



The Green Fund Annual Report

2023-2024

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Grace Carr, Lindsay Mauss



The Northern Arizona University Green Fund Annual Report 2023-2024

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Carr, Lindsay Mauss**

Vision Statement

Implementing student-led projects and developing campus-wide partnerships to drive visionary, impactful, and sustainable initiatives and serve as a leading example in higher education.

Mission Statement

The NAU Green Fund promotes student participation in and provides funding for projects that reduce NAU's impact on the environment and create a culture of sustainability on campus.

About the Northern Arizona University Green Fund

“The Green Fund is NAU’s main source for sustainability funding. University students, staff, and faculty may submit project proposals, which are reviewed and selected for funding by a committee of eight students supported by staff and faculty advisors. Projects are supported by the \$15 per student, per semester Green Fee, which adds up to a yearly budget that is upwards of \$600,000. The Green Fund allows students to utilize fee money to make campus a better place for themselves, their peers, and future students.”



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2023-2024 Green Fund Overview

**9 Projects
Funded**

**1 Research Grant
Funded**

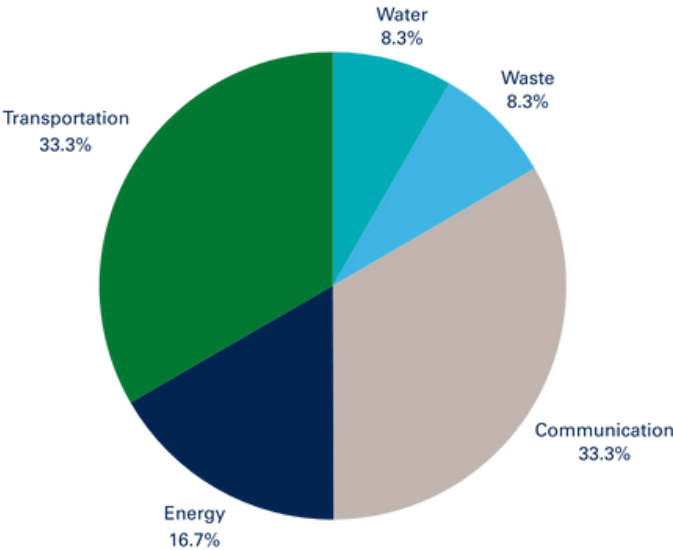
**7 Events
Funded**

**40 Idea
Summaries**

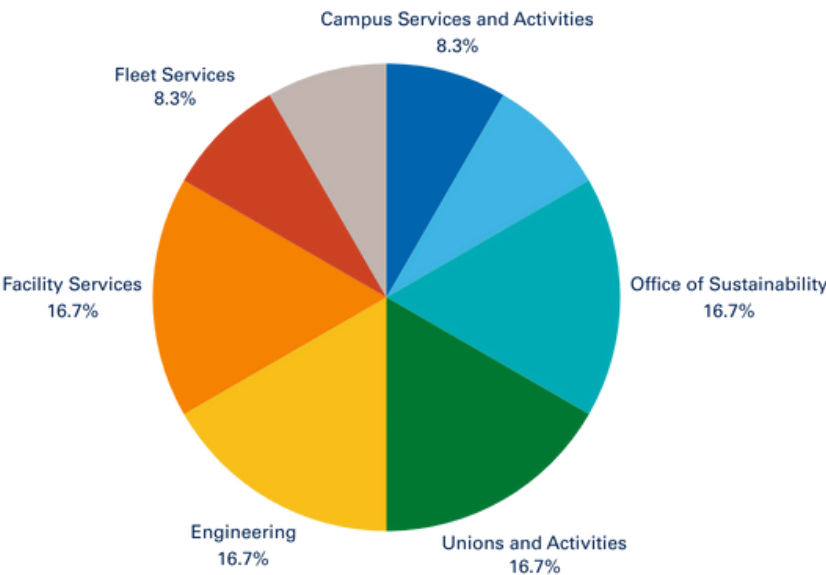
2023-2024 Green Fund

Demographic Analyses

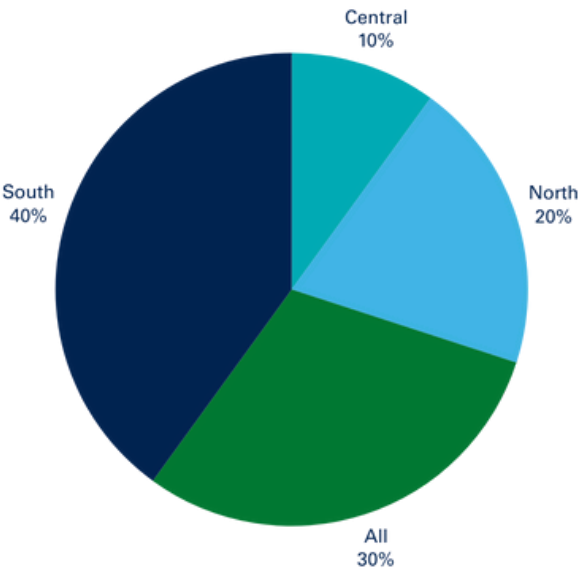
FY2024 Approved Funding
Submissions by CAP
Category



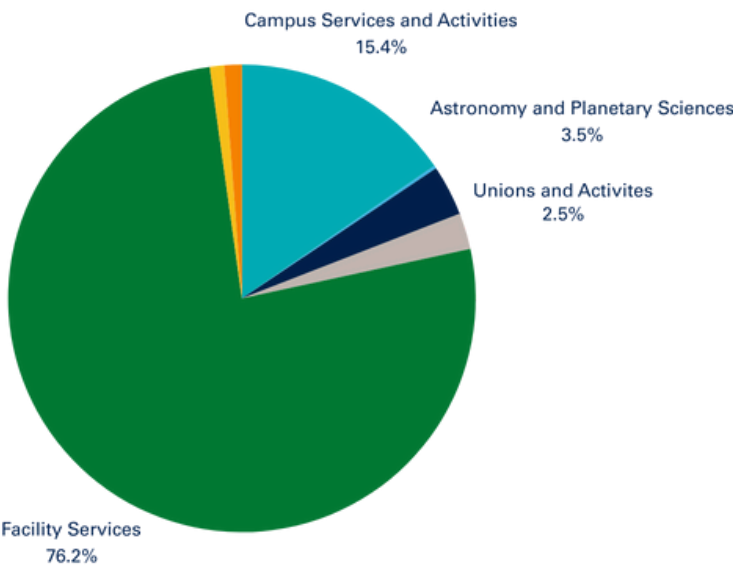
FY2024 Approved Funding
Submissions by Sponsoring
Department



FY2024 Approved Funding
Submissions by Campus Area
Designation



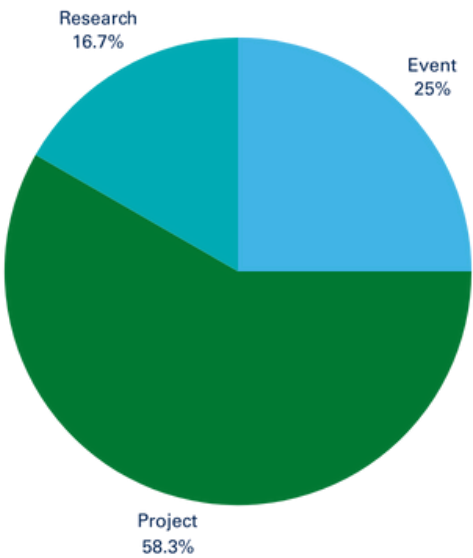
FY2024 Funding Amount by
Sponsoring Department



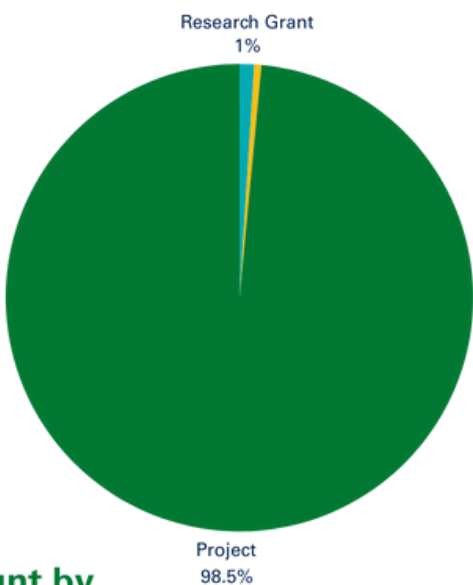
2023-2024 Green Fund

Demographic Analyses

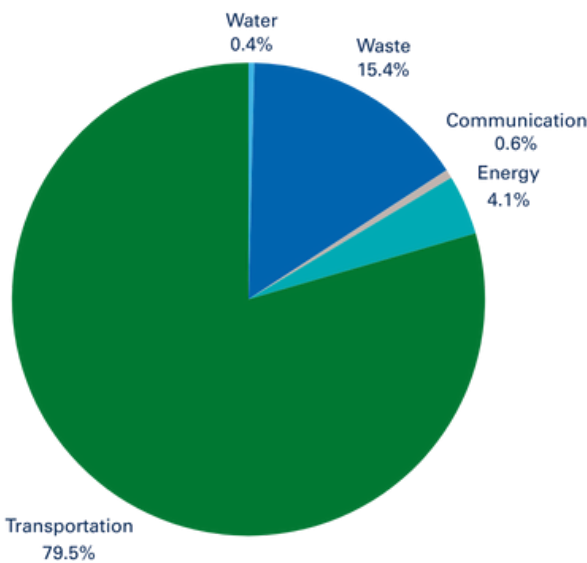
FY2024 Approved Funding Submissions by Category



FY2024 Funding Amount by Category



FY2024 Funding Amount by CAP Category



The Green Fund Committee



Olive Dunn
Co Chair

Marie Fredenburg
Co Chair
(Fall 2023)



Maxwell Sewell
Co Chair
(Spring 2024)

Eva Braunthal
Co Chair In Training
(Spring 2024)



Brynn Katz
Treasurer



The Green Fund Committee



Alexia Markoutsis
Secretary



Lindsay Mauss
Public Relations Specialist



Hope Saxton
Impact Analyst
(Fall 2023)



Grace Carr
Impact Analyst
(Spring 2024)



Kylie Vetere
Community Outreach Coordinator



The Green Fund Committee



Caleb Atsu Nyatuame
Graduate Student Representative

Chad Stiller
Staff Advisor



Dr. Kent Lithincum
Faculty Advisor
(Spring 2024)

Abraham Henn
Staff & Business Manager



Joshua Spear
Staff Advisor



Funded Projects

The Northern Arizona University (NAU) Green Fund has a variety of funding routes for students to get involved with sustainability, and the Project Proposal funding is no exception to this.

Every year, The Green Fund receives Idea Summaries from students, faculty, and staff on the Flagstaff Mountain Campus. These Idea Summaries are brought forth to the Green Fund Committee for review, and typically a full proposal is submitted after this initial process.

Once the final proposal is submitted to the committee, it undergoes a final review process where it is either passed or declined. Once a proposal is passed, the Green Fund will distribute the allocated funds towards the project, and keep track of the project until it is completed.

The Green Fund's passed proposals have to prove that they will improve the culture of sustainability on the NAU Flagstaff Mountain Campus.



Physical Sciences Energy Efficiency and Thermal Comfort Window

\$16,939.64

This project's goal was to install Thermal Window Films into the NAU Physical Sciences building, and collect data afterwards on the energy savings and efficacy in the building in comparison to having no films on the windows. These special films reflected UV rays and reduced indoor heating. Due to the nature of the Physical Sciences building, it requires a heightened amount of heating and air conditioning during their respective times of year, so these films sought to lower the need for both of those energy intensive productions.

The project was aligned with the energy portion of the NAU Climate Action Plan, as it would have reduced the energy used in cooling or heating the indoor temperatures of the building.

This project sadly had to be halted, as the team behind it ran into issues with installing the thermal films inside the specified building.

Project Submitted by: NAU Climate Action Committee

Project Advisor: Dr. John Fegyveresi



Climate Action Committee Tabling and Recruitment Materials

\$556.50

The Green Fund funded a project for the Climate Action Committee to obtain tabling and recruitment materials this year. The NAU Climate Action Committee works directly with students on campus (typically graduate students, but undergraduates are welcome to join) to expand the university's culture of sustainability and knowledge on creating tangible emission reductions within NAU systems.

The Climate Action Committee used these funded materials to recruit new members, who have directly helped the culture of sustainability on NAU campus. Along with recruiting new members, the Climate Action Committee has tabled at various sustainable events and even hosted their own throughout the 2023-2024 year.

Project Submitted by: Phoenix Eskridge-Aldama
Project Advisor: Dr. John Fegyveresi

USEFULL – A Solution to O2Go

\$99,485

USEFULL was one of the most anticipated projects of the 2023-2024 calendar year. Teams from Campus Dining, Sodexo, and Waste Minimization came together to create the proposal for USEFULL. USEFULL is a reusable container program, and it replaced the previous O2GO system. With USEFULL, the teams tackled the issues that NAU had with the previous container program and reworked them to better benefit NAU.

Students will download the USEFULL app to use the program. In the pilot run, the stainless steel containers were available at three different locations in the NAU Union building. Students are given a container with a matching QR code on the bottom to scan through the app. Once they have finished their food, they can bring the bowl back to one of the return stations for an easy checkout and return.

As of May 29th, 2024, USEFULL containers at NAU have been checked out 37,000 times, saving 3,484.60 pounds of trash.



Project Submitted by: Laura Bohland and Sara LaRosa
Project Advisor: Francisca Alvarado

Identifying Impervious Surface Runoff Quality and the Roles of Low Impact Development Basins in Filtration and Groundwater Recharge

\$2,736.83

This project aims to quantify the efficacy of existing LID basins in the NAU Mountain Campus's largest parking lot, P62, and the feasibility of potential fee decreases. The end goal is to build an argument in favor of the future implementation of more low-impact basins on campus. Harju and colleagues predict marked improvements in water quality and groundwater replenishment.

This project lays the groundwork for a proposed future installation of another LID basin in P62. By providing strong support for potential ecosystem health and fee reduction benefits through baseline water quality and basin efficacy data, Harju and his team will be able to firmly assert their recommendation of increased green infrastructure to the NAU community. Further research into LID basins presents an exciting chance for NAU to decrease its expenditures and environmental footprint.

Project Submitted by: Gabrial Harju
Project Advisor: Dr. Adam Bringhurst



Adding Electric Utility Vehicles to NAU's Facility Services Fleet \$160,989.57

This project was submitted with the idea of adding five new electric utility vehicles to the NAU Facility Services current fleet. The addition of these five electric vehicles would help decrease Facility Services greenhouse gas emissions.

These were successfully purchased and used by Facility Services starting fully in the Fall of 2023. They are now used daily by Facility Service employees, and it has inspired other departments, including Facility Services, to look further into electrifying the entire current fleet.

As reported by Kelly Pellegrino in this proposal, “Swapping the current four gas-powered vehicles to the example five EUVs will save NAU 3.84 metric tonnes of CO₂ 8,469.72 emissions per year. Other emissions that result from fossil-fuel-burning vehicles that will be avoided include methane (CH₄) and nitrous oxide (N₂O) from the tailpipe and all vehicles can emit hydrofluorocarbon (HFC) from leaking air conditioners.”



Project Submitted by: Kelly Pellegrino

Project Advisor: Abraham Henn

Yellow Bike Improvement Plan

\$13,816.38

The Yellow Bike Program started as a small bike share program in 2007 at NAU. In Fall of 2023, the fleet has expanded to 120 bikes, serving 3,000 members per year on campus.

This project was submitted to help improve the Yellow Bike Program, as the bikes were degrading due to age, sun damage, sticky tires, worn out grips, and other common bike maintenance issues. Additional funding was needed to help expand and upgrade the program due to the demand in the past few years.

This proposal added new tires, saddles, grips and pedals to the old bikes, along with a cargo style bicycle and two computer bicycles.

This upgrade will be apart of a yearly upgrade for the Yellow Bike Program as they see continuous growth in the future.

Project Submitted by: Blaise Ferro

Project Advisor: Beth Bengala



Compost Refresh Grant

\$2,082.58

The “Compost Refresh Grant” project was a project submitted by the Sustainable Living and Urban Gardening (SSLUG) club to upgrade their existing composting system into a more efficient one for Northern Arizona University Mountain Campus.

This project asked for funding for new materials like wheelbarrows, pitchforks, and larger bins. SSLUG has seen an increase in garden usage by students in the past two years, and new bins were needed to expand.

Along with these materials, they created new signage for the garden and surrounding areas, so when people walk by they can be educated on the gardens purpose and how the garden works.

With this compost upgrade, the SSLUG club can reach new students, and also benefit existing ones. Everyone on the affected NAU campus can visit the garden and view the upgrades.

Project Submitted by: Gabriel Navarro, McKenna Bean (SSLUG)

Project Advisor: Peter Friederici



Grounds Equipment Phase Two

\$13,499.78

Northern Arizona University has pledged carbon neutrality by 2030, and electrifying NAU's fleets is a crucial part of achieving this goal. This particular project was originally proposed in a two part plan. The first project passed was a success. Phase one was approved and implemented in the Spring of 2023. This involved purchasing / replacement of all push mowers and trimmers with electric equipment.

As stated by Ross Priehs, who submitted this proposal, "Phase two will include the purchasing of additional electric equipment to replace the remaining two-stroke and four-stroke engines, completing the project. NAU's current groundskeeping equipment relies on internal combustion engines, resulting in air pollution, greenhouse gas (GHG) emissions, and noise pollution".

Switching to electric equipment is the one of the steps to meeting NAU's carbon neutrality plan, and also creating a culture of sustainability on campus.

Project Submitted by: Ross Priehs

Project Advisor: Abraham Henn

Yellow Bike Expansion

\$8,090.08

In the past fiscal year, two Yellow Bike proposals were submitted, this being the second submission. For more information on the first proposal, see page 13. The Yellow Bike Program started as a small bike share program in 2007 at NAU. In Fall of 2023, the fleet has expanded to 120 bikes, serving 3,000 members per year on campus.

In order to keep the Yellow Bike Program running smoothly as rentals increase, the program has decided on regular submissions to the Green Fund for expansion. In this particular proposal, funding was requested for 20 new bikes, along with their stands to be integrated on NAU's South Campus DuBois Center.

The bikes are not currently on South Campus, and this extra location will allow more students to access them. The expansion of the Yellow Bike Program is necessary, and the Green Fund are expecting to see yearly proposals from the team.

Project Submitted by: Blaise Ferro
Project Advisor: Beth Bengala



Green Fund



NAU Skydome Sustainability Infrastructure

\$69,957.19

The Green Fund began a working relationship with NAU Athletics this past year, and with that comes projects to accelerate sustainability in their programs. Two of the Green Fund Committee members worked with the athletics department to submit this proposal.

Funding was requested for two electric gators, five water bottle refill stations, and a singular cart to be used for transporting recyclable materials to be used in the Skydome, which is NAU's athletics venue. The Skydome is one of the most walked through places on the Flagstaff Mountain campus, and these sustainable additions will save energy and be a promotor of zero waste.

Nackard Pepsi will be apart of this project and future sustainable athletic endeavors at NAU by collecting recyclable materials and having interns assist during game collections.

Project Submitted by: Kylie Vetere and Brynn Katz
Project Advisor: Andy Bourget and Connor Ross

Funded Research Grants

Another facet of funding that the Northern Arizona University Green Fund offers is research funding for people who have sustainability-related research. This route has students interested in funding submit a Student Research Grant application through the Green Fund website. This application goes through the review process with the committee and can get funded.

Many of the funded Student Research Grants come from departments that aren't the School of Earth and Sustainability, and can range in a variety of topics. Certain Research Grants are presented at the annual Student Undergraduate Research Symposium by the Green Fund.

This funding allows students interested in pursuing sustainable research a facet to improve their skills and an outlet to start their original work.



Passive Radiative Cooling Research

\$3,297.00

The Green Fund approved the past implementation of a radiative heat exchanger test rig in order to evaluate the efficacy of passive radiative cooling, in which ambient heat is emitted into space. The test rig involved the passing of ambient-temperature water through heat exchangers, each coated with materials of a specific radiative property. These materials include a black-body absorber, a white-reflector, and a white-reflector supplemented by an atmospheric window, releasing heat into a region of the electromagnetic spectrum not absorbed by greenhouse gasses. Surface emissions are manipulated as to bypass atmospheric gasses and provide comparatively cooler temperatures.

Plis' research aims to measure the passive radiative cooling performance of these heat exchangers based on temperature, flow rate, and metrics of radiation. The baseline of Plis' methodology was established on existing work by Shanhui Fan et al. and the 2022-2023 Mechanical Engineering capstone group.

Project Submitted by: Abraham Plis

Project Advisor: Dr. Jennifer Wade



Green Fund

Passive Radiative Cooling Research

\$3,297.00

The research has yet to be completed in its entirety. However, the outcomes so far suggest the merit of passive radiative cooling as a green supplement to cooling systems on campus. The researchers predict that the thermal energy flow (Q) from the passive cooling system will correlate to the avoided energy removed from a chilling unit equipped with this system, resulting in a reduction in energy costs and electrical load for NAU. The results of the first two datasets promisingly attest to the efficacy of passive cooling and its proposal as an environmentally-friendly alternative solution.

Project Submitted by: Abraham Plis

Project Advisor: Dr. Jennifer Wade

Funded Events

The Green Fund always strives to make the funding process more efficient for students to access, which is why the Spring 2024 Green Fund student committee created the Event Sponsorship form for student clubs and organizations on campus to request funding for their sustainability based events.

This process for sponsorship entails the club requesting funding to specify why their event created a culture of sustainability on the NAU Flagstaff Mountain Campus, along with other questions.

Clubs granted funding will receive it to put on their event, and also will have the Green Fund as a part of their event to be a visible sponsor.

As this form was debuted in Spring of 2024, some of the events were funded through the project proposal process, but going forward, the new sponsorship route is how these events will be funded.



BBQ & Brainstorm

This event was funded by the Green Fund and hosted by the 2023-2024 Public Relations Specialist, Lindsay Mauss.

At this event, students has the opportunity to gather in a outdoor communal area and brainstorm sustainability projects for NAUs Flagstaff Mountain campus.

This event was a success, and brought out interested students who wanted to get started in sustainability, and also students who were interested in proposing ideas to the Green Fund.

Being able to chat with directly with students involved in Green NAU was a great opportunity for new and interested people to break into the realm of sustainability on campus.



Event Leader: Lindsay Mauss

Students for Sustainable Living and Urban Gardening Fall Festival

\$871

This year, the annual Students for Sustainable Living and Urban Gardening (SSLUG) Fall Festival was a success, and brought NAU's sustainable clubs and hundreds of interested students together for a night of learning, costumes, and sustainability.

SSLUG submitted this proposal to the Green Fund for assistance with food costs, beverage costs, and having those options be vegetarian and compostable.

The SSLUG Fall Festival brings together sustainable leaders, students who want to learn and fosters a culture of sustainability through these actions. This festival is coveted year round, and adds a lot of new and diverse faces to Green NAU.

Event Submitted by: Gabe Navarro, Ivy Dveirin
Event Advisor: Peter Friederici

Nurture the Nature

In the Fall of 2023, Sun Entertainment, in collaboration with The Green Fund, SSLUG, and Green Jacks, hosted the second annual Nurture the Nature event.

This event is hosted at the beginning of the Fall semester to introduce new students to everything that Green NAU has to offer. This year, the event has a clothing exchange along with demos on composting, gardening and recycling.

Many different NAU clubs tabled, such as SSLUG, Green Fund, NAU Campus Dining, SSLUG, Green Jacks, and others.

This event is a great way to allow new and returning students into Green NAU, and to help anyone in their sustainable endeavors.

Event Leader: Sun Entertainment

Collaborators: Green Fund, Green Jacks, SSLUG



Green Fund



Earth Jam

\$3,701.76

Sun Entertainment and the Green Fund came together once again to put on the Annual Earth Jam Earth Day celebration. Each year on Earth Day weekend, the Earth Jam celebration is open to NAU students and the Flagstaff public to celebrate the Earth and sustainability at Northern Arizona University.

This year, there were performances and tabling from many of NAU's clubs, such as HAPA and Climate Action Committee. The Student Activities Council (STAC) also contributed to putting this event on and helping it become a success and the largest Earth Jam at NAU.

For 2024 Earth Jam, there were around 1500 total attendees in total. The NAU Green Fund is looking forward to putting on more Earth Jams in the future, and celebrating the Earth and sustainability all year.

Event Leader: Sun Entertainment
Collaborators: Green Fund



Arizona University Sustainability Summit

\$1,624.87

Each year, one of the three main Arizona Universities hosts an Arizona University Sustainability Summit, and this year was Northern Arizona Universities' turn to host this event. The Green Fund Public Relations Specialist for 2023-2024 organized and hosted this event for the entirety of Green NAU / The Office of Sustainability.

This summit was a success, with multiple institutions from Arizona attending and sitting in on the different panelists. Different topics were discussed in these panels, such as: Intersectionality in Sustainability, Carbon Accounting, and Sustainability in Media.

This year's summit was an opportunity for all parties to learn from one another. The topics discussed served as a way for those not actively involved in sustainability or those specific niches to involve themselves.

Event Leader: Lindsay Mauss (Green Fund, Northern Arizona University)



Green Fund



Valentine's Seed Bombing Event

\$137.18

For this event, Green Jacks and SSLUG collaborated to host an educational seed bombing event with a Valentines Day theme. This event was also hosted in a similar form in the previous academic year.

This event brought students together to teach them about seed bombing, why seed bombing is important, and how to plant seed bombs. After the learning demonstration, leaders helped guide students on building their own seed bombs with supplies that were funded by the Green Fund.

This event was a success, and brought new students in, along with the ones from the collaborating clubs together to learn about vegetation & restoration of native landscapes.

Event Submitted by: Grace Meinema (Green Jacks)
Collaborators: SSLUG

Better World Film Series

\$771.75

The “Better World Film Series“ event is hosted by the Green Jacks club, and 2024 was the second annual series hosted

The main event was hosted by Green Jacks, but the first night of the film series was co-hosted by Flagstaff Water Services, who provided the first film and panel. The second night was co-hosted by Northern Arizona Climate Change Alliance's (NAZCCA) who provided the film and panel.

This event promoted sustainability by educating NAU students and faculty about environmental issues facing the Northern Arizona region. Their panels helped connect students and staff through sustainable discussion.

Green Jacks submitted an Event Sponsorship Form to get assistance with catering for this event.

Event Leader: Green Jacks

Collaborators: Green Fund



Green Fund

Funded Addendums

The Green Fund offers Addendums as a route for projects, research grants, and funded events that have already been passed to apply for more funding. These situations can happen for a number of reasons; most of which being for unrepresented costs that weren't foreseen in the original proposal / application that was submitted.

The Green Fund has this available in case of times when more funding is needed for a project to be completed, or for any other reason that the committee finds acceptable for more funding to be given to the team involved.

in the 2023-2024 year, three addendums were submitted. Two of which from projects / research submitted in the 2022-2023 year, and one submitted in the 2023-2024 year.



Quantifying Financed Emissions at NAU: A Novel, Data-based Approach to the Fossil Fuel Divestment Movement Addendum

\$5,400

This project was passed in the Fall of 2022, McNamara’s research approaches fossil fuel divestment from a quantitative, ranking perspective. His primary objectives include analyzing NAU’s endowment, quantifying the impacts of divestment using greenhouse gas metrics, and engaging with the NAU Foundation Board regarding opportunities to align and integrate their investments with NAU’s Climate Action Plan.

This addendum was submitted to increase the wage that was given in the original proposal from \$15 to \$27 for 200 hours.

The Fall 2023 Green Fund Committee believes that all researchers should be compensated for their work, and this addendum was passed.

Project Submitted by: Brandon McNamara
Project Advisor: Dr. Deborah Huntzinger



Physical Sciences Energy Efficiency and Thermal Comfort Window Addendum \$4,500

The addendum for this project was submitted in the Fall of 2023, as the original project was passed during the Summer of 2023. See Page 8 for an in-depth explanation of this project.

The team working on this project ran into some issues with the installation of the thermal films within the NAU Physical Sciences building in the Summer of 2023. The updated amount accounted for costs needed for Pre-installation Work, Old Film Removal and Blind Removal and Reinstallation.

The Fall 2023 Green Fund Committee wanted to see this project succeed, and passed this addendum.

Project Submitted by: NAU Climate Action Committee
Project Advisor: Dr. John Fegyveresi

Utility Meter Installs Addendum

\$40,000.00

The Utility Meter Installs project was passed in the Spring of 2023, with the addendum being passed in the Fall of 2023. This project was partially funded by Facility Services, Utility Services, and Planning, Construction and Design (PDC). The data collected by the meters are implemented is crucial to proving the efficacy of the project and securing funding to replicate the projects in other buildings. The meter data will be used to create a dashboard for students, faculty and staff to see how Individual NAU buildings consume energy.

This addendum was submitted due to additional costs needed for abatement and air monitoring before and during the project, specifically \$25,000 before the project and \$15,000 as they are being installed.

The Fall 2023 Green Fund Committee wanted to see this project succeed, and this addendum was passed.

Project Submitted by: Jordan Sundin
Project Advisor: Erik Nielsen

Yellow Bike Improvement Addendum \$257.13

The Yellow Bike Improvement Addendum was submitted in the Spring of 2024, when the original project was submitted and passed in Fall 2023. For a more detailed explanation of the original project, see page 13.

The purpose of this addendum was to re-buy pedals for the current NAU fleet. A mistake was made in the original ordering process, and the pedals that were purchased were not compatible with the yellow bikes in the current fleet.

The original pedals were sent back in exchange for new ones. Funding was needed to cover the repackaging and shipping costs, along with the new contingency.

The Spring 2024 Green Fund Committee wanted this project to succeed, and also believes that mistakes can be fixed, and this addendum was passed.

Project Submitted by: Blaise Ferro

Project Advisor: Beth Bengala

