Sustainability, Equity, & Justice Fund

Grant Application
2022-2023

The SEJF grant application is for all fund requests. Please fill out the application completely, utilizing additional space as appropriate. Supplementary documents may be added in the appendix at the end of the document.

*Note: if you are requesting a large grant (over $35,000) you must first submit a Large Grant Abstract. Abstracts must be reviewed and approved by the Sustainability Engagement Institute Director and the SEJF Committee before a final application can be submitted. Ask a program representative for a copy of the Large Grant Abstract template.

Each grant team is assigned an SEJF project coordinator; this individual will collaborate with the project team and provide feedback and insight on the application. Teams are expected to meet on a weekly or bi-weekly basis with their SEJF project coordinator.

The research and writing components required for this application take, at minimum, a month to complete. Last-minute requests may not be accepted. For detailed application instructions, please refer to the *SEJF Grant Proposal Toolkit* or ask your project coordinator.

Submit your completed application by emailing a scanned version (including signatures) to the SEJF Grant Program Coordinator, Zinta Lucans. Applications must be signed by your advisor, all members of the project team, and all stakeholders in order for them to be reviewed. Email: lucansz@wwu.edu.

Application Level: Determine the amount of funding you will require and check or highlight the appropriate category:

	Small Grant: Up to $5,000. Applications of this size will be reviewed by the Sustainability Engagement Institute Director. Small grants may be approved, declined, or sent to the SEJF Committee for consideration.
x	Medium Grant: Between $5,001 and $35,000. Applications of this size will be reviewed by the Sustainability Engagement Institute Director for alignment and completeness and then provided to the SEJF Committee. The committee will review the grant, receive your presentation, and approve or decline the funding request.
	Large Grant: Over $35,000. To request funding at the level, you must already have submitted and received approval of your grant abstract. Please attach your approved abstract to the end of this application. Applications of this size will be reviewed by the Sustainability Engagement Institute Director for alignment and completeness and then provided to the SEJF Committee. The committee will review the grant, receive your presentation, and approve or decline the funding request.

SECTION 1: Project Concept.

a. **Project Title:** Project ZeNETH: Construction Phase

b. **Statement of Purpose:**

Originally begun in 2017, Project ZeNETH (Zero Net Energy Tiny House) has been a (now long-running) objective aimed at engaging WWU students to design, construct, measure, and manage a net-zero, energy efficient mobile tiny house. Since its inception, the main emphasis for this project has been in maximizing students' education at Western Washington University, and we believe that this project continues to serve as a strong platform for incorporating disciplines and students from multiple colleges at Western. Students and faculty have been the primary instigators of this project, continuously pouring support and momentum to execute it. In the first years, ZeNETH had made great strides in partnering with local businesses, gathering materials, and setting course for a 2020 construction. Such progress was made possible by grants through both SAF and SEJF in October 2018 and December 2019.

As with every corner of the world, this project was delayed indefinitely due to COVID-19; additionally, during the pandemic period, every student originally connected to the project graduated or otherwise departed from Western. The goal and spirit of ZeNETH were hanging in limbo, kept aloft with our chief faculty advisor, Dr. Imran Sheikh. In the past two years, what had been pared down to a single professor has now grown to over 10 committed members, led in part by undergraduate student, Ryan Bottem, and grad student, Ted Tarricone.

Our team consists of students in electrical engineering & energy science, all of whom are combining effort to get the project back on track. Work done in electrical redesign, equipment sourcing, subcontractor and donor outreach, construction, and planning have all been greatly revitalized in the past few months. Our principal build partner, A1DesignBuild, has offered countless hours of guidance and help with these strides, along with new partnerships forged with local businesses, like the battery firm, Enersys. Construction has begun, and what was once a pile of various items stored in a warehouse now has structure; walls and a roof are sealed over our trailer, with plumbing and electrical work all encased within. Such progress is to be celebrated, but the revitalizing process has not been without unexpected expense. We have done a comprehensive assessment of our budget and are asking for $20,803.16 to finish this investment.

The struggles that were inherent to this project have been overcome for the time being, but these points of progress are in spite of some major financial obstacles. Three of our seven partner subcontractors (our roofing partners, our electrician, and electrical storage system supplier) were forced to withdraw from the project in the intervening years of COVID. These supplies and work were all to be in kind, meaning the deficit left could derail the monumental efforts that went into composition of the project pre-COVID and the efforts spent to bring fresh life in the time since. We are asking for this further funding to attain the materials and professional guidance in implementing the systems required to finish the tiny home's construction. Using the funding that SEJF can provide, this next generation of engaged students intend to finish the hard work that laid the foundation for the project, construct of the home, and have it installed on campus September 2023 with this financial help. Once on campus, opportunities for energy modeling, dashboard management, educational tours, and insight for the student body and visitors at large will be available to enrich the learning environment at large. Upon retiring from campus, possibilities exist for student housing in our Sustainability Pathways program in the Methow Valley or donation for use in affordable housing locally.

c. **Describe your proposed project in detail:**

The ZeNETH team's goals have been rooted in tackling issues of students' unrealized and underutilized education potential while at Western. To act on this issue, we are engaging student learning and leadership at every opportunity. This materializes as studying energy and design as a means to reduce carbon emissions in homes and buildings. This makes the energy efficient tiny house a great opportunity for students to have a hands-on learning experience.

As Bellingham's housing market continues to rise in prices, affordable housing is now not a choice but a necessity. For many college students, housing insecurity is becoming more and more a challenge to face. By providing the local and regional community with a design that works in our cloudier climate, we are bringing clean energy and decarbonization to the residential sector, a portion of the energy sector that has a significant demand and is only increasing our emissions as a society. This house has been modeled to show its ability to cover its energy requirements throughout the year by way of a solar panel array and an Enersys Outback battery system.

Figure 1 above depicts the rendering of Project ZeNETH.

The tiny house will serve as a tangible design project and test bed for students in courses related to design, urban planning, environmental justice, business and sustainability, biology, environmental studies/science, electrical engineering, and energy policy. This will include using the house as a living laboratory, and a possible study space.

To complete this project our team is asking for $20,803.16 to finish this project due to the unforeseen challenges of COVID-19 and student turnover. Our project has since gained attention from the student body, primarily within the Institute of Energy Studies and Urban Planning. It is in the interests of both the students, faculty, and university to see this project completed and continue our construction and installation. This momentum has involved students and re-ignited partnerships within the community, including A1 DesignBuild, Western Solar, and Enersys, promoting a public-private cooperation that allows students to work alongside and learn from real-world professionals.

d. Who is the intended audience?

The Western student body at large, local builders and suppliers, and the community of Bellingham all stand to benefit from the cooperative effort that is going into ZeNETH. The plan is to make all the designs open source to promote this learning experience as one for anyone to share in the insights garnered during its production.

e. How does this project directly impact the Western student community? How many students will be affected?

The focus of our project is to provide Western students with an actionable learning environment where classroom learning can extend into real world applications, such as engineering, sustainable building design, energy modeling, construction, project management, data analysis, socio-economic analysis, psychological impacts, urban planning, community outreach, computer science, grant writing, and marketing. With its location near Flag Plaza, ZeNETH will act as a welcoming beacon for those who enter campus from the south end, illuminating our commitment to the pursuit of

sustainable design. Information on site will allow for people to learn directly, and ongoing involvement opportunities will provide students a path to engage with ZeNETH both during and after construction. This site has been approved for ZeNETH through 2025 with the help of campus Facilities Services with a comprehensive plan in place for adapting the site accordingly. The design has been modified to accentuate an off-grid functionality, meaning the site will have fewer requirements to accommodate it.

Our project fits into AS sponsored events like, "WWU Asks: What Are Solutions to the Housing Crisis in Bellingham" and many other campus and community-wide discussions on housing affordability. Affordable housing is crucial in creating a campus culture where students are not burdened by the rising rents. One student on our tiny house survey reported, "I am Homeless, and couch surf, keep doing what you are doing it's just going to get harder out there for a lot of people." This comment illustrates that high rent is negatively impacting Western students and needs to be addressed immediately in order to ensure student success.

SECTION 2: Project Goals and Outcomes.

a. What are the goals and desired outcomes of your project?

Our goals are as follows:

- To educate and engage Western students in their respective discipline.
- Teach students about how tiny houses can be an attainable, sustainable, and equitable housing solution.
- To provide our student-led team with practical experience on a project that will directly benefit their professional aspirations through the utilization of their education in a meaningful way.

b. How will your project positively support the four pillars of sustainability at Western? *For information on the four pillars of sustainability, please refer to the Sustainability Engagement Institute's website (https://sustain.wwu.edu/our-mission), look through the SEJF Grant Proposal Toolkit, or ask your program coordinator.*

1. Create economic vitality: Through the construction of this project, ZeNETH is creating an importance to the built environment ensuring that any student that participates in its construction and any student that interacts with the unit after completion becomes integrated in a more sustainable world. By providing a landmark of clean design, the structure signifies the effect that our buildings have on our environment.

   This tiny house project will also have an indirect impact on the finances of students. We hope to partner with the Financial Literacy Intelligence program to help students win back control of the proportion of income they spend on rent. Students would benefit from this option greatly as the housing market is unaffordable for the vast majority of students. This leaves many students simply paying rent for years on end without creating equity in any property. Tiny homes across the nation, and here in Bellingham, provide an opportunity for people of diverse income brackets to own a house of their own.

2. Promote well-being: The design of the building maximizes comfort and well-being for the occupant and shows how simple reducing the carbon footprint of our homes can be. As students walk by the building, interact with it, and learn more, we are ensuring an interest in clean design for our students as well as understanding what improves the daily life of an occupant.

3. Protect the environment: Due to the home being a zero net energy tiny home, the impact it has on the environment is minimal. It becomes an ideal representation of how individuals can occupy less space and therefore leave a smaller footprint. We are showing the community of Western and Bellingham what the future of urban planning and sustainability.

This project will have both a direct and indirect impact on the sustainability of Western's campus. The house itself will be designed to generate enough electricity from its rooftop solar array to power the entire house through utilizing efficient appliances, insulation, and carbon-neutral design. The house will be designed using the Living Building Challenge standard, as well as aspiring to implement passive house design and cradle to cradle methodologies.

4. Uphold social justice: One of the largest problems facing the modern world today is affordable housing. Whether it is homes or apartments, renting for most people is extremely expensive and with the increase in most materials used in commercial and residential buildings, larger spaces inherently cost more. But by reducing the square footage of a home, and working with A1 construction, we are able to provide a model of what a low-income individual could rent. This model can be modular with others to design small home communities and can be individual. This distinction becomes a branch from the modern design of multifamily housing where a city's advantage is to build larger homes for more wealthy individuals and compressed, apartment style homes for low-income individuals. To breach that equity barrier and still provide a comfortable space, a tiny home is the perfect intermediary.

c. How will your project positively align with Western's Sustainable Action Plan (SAP)? Please determine how it advances one or more of the ten SAP chapters. *For information on the SAP, please refer to the Sustainability Engagement Institute's website (https://sustain.wwu.edu/sustainability-action-plan), look through the Grant Proposal Toolkit, or ask your program coordinator. The ten SAP chapters are:*

1. Built Environment
2. Campus & Community Engagement
3. Curriculum and Research
4. Dining Services
5. Grounds
6. Investments
7. Procurement
8. Student Life
9. Transportation
10. Waste

Primary chapter of alignment: Built Environment

Explanation: The focus of this project is primarily the Built Environment since this is the construction and livability of a tiny home. The home is net zero emissions, providing an ideal example of what an individual's footprint could be if designed correctly. The simplicity of the design, the small area, and the renewable power generation on the roof allows Western to spearhead the decarbonization of buildings through example.

Additional chapter(s) of alignment, if applicable: Campus and Community engagement

Explanation: Due to the prime placement of the tiny home on campus, ZeNETH will become an impressive interactive landmark for students. The ability of the home to be researched and interacted with will allow students and staff to understand the issues of the energy transition and decarbonizing the building sector. This outreach and engagement are extremely important for Western Students to implement the concept of sustainability outside of traditional examples.

d. How will your project address the UN Sustainable Development Goals (SDGs)? *The United Nations has developed seventeen sustainable development goals (SDGs) to transform our world. These goals address the full spectrum of sustainability. When we work locally to transform our community, we are in league with people around the globe striving to create a more just society. Visit the UN's website for more detailed information:* https://sdgs.un.org/goals. *The UN's seventeen SDGs are:*

1. No Poverty
2. Zero Hunger
3. Good Health and Well-being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequality
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace and Justice Strong Institutions
17. Partnerships to Achieve the Goal

Please list and explain the three United Nations' Sustainable Development Goals that your project primarily addresses.

1. Affordable Clean Energy – ZeNETH will have a large solar array on the rooftop providing cost effective renewable solar power. This array will sustain the energy needs of the tiny home and allow it to be self-sufficient all year long.

2. Sustainable Cities and Communities – The importance of ZeNETH in the SDG of cities and communities is the fact that it brings affordable and clean housing to a growing urban space. By providing the public with an example of smaller footprints, urban planners can effectively utilize land while allowing the housing to stay affordable for low-income populations.

3. Industry, Innovation & Infrastructure – The building is a prime example of innovation in the built environment. By bringing in a new design of residential housing, the expanding housing market in Bellingham and many other parts of the world can understand the infrastructure needed to make these projects happen. By expanding the potential of the residential market through a new design, the infrastructure will grow bringing in a new wave of clean energy decarbonization employment.

e. How will the success of the project be measured? Describe the quantitative and/or qualitative sustainability metrics you will use to measure the success of your project. A data collection plan is required for all projects, and all data must be provided to the SEJF Program upon completion of the project.

Metric	Description	How and when will you collect it?
Energy Produced and Consumed	Our house has been designed to use approximately 2800 kWh annually. Our 2.5 kW solar PV array will produce at least as much electricity to match this consumption. The average house in the USA uses five times as much energy as ours will.	Our house is designed to be net-zero energy and must produce as much energy annually as it consumes. We will continually measure the performance through energy monitoring technology. The residency program will provide most of the necessary data.
Housing Economics	We plan on educating students about the financial and practical benefits they can receive when considering this housing	Housing affordability is federally defined as a house not costing more than 30% of a tenant's income. Locally, tenants throughout Bellingham

	model. We want to know if our house can be marketable as an affordable housing option, but the key to this is in demand. Are people interested and able to switch from a rental based to a mortgage-based living situation? We are studying how realistic it is for students, once they graduate, to consider purchasing a tiny house.	have an increased cost burden of paying more than 30%, according to a City of Bellingham report. We hope to design, construct, and implement our house within the 30% of our target market's income. We will measure WWU student's willingness and ability to purchase a tiny house before, during, and after our project.
Urban Planning and Policy	As local, state, and international building codes shift to match needs, our house will embody these shifts by keeping up to date on any code allowances, especially in terms of zoning and house systems, like wastewater. We aim to educate students on campus as to how zoning regulations can steer housing opportunities.	We will measure the education and awareness students have concerning urban planning guidelines before, during and after our project.
Students Reached	We aim to reach students across campus through campus newspapers, social media, blog posts, events in red square, and in-class presentations.	We will measure the education and awareness students have concerning their own education at Western. We will measure this through ongoing surveys and interviews.
Student Involvement	We plan on involving students of all seven colleges in our pre-construction process, as well as in the post-construction on-campus siting phase. Students involved will have many different tasks which can be viewed in section C of this document. It is critical that students stay involved in the process throughout the life of ZeNETH.	We have not found a project that has been as interdisciplinary as ZeNETH, and we hope that we can help set a precedent on what is possible at Western. To measure this, we will utilize surveys and interviews to track those we've had involved as they move through their time at Western and a year past graduation.

SECTION 3: Project Participants.

Team Information: A team should consist of two to five individuals, including the team advisor.

Project Advisor (Faculty or Staff) Student proposals must include a staff or faculty advisor. The role of the advisor is to assist and guide the team during the development, implementation, and post-implementation stages of the proposal process.

Project Lead: There must be at least one team lead designated for the project. This individual is expected to serve as the communication liaison for the project.

Financial Agent: The project must have someone with budget authority to manage funds for all purchases. Should funds require transfer, this individual will have to provide a FAST Index and Activity Code to the SEJF Manager.

SEJF Project Coordinator: A member of the SEJF team will serve as the primary contact for the program and committee.

Name	Department/School; *Students provide major/minor*	Position: Faculty/staff/student; *Students provide expected graduation quarter/year*	Western email address	Signature to verify agreement
Team Advisor: **Imran Sheikh**	Institute for Energy Studies	Faculty	sheikhi@wwu.edu	Imran Sheikh
Team Lead: **Ted Tarricone**	Institute for Energy Studies	Staff / Graduate Student; Summer 2023	tarrict@wwu.edu	Ted Tarricone
Team Member: **Ryan Bottem**	Institute for Energy Studies	Undergraduate Student; Spring 2023 Graduate Student Spring 2025	bottemr@wwu.edu	Ryan Bottem
Team Member: **Hari Nath**	Institute for Energy Studies	Undergraduate Student; Spring 2023	nathh@wwu.edu	Hari Nath
Team Member: **Ben McNett**	Institute for Energy Studies	Undergraduate Student; Spring 2024	Mcnettb@wwu.edu	Ben McNett
Financial Agent:	Institute for Energy Studies *(*see note below)*			

For fund transfers *FAST Index:* *Activity Code:*	The Institute for Energy Studies will provide this information upon approval of the proposal.
SEJF Project Coordinator (SEJF staff member):	Zinta Lucans

*Note: the Institute for Energy Studies will be the owner of this project, as well as the fiscal agents. The Institute's current fiscal administrator is transitioning to a different role, and the new administrator role is yet to be filled. Jenny Sidwell in the Provost's office will be helping on an interim basis.

SECTION 4: Project Timeline.

a. **Describe how your project will progress, both before and after the approval of your proposal.** Outline all tasks that are required to complete the project, including all the means in which you will promote the project on campus, in the table below. Insert additional rows as necessary.

Action	Purpose	Initiation	Completion
Year 6 Summer 2023	Continue construction at A1 with students and volunteers Clear up site at WWU campus		
Year 6 Fall 2023	Installation at WWU campus		
Year 6 Winter 2023	Continued engagement through its presence on campus		
Year 8 Winter End Date	Permit for site on south campus expires in January 2025 to clear space for new campus building.		

b. **When is the planned project completion date?**

   October 2023

c. **When will final metrics and a final report be submitted to the SEJF Program?** *This should be completed no later than one month after the project completion date.*

   November 2023

SECTION 5: Project Stakeholders.

a. Does your project involve labor/participation or require permission from organizations, departments, or individuals on campus? Who will be impacted if this proposal is implemented? All stakeholders must provide a signature of approval for this project. *Please refer to the SEJF Grant Proposal Toolkit for more detailed information.*

Stakeholder Name	University Department and Position	Involvement in Project	Stakeholder signature of approval
Imran Sheikh, Assistant Professor	Western's Institute for Energy Studies	The IES is the owner of Project ZeNETH and will continue to oversee this project for the duration of the process and once it is sited. The IES approves of our project.	
Steve Hollenhorst	Facilities Management	Facilities Management will help manage the siting of our structure and will need to approve our project for siting, but not for building.	
Paul Mueller	Risk Management	Risk Management is helping us plan to avoid risk and addresses liability and insurance.	
John Kingsford-Smith	Environmental Health and Safety	This office seeks to guide us in our process of providing safe and accountable practices, especially in constructing the house. At this time, we have met with John Kingsford-Smith and received his approval for us to move forward. We will be seeking his guidance again for safety training in Fall quarter.	
Rick Benner	Facilities Development and Capital Budget	FDCB has been involved with our project and has been consulted for guidance on what steps need to be taken. Rick Benner has provided our team with tasks that must be completed, such as potential build sites, and a comprehensive plan of our whole project. We have delivered these items and are awaiting further guidance.	

b. **Who will be the project owner upon completion of the project? Which individual/office/department will take over the project? This owner should also be listed as a stakeholder.**

Western Institute for Energy Studies

c. Does your project propose a temporary or permanent facility or property modification?

Temporary, as the site will be cleared on January 2025 for new campus building.

SECTION 6: Project Budget.

Provide an itemized list of the budget items required for this project. Include equipment, construction costs, publicity, labor, and any other costs. Include funding amounts from other sources that will impact project cost. The SEJF Program encourages the identification of additional funding sources to augment SEJF funds, and failure to secure such support may prevent approval of an application. List pending, approved, and denied applications for funding from other sources, along with amounts requested from those sources.

Budget item	Cost per Item	Quantity	Cost
A1 Debt (approximate, for container storage, lumber purchases)			3000
Electrician			8000
Transportation			650
Site Prep for Campus			5000
Tie Downs			800
Backup Generator			1000
Trailer Lock			250
Green Home Solutions			2323.52
RecPro Water heater			199.95
Interior Doors and Hardware			500
Ladder Hardware and Materials			600
Cooktop			400
Oven			250
Table Bracket			250
Cabinet Knobs			50
Interior Light sconces			150
Exterior Ramp-Framing Decking and Railing components			2,000
Skirting			200
Gutters			250
Roofing and Flashing			2,500
Soffit Metal			250
Corner metal for Cork			100
Rain Barrel			250
ERV			600
Cove Heater			300
Interior Trim Base and Case			250
Drywall and finishing materials			1,000
Paint			250
Elevated Bed hardware, platform materials and motors			1,000
Roofing underlayment			250
Microinverters			1,809
Enphase IQ7 Cable			239
Enphase IQ7 Gateway			595
Current Expenditures Remaining			**$35,996**
Amount of ZeNETH Funds Remaining			**$15,163.49**
	Total Remaining		**$20,803.72**

Budget Items	Status	Amount
Total Project Cost	Both spent and estimated future	**$88,811.88**
Previous funding from SAF/SEJF	Active	$63,250
Previous Funding from changemakers	Active	$4,757.72
	Total requested funds from SEJF	**$20,803.16**

If the project is implemented, will there be any ongoing replacement, operational, maintenance or renewal costs? If yes, has a source of funds been identified to cover those costs? This must be communicated to the appropriate stakeholder.

Ongoing cost	Amount/year	Responsible Stakeholder	Signature

SECTION 7: Appendices.

Provide any additional documents, references, or information here. For large grants, attach the approved abstract in its entirety at the end of this document. When possible, provide documents rather than URLs.

See attached email thread for stakeholder approvals:

FW: Tiny House

Imran Sheikh <sheikhi@wwu.edu>
Tue 5/16/2023 11:47 AM
To: Zinta Lucans <lucansz@wwu.edu>

1 attachments (2 MB)
Location for Tiny Houseart;

Hi Zinta,

Below is approval from university leadership on tiny house siting on campus. Let me know if any other documentation is needed.

Best,
Imran

From: Rick Benner <benner@wwu.edu>
Sent: Thursday, December 15, 2022 10:46 AM
To: Imran Sheikh <sheikhi@wwu.edu>; Amanda Cambre <cambrea@wwu.edu>; Joel Swisher <swishej3@wwu.edu>; Avinash Rahurkar <rahurka@wwu.edu>; Alexis Blue <bluea2@wwu.edu>; Steve Hollenhorst <hollens@wwu.edu>
Subject: FW: Tiny House

All,
After discussions with Provost Johnson and VP Lopes, it was decided to extend the existing agreement as follows:

The site approval is extended until January 2025. In January 2025, if not sooner, the site will be restored back to its current state. Due to the planned construction of the Student Development & Success Center in this location, no further extensions will be granted.

Please let me know if this is acceptable.
Rick

GRANT APPLICATION
PROPOSAL REVIEW PROCESS

Please arrange a meeting with Zinta Lucans, SEJF Program Coordinator for the Sustainability Engagement Institute, to review your drafted proposal. Once your project proposal is complete, sign and deliver it via email to: lucansz@wwu.edu.

Completed medium and large grants applications are presented to the SEJF Committee for consideration. The SEJF Program Coordinator will provide you with dates and information for your presentation once your application is complete and submitted.

Zinta Lucans
SEJF Program Coordinator, Sustainability Engagement Institute, Western Washington University

Signature: _____Zinta Lucans_____ Date: __05/16/2023_

This signature confirms that the application has been accepted for SEJF committee review; it does not indicate funding approval.

Grace Wang
Director, Sustainability Engagement Institute, Western Washington University

Signature: _____ Date: _____

This signature confirms that the application has been accepted for SEJF committee review; it does not indicate funding approval.