

# Proposal for a Small Grant from the Sustainable CU Environmental Improvement

## **Project: Diversion of Used Oil Filters from the Transportation Garage**

### **Applicant:**

Mark Lapham, CHMM  
Hazardous Materials Program Manager  
Environmental Health & Safety Department  
303-492-8531  
[lapham@colorado.edu](mailto:lapham@colorado.edu)

### **Description of Project:**

**Problem:** The university operates and maintains a large fleet of vehicles to accomplish its mission. Every one of these gasoline or diesel powered vehicles has an engine that is lubricated with motor oil which is filtered by an oil filter that is also attached to the engine. Both the oil and the oil filter must be periodically changed according to vehicle manufacturer maintenance specifications to ensure a long engine life. The Department of Parking & Transportation Services (PTS) performs the oil and filter change-outs on all vehicles owned by the university. The oil collected from these change-outs is sent to a used oil recycler that re-refines the oil for re-use. The oil filters are drained following procedures outlined in environmental regulation and then sent to a landfill for disposal. This is unfortunate, as the oil filters are constructed of mostly steel with small amounts of paper and rubber and are very recyclable once drained of oil. The largest obstacle to recycling these oil filters is cost - there are companies that recycle oil filters for a fee, but it is very cost prohibitive in the long run.



**Solution:** CU Recycling has secured a scrap metal recycler that is willing to recycle the oil filters free of charge as long as the oil filters have first been crushed. Crushing the oil filters solves two important problems — space requirements and the residual oil remaining in the used oil filters.

**Space:** The more filters that can fit into a shipping container the better. Space is always one of the biggest hurdles in the recycling industry due to the tight economics of turning a profit from the recycled materials. The total weight of steel for each trip the scrap metal recycler makes is important because the recycler would haul and recycle these filters free of charge. Many of the vehicles in the university fleet are large, heavy duty vehicles such as buses and delivery trucks that have very large oil filters. An oil filter crusher would crush these filters to 20% of their original size.

**Residual Oil:** Crushing the filters will allow vastly more oil to be squeezed out of each filter (even this oil can then be recycled). An oil filter crusher would remove 95% of the residual oil in each filter.



Therefore, the Zero Waste Team and the departments of Parking & Transportation Services (PTS), Environmental Health & Safety (EHS), and CU Recycling seek funding for a used oil filter crusher. This oil filter crusher would be managed and maintained in the Transportation garage, where most of the oil filters on campus are generated. It could also serve as an end point for oil filters generated on campus by other departments such as Facilities Management and Housing that generate a small number of oil filters from motorized equipment such as lawn mowers.

### **Student Impact and Involvement:**

100% of the student body would benefit from making university services such as public safety, facilities management, housing & dining services, etc., more sustainable by recycling the oil filters used in vehicles providing these services. Additionally, many of the students that use the university bus service would also benefit from ensuring the oil filters from buses that provide these services (and which drive thousands of miles per year) are recycled - these are also some of the largest oil filters in the university fleet. Other than the predicted small amount of coordination by CU Recycling for this program, it is not projected that there will be many opportunities for student involvement in the recycling of oil filters; however, the student involvement in the generation of this waste stream is huge.

**Sustainability:**

It is estimated by the Transportation garage that this project would allow the university to start recycling an additional 200 pounds of steel and 5 gallons of oil per month. Recycling oil filters protects the environment by preventing the wasting of filters into landfills, helps to reduce the need for additional mining and conserves energy needed to manufacture new articles that contain steel. Recycling oil filters would also provide an economic benefit by supporting a market for recycling of steel and other scrap metals, and supporting jobs for individuals that are employed in the industry. Recycling oil filters provides social equity by preventing their disposal into landfills which are often times located in low socio-economic areas.

**Budget:**

According to the Transportation garage, approximately 20% of the oil filters generated on campus come directly from student transportation (buses); the other 80% are generated from other services/activities that are related to administrative functions of the university. PTS, EHS, and CU Recycling have also submitted a funding proposal to the Sustainable Action Team (SAT) on campus.



We propose that the funding ratio for this oil filter crusher could be allocated in the same ratio (20% coming from Sustainable CU Funds and the other 80% coming from SAT funds).

In total, we seek \$7465.75 in funding that includes costs of:

- Purchase price for an OTC Oil Filter Crusher Model 1896: \$6654.51 (including shipping)
- Installation of 220V electrical connection: \$ 811.24  
\$ 7465.75

Broken down into the 80/20 split, the funds we are requesting from the SAT and Sustainable CU are as follows:

- SAT: \$5972.60
- Sustainable CU: \$1493.15

If Sustainable CU is able to commit these funds towards this effort, it will ensure a better chance of also being partially funded through funds from the SAT, and in an equitable manner based on the ratio of oil filters generated from each representation.

**Timeline:**

Once funding has been secured, the purchase would be immediate with installation occurring shortly thereafter. It is estimated that the entire process, including acquisition and installation of the oil filter crusher, would take 4 weeks or less. An oil filter crusher is a large one-time capital expenditure but will provide many years of service and require minimal maintenance.

**Feasibility:**

As stated above, a scrap metal recycler has already committed to recycling the crushed oil filters free of charge to the university – and has already provided a container in which they could be transported. The Transportation garage is committed to modifying their procedures and allowing space for an oil filter crusher in their facility. The only missing link to the successful implementation of this program is the purchase and installation of an oil filter crusher.



**Innovation:**

This proposal would support the university's continued efforts to be a leader in sustainability and ensure that sustainability is pursued at all levels of the institution. Crushing oil filters removes considerably more residual oil versus just draining alone. Even though the practice of draining oil filters and their disposal into the municipal garbage stream is allowable in Colorado at the current time, it is clearly unsustainable. As environmental regulations tighten, the disposal of oil filters into municipal landfills could be prohibited (which has just occurred in the State of Wisconsin). If in the future this were to also happen in Colorado, the university would be a step ahead of regulations with the successful implementation of this program. To our knowledge, no other institution of higher education in Colorado has implemented a program to recycle oil filters.