



Forest Service
U.S. DEPARTMENT OF AGRICULTURE



National Greening Fire Team Semi-Annual Bulletin

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FY23 GFT Microgrant Success Stories

The Forest Service (FS) started funding a small [Greening Fire Team \(GFT\) Microgrant program](#) in 2021, enabling GFT Ambassadors (that are FS employees) to compete for funds to implement new or existing sustainability best management practices tied to fire operations. This program is intended to promote field-based innovation in sustainable operations.

Here are some of the GFT microgrant success stories from the field this year.



Closeup of Rechargeable Clamshell vs Alkaline AA Clamshell on the Nez Perce-Clearwater NF. USDA Forest Service photo by Mark Wahlberg, USDA FS.

Success Stories Feature: Solar Systems for Recharging Battery-Powered Communication Devices in the Field

Radios play a critical role in wildland fire operations. At the height of the fire season, when roughly 30,000

personnel are simultaneously deployed, up to 225,000 alkaline batteries can be consumed per day for radio operations. Finding ways to reduce this waste stream is a high priority for the GFT.

Forestry Technician Mark Wahlberg from the Nez Perce-Clearwater National Forest was awarded \$5,400 in GFT microgrant funds for his project to deploy a mobile solar power system. His team's solar kit included a GOAL ZERO 500x battery, 100-watt solar panel, and rechargeable radio batteries and chargers. This past summer, 15 members of the Initial Attack crew fielded the rechargeable + solar power system while on assignment in Alaska for 21 days.

In a remote place like Alaska, avoiding the logistical burden of obtaining, replacing, and back-hauling/disposing of alkaline batteries proved invaluable. Even better, the solar kit provided power for other critical communication devices like cellphones and satellite phones.

Importantly, each rechargeable battery lasted 3 to 4 days on a single charge, much longer than traditional alkaline batteries. In addition, the solar system provided additional operational resiliency benefits by providing remote power capability for other critical communication devices, like the crew's satellite phone—an important safety factor should the radio system fail.

At times, smoke from nearby fires prevented the solar system from capturing adequate levels of sunlight needed to recharge the batteries for the handheld radios. To resolve this, Wahlberg and crew switched to the single port 12-volt battery charger, which provided a

reliable alternative to recharge the handheld batteries. To maximize input, even on smoky days, the panels are wiped down with glass cleaner and adjusted to directly face the sun.

Overall, the solar system's benefits far outweighed any drawbacks. On this single assignment, the crew saved an estimated 2,520 batteries and \$3,150 (not including the additional costs saved for transport and disposal of the used batteries). Over the course of a year, the crew estimates they could eliminate 21,600 AA batteries from being landfilled (and save \$27,000 in the process).

Wahlberg said the district is now looking to build on this success by purchasing more rechargeable batteries so every crewmember can have at least two.



Solar Kit and Rechargeable Clamshell Batteries on the Nez Perce-Clearwater NFs. USDA Forest Service photo by Mark Wahlberg.

Success Stories Highlights: Rechargeable Batteries and Solar Systems

At the Uinta Wasatch Cache in Utah, Garrett Pitsenbarger led the deployment of three mobile power stations and solar panels at spike camps for the **North Zone Fire**. The purchase of Goal Zero Yeti 1000X Power Stations and Goal Zero Nomad 200 Solar Panels are expected to save up to \$1,000 annually in battery costs and an additional \$110 annually in disposal costs. The large sized power station (almost 1000-watt hours) allows greater reliability at spike camps where smoke, cloud cover, and vegetation may obscure sunlight.

At the Redmond Cache in Oregon, Tamara Bender led efforts to install overhead solar-powered lighting at a workstation that previously relied solely on disposable

D-type batteries. This eliminated the need to purchase, replace, and recycle more than 432 D-type batteries every year. In addition to the \$500 worth of savings, the work environment for employees was improved through improved lighting.



View of the solar system atop the Price Valley Helirappeller trailers that enables self-sufficient remote helibase operations. USDA Forest Service photo by Chad Walker.

In Price Valley, Utah, Chad Walker led efforts to install solar panels and batteries on two trailers used for remote helibase aviation operations by the **Price Valley Helirappellers**. The trailer-mounted ruggedized solar panels enable their personnel to have reliable, remote power, while also eliminating the logistical burden of hauling and refueling diesel generators—never mind saving roughly 1,800 gallons of fuel per year.



Fenix HM65R headlamps are rechargeable, forgoing the need for disposable batteries. Photo courtesy of Fenix Lighting LLC.

In Klamath Falls, Oregon, Patrick Clark piloted the implementation of Fenix HM65R combo headlamps for the **Fremont-Winema Interagency Hotshot Crew** to curtail waste and improve operations even further.

These rechargeable headlamps weigh less and are brighter than the ones they replaced. They also eliminate approximately 7,000 disposable batteries per season.

On the Teton Basin Ranger District of the Caribou-Targhee National Forest in Idaho, Deb Flowers led efforts to install a portable power station for **the South Fork Zone Fuels Crew** bully barn. The power station saves up to \$1,600 a year by replacing most AA batteries with rechargeable batteries.



Portable solar panels for the South Fork Zone Fuels Crew bully barn. USDA Forest Service photo by Deb Flowers.

Estimated FY22 Annual Savings from 13 GFT Funded Microgrants

\$94,921 (< 1 year to recoup the cost of the microgrant program)

241 staff-hours

2,864 gallons of fuel

28.303 tons of CO₂

4,681 pounds of waste

540 kWh of electricity



Fire camp food waste was diverted to a local compost outlet. USDA Forest Service photo by Denise Kusnir.

Repurposing Fire Camp Food Waste into Commercial Soil Amendment

Uneaten meals, spoiled ingredients, and food scraps generally account for about half of the waste in fire camps. The GFT has started tackling food waste through pilot compost programs like this large-scale food-waste diversion effort on the Six Rivers Lightning Complex in Willow Creek, California.

Converting compostable waste to commercial fertilizer and soil amendment is relatively easy compared to recycling paper, glass, or plastics. Food waste decomposition in landfills produces methane and carbon dioxide gases, both big contributors to climate warming. Food waste repurposing efforts not only reduce landfill waste, but composting food waste generates 50 percent less greenhouse gases than landfilling organic waste.

Zero Hero, the incident recycling company on the Six Rivers Lightning Complex, successfully coordinated with the on-site catering company to capture kitchen waste such as preparation scraps, coffee grounds, and leftover food and divert it to nearby organic compost farms. Overall, 15,241 pounds of waste were composted, reducing trash hauling costs by over 30%.

In addition, sealed and intact non-perishable food was collected and donated to DreamQuest and Pay it Forward Humboldt, two local food banks. Overall, more than 3,700 pounds of food were donated, reaching 390 households and over 1,000 people.

Trish Oakes, Executive Director of DreamQuest said, “The community is pleased and appreciative. The donated packaged snacks are often not affordable items for the program to purchase. Economically, emotionally, and physically, the donations have helped soften the blow, the trauma, of living and working in a community with a fire.”

Keeping up with the GFT

- The GFT will host its **second annual Green Procurement Tech Expo in early March 2023**. Email the GFT if you are interested in participating!
- If you are interested in **providing green products or services** in support of wildland fire operations, please provide your information in our **[GFT Green Procurement Market Research Survey](#)**.
- The next **GFT Ambassador call will be January 19, 2023 from 10:00 AM to 11:30 AM. (MDT)**. Email the GFT if you would like the virtual meeting connection information!

Ambassador Program

Greening Fire Team (GFT) Ambassadors are individuals who simply have a desire to help advance sustainability best practices in incident operations. They participate as little or as much as they are interested and able. Every one of the GFT’s initiatives has been a grass-roots effort from our members and Ambassadors that have stepped up to help GREEN FIRE. The **[GFT network](#)** continues to grow from 17 individuals in 2018 to over 150 today, and it spans multiple agencies and organizations across all geographic areas.

Welcome to our newest members since August 2022!!

- **Tom Herman**, Department of Natural Resources, Washington
- **Joey Jasperson**, Hoosier National Forest (NF)
- **Michael Johnson**, Superior NF
- **Dave Lefevre**, Bureau of Land Management
- **Pauline Ordonez**, R5 Regional Office
- **Vince Pacific**, El Dorado NF
- **Stacy Powers**, AD
- **Josh Quinn**, Ocala NF
- **Jan Robbins**, AD

For any inquiries, email the Greening Fire Team at SM.FS.greeningfire@usda.gov

How Do I Sign Up to Become an Ambassador?

Simple! Receive approval from your supervisor, then email the GFT and request to join our Ambassador Network. We will schedule a one-on-one discussion to understand your background, interests, and the best opportunities for you to engage with our team. All levels of experience and involvement are welcome in the Ambassador Network!