

Tire Disposal and Recycling



ATV, car, truck and equipment tires present a challenge to any landfill operation. They are especially difficult in rural Alaska because options for disposal or recycling are limited. Equipment for preparing tires for disposal is often not available and the cost for backhauling them is high. But dealing with waste tires is a necessity. Improperly managed waste tires can create significant environmental concerns, and a breeding habitat for mosquitoes and rodents. Because tires are made of synthetic rubber, they are not biodegradable and can take hundreds or even thousands of years to fully decompose. Having tires around that long is bad for our subsistence resources. Nearly all tires contain a chemical stabilizer called 6PPD that is very toxic to many fish, including salmon. When tiny particles wear off of them, 6PPD can wash into waters and potentially harm not just fish, but other aquatic wildlife.



The Bottom line? You don't want these just piled around your landfill if you can help it. Disposed tires also create a fire risk since they trap methane gas, and these fires are notoriously difficult to extinguish. That is one reason why burning is not an acceptable disposal method for tires. Burning tires also produces emissions that can be very harmful to humans and the environment, and is prohibited (ADEC 18 AAC 50). To note -- tires can only be burned in a large incinerator that treats the emissions before release. Burn boxes are not incinerators because they don't treat emissions and there is no way to control the temperature. Burning tires in a burn box is nearly the same as open burning them – dangerous due to fire risk and harmful to health.

Tire Storage

Even under the best of circumstances, waste tires will need to be stored for some period of time awaiting backhaul or reuse in the community. Tires should be “off-rim” or separated from their metal rims. This makes handling, storing and backhauling easier. When feasible, tires should be kept out of the rain and snow to avoid the collection of water that easily pools in the tires and provides a home for mosquitos. Keeping tires dry and free of dirt is also important if the tires are to be backhauled. Less water/dirt = less weight and less mess. If tires are not going to be covered, putting at least three holes in each side will help prevent the pooling of water inside the tire. Less water also means less degrading, which can mean less release of 6PPD.



Tires punctured for outdoor storage



Hydraulic Tire Cutters

Tire Disposal or Landfilling



Tire-only bales from a Harris Badger baler in Petersburg. Bale size: 46"x31"x61"

Baling of off-rim tires can be a helpful method for landfilling tires, reducing the landfill airspace needed for disposal. While there are balers made specifically for baling waste tires, other recycling balers can be used as well. Examples here in Alaska include Petersburg -- where a Harris Badger horizontal baler creates tire-only bales and Gustavus-- where off-rim waste tires are mixed in with other waste and baled in a smaller Harmony M30HD vertical baler. No more than three tires are placed per bale or baling is too difficult.

Tire Re-use

Dealing with waste tires is an environmental and economic challenge that leads to a variety of creative strategies for repurposing into something new and useful. And while reusing waste tires does keep them out of the landfill, there are potential risks. Tires contain aluminum, cadmium, chromium,



Waste tires woven into a work mat

copper, iron, magnesium, manganese, molybdenum, selenium and sulfur, as well as high levels of zinc. Tires also contain plasticizers and accelerators used during the vulcanizing process. Additionally, rubber tires can absorb heavy metals, such as lead, during their use. And while the process is slow, tires do eventually break down. A waste tire left sitting on the ground releases methane gas into the air, contributing to climate change impacts. And if that tire remains there, 6PPD and other toxic substances will leach out, contaminating the surrounding soil and waterways. Over time, this could pose a health risk for those consuming subsistence resources off nearby lands.

Direct burial into a landfill without some form of compression will create small voids in the landfill and is an inefficient use of limited landfill space. Ideally, tires are cut prior to burial or transport. Unfortunately, without proper equipment such as a hydraulic tire cutter, tire cutting is impractical. Tire cutters or shredders can range significantly in price, with the least expensive in the ballpark of \$10,000, and the larger and more portable units costing \$25,000 to \$40,000. See "Useful Links" at the end of this factsheet for information on purchasing a tire cutter.



Mixed waste bale including tire from a Harmony M30HD baler in Gustavus. Bale size: 30"x24"x30"



Waste tires used as roof shingles



Waste tires used as ornamental planters

Used tires are often used as planters and soil stabilizers. It is important to not plant any edible food in waste tire planters. Tires degrade slowly and annual flowers and other small ornamentals are well suited to tire planters because any adverse impact over their shorter lifetime may not be noticeable. Care should be taken though with plant debris and used soil. It is best to assume toxic substances have been transferred from the tires and that waste should be disposed of properly.



Waste tires used as recycling and trash cans

There is a lot of incentive to find alternative uses for tires in rural communities to reduce impacts to already over-burdened landfills. Some appropriate uses that minimize environmental and health risks could include use in construction projects, serving as trash cans, and even furniture. Caution should be taken when cutting a tire for re-use. Tires are made with steel plys and bands in the sidewall to reinforce the tire. If proper tools and safety gear are not used, injuries can occur. See “Useful Links” at the end of this factsheet for more ideas for re-purposing waste tires.



Backhauling Tires

Backhauling tires is an effective way to remove them from your community. They can be recycled or used for heat. But it can be expensive. Tires can be shipped either on pallets or in shipping containers. Typically, an Alaskan shipper barges the tires to Seattle in a container and then arrange a trucking company to transport the container to the tire disposal company.



Tires staged in Sand Point as part of a tire backhaul conducted by Pauloff Harbor Tribe

Want to Backhaul Tires?

What needs to happen once you decide that it is time to rid your community of the accumulated waste tires and conduct a backhaul event? The following steps will guide you through the process of estimating your costs and logistic needs.

Step 1: How many tires do you have?

If you are able to grade your tires by size – ATV, car/light truck, heavy truck, etc. you can get a more accurate estimate of your actual costs, helping tremendously with planning and organizing shipping. Ideally you could count the number of tires to be disposed, but that will not always be the case. **If you are not able to count the tires, click on our handy-dandy tire calculator!** This can provide an estimated number of tires in a pile.



[Tire calculator](#)

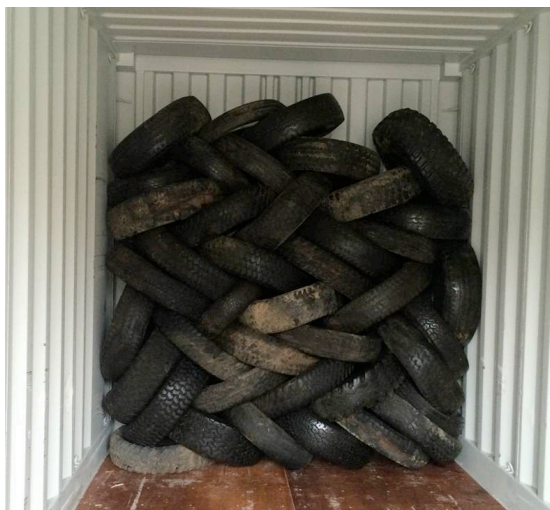
NOTE – This calculator applies to **off-rim tires** only.
<https://zendergroup.org/wp-content/uploads/2023/10/TireCalculator-1.xlsx>



Palletized tires ready for backhaul

Step 2: How will you ship them?

Determine if tires will be shipped stacked on palletsor loose in a shipping container, which is the preferred method.



Tires laced inside a shipping container

Step 3: How many pallets or containers will your tires fill?

If you have chosen to send your tires out on pallets, a good estimate would be 9 – 14 off-rim tires per pallet. On-rim tires will be several less per pallet, so you can estimate 7 – 12. In either case, if most of your tires are ATV or trailer tires, choose the higher end of the number ranges and if none of the tires are smaller, choose the lower end.

For shipping containers, estimate 500 off-rim tires per 20' container (1,000 off-rim tires per 40' container). Tires need to be laced back and forth with the first layer leaning to one side and the next layer leaning to the other side, and so on. This will maximize the number of tires that will fit.

Step 4: How much will it cost to ship?

Weigh a few tires of each size to get an average weight per tire. Multiply that average by the number of tires you have. As an example, if the average weight of a light truck tire is 35 pounds and you have 70 of them:

$$35 \text{ pounds/tire} \times 70 \text{ tires} = 2,450 \text{ pounds}$$

Get a per pound shipping quote from your shipper and multiple the weight by the per pound charge. Continuing our example from above with a shipping quote of \$0.60 per pound:

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$$2,450 \text{ pounds} \times \$0.60/\text{pound} = \$1,470$$

There may be additional charges to pay, such as a volume charge, loading/unloading charges and fuel surcharges. You also need to know the trucking charges to haul the tires from the barge lines to the tire disposal company. Be very careful in going over the costs of shipping to make sure you didn't miss anything. [Also, see our green shipping calculator after Step 6.](#)

Step 5: How much is the disposal fee?

Contact the tire disposal company you have chosen and get their current per pound/ton or per tire disposal rate. Back to our example, if the tire disposal rate is \$125 per ton, the following would calculate your disposal cost:

$$2,450 \text{ pounds} \times 1 \text{ ton}/2,000 \text{ pounds} = 1.225 \text{ tons}$$
$$1.225 \text{ tons of tires} \times \$185/\text{ton disposal cost} = \$226.63 \text{ disposal cost}$$

Many tire disposal companies will also collect an environmental compliance fee. Be sure to include that in your final calculations. In this example, there is a 7% ECRF (Environmental and Regulatory Compliance Fee) added to disposal cost.

$$\$226.63 \text{ disposal cost} \times 7\% \text{ ECRF} = \$242.49 \text{ total disposal cost}$$

However, if the disposal cost is a per tire fee, you would calculate your disposal cost this way:

$$70 \text{ tires} \times \$4.25/\text{tire disposal cost} = \$297.50$$

Step 6: What are your total costs?

Add the total shipping costs and disposal costs together. To finish with our example:

$$\$1,470 \text{ shipping costs} + \$242.49 \text{ disposal costs} = \$1712.49 \text{ for 70 car/light truck tires}$$

It's a good idea to include a contingency amount of at least 5% - 10% in your calculations. This will help in dealing with the unexpected. Keep careful track of all your costs and quantities so that you will have a better idea going into your next backhaul event.

Helpful Tire Shipping Cost Calculator!



Click on this calculator to estimate tire shipping costs or to compare the shipping cost of shipping on pallets vs loose in a container.

<https://zendergroup.org/wp-content/uploads/2023/10/ShippingCalculator.xlsx>



Example Tire Disposal Companies and Spring 2023 Costs:

Tire Disposal and Recycling Services 503-240-1919

Two price classifications: Small passenger vehicle and light truck is \$185 ton; large tires are \$395 ton, plus and additional 7% environmental compliance fee. This price is for tires delivered to their facility in Prineville, OR (97754). Tires can be on or off-rim but are preferred off-rim. At \$197.95 a ton the cost for disposing a light truck tire (35 pounds) is \$3.50 without shipping.

Liberty Tire 253-582-5556

Car and light truck off-rim tires are \$4.25 each off-rim tires over 27" tall are \$5.25 each. On-rim passenger tires are \$7.00 each. Tires that have been cut and cannot roll, are very worn or are dirty are about twice the cost.



Communities With Experience in Backhauling Tires:

Ekwok: Lorraine King 907-464-3300. In 2019 Ekwok shipped 72 tires: ATV to light truck. They shipped them stacked in a container. The container was shared with other backhaul items. The Container went to Dillingham and then Seattle and was received by Total Reclaim who forwarded the tires to the tire disposal company. Shipment went smooth for them.

Sand Point: Anne Morris 907-383-2487. In 2019 Sand Point did a large shipment of tires and produced an excellent guide: Sand Point Alaska USA Backhaul Manual. This manual is well written and provides photos of how they palletized the tires. They were surprised by some of the shipping costs – make sure to get your shipping costs in writing.



Useful Links

Tire Cutting Equipment:

www.northerntool.com/shop/tools/category_automotive+tire-equipment+tire-shredders-crushers

https://www.alibaba.com/product-detail/Waste-Tire-Cutting-Machine-Hydraulic-Tyre_1600532232655.html?spm=a2700.7724857.0.0.221019b3sYUxy6&s=p

<https://eagle-equipment.com/products/tuf-cut-ii/>

Repurposing Waste Tires

<https://www.wheelsforwishes.org/news/20-things-to-do-with-old-tires/>

<https://www.thinkingreener.com/lifestyle/5-clever-ways-to-repurpose-old-tires/>

<https://ecogreenequipment.com/environmentally-friendly-ways-to-dispose-of-used-tires/#:~:text=They%20take%20millions%20of%20years,%2C%20sculptures%2C%20or%20other%20artwork.>

<https://ecomaniac.org/recycle-tires-ideas/>