

The NYS Roundtable for Consensus on Tire Management

Parameters for Legislative Development

March 2000

Final Draft

Executive Summary

In late 1998 a diverse group of stakeholders came together to build a consensus around environmentally sound and economically viable policies and programs that would definitely address the scrap tire problem in New York State. The participants formed the New York State Roundtable for Consensus on Tire Management (Roundtable) with the intent to address both the annual generation and stockpiles of tires in New York. Members agreed any recommended program would have a market orientation, insure environmental protection and constitute an efficient regulatory framework.

Findings of the Roundtable:

- (1) There are no viable markets for scrap tires in New York State. Scrap tires remain a material with a negative value in New York State.
- (2) There are two separate scrap tire situations (annual generation & stockpiles) that require varied approaches and solutions.
- (3) New York produces 18 – 20 million tires annually.
- (4) There are at least 25 million scrap tires in stockpiles in New York. There have been 10 reported stockpile fires since 1994. Because of their condition, stockpiled tires have limited markets or applications.
- (5) The cost of cleaning up stockpiles and creating sufficient market demand is expected to be in the \$100 –140 million range.
- (6) The most efficient manner to address market development is to have multiple markets.
- (7) Market development is a multiple step, long-term process.
- (8) The greater economic benefit is in developing higher valued added markets. But, lower-valued markets can consume relatively large quantities of scrap tires in the near-term.

Recommendations:

- (1) The Roundtable recommends the enactment of a comprehensive scrap tire management plan, consisting of three phases; Phase I (12 – 18 months) should consist of market evaluation, emergency stockpile remediation, and implementation of the scrap tire management fee; Phase II (18 – 36 months) should consist of market development programs, with emphasis on higher-value added markets and intensive stockpile abatement; Phase III should continue elements of Phase II with an added emphasis on research and development for new scrap tire rubber applications and completion of stockpile abatement.
- (2) The Roundtable recommends a \$0.50 per tire biannual registration fee should be collected by the Department of Motor Vehicles. The revenue generated should be placed into a dedicated scrap tire management fund for the purposes of market assessment, stockpile remediation and abatement; market development and program administration.
- (3) The Roundtable recommends shared responsibility for administration of this program between two agencies: NYSDEC (for stockpile remediation, abatement and regulatory enforcement) and the NYSDED (for market development and education programs). In addition, the Roundtable recommends the creation of a Scrap Tire Management Board, to serve as an on-going working forum to monitor progress and recommend any needed courses of action.
- (4) The Roundtable recognizes a variety of markets are necessary to properly manage both stockpiled and the annually generated scrap tires. The Roundtable recommends that the State remains market-neutral, and allows market forces to determine the end uses for scrap tires. The Roundtable recommends that any funds used for research and development be focused on higher valued added applications (e.g.,

rubber products [mats, hoses, playground and athletic surfaces], rubber-modified asphalt and large-scaled engineered projects.

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I. Purpose and Background

A. Purpose

B. Stakeholders

C. Terms and Definitions

D. Current Scrap Tire Processing and Markets

E. Current and Potential Markets and Disposal Options for New York

F. Scrap Tire Stockpiles

A. Purpose and Membership of the Group

The problem of scrap tires is largely overlooked until a fire in an unmanaged or abandoned pile of scrap tires raises public awareness and draws political attention. But before the problem is understood and addressed, interest typically wanes, and the cycle repeats itself. Recognizing that the scrap tire problem, especially out of compliance stockpiles, constitutes a potential public and health catastrophe, a group of interested stakeholders came together in 1998 to form a working group to address the issue, determined to generate solution and action.

The purpose of the New York State Scrap Tire Roundtable (Roundtable) has been to build a consensus around environmentally sound and economically viable policies and programs that would definitively address the scrap tire situation in New York State. The recommendations herein have therefore been designed to immediately reduce the hazards of, and over a reasonable period of time eliminate, existing scrap tire stockpiles and prevent the development of new ones.

The participants and constituents of the Roundtable represent many varied interests, and so, the recommendations that are detailed herein are not the product of any single interest. The approach that has been developed has resulted from intense discussion and dialog. It offers a balanced approach based on the following criteria developed by the Roundtable: The program would have to have a market orientation, ensure environmental protection and constitute an efficient regulatory framework. The Roundtable believes that this document, which represents the results of its effort, achieves those objectives. The inclusiveness of the process insured that participants' ideas were subjected to scrutiny from multiple perspectives, including individuals who work with and manage scrap tires every day. The result is therefore informed and thoughtful.

While the signatories to this document may not agree with every element of its recommendations, they have agreed, in order to generate and sustain the consensus, to subscribe to and support the recommendations as a whole. They desire that those who read the document consider it in that spirit, as an integral package, recognizing that the diversity of the stakeholders required that everyone make some compromises and that no element of the package can easily be changed without disrupting the system it contemplates.

The central conclusion of the Roundtable is that the linchpin to the scrap tire problem is the lack of markets in New York for whole and processed scrap tires. To ensure that New York State can reduce and eventually eliminate the tires in stockpiles, as well as properly manage those tires generated annually; multiple markets must be created. To place this issue in perspective, the New York State Department of Environmental Conservation (NYSDEC) estimates there are 20 million tires generated per year (approximately one tire per person). The NYSDEC also estimates that there are some 25 million scrap tires in stockpiles in the State. The basic conclusions of the Roundtable are that:

- (1) A scrap tire management program will need to focus on market development;
- (2) Multiple markets will have to be developed;
- (3) Stockpile abatement will occur once markets are developed;
- (4) Education will be an essential component of the program;
- (5) A dedicated fee is required;
- (6) The program could take up to ten years to accomplish its goals.

B. Stakeholders

The Members of the Roundtable consisted of individuals who accepted invitations from the steering committee of founding members, accepted the responsibilities of membership, and obtained authorization to represent one or more organizations. The Members were:

Michael Blumenthal*	Scrap Tire Management Council
Bruce Hayn	Lakin Tire East, Inc.
Claudia Sandoval*	Integrated Tire Inc.
David Higby*	Environmental Advocates
Tom Congdon	League of Conservation Voters
Ira Rubenstein*	Environmental Business Association of New York State, Inc.
Manna Jo Greene*	New York State Association for Reduction, Reuse & Recycling
Tim DiMarco	Seneca Meadows, Inc.
Eileen McGuire	Northeast Rural Community Assistance Program
Gerald DeLuca	NYS Motor Truck Association
David Watson	Blue Circle Cement

New York State government agencies were also invited to participate, and the individuals representing them were accorded ex-officio/non-voting status. As such, they were not considered Members for the purposes of determining a consensus (see appendix A, Groundrules for Decision-Making).

Chris Glander	NYS Dept. of Environmental Conservation
Brian Johnson	NYS Attorney Generals Office
Keith Lashway	NYS Department of Economic Development, Environmental Management Investment Group
Janet Matthews	NYS Legislative Commission on Solid Waste Management
Ken Smith	NYS Department of Transportation

In addition, other individuals participated as non-member advisers and provided invaluable information and perspective. All meetings of the Roundtable were open to observers.

* Steering committee member

C. Terms and Definitions

In order to understand the issues and term discussed the following terms are defined.

All Season Radial: A highway tire designed to meet the weather conditions in all seasons of the year and which meets the Rubber Manufactures Association definition of a mud and snow tire.

Altered Tire: A scrap tire that has been modified so that it is no longer capable of holding/retaining air, water or being used on a vehicle.

Bead: The anchoring part of the tire that is shaped to fit the rim. The bead is constructed of high tensile steel wires wrapped by the plies.

Bead Wire: A high tensile steel wire, surrounded by rubber, which forms the bead of a tire that provides a firm contact to the rim.

Belt: An assembly of rubber coated fabric or wires used to reinforce a tire's tread area. In radial tires, it also constrains the outside diameter against inflation pressure and centrifugal force.

Belt Wire: A brass plated high tensile steel wire cord used in steel belts.

Bias Ply Tires: A tire built with two or more casing plies which cross each other in the crown at an angle of 30 to 45 degrees to the tread centerline.

Carcass: see Casing

Casing: The basic tire structure excluding the tread (also referred to as a carcass).

Chip Size: The range of rubber particle sizes resulting from the processing of whole tires.

Chipped Tire: Pieces of scrap tires that have a basic geometrical shape and are generally smaller than 6 inches by 8 inches in size (also refer to Tire Chip).

Chopped Tire: A scrap tire that is cut into relatively large pieces of unspecified dimensions.

Combustion: The act or process of burning. The rapid oxidation accompanied by high temperature and usually light.

Combustion Unit: Refers to any number of devices to produce or release energy for the beneficial purposes of production by burning a fuel to include, but not limited to, units such as industrial power boilers, electrical utility generating boilers, and cement kilns.

Commercial Tire: Truck and industrial tires.

Compound: A mixture of blending chemicals specifically tailored to the needs of the specific components of the tire.

Converted Tire: A scrap tire that has been processed into a usable commodity other than a tire.

Dewired: The absence of exposed wire on the perimeter of the tire chips. Belt wire typically remains in the chip, but is embedded in the chip.

Discarded Tire: A worn or damaged tire that has been removed from a vehicle.

End User: The facility that utilizes the heat content or other forms of energy from the combustion of scrap tires (for energy recovery). The last entity who uses the tire, in whatever form, to make a product or provide a service with economic value (for other uses).

Energy Value: The assignment of a value to the tire derived fuel as measured in British thermal units per a specific one pound weight.

Energy Recovery: A process by which all or part of the tire (TDF) is utilized as fuel to recover its BTU value.

Fuel Value: Refers to the inherent nitrogen, hydrogen, oxygen, carbon, sulfur, ash, moisture, and Btu content of tire derived fuel.

Ground Rubber (AKA crumb rubber, particulate rubber). Process rubber that conforms to the ASTM D5644-96 and D5603-96 specifications.

Heavy-Duty Tires: Tires weighing more than 40 pounds, used on truck, buses and off-the-road vehicles in heavy duty applications.

Light-Duty Tires: Tires weighing less than 40 pounds, used on passenger cars and light trucks.

Light Truck Tires: Tires with a rim diameter of 16 to 19.5 inches, manufactured specifically for light truck use.

Market: An end use for a scrap tire, either processed or whole, for which the collector process receives payment.

Minus: The sieve designating the upper limit or top size shall be the sieve of the series with the largest openings upon which is cumulatively retained a total of less than or equal to one percent of the sample.

New Tire: A tire that has never been mounted on a rim.

Nominal: A term commonly used to refer to the average size product (chip) that comprises 50 percent or more of the through put in a scrap tire processing operation. It should be noted that any scrap tire processing operation would also generate products (chips) above and below the “nominal” range of the machine.

Non-Engineered Uses: Those situations where/when scrap tire materials (i.e., shreds) are used simply as a disposal option, rendering no engineering benefit nor financial benefit.

OTR: Off the Road Tire; tire designed primarily for use on unpaved roads or where no roads exist, built for ruggedness and traction rather than for speed.

Outlet: A means of disposing scrap tires, either whole or processed, which bears a cost to the collector/process.

Passenger Car Tire: A tire with less than an 18-inch rim diameter for use on cars only.

Pneumatic Tire: A tire that depends on the compressed air it holds to carry the load. It differs from a solid tire in which the tire itself carries the load.

Processed Tire: A scrap tire that has been altered, converted or size reduced.

PTE: Passenger Tire Equivalent; a measurement of mixed passenger and truck tires, where five passenger tires are equal to one truck tire.

Radial Tire: A tire constructed so that the ply cords extend from bead to bead at a 90 degree angle to the centerline of the tread.

Relatively Wire Free: For purposes of this guideline, refers to TDF that has a bead wire content no greater than one percent by weight, and a total wire content of two percent or less by weight.

Rim: The metal support for the tire and tube assembly on the wheel. The beads of a tire are seated on the rim.

Rough Shred: A piece of a shredded tire that is larger than 2" X 2" X 2", but smaller than 30" X 2" X 4".

Rubber: An elastomer, generally implying natural rubber, but used loosely to mean any elastomer, vulcanized and unvulcanized. By definition, rubber is a material that is capable of recovering from large deformations quickly and forcibly and can be, or already is modified to a state in which it is essentially insoluble in a boiling solvent.

Scrap Tire: For purposes of this guideline, refers to a pneumatic rubber tire discarded because it no longer has value as a new tire, but can be either reused and processed for similar application as new or processed for other applications not associated with its originally intended use. A tire which can no longer be used for its original purpose, due to wear or damage.

Scrap Tire Processing: Any method of size reducing whole scrap tires to facilitate recycling, energy recovery or disposal.

Secondary Material: Fragments or finished products or leftovers from a manufacturing process that converts a primary material into a commodity of economic value.

Sectioned Tire: A tire that has been cut into at least two parts.

Shred Sizing: A term which generally refers to the process of particles passing through a rated screen opening rather than those which are retained on the screen. (i.e., 1" X 1"; 2" X 2")

Shredded Tire: A size reduced scrap tire. The reduction in size was accomplished by a mechanical processing device, commonly referred to a "shredder".

Shredded Rubber: Pieces of scrap tires resulting from mechanical processing.

Sidewall: The side of a tire between the tread shoulder and the rim bead.

Single Pass Shred: A shredded tire that has been processed by one pass through a shear type shredder and the resulting pieces have not been classified by size.

Specifications: Written requirement for processes, materials or equipment.

Standard Size Specification: For purposes of this guideline, refers to the size specifications with the broadest application when blending with other solid fuels and requiring minimal adjustments or retrofits to existing solid fuel combustion units.

Steel Belt: Rubber coated steel cords that run diagonally under the tread of steel radial tires and extend across the tire approximately the width of the tread. The stiffness of the belts provides good handling, tread wear and penetration resistance.

Supplemental Fuel: A combustible material that displaces a portion of traditional fuel source. Refers to the product being used in conjunction with another conventional fuel, but typically not as a sole fuel supply.

TDF: Refer to Tire Derived Fuel.

Tire: A continuous solid or pneumatic rubber covering encircling the wheel of a vehicle.

Tire Chip: A classified scrap tire particle that has a basic geometrical shape, which is generally two inches or smaller and has most of the wire removed (also referred to Chipped Tire).

Tire Derived Fuel: Refers to the end product of a process that converts whole scrap tires into a specific chipped form. This specified product would then be capable of being used as fuel.

Tire Shreds: Pieces of scrap tires that have a basic geometrical shape and are generally between 50 mm and 305 mm in size.

Tread: That portion of the tire that contacts the road.

Truck Tire: Tires with a rim diameter of 20 inches or larger.

Used Tire: A tire removed from a vehicle's rim which cannot be legally described as new, but which is structurally intact and has a tread depth greater than the legal limit. This tire can be remounted onto another vehicle's rim without repair.

Waste Tire: A tire which is no longer capable of being used for its original purpose, but which has been disposed of in such a manner that it can not be used for any other purpose.

Whole Tire: A scrap tire that has been removed from a rim, but which has not been processed.

Wires: High tensile, brass plated steel wires, coated with a special adhesion-promoting compound, which are used as tire reinforcement. Belts or radial tires plies and beads are common uses.

D. Current Scrap Tire Processing Capacity and Markets

Currently, according to the New York State Department of Environmental Conservation, there are five permitted scrap tire storage facilities (can store 1,000+ tires) in New York State (refer to list in Appendix II). The NYSDEC does not require a permit for processing scrap tires, however, no facility can process without having a storage permit. These five companies are currently processing tires at their facilities. Additionally, there is a NYSDEC requirement to obtain a transporter permit to transport scrap tire in the State. A Part 364 transporter's permit is required to transport more than 500 pounds of scrap tires (approximately 25 scrap tires). At this time the NYSDEC is not able to provide an accurate listing of the number of licensed transporters. In 1996, the last year the report was available, there were 82 permitted transporters listed.

Overall, there are a series of factors that will impact the profitability and viability of a scrap tire processing facility. The first and most important factor is the market into which a processor can sell their products. The marketplace can be divided into two important subsections: the type of products (i.e., tire-derived fuel, tire shreds for civil engineering applications or ground rubber) and the quantity of product to be sold. Typically, low-value added markets such as tire derived fuel and tire shreds for civil engineering applications consume relatively large amounts of products, but have a relatively low return on investment. The production and marketing of ground rubber or products containing recycled rubber, while smaller in quantity has the highest return on investment.

The ability of a processor to attract and maintain any given market is a function of that facility to produce a consistently high quality product that meets the end users needs and specifications. Internal factors that can impact a processor's profitability are the number of times they must handle the tire (in what ever form) and the distances that must be traveled either to obtain the raw material (whole tires) and to deliver the finished product. A general rule of thumb within the scrap tire industry is that the area of collection is limited to a maximum 200-mile radius, with the processing facility being the focal point. Generally, this is also the maximum distance that finished products can be efficiently transported, with the major exception of ground rubber.

The final, and perhaps most critical aspect of the profitability equation is the understanding of the potential end user. The understanding not only includes the knowledge that their process can use processed scrap tire rubber, but that the incorporation of recycled rubber will serve some beneficial use. Often, the use of scrap tire rubber products is viewed as a solid waste disposal option. This is an unfortunate manner to view this effort, but remains all too prevalent in the marketplace today.

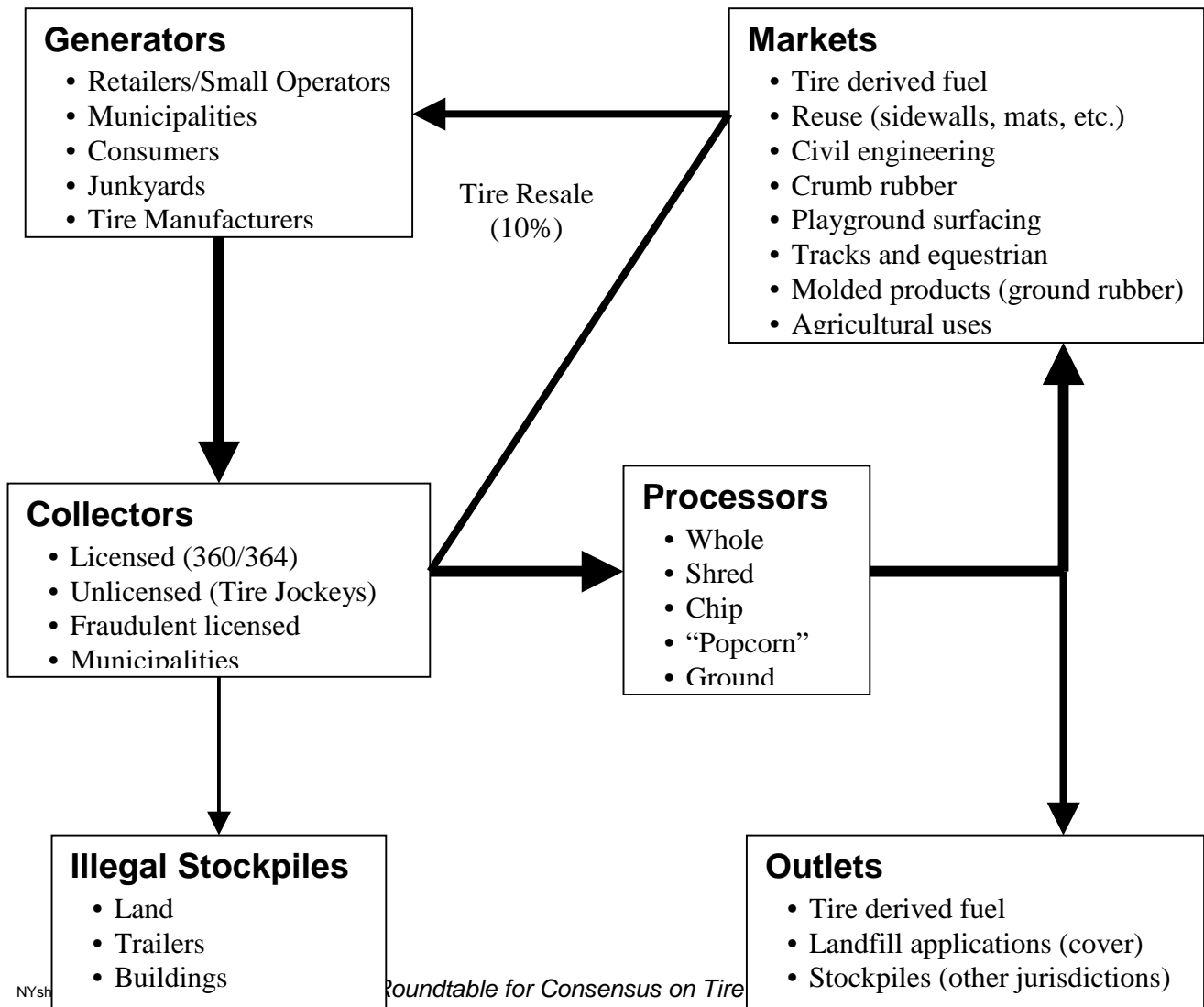
According to the most recent market report from the Scrap Tire Management Council, it has been recognized that certain areas in the United States strong markets for scrap tire have been developed. Where achieved there have been several distinct and clear benefits. First, due to the competition for scrap tires, the "tip fee", the amount of money paid to rid oneself of the scrap tire, has decreased. For example, seven years ago the tip fee in Illinois was \$1.00 per passenger car tire. Today it is \$0.35 per passenger car tire. Second, the incidences of indiscriminate dumping have diminished drastically throughout the State. Since less is being charged to remove tires, more persons are participating in the

program. Third, the development of long-term viable markets has assisted in the economic viability of the scrap tire industry.

Where and when markets are not developed, processors seek out the least cost disposal option (outlet) available. In these cases, processors are forced to turn to outlets that charge for the use or disposal of their materials. In these situations, the tip fees remain relative high and the economic viability of the scrap tire industry is at constant risk due to the small profit margins commonplace in this situation.

In the case of New York, the scrap tire industry must contend with virtually no in-state markets. Consequently, the scrap tire industry is faced with finding outlets for their material. The need to dispose of scrap tire generated material is necessary because the permitted scrap tire processor have a finite limit on the amount of scrap tires, whole or processed that can be stored on their premises. Hence, even though there are costs incurred by the processor when their scrap tire material is taken to an outlet, it allows them to continue in operation and the time to develop markets. While commonplace in New York, this scenario maintains the tipping fees at a relatively high level and raises the risk that these companies, and even the entire scrap tire industry, will cease to exist.

Overview of the Tire Collection/Processing Industry



E. Current and Potential Markets and Disposal Options for Scrap Tire in New York

Applications for Scrap Tires in New York and Nation-Wide*

At present, there are three major uses for scrap tires in the United States: tire-derived fuel (TDF), civil engineering applications and ground rubber applications. However, there are no current markets for scrap tires in New York. There are several outlets for scrap tires in the New York region, primarily low value added civil engineering applications, or placing processed scrap tires into landfills or monofills (a landfill that only accepts scrap tires). While landfilling of whole tires in New York State is not permitted, this disposal option is allowed and currently practiced in adjacent regions (i.e., Ohio and Quebec).

Overall, In New York State, a consensus of the collectors/processors that services New York calculate that 40 percent of the scrap tires generated in the State go to landfills. Another 20 percent are processed into TDF, 10 percent are processed and sold as ground rubber. The remaining 10 percent are culled from the waste stream and sold as used tires.

*[The retreading of tires has not been discussed here because retreaded tires are not generally considered a scrap tire. Nonetheless, retreading should not be ignored. The reason is simple: increasing the number of tires being retreaded can reduce the number of scrap tires generated in any given year. Consequently,

a comprehensive scrap tire management effort should contain provisions to increase the use of retreaded tires.]

Unlike engineered applications that make use of the unique qualities of the tires, these are low-value-added disposal options that yield little or no profit to the processor, and generate few jobs and little economic benefit for the state. The use of scrap tires in non-engineered applications is not an actual “market”, but rather an “outlet”, where the processor must pay the customers to use or dispose of their scrap tire materials.

When scrap tire processors are totally dependent upon an up-front tip fee for their economic survival, they are at great risk, both from a financial and regulatory perspective. Ironically, there is considerable competition in the marketplace to pick up scrap tires. This competition places a downward pressure on tip fees (the cost of removing scrap tires from the point of origin). Since tipping fees provide the majority of the revenue a scrap tire processor receives, this fee must be adequate to cover the costs of transporting the whole scrap tire, processing the tire, transporting the processed tire to the end application, and usually paying the end user to take the tire.

If the fee is inadequate to cover these costs, then the processor is unlikely to take any tires to an outlet. This, in turn, results in ever increasing numbers of scrap tires being kept in processors’ on-site inventories. Should this condition continue for an extended period of time, the processor would likely violate the provisions of their storage permit. In other words, when scrap tire processors are totally dependent upon an up-front tip fee for their economic survival, they are at great risk, both from a financial and regulatory perspective. This is not a base upon which an economically viable market infrastructure can be developed or sustained.

The most effective manner in which to address this situation is through development of various end use markets for scrap tires. In general, although the lower-value-added markets take a shorter period to develop and can use larger amounts of scrap tires than the higher-value-added markets, higher-value-added markets provide a better return on investment, which is essential for the long-term economic viability of the scrap tire industry.

Applications for Scrap Tires

Tire Derived Fuel (TDF)

Currently, tire-derived fuel (TDF), or energy recovery, is the largest application for the scrap tires in the United States. Overall, TDF consumed 114 million of the 273 million scrap tires generated in 1998. It is generally recognized that a considerable percentage of New York State generated scrap tires are sent to combustion facilities in adjoining states, although exact numbers are difficult to obtain.

- Facilities that can use TDF as a supplemental fuel include:
- Cement kilns (whole and processed tire chips)
- Pulp and paper mills and boilers (chips)
- Industrial boilers (chips)
- Utility boilers (chips)
- Dedicated scrap tire to energy plant (whole or chips)
- Resource recovery facilities (chips)

At present, there are no combustion facilities using TDF in New York State, although there has been some interest in it. The NYDEC has issued a generic beneficial use determination (BUD) for tire-derived fuel. In the past, there was a utility boiler in New York that used TDF and several other facilities that conducted trial runs with TDF. In addition, two cement kilns were granted permits to use TDF, but one of these facilities was closed down for business reasons and the second facility has yet to begin using TDF.

Civil Engineering Applications

One of the fastest growing markets in the United States is the use of scrap tires in civil engineering applications. Civil engineering applications are generally defined as the use of scrap tires, either whole or processed, in lieu of conventional construction materials (i.e., clean fill, gravel, sand). In this regard, scrap tires have been/are being used as a light weight backfill, as road embankment fill, in leachate collection systems, as septic field drainage material, as alternate daily cover in landfills, as road base, as a thermal insulator (along housing foundations), as breakwaters, as side slope stabilizers, among other applications. This market application did not exist even six years ago. Today it consumes 20+ million scrap tires a year nation-wide. In New York State, up to seven landfills now use tire chip for daily cover or leachate collection. However, profitability in this market depends on the cost of traditional materials with which scrap tire materials compete. Because aggregate (gravel, etc.) is often less expensive than even the cost of processing scrap tire into chips, landfill applications often represent a net cost to the processor.

Ground Rubber Applications

Scrap tires can be processed into a product referred to as ground rubber. This material, also known as crumb rubber, can vary from particles as large as three-quarters of an inch in diameter to a particle size of 100 mesh (150 microns, or the consistency of talc powder). As would be expected, the uses for this material are a function of size and shape.

Larger-sized particles (half to quarter inch) are used as cover material for playgrounds, as a soil amendment, as a turf treatment, and in several manufactured products (running tracks, mulch). The "larger" ground rubber sizes (4 - 16 mesh) are used as an amendment for asphalt binders, which is the largest single market for ground rubber.

Ground rubber in the 20 - 80 mesh sizes is also incorporated into a wide range of manufactured products, including but not limited to soaker hoses, mats, carpet backing and mold and extruded copolymer materials. The ultra fine mesh (100 mesh and smaller) is used in tire manufacturing. This is the second largest market application for ground rubber.

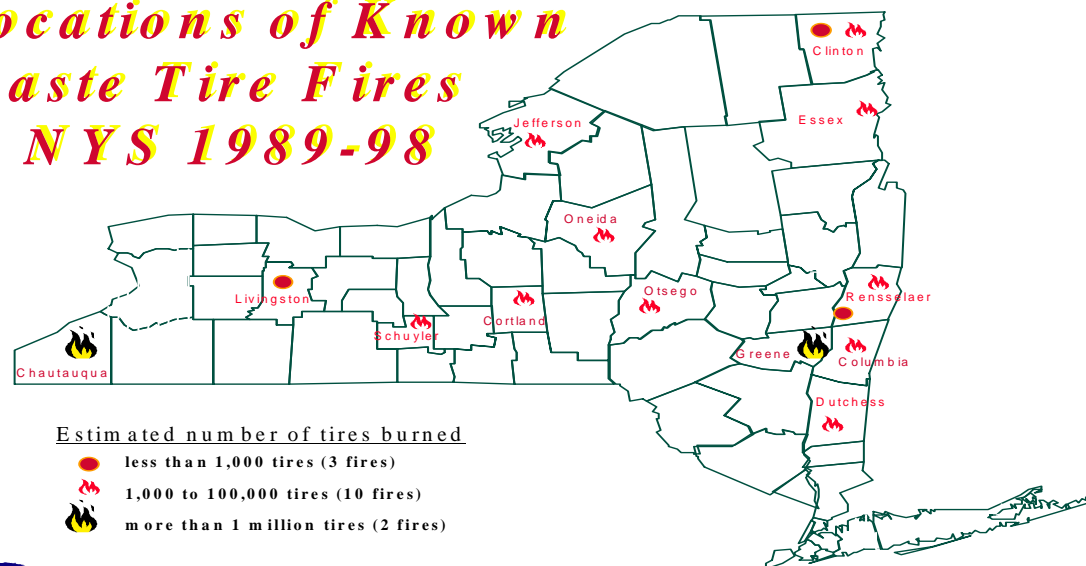
There are two basic processes for making ground rubber; ambient and cryogenic processing, but ultimately capacity to process scrap tires is less important than, and will naturally follow, the development of the end use markets for scrap tires.

F. Scrap Tire Stockpiles

In 1997, the New York State Department of Environmental Conservation (NYSDEC) counted 114 scrap tire stockpiles in New York State (refer to Appendix II for details). In 1998, these stockpiles were estimated to contain over 22 million scrap tires. Of these sites, two are estimated to have over five million tires each and six sites are estimated to have over one million tires each. The dangers of stockpiles are well known: fires, typically caused by arson, can be the source of multiple pollution streams. Both the emissions and oil run off from an uncontrolled, low temperature tire fire can have severe environmental impacts. Furthermore, stockpiled scrap tires are preferred harbors for rodents and insects, particularly mosquitoes. Given the recent episodes of mosquito borne diseases in the State, the urgency for scrap tire stockpile abatement in New York has heightened.

Although the NYSDEC has strict regulations regarding the management of these sites, ten uncontrolled tire fires have occurred in the state since 1994. These are fires that occurred in either scrap tire stockpiles or in scrap tire processing facilities. These fires occurred at relatively low temperatures, generating large amounts of smoke, soot and oil. The emergency response to these fires is a local matter, and the cost of response is borne by local government. The United States Environmental Protection Agency (USEPA) estimates that the cost of cleaning up a scrap tire stockpile (including fire fighting costs) is 10 times greater after an uncontrolled burn than before.

Locations of Known Waste Tire Fires in NYS 1989-98

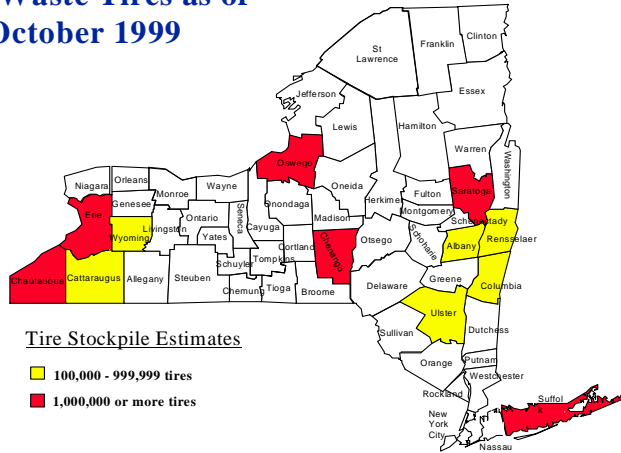


Source: NYS Dept. of Environmental Conservation

In 1998, the DEC initiated two scrap tire abatement demonstration projects (in Lewis and Chautauqua counties). Both projects identified the lack of markets as a major barrier to the success of the pilots. Since landfilling scrap tires is not allowed in New York, appropriate markets need to be developed before an effective stockpile abatement program is possible. Normally, there are two market applications for scrap tires: tire-derived fuel and/or civil engineering applications, but stockpiled scrap

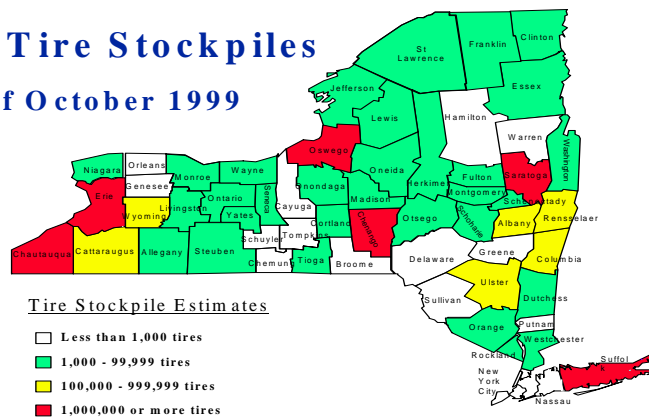
tires, because of the residue that coats them, as well as an accumulation of other materials within them, renders stockpiled tires unsuitable for higher-value-added applications.

Counties Storing More than 100k Waste Tires as of October 1999



Source: NYS Dept. of Environmental Conservation

Waste Tire Stockpiles as of October 1999



Source: NYS Dept. of Environmental Conservation

II. Scrap Tire Management

A. Overview

B. Market Development

C. Tire Management Education Plan

D. Stockpile Abatement

E. Administration and Enforcement

A. Overview

There are actually two separate sets of scrap tire issues that must be addressed. The first set of issues concerns the annual generation of scrap tires. The second set of issues concerns the existence of scrap tire stockpiles. While both sets of issues share a common material, the scrap tire, the underlying issues, approaches and solutions are different. Furthermore, simply focusing on one of these aspects of scrap tire management will not automatically address the other issue. Therefore, the consensus of the Roundtable was to take an approach that would address the core issues of both the annual generation and the existence of stockpiles.

Given that there has not been a coordinated, comprehensive scrap tire program in New York, any program initiated will require resources and time. The consensus recommendations to be explained herein were developed with these considerations in mind.

The overall concept is a three-phased plan that focuses on three major areas: market development, stockpile abatement and consumer education. Each of these activities is interconnected and dependent upon each other for the overall success of the program. The first phase will assess the current situation and allow for efficient planning. The second phase focuses on assisting the development of the marketplace, while the third phase focuses on stockpile abatement, with continued support for the market infrastructure. The Table below shows the general breakout of activities; the following section details the action plan.

	Phase I <i>12 – 18 months</i>	Phase II <i>18 – 36 months</i>	Phase III <i>On-going</i>
<i>Market Development</i>	<ul style="list-style-type: none"> • Identify & Assess Current and Potential Markets • Begin Expansion of Current Market Capacity • Product Pilots and Equipment Incentives 	<ul style="list-style-type: none"> • Develop High Value-Added Markets • Support End-User Education and Acceptance 	<ul style="list-style-type: none"> • Expand High Value-Added Markets • Focus on innovative market development opportunities
<i>Stockpile Abatement</i>	<ul style="list-style-type: none"> • Assess/List Current Stockpiles/Hazards • Perform Emergency Remediation 	<ul style="list-style-type: none"> • Intensive Stockpile Clean-Up 	<ul style="list-style-type: none"> • On Going Abatement of Stockpiles
<i>Consumer Education</i>	<ul style="list-style-type: none"> • Explanation of Program, Tire Maintenance and Funding Source 	<ul style="list-style-type: none"> • Scrap Tire Management and Tire Conservation 	<ul style="list-style-type: none"> • Market Development Outreach

B. Market Development

Phase I: Assessment of Stockpiles and Development of Market Capacity

There are considerable uncertainties regarding the actual number and size of existing stockpiles. The Roundtable therefore recommends that a first priority of the stockpile abatement program be a comprehensive assessment of the current reality of stockpiles, to include the identification of situations requiring immediate remediation and abatement and an updating of the NYSDEC's estimates of the number and size of existing stockpiles. The Roundtable anticipates that the program being recommended will require a review after the first five years to determine the future direction of the program and the best allocation of the available revenues.

Market Development

Market development is the primary strategy for insuring stockpile abatement and the prevention of new piles. Although the volume of tires annually generated in the state can largely be handled now by existing outlets, the heavy reliance on low value-added applications and exporting makes the situation unstable. There are a limited number of markets available in the country and very few in New York State, and they are limited in capacity. The need to export substantially increases costs and renders the state dependent and vulnerable. In any case, current markets do not have the capacity for processing the scrap tire material that would be generated from stockpile clean up. Developing and expanding markets for scrap tires will make the processing industry more stable and generate the outlets and processing capacity needed for the cost-efficient clean-up of stockpiles.

Assessment and Development of Market Capacity

Phase I of the market development work will focus on assessing the market potential and expanding the current markets. The New York State Department of Economic Development's Environmental Management Investment Group (EMIG) will do the primary task. The EMIG will work on the development of markets for scrap tires in New York State, and will utilize coordinate with the related projects being undertaken by the NYSDEC, NYSDOT and the Office of the NYS Attorney General.

Different applications are required for the various sources of scrap tires. Whereas uses for tires from stockpiles are limited to TDF and civil engineering applications, tires from annual generation can be used in all applications, including higher value added applications, such as ground rubber. Since civil engineering applications can consume large numbers of tires, the development of this market will be an early priority. The higher value added market applications, such as the use of rubber modified asphalt or product manufacturing, are projected to take up to three years to develop. The expedited development of the large-scale civil engineering applications will allow for the consumption of a large number of tires (both stockpiled and newly generated), while the higher valued added markets are developed.

Assess Current Markets

In order to develop a long-term strategy for developing sustainable markets, the EMIG will assess the potential markets and outlets for scrap tires as well as the state processing capacity. This assessment will include: current markets (in and out of state); potential markets; production capacity; and contribution to job growth

Once completed, this assessment should be used to focus resources and attention on those areas where development dollars can best be leveraged. For example, how many manufacturers of (virgin) rubber products are located in New York? What types of products do they make and what type/how much recycled rubber can be used in their manufacturing process. The answers to these questions are not only useful in developing a market development program, they will enable the scrap tire processing industry to better focus their resources. The sum total of this project would be to improve the economic infrastructure of the industry, and hence, the State.

Phase II: Expanding High Value Added and Consumer Product Markets

A number of applications can be further expanded using existing capacity and markets. Most of these applications are civil engineering applications, including:

- Landfill Applications (e.g. closure/contouring, gas venting, liner (new/expansions), drainage, leachate collection, roadways, etc.);
- Fill and drainage (e.g. contouring, embankments, septic systems, etc.).

Product Pilots and Equipment Incentives

Several applications for scrap tires are viewed as unproven and still require considerable user education and acceptance. During this phase of the program resources will be invested into research and development of practical applications currently utilized in other states, education of the end user industry and regulatory agencies. Furthermore, when information gaps are identified, demonstration assistance can be undertaken, building on the success of programs in other states, these include;

- Refined ground rubber and insulating applications
- Rubber modified asphalt (RMA).

The success of the demonstration projects in the first phase will allow the fund (through EMIG or other agencies) to better leverage its dollars in the expansion and creation of more markets, and will create opportunities for investment capital in high value added applications.

Additional value-added markets that can be developed in this phase include:

- More refined ground rubber applications, such as matting, highway protective devices, sound proofing material;
- Manhole covers;
- Molded consumer products (planters, mud flaps, etc).

Phase III

In the third phase of the market development program, market development efforts will focus on expanding the high value-added markets. This includes breaking down barriers to entry for competitors as well as expanding the breadth and diversity of viable products. One of the suggestions of the Consensus group is that there be a coordination of efforts between the NYSDEC and the NYSDED, since these will be the lead agencies. Furthermore, the NYSDEC and NYSDED should coordinate their activities with the other agencies that have programs that involve scrap tires.

C. Tire Management Education Plan

A significant aspect of the NYS Tire Management Plan is education. A comprehensive program will be developed to educate the public about the problem of scrap tires, potential solutions, and their responsibility in implementing these solutions. The education program will also address the commercial sector to promote full utilization of the variety of scrap tire uses by related industries for both existing and new, innovative applications.

Since the NYS Scrap Tire Management Program will be a State funded program, it is of primary importance that all residents and businesses understand that we each contribute to the problem which the funds are intended to address (i.e., we all drive vehicles and generate scrap tires). The public should also understand how the funds are generated and utilized (to clean up stockpiles, provide incentives for recycling infrastructure, etc.), how long the program is expected to be in existence, how often the program will be reviewed, and when the program is predicted to sunset.

Tire management program staff, housed in the Environmental Management Investment Group (EMIG) of Empire State Development, should provide the public and industry education either directly or through contractors. The Consensus Group believes that an important aspect of the implementation of the program is to establish scrap tire market development projects. The Consensus Group recommends that projects for various uses be established in at least six regions around the state, for hands on, direct experience. Program staff should maintain a list of existing models, where tires have been utilized for landfill cover, embankment construction, septic drainage, rubber modified asphalt, running track, and other uses. An annual conference should be held either on a regional or statewide basis. The conferences should focus on educating the end users, assisting in market development and provide technical training programs for related industries. Where possible, tours and field trips for target audiences should be part of the educational program.

The scrap tire management program should also serve as a clearinghouse for a wide range of information and technical specifications on the use of tire derived products and their availability. Part of the education process should be to bring information on these recycled content products to the attention of the appropriate state and municipal agencies.

Target Sectors:

1) Public Education and Consumer Information:

Public service announcements, videos and brochures should be developed to help the public understand how to care for tires, how and where to properly dispose of tires, how the tire management program is financed, how it works, what problems it corrects (including economic, environmental and health benefits), what fees may or may not be charged for tire disposal, and related topics. This information could be distributed through the media, by local municipalities (via recycling education programs), and at vehicle repair and tire retail outlets (where consumers are often waiting for a period of time).

Information about the NYS Tire Management Program could be included with vehicle registrations, both at DMV locations and with mail-in registrations. Tire Care Tips, provided by the Scrap Tire Management Council, will be made available to prolong tire life and reduce waste. Information on the Tire

Management Program should also be coordinated through annual Earth Day campaigns and America Recycles Day programs.

2) Education for Scrap Tire Processors and Related Industries:

A series of targeted videos with workbooks should be developed for the scrap tire and related industries. One set of education materials should present a general overview detailing various applications of scrap tires. In addition, several products-specific videos and workbooks should be developed, including, but not limited to manufacturing specifications and processes, and end product uses. Through a series of training sessions this information could be distributed to processors and end-users including roadway construction agencies and businesses, construction engineers and contractors, purchasing agents, municipalities, and the like.

3) Consumer Acceptance:

End-user acceptance is an important determinant of viability of the tire management program, especially in the civil engineering, tire-derived products, crumbles and rubber modified asphalt markets. End-user education can be strengthened by programs like the following: (1) Clearly identifying the target group and their needs. (2) Designing education and demonstration programs to target the "method of learning" most appropriate to the audience. (3) Following up programs to support the acquisition and use of tire derived materials. (4) Understanding any obstacles to change. (5) Working with potential users of scrap tire-derived materials in roadway applications, include but not limited to local Highway Superintendents, NYSDOT and the Thruway Authority, engineering firms, specification services, and public officials. (6) Municipal and private landfills should be educated in the use of shredded tires in landfill applications. (7) Municipalities, schools, colleges, YM/YWCAs, recreation departments, and day care centers should receive information on "crumbles" for use in running tracks, playgrounds, and similar applications.

4) Storage and Safety Issues

Tire fire prevention and management information should include videotapes and literature, which will be distributed to municipal officials, firefighters and regulators, especially in areas in which piles are located.

D. Stockpile Abatement

Phase I: Assessment and Emergency Abatement

As noted earlier, the existence of stockpiles present some very real dangers. Stockpiles were created for several reasons: lack of markets, speculative accumulation, or illegal dumping. Regardless of the reason, market development and expansion of processor capacity could create incentives for individuals and businesses with stockpiles to begin processing them. However, it not realistic to assume that this type of market pull will inspire businesses to clean up all of the stockpiles. For this reason, significant funds are dedicated in Phases I and II to stockpile abatement. The program provides the appropriate regulatory abilities to ensure sites that pose a hazard to public health or the environment are cleaned-up while relying on market mechanisms to ensure it is efficient.

Assessment and Emergency Abatement

Phase I of the stockpile abatement work will focus on cataloging and assessing the hazards posed by current stockpiles. Where stockpiles pose a significant risk, emergency abatement or remediation will bring the stockpile at least up to an acceptable standard for safety. The New York State Department of Environmental Conservation (NYSDEC) will do the primary work. Its work will utilize existing work done by the Department and the Office of the NYS Attorney General.

Hazard Assessment

As an initial step, the NYSDEC would confirm its stockpile assessment. Factors that threaten public safety or threaten the environment would be systematically catalogued. These factors include:

- Potential for fire and accessibility to fire fighting personnel
- Pestilence infestations
- Accessibility to the surrounding public
- Pesticide and toxic waste contamination
- General tire condition (soilage, ease of handling, etc.)
- Proximity to processor and end markets
- Potential impact on surface and groundwater

Based on this assessment the NYSDEC would prioritize the stockpiles for clean up. Any stockpile that met a pre-defined threshold would be immediately cleaned-up through emergency abatement.

NYSDEC would also assess all collectors and processors to determine whether they are in compliance with all of NYSDEC regulations. Those found not to be in compliance would be given the choice to get into compliance (within three months) or submit and institute a closure plan (also beginning immediately). Stockpiles that pose an imminent risk to public health or the environment would be cleaned-up or remediated immediately. Since this aspect of the scrap tire program would have to be entirely funded by program funds, emergency abatement may be limited to the most environmentally compelling situations.

Phase II: Pile Management and Intensive Clean-Up

Stockpile Management and Intensive Clean Up

Continued pile management is an important part of ensuring that the condition of stockpiles does not deteriorate. For this reason, legislation will grant the NYSDEC and the NYS Attorney General's Office significant powers to enforce its guidelines and direct these agencies to implement the program. New powers needed include:

- Independent inspection authority to the New York State Office of Fire Prevention to inspect out of compliance stockpiles.
- Authority to DEC to determine eligibility for tire abatement funding.
- The ability of AG, with or without a referral, to declare a scrap tire stockpile abandoned and in receivership of the State.
- Ability of AG to seize the assets of non-compliant stockpiles so that liens can be placed on all assets.
- Superlien authority to AG for stockpiles that the state cleans up.

Intensive Clean-Up

Once capacity is built up and applications for scrap tires have been expanded the program would intensively fund the clean up of stockpiles. This process will consist of soliciting proposals for the clean up of the identified stockpiles. The specifications for the awarding of the abatement contract cannot restrict the end-market/application to which the tires go. Greater consideration for award of contract should be given to those bids that move the abatement tires to a market, or if not, then to an environmentally sound application, consistent with the State's solid waste management hierarchy.

The NYSDEC, in conjunction with the other, appropriate state agencies, will have to develop criteria to determine ownership and eligibility for stockpile abatement and remediation. There will also be a need to have a means for addressing the "discovery" of previously unknown stockpiles.

The NYSDEC in coordination with the program administrators would determine which stockpiles should be cleaned-up based on its priority assessment in consultation with the Attorney General's Office, to exercise discretion to work with operating facilities to resolve environmental problems during the course of continued operation, including the authority to use program funds to make secured loans in cases where such assistance is needed by good faith operators to implement agreed-upon remediation plans.

Phase III: Continued Stockpile Management and Abatement

Once all abandoned stockpiles have been cleaned up, abatement efforts will be focused on ensuring that current working inventories do not fall out of regulation. This will require enforcement from the NYSDEC and the Attorney General's Office.

E. Administration and Enforcement

Administration

The Roundtable recommends shared responsibility for administration of this program between two agencies: The New York State Department of Environmental Conservation (NYSDEC) for stockpile remediation, abatement and regulatory enforcement and the New York State Department of Economic Development (NYSDED) for market development and education programs.

Scrap Tire Management Board

The Roundtable recommends that the State create a working group to be known as the Scrap Tire Management Board. The NYSDEC is the recommended coordinating agency for the Scrap Tire Management Board (Board). The NYSDDED and other State agencies, including the NYSDEC, the Attorney General's Office, the Department of Health and the Office of General Services should be represented on the Board. Through appointments by the Governor and the leaders of each house of the legislature, Board member representation should also include representatives from each of the following sectors: scrap tire processors; tire manufacturers; municipal solid waste managers and/or recycling coordinators; environmental groups; scrap tire rubber end users and tire retailers.

The Board should serve as a working forum for the exchange of views, concerns and information relating to the implementation and operation of a comprehensive scrap tire management program. The Board should make annual recommendations to the Governor and the legislature concerning particular tire stockpile sites, issues in the reuse, recycling or disposal of scrap tires, incentives for the processing and utilization of scrap tire rubber, and other programs to strengthen end-use markets for scrap tire rubber.

Accountability

The entire scrap tire management program, including the necessity of further collection by Department of Motor Vehicles (DMV) of the Tire Management Fee (refer to section below), shall be reviewed once every three years. This assessment of the program will be done to review the activities and determine whether the goals, as stated, have been obtained or are proceeding according to the planned schedule. One of the responsibilities of the Advisory Board should be to devise key indicators that would clearly determine whether the programs, as designed and implemented, are achieving their goals. If upon such review it is determined that the goals are not being achieved or that the time frames for achieving these goals are not being reasonable the Advisory Board shall begin to undertake a revision of the program. This revision should reassess the market conditions and the programs of this plan, and make the necessary changes to the manner in which this project is being implemented.

Interagency Coordination

Since the issue of scrap tire management transcends the working responsibilities various State agencies, the consensus position suggests that there be coordination among these various agencies. Therefore, the commissioners of the NYSDEC, Department of Transportation, Department of Motor Vehicles, Attorney General, Department of Economic Development, New York State Energy Research and

Development Authority, Office of General Services designate a representative(s) to attend a quarterly meeting to discuss each respective agencies involvement with and projects concerning the management of scrap tires.

Enforcement

In addition to the provisions of NYSDEC Part 360 and NYSDEC Part 364, the consensus of the Roundtable stakeholders was that certain enforcement, or empowerment, provisions be given to the Attorney General's office and the Office of Fire Prevention and Control. These provisions would enable the appropriate agency representative access to inspect, condemn and/or order the removal of scrap tires from locations that are not in compliance of State regulations or which pose eminent danger to the environment.

In addition to the NYSDEC and local fire chiefs, independent authority should be granted to appointed representatives of the Attorney General's (AG) Office and/or the Office of Fire Prevention Control to inspect scrap tire stockpiles identified as having more than 10,000 scrap tires stored on site.

Grant the NYSDEC and the AG the power to declare a scrap tire stockpile abandoned and therefore under the receivership of the State of New York.

Grant the AG the ability to seize assets from those the owner of the property on which the illegal scrap tire stockpile exists, including, but not limited to all equipment, and to place freezes or liens on any and all bank accounts of that person(s). If the State, on its own initiative, and with its own money, cleans up an illegal/abandoned scrap tire stockpile, grant the State the ability to place a "superlien" on the assets of the owner of that site. This superlien would take precedence over all other liens or judgements outstanding on the property. The State could then seize the property, and offer it for sale, collecting the money from the sale for reimbursement.

Continued Regulation and Enforcement

The NYSDEC is the agency responsible for issuing permits for the collection/transportation, storage and processing of scrap tires. These regulations are found in NYSDEC's Part 360 regulations (for storage and processing), and in NYSDEC Part 364 for collection and transportation. These regulations are among the most comprehensive scrap tire regulations in the nation. It was the consensus position that the NYSDEC should continue to diligently enforce these regulations to all entities that are engaged in any scrap tire related activity. These activities include, but are not limited to: inspecting processing facilities to ensure they are in compliance with their operational permits; continuing collection and maintenance of financial surety; closing facilities that have not completed or did not receive the appropriate permits; and reviewing the records of collectors and transporters of scrap tires.

III. Funding and Expenditures

A. Sources of Revenue

B. Expenditures

A. Sources of Revenue

Tire Management Fee (DMV Registration Fee)

In Fiscal Year 2001, there will be approximately 8.6 million 4-wheel vehicle equivalents that biannually register with the Department of Motor Vehicles, approximately 1.2 million trucks, approximately 360,000 tractors (multi-wheeler) and 180,000 motorcycles. The Roundtable recommends that a fifty-cent per tire registration fee be added to vehicle registrations and a one dollar fifty cents annual registration fee for truck tires with a diameter larger than 25 inches. This fee assessment should raise approximately \$19.7 million dollars, and would be used for market development, stockpile abatement education programs and program administration.. This scrap tire management fee and the revenue it raises should be referred to as the Scrap Tire Fund. This fund will enable the State to efficiently address the scrap tire situation and creates jobs. It is the intent that as stockpiles have been abated and viable markets developed, the fee would be reduced and eventually discontinued.

The revenues obtained would be designated to a special scrap tire fund, as in the Environmental Protection Fund. These funds, placed into a fund that would be a dedicated account, used exclusively for scrap tire related programs and projects. Any interest earned from this fund would also be used for scrap tire related issues. However, revenues raised from existing scrap tire related programs (i.e., permit application fees, fines, hauler license fees, etc.) would continue to go to the agency (ies) to which they are currently destined. The fund will be self-funding and is specifically designed to pay for any costs (administrative or programmatic) incurred by any State agency that carries out duties directly related to the scrap tire situation New York.

The assessment of the fee would equate to one dollar per year for the average passenger vehicle owner. It is anticipated that the need for these funds should diminish over time as stockpiles are cleaned up and markets increase. Environmental and economic benefits will accrue to the State as a result of the developed market infrastructure.

After reviewing the experiences from other states, the consensus was to assess the fee at the time of registration. In this means of fee collection, there is reduced likelihood of error, oversight or emission. Accordingly, the State will receive the entirety of the fees that are generated. Since the fee assessment and transference of the fees are to be done by the Department of Motor Vehicles (DMV), the DMV shall be reimbursed for their costs. The reimbursement to the DMV should be taken from the Scrap Tire Fund. The fees collected through the DMV shall be the only fees collected by the State for the purpose of developing a comprehensive scrap tire management program. Retail vendors of tires should not be restricted from charging for the cost of removing scrap tires from their premise. However, this charge shall not be referred to, or implied as, a State mandated fee.

B. Expenditures

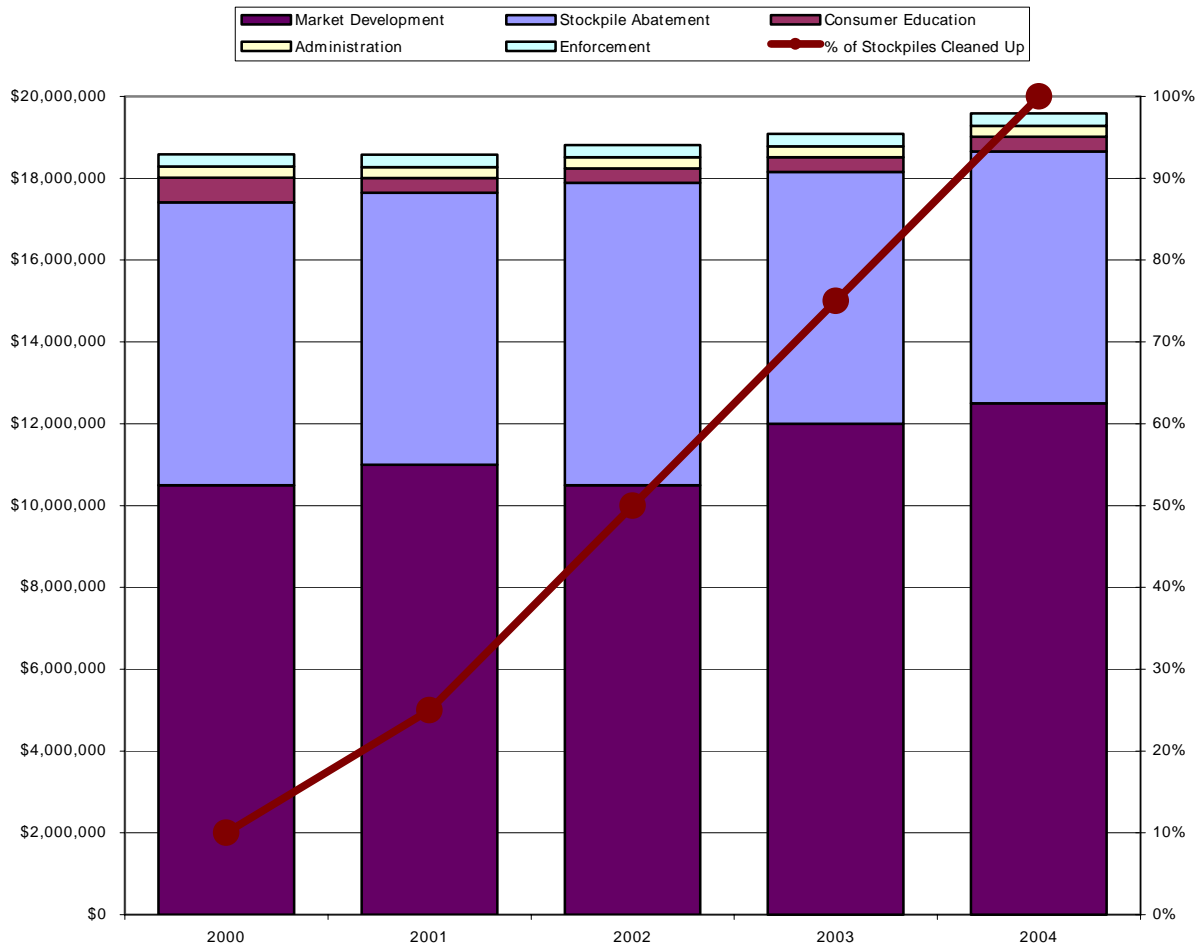
The funds would be distributed to the State agencies responsible for the tasks prescribed herein. To whatever extent possible, the agency in question should first seek to use existing (non-financial) resources to accomplish the tasks set forth. Where and when ever necessary, additional staff should be added for the specific tasks described herein. Cost associated with the additional staff would be compensated from the scrap tire fund.

Examples of how the monies in the scrap tire fund would be used include, but are not limited to:

- (1) Payment for abatement of stockpiles. Abatement projects would be “bid” out to the public. Qualified contractors would submit proposals that would detail the destination of the stockpiled tires, the time they would take to abate the pile and the cost. Contracts would be awarded on the basis of cost, time and ability of the contractor to accomplish the project.
- (2) Funds could be used to remediate a stockpile. Herein, the NYSDEC, in conjunction with the appropriate fire authority would cause to effect actions that would reduce the likelihood or severity of a tire fire at an existing, non-permitted (abandoned) scrap tire stockpile.
- (3) Funds would be used to offset the cost of researching the incorporation of ground rubber into new products (i.e., rubber-modified asphalt or new products). Where and when possible, regionally oriented projects would be encouraged.
- (4) Funds could be used to develop training/education courses or seminars on issues that would assist in furthering develop markets for scrap tires, business practices for scrap tire processors and/or end users of scrap tire-derived materials.

C. Projected Tire Management Budget

Tire Management Budget



(000)	Phase I		Phase II		Phase III	
Market Development	55%	\$10,835	35%	\$6,895	75%	\$14,775
Stockpile Abatement	30%	\$5,910	50%	\$9,850	10%	\$1,900
Consumer Education	5%	\$975	5%	\$975	5%	\$975
Enforcement	5%	\$975	5%	\$975	5%	\$975
Administration	5%	\$975	5%	\$975	5%	\$975
Total	100%	\$19,700	100%	\$19,700	100%	\$19,700