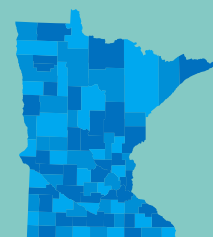


Solid waste

March 2020

Waste tires in Minnesota: Facility capacity and financial assurance



Legislative charge

Minnesota Session Laws - 2019, 1st Special Session, Chapter 4, Sec. 116

By February 1, 2020, the commissioner of the Pollution Control Agency shall conduct an analysis of the forms and levels of financial assurance required of owners and operators of permitted waste tire facilities and submit a report to the chairs and ranking minority members of the legislative committees with jurisdiction over environment policy and finance that includes the following:

- (1) An analysis of the adequacy of existing financial assurance mechanisms for waste tires stored at waste tire facilities*
- (2) Waste tire processing capacity statewide*
- (3) A review of additional options for financial assurance mechanisms*

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Cover photo courtesy Kevin Shoemaker,
Ohio EPA

Estimated cost of preparing this report (*as required by Minn. Stat. § 3.197*)

Total staff time: 40 hrs.	\$1,440
Production/duplication	<u>\$ 200</u>
Total	\$1,640

Editing and graphic design

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This report is available in alternative formats upon request, and online at www.pca.state.mn.us.

Document number: lrw-sw-2sy20

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I. Legislative charge

Financial assurance analysis for waste tire facilities.

Minnesota Session Laws - 2019, 1st Special Session, Chap. 4

By February 1, 2020, the commissioner of the Minnesota Pollution Control Agency (MPCA) shall conduct an analysis of the forms and levels of financial assurance required of owners and operators of permitted waste tire facilities and submit a report to the chairs and ranking minority members of the legislative committees with jurisdiction over environment policy and finance that includes the following:

- 1) An analysis of the adequacy of existing financial assurance mechanisms for waste tires stored at waste tire facilities
- 2) Waste tire processing capacity statewide
- 3) A review of additional options for financial assurance mechanisms

II. Background

The MPCA estimates that Minnesota vehicle owners generate about seven million “passenger tire equivalents” of waste tires per year. The term passenger tire equivalents (PTE) estimates the weight and volume of a passenger-car tire and is used as part of a formula to enable the oversight of waste tire facilities. It is a priority under statute and rule that waste tires not be allowed to accumulate in large, uncontrolled quantities, but instead are directed to reuse, recycling, energy recovery, or beneficial use. Some states in the Upper Midwest still allow landfilling of tires (e.g., tires having been cut into quarters) but Minnesota does not. Land disposal of waste tires is prohibited under Minn. R. 9220.0220 and Minn. Stat. sec. 115A.914.

Piles of tires abandoned on the landscape have been a source for disease vectors and have, on occasion, led to very large, environmentally hazardous fires. Illegal tire dump are more expensive to handle, and have a much lower recycling value, than stacks of waste tires on pads.

Current practice is for tire retailers to charge a predisposal fee (typically a few dollars per passenger tire) and use that money to offset a “tip fee” charged by firms that collect and process waste tires.

Minnesota has five locations with permits and financial assurance that actively handle large numbers of waste tires, listed by annual permitted processing capacity:

- Liberty Tire, Savage, MN (12,000,000 PTE)
- Liberty Tire, St. Martin, MN (25,000 tons)
- First State, Isanti, MN (5,000,000 PTE)
- Tire Aggregate, Cloquet, MN (50,000 PTE)
- Ron’s Tire, Tracy, MN (20,000 PTE)

Under the authority of the original Waste Tire rules to calculate the figures needed for permitting and financial assurance, the MPCA uses the following assumptions:

- One “Passenger Tire Equivalent” (PTE) weighs 20 pounds
- One cubic yard of whole passenger tires is equivalent to ten PTEs, weighing 200 pounds
- One cubic yard of “single pass” tire shreds weighs 440 pounds

- A cubic yard of more thoroughly ground tires (fragments two inches or less in size) weighs 800 pounds

This report will use the following terms common in the waste-tire industry:

- **Crumb Rubber:** Small particles produced after shredding and grinding steps. Particle sizes depend on the intended use, and are classified by a screen or mesh size. A common size is less than a half-inch in diameter. The process of making crumb rubber separates the steel reinforcing wire, which is sent to metal recyclers.
- **Off-road tire:** Includes large tires for tractors, construction equipment, and mining. Tires for haul trucks at Minnesota iron mines can weigh more than seven tons each.
- **Quartered tires:** Whole tires cut into quarters.
- **Retreading:** Restores tread needed for traction. A related operation, called recapping or top-capping, adds a new tread layer to the casing.
- **Rubberized asphalt:** Hot mix asphalt with a portion of tire crumbs.
- **Single-pass shredding:** Single pass shredders take whole tires and reduce them to chunks and slabs that can be more than a foot long. Double-pass directs these pieces into a shredder a second time. Shreds can be used as lightweight fill or can be processed to a smaller size.
- **Tire chips:** Pieces typically less than twelve inches in size, and retaining some of the original wire and fabric.
- **Tire derived aggregate (TDA):** Tire pieces taking the place of conventional material such as gravel, for use as lightweight fill in roadways, embankments and drainage structures.
- **Tire derived fuel:** Tires that have been reduced in size to meet the requirements of cement kilns, industrial boilers, and waste combustors.
- **Wire:** Fragments of steel belting recovered from tire shredding and grinding.

There are three legitimate destinations for “waste” tires now being collected.

Processing for reuse. Many tires that are turned in as “waste” still offer useful life. Some are suited for resale after inspection, and others are acceptable for the addition of a new tread layer. Retreading and top-capping is mostly a matter for large truck tires, which are more expensive to replace than passenger-car tires. This process takes whole tires, inspects them, and renews tread on tires with sound casings.

Processing for the sale of tire derived product into the marketplace. For users wanting the rubber free of steel reinforcement, this requires grinding the tires to sizes (e.g., “crumb rubber”) that allow magnetic separation of metal fragments. So processed, the product can be used for rubberized playground and athletic surfaces; for incorporation into “rubberized asphalt,” for the manufacture of traffic cones, and for chemical recycling into new rubber products. Cut in half, tires are used as ballast to hold down tarps covering piles of stored agricultural product such as silage. Cement kilns, industrial boilers, and waste-to-energy combustors are also outlets for waste tires both whole and ground to smaller pieces, called tire-derived fuel (TDF). In the years since MPCA’s Waste Tire rules were adopted, the largest single end market for waste tires, in both Minnesota and the nation has been tires as a substitute for fossil fuel, though the consumption of tires for fuel has dropped with the availability of less expensive natural gas.

Processing for projects under the MPCA’s Beneficial Use rules (Minn. R. 7035.2860).

The MPCA rules provide a “standing beneficial use” regulatory allowance for tire-derived materials if they substitute for a comparable amount of conventional material. Projects

employing tire products that meet the criteria for a standing beneficial use do not have to be approved individually by the MPCA, nor reported to the MPCA, but the waste tire facilities providing the tire product for that beneficial use must follow MPCA storage and processing permit requirements. Three such standing uses are listed in subpart 4 of the beneficial use rules:

- Crumb rubber when used in asphalt paving or applications where it is used as a substitute for rubber or similar elastic material.
- Tire shreds when used as lightweight fill in the construction of public roads in accordance with Minnesota Stat. section 115A.912, subd. 4.
- Tire chips when used as a substitute for conventional aggregate in construction applications when the ratio of this substitution is no greater than one to one by volume. This does not include use of tire chips as general construction fill or clean fill.

Applicants who desire a beneficial use designation in other settings are subject to the conditions of Minn. R. 7035.2860, subparts 5-10, for case-specific beneficial uses. Upon receiving an application, under subpart 6 the MPCA may request more information, may approve the project, or may deny the project.

Depending on the use, processors may send waste tires for such projects through a grinder only once, which is called single-pass processing. This yields comparatively large chunks called shreds and is significantly less expensive than processing the tires to chips or crumb size.

III. MPCA Responses to Legislative Inquiries

Topic 1: “Analysis of the adequacy of existing financial assurance mechanisms for waste tires stored at waste tire facilities”

Status:

The MPCA set a cost estimate pursuant to the authority of Minn. R. 9220.0570. The presumption was that this figure, multiplied by the quantity of tires allowed in the permit, should be adequate for a government agency to pay the costs of processing and transporting abandoned tires to a broker or end market. Cost estimates in permits issued by the MPCA rely on the original figures:

- \$0.65 per PTE
- \$1.00 per loose cubic yard of tire derived product
- \$100.00 per off-road tire

Minn. R. 9220.0590 allows the MPCA to revise this figure annually, and directs the agency to notify operators by mail, at which point the operator must raise its total funding. Alternatively, an operator could choose to decrease its permitted capacity, which would lower its obligations.

Some counties also require financial assurance for waste tire facilities.

The MPCA’s current rules do not require financial assurance to cover the cost of fighting a tire fire and the subsequent cleanup, such as toxic pyrolytic oils that such massive fires release into the soil and groundwater.

MPCA observations:

The MPCA’s position (see Topic 3) is that the instruments allowed under the existing rule are adequate financial mechanisms, but the closure-cost estimates appear to be outdated. The MPCA is consulting with other Upper Midwest states such as Ohio and Illinois that have recent experience in tire collections

and cleanups. At this point the estimates of average closure costs appear to vary by a factor of six, from over two dollars to about twelve dollars per PTE. This subject deserves more discussion with the sector, with tire generators, and with other government agencies, as is noted in Section IV. If the MPCA decides after these consultations that the existing closure-cost estimates are too low, it will “phase in” the increase over a period of years using its rule-based authority under Minn. R. 9220.0590, which allows the MPCA to make annual revisions to the cost estimate. This will give time for waste-tire facility operators to adjust the prices they charge in accepting waste tires. If the MPCA decides an existing closure-cost estimate is too high, it will revise the estimate in a single change.

Topic 2: “Waste tire processing capacity statewide”

Status:

The MPCA has no active role in the waste tire sector other than permitting storage and processing facilities. It does not regulate nor receive reports from end markets or from beneficial use projects. Based on the information available, the MPCA believes there is sufficient capacity to process the waste tires being generated in Minnesota.

However, the level of processing varies significantly in how the tire derived product can be used, on its environmental life cycle, and whether it has a positive value in the marketplace. The greatest resource recovery comes with reuse: identifying tires suitable for resale or for retreading and recapping.

Retreading and top-capping is limited by the demand for restored large tires, such as those used for short-haul delivery trucks, and rarely used for passenger tires generated in Minnesota. The lowest cost method of grinding waste tires is single-pass shredding, which produces slabs and chunks, which can be a foot or more in length. More expensive grinding and sorting methods reduce the tires to chip and crumb size.

MPCA observations:

While processing equipment can handle the volume of waste tires generated in Minnesota, three capacity-related factors bear watching because these strongly influence the viability of their businesses.

Viability of permitted storage and processing facilities is an important consideration since an active, environmentally sound, and competitive market for waste tires is vital to avoiding waste-tire problems of the past, namely giant piles of abandoned whole tires and shreds that posed an imminent health and environmental hazard. Minnesota does not have such piles now, but it did have them before the adoption of waste-tire statutes and rules.

Demand for tires as fuel: Historically this has been a reliable, large-volume outlet for waste tires in the U. S. and Minnesota (both whole and processed tires), and it offsets the use of fossil fuel at industrial boilers and furnaces. However, national trends show a slight decline in share for TDF combustion, due in part to lower natural gas prices and the remaining TDF markets are more distant, which raises costs. A decline in waste-tire fuel demand encourages more use of alternatives, in particular, tire derived aggregate. At one point, the Holcim cement kiln in Mason City, Iowa, accepted tires from Minnesota, but it has closed. Green America Recycling, a subsidiary of the company that owns Continental Cement in Davenport, Iowa, buys TDF but fills all its kiln tire-fuel needs from nearby tire processors, without drawing material from Minnesota. Liberty Tire reports that none of its customers for Minnesota-generated tire fuel products are located in Minnesota.

Appropriate use of tire-derived aggregate (TDA): Currently this is the lowest-cost method for preparing a tire product, since shreds or chips satisfy many tire-derived aggregate applications. Because TDA

projects do not require approval or reporting to the MPCA, these can be prone to excessive quantities, even if the project itself is well-suited for TDA use. The Agency is considering a clarification of standing beneficial use allowance for tire derived aggregate, to ensure that the practice remains sound in environmental and engineering terms.

Demand for rubberized pavement: While incorporation of crumb rubber into asphalt mix is listed as a standing beneficial use in Minnesota Rules, and could employ a large tonnage each year, MnDOT accepts it only in small percentage of asphalt and not a major outlet for waste tires generated in Minnesota.

Topic 3: “A review of additional options for financial assurance mechanisms”

Status:

MPCA’s waste tire facility rules allow operators to choose between three financial assurance mechanisms:

- Letter of Credit
- Surety Bond
- Funded Trust Agreement

Terms and language of the mechanisms are covered in the following Minnesota Rule sections:

- [9220.0600](#) County held financial assurance mechanism
- [9220.0610](#) Closure Trust Fund
- [9220.0620](#) Surety Bond guaranteeing payment into a standby Trust Fund
- [9220.0630](#) Letter of credit
- [9220.0640](#) Surety Bond guaranteeing performance of closure for permitted facilities

MPCA observations:

Based on decades of experience with a wide variety of solid and hazardous waste operations, including responses to contaminated sites that were abandoned by the operators, the MPCA is confident that the options provided in the current rules for waste tire facility operators are sound and reasonable. They provide the public with a solid guarantee that closure costs will be covered. These mechanisms are irrevocable without prior notice to the MPCA, and the issuing financial authority (a bank or trust company) is overseen by state and/or federal agencies.

One option discussed in 2019 would allow an operator to substitute a “self-test” for one of the current mechanisms. In the MPCA’s view, a self-test is only an operator’s promise to cover closure costs out of its own resources. Lacking a legally dedicated trust fund or a third party guarantor, a self-test approach provides no viable backup plan if the company were to suffer a financial reverse.

A self-test relies on an annual submittal by the operator based on the previous year’s audited financial reports. The problem is that any such report is a snapshot in time, and a company’s financial strength can weaken rapidly. In addition, after an operator has weakened enough to fail the self-test, the MPCA doubts that such a troubled operation would be able to rapidly secure a conventional financial

assurance mechanism. Enforcing closure obligations then would depend on litigation and possibly bankruptcy proceedings. Either would be costly to the public and, at best, cause delays in addressing environmental liabilities.

IV. Next steps

Given the range of closure-cost estimates received to date, the MPCA plans to seek more information from scrap tire processors, generators, markets, state and local governments, engineering firms, and citizens. Possible topics for a survey or a meeting include:

- Market development in, or near, Minnesota, for tire products, especially crumb rubber
- Updates on the uses of tire-derived aggregate as lightweight fill and drainage material
- The status of waste-tire programs in neighboring states
- Financial assurance provisions at waste-tire storage and processing facilities