

TIRE STAKEHOLDER GROUP REPORT

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I. Executive Summary

In April 2015, a diverse stakeholder group known as the Beyond Waste Advisory Group (Advisory Group) submitted a report to the Vermont legislature. The Advisory Group was charged with investigating materials that were not covered under the disposal bans adopted under the Universal Recycling law (Act 148), or the Architectural Waste Recycling law (Act 175). The materials evaluated were difficult to manage due to characteristics that contribute to their high volume, toxicity, limited end markets, and limited collection and processing infrastructure, and other issues. The Advisory Group agreed by consensus that Agency of Natural resources (ANR) should first focus its attention on four waste streams, one of which was scrap tires.

In July 2015, ANR convened the first of three meetings with a group of interested stakeholders, identified in this report as the Tire Stakeholder Group (Group). The Group consisted of a diverse set of perspectives, representing the tire industry, environmental advocates, tire recyclers, the legislature, retailers, the automobile industry, solid waste districts, and ANR staff. Appendix A includes a list of the members of the Group. The Group was asked to review the current state of tire management in Vermont, identify problem areas and develop possible strategies and recommendations that could be used to form the basis for legislative initiatives and programmatic changes.

The Group agreed that there were three areas of concern with scrap tire management in Vermont: legacy scrap tire piles, ongoing illegal dumping of scrap tires, and the lack of recycling markets.

There was general group consensus that legacy scrap tire piles are a historic problem that is fairly well defined both in terms of the magnitude and the overall costs to cleanup. Aspects that contributed to this consensus were built on discussion and concerns shared from the participating stakeholders. For example, the group heard from the local Solid Waste Districts about the importance of addressing large tire piles. From our Vermont Agency of Agriculture, Food and Markets partners, they expressed strong interest in abating tire piles and discouraging farmers from using unsplit, whole tires as bunker tarp weights. Concerns on this are shared with the Vermont Department of Health in that scrap tires are ideal breeding grounds for Eastern Equine Encephalitis and West Nile Virus-carrying mosquitos. Further, building on the public health concerns, large tire piles present a potential fire threat to local communities.

On the topic of scrap tire management markets, there was general Group consensus that the current markets for scrap tires are fluctuating and tenuous. Vermont has one scrap tire processor. Nearly all of Vermont scrap tires are exported out of state for processing, and all of the processed rubber is utilized in other states and countries. Once leaving Vermont, scrap tires are difficult to track accurately, but the majority are converted to Tire Derived Fuel (TDF) and utilized in Maine paper mills, with lesser utilized in New York and Quebec cement kilns. The Group expressed concern over the impact on Vermont's - and New England's - scrap tire management should energy prices or the regulatory landscape change, and the outlets for TDF wane. A portion of the Group also believed that while burning as TDF is currently a necessity, it is not the preferred use of Vermont's scrap tires. The Group learned of other scrap tire markets, including ground rubber applications and civil engineering, and considered their potential within Vermont. The Group heard from engineering managers from the Vermont Agency of Transportation (VTrans), who related that there is some potential for use of

shredded scrap tires as lightweight backfill, as a stratified drainage layer beneath gravel roads, or in the manufacture of Crumb Rubber Modified Asphalt (CRMA).

The problem of ongoing illegal dumping of scrap tires poses a challenge to Vermont. Although most scrap tires are properly managed by licensed and legitimate collectors and processors, small scale illegal dumping continues to occur. Those tires that are illegally dumped cost local communities and private landowners considerable resources to address, as it is often difficult or impossible to determine the person responsible for the dumping. Illegally disposed tires pollute our streams and degrade our countryside. The Group was unanimous that illegal scrap tire disposal is a problem to some degree, but did not reach consensus on a solution or solutions to address this problem. Options such as creating a monetary deposit on new tires, establishing an Extended Producer Responsibility (EPR) program, or adding a State-mandated fee on scrap tires were discussed by the Group. There was some consensus that any fee on tires to cover the management of scrap tires should be moved to the time of new tire purchase rather than at the time of disposal, and that the fee should be uniform and transparent. The Group also discussed adding a fee on tires that would generate resources to address the legacy tire piles problem and to help to develop sustainable markets for scrap tires.

II. Background

Legacy Tire Piles

ANR submitted a report to the legislature in 2013 which identified 62 scrap tire piles of greater than 100 tires. The total number in these legacy piles was estimated to be 417,000-458,000 tires. This report estimated that the cost to collect and properly dispose of these tires ranged from \$383,600-\$1,053,400. The 2013 report also recommended that a lien be placed on the property when using funds to clean up large piles on private property where the property owner was involved with creating the pile. Also contained in this report was a summary of background information on scrap tire management in Vermont and nationally. The report highlights that Vermont is one of 17 states without some manner of funded state tire management program.

Markets

As with most commodities and recyclable materials, the market for scrap tires is volatile and greatly influenced by economic factors, energy prices, and political circumstances outside of Vermont and, increasingly, outside of the United States. As with any material, virgin or recycled, demand drives the market. TDF is relatively inexpensive to produce, but commands a commensurately low price. Additional processing of the tire to produce smaller shreds or crumb rubber increases the production costs proportionately; however, also increases the value of the finished product. As of the date of this report, a majority of the scrap tires collected in Vermont are processed for TDF for use in two operating Maine paper mills, with lesser amounts used in New York and Quebec cement kilns. With low natural gas and oil prices, the market for TDF is stagnant nationwide, and in the Northeast, dependence on Maine paper mills – an industry in decline – to continue to consume a large proportion of the region’s scrap tire may be problematic in the future. Some members of Group were philosophically opposed to burning tires for energy, contending that Vermont’s waste management hierarchy prioritizes true recycling over processing waste for energy or fuel products.

The group was educated on other national and regional markets for scrap tires, and the potential for advancing in-state markets. Because of rubber chemistry, complex tire construction, and proprietary formulations, very little of a scrap tire can be recycled into a new tire. Instead, uses are developed for the individual components of tires: rubber, steel, and fiber. These uses are, for the most part, recognized and mature, and it is doubtful that an entirely new and distinct use for scrap tires will be created in the immediate time frame.

One established scrap tire market, with some potential in Vermont, is the use of Tire Derived Aggregate (TDA) in civil engineering projects, as specialized lightweight fill. Yet tire shreds are not an economical substitute for crushed stone in Vermont. However, tire shreds are free draining, insulative, and about 1/3 the density of natural aggregates, and thus would be beneficial in situations where one or more of these unique characteristics are desired. VTrans explained that key barriers to creating this market lie within state and federal transportation specifications, the price differential with conventional materials, the consistent availability of the feedstock, and project funding policies. While TDA is defined by ASTM Standard D6270-08(2012), which provides guidance for testing the physical properties, design considerations, construction practices, and leachate generation potential of the material, to develop this market it will be necessary for the VTrans to adopt Vermont specifications for use of the TDA. For the tire shreds to be used in State funded transportation projects, the material will need to be readily available and at a competitive cost. In addition, if the project is receiving federal funding the state would need to get federal approval to accept that "least" cost option should include "avoided" costs. The group discussed whether the Governor could issue an executive order requiring Vtrans to use some pre-determined quantity of tire shreds each year. It would need to be shown what the added benefit would be to Vermont before such an action could take place. It will also be necessary to evaluate any disadvantages of using shredded rubber in road projects, including any negative environmental impacts. The group generally believed this could be achieved, especially in light of the uncertainty of current scrap tire markets.

There appears to be renewed interest, nationally, in Crumb Rubber Modified Asphalt using rubber from scrap tires as the feedstock. The inclusion of crumb rubber into hot mix asphalt (HMA) was mandated by Congress in the early 1990s, then quickly discontinued as problems with pavement quality arose. The state of the practice has improved greatly since, and many States have experienced the cost effectiveness and performance advantages of CRMA, and have embraced the technology. Vtrans explained that "terminal blend," the process in which the crumb rubber is added to the liquid asphalt, has been shown to outperform conventional HMA. CRMA can increase the cost of the pavement by less than 5% but has a 15-20% better overall longevity than a standard mix. Vermont obtains its liquid asphalt from terminals located in either Canada or Rhode Island. The added costs to process the tires to 10 - 14 mesh crumb rubber to add to the liquid asphalt and the cost to ship the crumb to the asphalt terminals makes this option less favorable, at the present, than processing and shipping TDF to Maine (or Quebec or New York). However, if TDF usage was to diminish due to low energy prices and/or changes in the paper industry, CRMA could be economically viable, particularly if the use of CRMA by all New England states becomes commonplace.

Ongoing Illegal Dumping

Based on conversations with a number of tire dealers, 5 – 10% of used tires are taken back by customers buying new tires, and no doubt that some portion of these 35,000 – 70,000 used tires end up being illegally dumped. Therefore, although on a percentage basis the majority of scrap tires are properly managed by tire dealers and fleet managers, the volume of those scrap tires that are unaccounted for, and potentially illegally dumped, is significant. Even small numbers of tires that are illegally dumped pollute our streams and contaminate our rural landscape.

Illegal scrap tire dumping poses a challenge to Vermont. Although most scrap tires are properly managed, those that are illegally dumped cost local communities or private landowners considerable resources to address. This includes both the effort to collect the tires as well as the cost of properly managing the collected tires. These costs are not typically recovered by the local communities, volunteers, or landowners due to difficulty with determining the party responsible for the tire dumping.

The Group did not reach consensus on solutions to the ongoing illegal dumping problem. Ideas such as creating a deposit on new tires, establishing an Extended Producer Responsibility (EPR) program, adding a per tire fee on scrap tires, and manifesting scrap tire shipments were discussed by the Group. There was general Group agreement that ensuring compliance with existing solid waste transporter and disposal laws, and enforcement for non-compliance, would help address illegal dumping by so-called “tire jockeys.” The Group also considered the need to store scrap tires in secure containers to discourage theft of useable tires, some of which are invariably dumped. The pros and cons of each of these ideas were discussed but no single idea was recommended unanimously by the Group.

In considering prevention options, the Group did discuss what might be the root cause of the problem. There was general agreement that any program put in place would not completely solve the illegal dumping problem, but that the current scrap tire management system was not as effective as it should be. Currently, entities that collect scrap tires charge their customers a fee to cover the cost of managing the tires. This fee varies widely from location to location. The group identified an approximate fee range of between \$3.00-\$6.00/tire. In Vermont, when a consumer has their tires changed over in the spring or fall, the extra cost to dispose of the unusable tires can significantly raise the overall cost as a percentage of the tire changeover. This may discourage the consumer from disposing of the tires at that time, which may ultimately lead to illegal dumping. However, if the cost to dispose of the tires at the end of their life was added to the initial cost of purchasing the tires, this would only add a small fraction to the overall cost of the new tire purchase. The tires could then be disposed of for no added cost. Most of the Group agreed that making this change would create a convenient and seemingly less financially burdensome method to manage scrap tires, thus reducing the likelihood of tires being illegally dumped. However, a segment of the Group did not agree that establishing a prescribed fee system would be worthwhile, believing that the present market-based system was adequate. The Group discussed fees in the form of an EPR program where the manufacturers charge an assessment on each tire, similar to the PaintCare program, or an advanced recycling fee (ARF), where the consumer pays a fee at the point of purchase to pay for ultimate disposal. The Group did not agree on what, if any, particular methodology should be used. The majority of the Group did agree that whatever the upfront fee is, that it should be uniform and transparent, a

practice that mirrors existing policy in Ontario’s tire recycling program. Further, any instituted program would need to ensure that out-of-state tires were not collected. The majority of the Group also agreed that the fee on tires should be used to generate resources to address the legacy tire piles and to help to develop recycling markets for scrap tires.

III. Conclusions and Recommendations

Conclusions

- The three main issues involving scrap tire management in Vermont include: legacy tire piles, illegal dumping, and lack of recycling markets for scrap tires.
- Vermont is one of 17 states without some manner of funded, statewide tire management program.
- Scrap tires are ideal breeding grounds for Eastern Equine Encephalitis and West Nile Virus-carrying mosquitos.
- Illegal legacy tire piles and ongoing illegal tire dumping are a health concern, fire risk, and a public nuisance.
- The cost of illegal dumping is an ongoing expense that often falls to local government and private landowner to bear.
- The majority of the scrap tires collected in Vermont are processed for Tire Derived Fuel (TDF) for use in two Maine paper mills.
- TDF is necessary at the moment, and in the Northeast is an economical and effective fuel source, but is not the most beneficial and sustainable option for scrap tires.
- The problem of illegal dumping would likely be reduced if the disposal fee on tires is applied at the time of tire purchase. (One stakeholder disagrees.)
- As the current market-based system works to only manage the ongoing generation of scrap tires, any fee system established to also fund scrap tire clean ups and market development would likely result in increased per tire management costs.

Recommendations

The majority of the Group recommended that there be a legislative requirement that moves the existing disposal fee for tires from the time of disposal to the time of purchase. In addition, this fee should be uniform and transparent and should create funds to manage scrap tires, to assist with legacy tire pile clean ups, and to help to develop markets for scrap tires. Potential types of fees include advanced recycling fees (ARF) or some form of EPR.

Some group members disagreed that “uniform and transparent” fees were appropriate goals, believing that internalization of end-of-life system costs into the selling price of a tire would allow businesses to compete in a fashion to achieve the best results for the lowest cost, while acknowledging that life cycle costs of a tire are just another business expense that does not need to be separated out for consumers.

Several group members were opposed to an upfront fee on new tire purchases, concerned that such a fee would encourage consumers to purchase tires in adjacent States, or from Internet-based vendors. Further, that the cost to recycle tires is variable and market driven, and should not be combined with a State-mandated fee to address legacy tire piles and markets. These Group members consider the current system of scrap tire management to be adequate, with additional emphasis on generating sustainable markets for recycling scrap tires.

IV. Next Steps

The Group recognizes that there are many important details which must be understood before a scrap tire fee structure can be established and implemented. It is recommended that a group of interested stakeholders be convened to further investigate the following:

- Logistics and feasibility of moving to a fee based system where the cost of scrap tire management is part of the purchase price of new tires;
- Consider whether the fee is an ARF or EPR;
- Determining the appropriate fees to manage scrap tires, including a method of adjusting the fees to reflect changes in the marketplace ;
- Establishing a system of collecting, managing, and disbursing the funds collected;
- Determining the level of funding needed for the ongoing recycling of collecting scrap tires;
- Determining the funding, and potential sources of funds, needed for legacy tire pile clean ups;
- Types of financial assistance needed for market development; and
- Methods for tracking tires to ensure that the program is not collecting out-of-state tires.
- An evaluation of the ANR's scrap tire compliance and enforcement strategy, and means to increase education of tire dealers, fleet managers, and the general public on scrap tire management.

V. Appendix A: List of Tire Stakeholder Group Participants and Schedule of Meetings

The following participants contributed to the Tire Stakeholder Group discussion:

Representative David Deen, VT Legislature

Clare Buckley, KSE Partners, Vermont Vehicle and Automotive Distributors Association

Allison C. DeMag, Morris & DeMag, Alliance of Auto Manufacturers

Bill Driscoll, Associated Industries of VT

Jamie Feehan, Primmer Piper Eggleston & Cramer, Rubber Manufacturers Association

Peg Hall, Consultant

Jim Harrison and Heather Shouldice, VT Retail & Grocers Association

Lauren Hierl, VT League of Conservation Voters

Jen Holliday, Chittenden Solid Waste District

Taylor Johnson and Falco Schilling, VPIRG

Teresa A. Kuczynski, Addison Solid Waste Districts

Anne MacMillan, VT Agency of Agriculture, Food and Markets

John Malter, Mad River Waste Alliance

Joe Rivard, Gates Salvage Yard, Inc.

Frank Schofield, BDS Waste Disposal, Inc.

John Sheerin, Rubber Manufacturers Association

Leesa Stewart, Central VT Solid Waste Management District

Paul Tomasi, Northeast Kingdom Waste Management District

State Participants

VT Legislative Council: Helena Gardner, Michael O'Grady

VT DEC: Rebecca Ellis, Bryn Oakleaf, Chuck Schwer, Buzz Surwilo

VTrans: William Ahearn, Chris Benda, Mladen Gagulic

Also contacted: Randy McMullin, ME DEP and Andrew Horsman, Executive Director, Ontario Tire Stewardship

Tire Stakeholder Group Meetings

1. July 23, 2015
2. August 28, 2015
3. October 7, 2015