

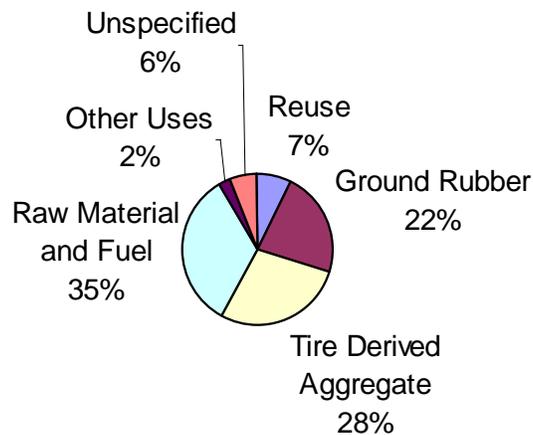
Final Report

# Analysis of New York Scrap Tire Markets: 2006 Update

Prepared for:  
New York State Department of Economic Development

## End-Uses for New York State Scrap Tires in 2004

Annual Generation = 206,617 tons (20.7 million tires)



2006





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# Section 1

## INTRODUCTION

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This report provides a snapshot of markets for scrap tires generated in New York State during the study year 2004, and discusses trends during 2005 and 2006. Covered in the report are the over 20 million scrap tires<sup>1</sup> generated in New York annually, as well as progress towards abating the over 29 million tires estimated in 2004 to be stored in noncompliant waste tire stockpiles.

Scrap tires are a potentially valuable product that can serve as raw material for reuse and recycling businesses, provide a low cost fuel alternative to manufacturers and utilities, and provide other beneficial uses. Although the economic value of scrap tires is generally low relative to processing and transportation costs, scrap tire markets are currently expanding and diversifying in New York and throughout the Northeast. In contrast to recycling, disposing tires wastes their value and presents important environmental challenges. Stockpiled tires, in particular, present a substantial environmental and public health hazard. They are a persistent breeding ground for mosquitoes and rodents, and can fuel dangerous and difficult-to-extinguish fires. Tire fires can result in contamination of surrounding surface and ground water; and air contamination from tire fires can be widespread, substantially affecting human and environmental health as well as commercial activities.

The State of New York is aggressively working to strengthen scrap tire markets and to clean up noncompliant waste tire stockpiles. The New York Waste Tire Management and Recycling Act of 2003 instituted a \$2.50 fee on each new tire purchased, to be placed in a Waste Tire Management and Recycling Fund. The Act requires the New York State Department of Environmental Conservation (DEC) to work in concert with the Department of Transportation (DOT) and other agencies in the abatement and beneficial reuse of non-compliant waste<sup>2</sup> tire stockpiles. Also, the Act requires the New York State Department of Economic Development (DED) to prepare an annual analysis of scrap tire markets and to implement a comprehensive program to expand markets in support of the following priorities:

1. Reduce the number of waste tires generated;
2. Remediate waste tire stockpiles in noncompliance;
3. Recycle waste tires into value-added products;
4. Beneficially use waste tires in an environmentally acceptable manner, including the beneficial use in civil engineering applications; and
5. Recover, in an environmentally acceptable manner consistent with the purpose of the Act, energy from waste tires that cannot be economically recycled or otherwise beneficially used.

## Section 1

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To assist DED in complying with these requirements, in fall 2004 DED contracted with R.W. Beck, Inc. to prepare a comprehensive analysis of New York scrap tire markets, including detailed background information on each market.

This report is the first of three annual updates that R.W. Beck will prepare to update the initial market analysis report. The following sections include: a market synopsis; a summary of markets for annually generated scrap tires in the study year 2004 (along with trends in 2005 and 2006 and a comparison with 2003 findings); a summary of progress towards abating stockpiled waste tires; and overall conclusions. Additionally, the appendix summarizes the methodology used and discusses sources of uncertainty and the degree of confidence in results.

The report is limited to a presentation of aggregated statistics, and to protect confidentiality no company-specific information or data are presented.

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<sup>1</sup> Unless otherwise noted, in this report the term “tire” is equated to a Passenger Tire Equivalent (PTE), which is a common measure of scrap tire quantities. The measure is based on the assumption that one scrap passenger tire weighs 20 pounds.

<sup>2</sup> In this report the terms *waste tire* and *scrap tire* are used synonymously. The Act defines *waste tire* as “any solid waste which consists of whole tires or portions of tires [including] tire casings separated for retreading and tires with sufficient tread for resale...”

## Section 2

# NEW YORK SCRAP TIRE MARKET SYNOPSIS

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In 2004, R.W. Beck estimates that approximately 206,617 tons of scrap tires (20.7 million PTE) were generated in New York State. As Figure 2-1 shows, about 94 percent (194,051 tons or 19.4 million PTE) of this total flowed to an end use market, either in or out of state, for reuse, recycling, energy recovery or other beneficial use. The fate of the remaining 6.1 percent was not able to be documented in this study.

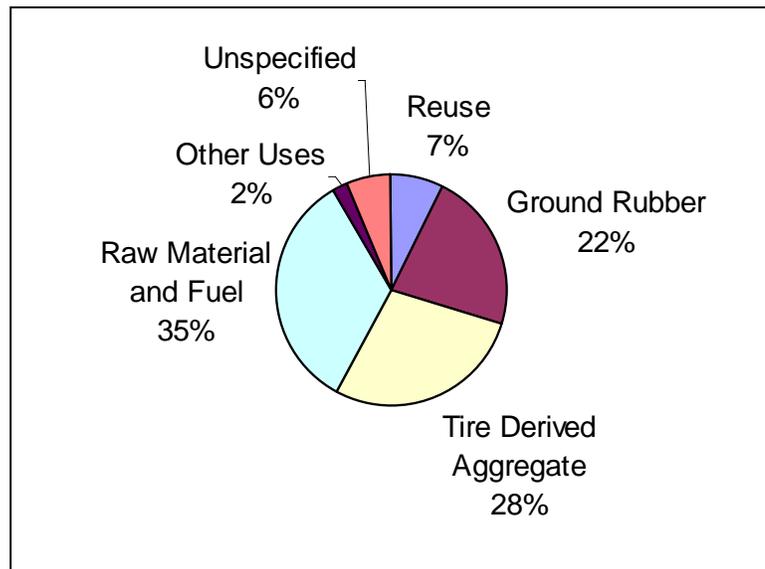


Figure 2-1: End-Uses for Annually Generated New York State Scrap Tires in 2004 - Annual Generation = 206,617 tons (20.7 million tires)

The New York scrap tire market is continuing a period of transition that began in 2003, with in-state demand growing and diversifying steadily. Throughout the 1990s, New York scrap tire demand was limited to traditional retread and reuse markets, along with a fledgling ground rubber production industry. However, as shown in Table 2-1, in 2004 in-state demand for scrap tires and intermediate products reached at least 141,215 tons (14.1 million PTE or 68.3 percent of total generation). This includes:

- 15,441 tons (1.5 million PTE) sent to New York retreaders and reused tire distribution firms;
- 57,302 tons (5.7 million PTE) used as tire derived aggregate in engineering applications (almost exclusively at New York landfills);
- 5,347 tons (0.5 million PTE) used as raw material by a New York steel manufacturer;

## Section 2

- 19,908 tons (1.9 million PTE) used at New York utilities as fuel for electricity generation; and
- 468 tons (0.05 million PTE) burned at New York Waste-to-Energy Facilities.

In addition, New York-based ground rubber producers report using approximately 41,604 tons (4.1 million PTE), the bulk of which was used to produce product in the sports surfacing and horticultural market, such as mulch, playground material and sports turf products. Ground rubber products produced in New York were shipped to a wide range of customers and value-added manufacturing markets, largely outside New York State. At the collection end, some market participants interviewed reported a trend of smaller tire “jockeys” and resellers dropping out of the market, due to rising fuel and insurance costs, and increasing competition from larger processors who are increasingly dealing directly with tire generators. As market demand increases for scrap tires, this trend may ultimately help to fuel a consolidation wave in which only the most efficient and profitable tire recyclers survive, as scrap tire supplies become increasingly scarce.

Table 2-1  
In-State Uses for New York Generated Scrap Tires (2004)

Market Category	2004 Total Documented Uses of NY Scrap Tires (Tons)	Amount of Total use that Occurred in NY State (Tons)	Activities Occurring In-State	Percent of Total Use that Occurred in NY State
Reuse	15,441	15,441	Sorted for Reuse at NY Facilities	100%
Ground Rubber	46,485	41,604	Ground Rubber Produced or Consumed in NY <sup>3</sup>	89.5%
Tire Derived Aggregate	57,302	57,302	TDA Used in NY	100%
Raw Material and Fuel	70,084	25,623	Tires Consumed in NY	36.6%
Other Recycling	4,738	1,245	Products Produced in NY	26.3%
Other Unspecified	12,566	N/A	N/A	N/A
Total	206,617	141,215	N/A	68.3%

Source: R.W. Beck, Inc.

This market expansion and diversification trend may be intensifying. In 2005 one additional ground rubber producer began operations, and another is actively investigating start-up for 2006. One cement producer and one pulp producer are actively seeking permit approvals that could significantly boost in-state scrap tire demand in raw material and fuel uses. Several additional, innovative ventures are under development that could further enhance value-added demand for scrap tires within New York State. Demand for tire-derived aggregate (TDA) in septic and road

construction applications (in addition to already substantial landfill applications) has the potential to increase, although such growth (for annually generated tires, as opposed to stockpiled tires) is probably still a few years off. Use of ground rubber in asphalt products in New York remains elusive and will likely require several more years of research and development.

Use of tires abated from noncompliant waste tire stockpiles was just getting underway in study year 2004. The DOT used 8,568 tons from Cycletech in a road construction project and 4,721 tons from Cycletech and Tire Recycling, Inc. were used as part of landfill construction. However, by early 2006 over 4.7 million tires (47,000 tons) had been processed to DOT specification and/or used in DOT road projects or other beneficial uses, marking significant progress towards cleanup of the estimated 29 million tires in stockpiles.

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<sup>3</sup> This is the amount of ground rubber produced in New York State. Most ground rubber produced in New York State is sold in other states.



## Section 3

# ANNUALLY GENERATED SCRAP TIRES

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Table 3-1 details the end uses to which annually generated New York scrap tires flowed in 2004, along with key trends. Accurately estimating scrap tire supply and demand is complicated by numerous sources of uncertainty, including the need to deal with incomplete, inconsistent, inaccurate, and sometimes conflicting data and information. Because overcoming these data barriers is time consuming and challenging, these supply and demand estimates should be viewed as the best available approximations. R.W. Beck will continue to seek to refine these estimates in the annual updates to be prepared under contract to DED through 2008. (See the appendix for additional discussion of methodology and sources of uncertainty.)

## Reuse

Reuse markets include retreading and remanufacturing, and the use of partially worn tires domestically or internationally. R.W. Beck estimates that reuse accounted for about 7.5 percent of New York's annually generated scrap tires in 2004 (15,441 tons or 1.5 million PTE), with the majority of reuse comprising reuse of partially worn tires, mainly via exports to other countries.

Although a relatively high value end-use, reuse as a percentage of overall scrap tire supply consumed is expected to remain relatively flat in coming years. Retreading is now largely limited to truck and industrial tires. Most analysts agree that retreading of passenger tires has essentially collapsed and remaining growth opportunities related to truck tires appear limited. While reuse of partially worn tires may have some room for growth, given sustained demand in some developing countries, the ability of New York processors to increase the number of tires sorted, graded and exported into these markets is not expected to increase. Barriers include the need for specialized knowledge and skilled laborers, and market relationships and savvy required to access international markets. Domestic reuse markets are hampered by relatively low cost new tires and concerns regarding safety and liability. Furthermore, as small tire jockeys and resellers exit the market, larger processors with commitments to supply ground rubber, TDF and other domestic markets for processed tires may have less of an incentive to tap reuse markets. Notwithstanding these barriers, at least one emerging New York market for remanufacturing certain types of scrap tires is under development and could boost reuse somewhat in coming years.

### Section 3

**Table 3-1  
2004 Markets for NY Scrap Tires and Key Trends**

Market Category	Submarket	2004 Use of NY Scrap Tires (Tons)	2004 Use of NY Scrap Tires (PTEs)	Percent of Total	Projected Key Trends Through 2006
Reuse	Partially Worn Reuse	13,157	1,315,650	6.4%	Expected to remain stable.
	Retread and Remanufactured	2,284	228,443	1.1%	Some growth potential in remanufactured tires.
	<b>Subtotal – Reuse</b>	<b>15,441</b>	<b>1,544,093</b>	<b>7.5%</b>	
Ground Rubber	Roads	4,969	496,944	2.4%	No significant NY uses yet. Until NY uses increase, amount likely to decline and remain negligible.
	New Tires	1,886	188,611	0.9%	Likely to remain negligible. No NY suppliers to new tire industry.
	Athletic Surfacing and Horticultural	34,469	3,446,906	16.7%	Sustained growth likely. Continued competitive pressures.
	Molded Products	2,779	277,879	1.3%	Likely to remain stable with moderate growth potential.
	Rubber-Plastic Compounds	0	0	0.0%	Potential for growth. Will likely remain negligible in near term.
	Misc. Ground Rubber	2,382	238,196	1.2%	Most of this likely is being sold into sports surfacing and horticultural market, but could not be documented.
	<b>Subtotal - Ground Rubber</b>	<b>46,485</b>	<b>4,648,537</b>	<b>22.5%</b>	

## ANNUALLY GENERATED SCRAP TIRES

Market Category	Submarket	2004 Use of NY Scrap Tires (Tons)	2004 Use of NY Scrap Tires (PTEs)	Percent of Total	Projected Key Trends Through 2006
<b>Tire Derived Aggregate</b>	Roads	754	75,413	0.4%	Use of annually generated scrap tires (as opposed to stockpiled waste tires) likely to remain negligible.
	Landfill	55,623	5,562,322	26.9%	Will remain stable, and a major use of NY generated tires.
	Septic	925	92,453	0.4%	Modest growth potential depends on regulatory hurdles being overcome.
	<b>Subtotal - Aggregate</b>	<b>57,302</b>	<b>5,730,188</b>	<b>27.7%</b>	
<b>Raw Material and Fuel</b>	Manufacturing Raw Material (Steel)	5,347	534,700	2.6%	Likely to remain stable.
	Manufacturing Fuel (Cement and Pulp)	1,349	134,900	0.7%	Potential for very significant use. Permits pending at two large facilities.
	Electricity Generation Fuel	63,388	6,338,841	30.7%	Likely to remain stable. Use may decline eventually due to competition from higher value markets.
	<b>Subtotal - Raw Material and Fuel</b>	<b>70,084</b>	<b>7,008,441</b>	<b>33.9%</b>	
<b>Other Recycling</b>		4,738	473,800	2.3%	Will remain stable with modest growth potential.
<b>Other Unspecified</b>		12,566	1,256,600	6.1%	
<b>Total</b>		<b>206,617</b>	<b>20,661,659</b>	<b>100%</b>	

Source: R.W. Beck, Inc.

### Ground Rubber

Ground rubber markets (See Table 2) accounted for about 22.5 percent of New York's annually generated scrap tires in 2004 (46,485 tons or 4.7 million PTE). In 2004, New York scrap tires were shipped to three in-state as well as several out-of-state ground rubber producers located in Massachusetts, Pennsylvania, New Jersey, and Quebec. Additionally, one New York firm deals exclusively with buffings from retread operations. These ground rubber producers sold their products to a wide range of customers, both inside and outside New York, including: molded product producers, schools, sports stadiums, landscape firms, road construction firms and new tire manufacturers.

Ground rubber markets continue to go through a period of intense consolidation, expansion and vertical integration. Since 2004, one producer has changed ownership, one new producer has started up and one additional established producer is actively investigating establishing a New York facility. Technologies and production practices are becoming increasingly efficient and could result in the closure of additional production facilities nationwide in coming years. Growth in some relatively high-value markets, such as rubberized asphalt and rubber-plastic compounds, remains elusive. Growth in ground rubber production is largely centered on the mulch products, playground materials, and sports fields markets.

### Tire-Derived Aggregate

Tire-derived aggregate (TDA) markets accounted for nearly 28 percent of New York's annually generated scrap tires (57,302 tons or 5.7 million PTE). This was the second largest market niche, and was dominated by TDA engineering applications at a single New York landfill that is expected to continue its high volume use through 2006. There was virtually no flow of annually generated scrap tires to the other two TDA markets (roads and septic applications) in 2004. However, in 2005 stockpiled tires from the abatement of noncompliant waste tire stockpiles began to flow to several identified Department of Transportation (DOT) and New York State Thruway road construction projects. (See discussion of stockpiled tire market disposition below.)

Furthermore, the NYS Department of Health (DOH) is revising its regulations to allow the use of TDA in septic system leachfields. DED has been working with DOH and the DEC to promote this use. DED is funding technical and economic research and promotion of TDA septic system applications. DED is actively pursuing investment opportunities for other TDA applications. The potential for growth in this market has yet to be determined, but success in some other states (albeit with a different competing aggregate market structure) indicates there may be strong potential.

### Raw Materials and Fuels

Raw material and fuel markets accounted for nearly 34 percent of New York's annually generated scrap tires (70,084 tons or 7.1 million PTE), the single largest market niche for New York generated tires. Of this amount, approximately 5,347 tons

(0.5 million PTE) were used at a value-added manufacturing facility for which scrap tires provide a raw material source. About 1,349 tons (0.1 million PTE) were used as fuel and raw material by cement kilns in Pennsylvania. This use could grow substantially in the future, as two New York facilities (one cement kiln and one pulp mill) are actively seeking permit approval to consume scrap tires in very significant quantities. Approximately 63,388 tons (6.3 million PTE) were used as fuel to generate electricity, with about 19,908 tons (1.9 million PTE) of this amount used at New York power generation facilities, an amount that could grow in the future. An estimated 468 tons were consumed at New York waste-to-energy facilities, and the remainder (about 43,012 tons or 4.3 million PTE) was consumed at out-of-state energy generation facilities – primarily the Exeter tire-derived-fuel facility in Sterling, CT.

### Other Recycling Uses

Other scrap tire recycling uses accounted for less than three percent of New York's annually generated scrap tires in 2004. They include a wide range of projects involving whole, baled, and cut scrap tires. Some of these uses (such as production of cut, punched, and stamped products, production of rubber highway safety cones, or use of tire strips in railroad ties) are value added markets that could potentially grow modestly in coming years.

Many other low or no-value uses are dependent on sponsorship (e.g., by local government agencies) and are not expected to grow. The portion of overall flow moving to these uses is expected to remain low in the foreseeable future.

### Comparison of 2004 and 2003 Findings

Table 3-2 compares findings for 2004 New York annually generated scrap tire markets with 2003 findings. While some trends are evident, several of the changes in reported usage can be attributed to improved data collection and analysis methods (discussed in detail in the appendix). Most importantly, compared to last year's analysis, this year's report:

- Defined market categories consistently throughout all interactions with market players. (Last year the categories were defined after discussions with some players were complete.)
- Is based on a more accurate estimate of the percentage of throughput handled by each facility that was generated in New York.
- Applies lessons learned in the 2003 study to more accurately and systematically target respondents, and consequently reduce the “unspecified” percentage of total flow from 25 percent to nearly 6 percent.

Table 3-2  
Comparison of 2003 and 2004 New York Scrap Tire Markets

Market Category	2003 Use of NY Scrap Tires (Tons)	2003 Percent of Total	2004 Use of NY Scrap Tires (Tons)	2004 Percent of Total
Reuse	8,140	3.9%	15,441	7.5%
Ground Rubber	23,938	11.5%	46,485	22.5%
Tire Derived Aggregate	67,883	32.5%	57,302	27.7%
Raw Material and Fuel	56,476	27.1%	70,084	33.9%
Other Recycling	975	0.5%	4,738	2.3%
Other Unspecified	52,143	25.0%	12,566	6.1%
<b>Total</b>	<b>208,580</b>	<b>100%</b>	<b>206,617</b>	<b>100%</b>

Source: R.W. Beck, Inc.

Following are some key points of comparison regarding 2003 and 2004 findings, summarized in Table 3-2:

- Total scrap tire generation in 2004 is slightly less than reported in 2003. This difference can be attributed to uncertainties involved with data analysis (see “Potential Sources of Error” in Section 6), and does not necessarily represent a reduction in total generation.
- The 2004 reuse, while significantly higher than the 2003 estimate, does not necessarily indicate an increase over the 2003 reported level. Rather, this difference is due to more accurate reporting of partially worn tire reuse in the 2004 study.
- The increase in ground rubber markets reflects substantial growth in production as reported by respondents. This growth is largely in the mulch, playground and sports field product categories. Amounts reported by producers were not verified by independent third parties. See discussion of sources of uncertainty in the appendix.
- The decrease in TDA use reflects reported usage by respondents. Estimates for both 2003 and 2004 are particularly sensitive to double counting uncertainties. Consequently the difference in reported usage may in part be real and in part be a by-product of these uncertainties.
- The increase in raw material and fuel use reflects both clear increases in use by two New York facilities in 2004 compared to 2003, as well as more accurate reporting and analysis that captured some flows that were undocumented in 2003.

## Section 4

# STOCKPILED WASTE TIRES

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In late 2004, as required under the Act, DEC prepared a *New York State Waste Tire Stockpile Abatement Plan*. The plan details a partnership among the DEC, DOT, the Thruway Authority, and the Office of General Services (OGS) to implement the DEC's *Plan* in which tires in noncompliant waste tire stockpiles in New York will be used in civil engineering highway projects, with all noncompliant stockpiles expected to be abated over the next six years.

Use of tires abated from noncompliant waste tire stockpiles was just getting underway in study year 2004. The DOT used 8,568 tons from Cycletech in a road construction project and 4,721 tons from Cycletech and Tire Recycling, Inc. were used as part of landfill construction. Other local efforts continued. Chautauqua County, for example, baled tires from local stockpiles (as well as some annually generated tires) for use in road construction. Additionally, Seneca Meadows, which shreds tires and uses tire-derived aggregate in landfill construction, reported that they received some stockpiled tires from small New York remediation projects.

In contrast to 2004, in 2005 the State made significant progress in waste tire stockpile abatement activities. Work at nine of the ten highest priority sites resulted in the processing and/or reuse of approximately 4.7 million waste tires (47,000 tons). Table 4-1 summarizes the status of efforts at each of these largest sites. Waste tires from stockpile clean up efforts are generally being processed to meet DOT shred specifications and used in DOT road construction projects as conventional fill. Additionally, some tires are being beneficially used as landfill cover, or in landfill engineering applications involving leachate and gas management.

## Section 4

**Table 4-1**  
**Status of Largest 10 NYS Noncompliant Waste Tire Stockpile Abatement Efforts (as of February 2006)**

Site	Location	Priority Score	Original Estimate of Number of Tires (millions)	Status
Fortino Site	West Monroe, NY	10	10.0	Contract abatement work ongoing.
Mohawk Tire Recycling	Waterford, NY	9	8.0	Contract development proceeding.
New York Tire/Izzo	Smithtown, NY	9	2.0	No current activity.
Cycletech	Hudson, NY	8	1.2	Complete. Approx. 2.3 million tires processed. 1.1 million were used in one DOT project (I-87 bridge replacement) and 1.2 million went to landfill construction beneficial use.
Clarence Auto Parts	Newstead, NY	8	0.65	Proceeding. About 396,400 tires processed to meet DOT specifications of which 96,400 were used by DOT. An additional 29,000 tires were beneficially used. The remaining tires are still awaiting use.
Hornburg Tire	Sinclairville, NY	7	3.5	Over 50% complete. Over 1 million tires processed to meet DOT specifications and 0.5 million additional tires used in beneficial uses.
Hutchings Automotive	Plymouth, NY	6	0.8	Proceeding. About 98,100 tires processed to meet DOT specifications, and 31,400 additional tires used in beneficial uses.
Southern Tier Tire	Persia, NY	6	0.35	Complete. Approx. 200,000 tires processed to meet DOT specifications and 21,900 additional tires used in beneficial uses.
Tire Recycling, Inc.	Saugerties, NY	5	0.3	Ongoing. About 196,000 tires processed to meet DOT specifications.
U Save Tire Company	Plattsburgh, NY	4	0.2	Proceeding independently by private sector.
<b>TOTAL</b>			<b>27.03</b>	

## Section 5 CONCLUSIONS

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Given the continuing growth and diversification of New York scrap tire markets, as well as the funding and mandate provided by the Act, the New York State Department of Economic Development (“DED”) is well positioned to continue to successfully execute its legislative mandate to strengthen New York scrap tire markets by increasing the value of, and demand for, New York generated scrap tires. DED has used Scrap Tire Management Funds to invest in several scrap tire processing and manufacturing ventures that have expanded capacity to produce higher value tire material. In addition, DED has funded research and supported efforts targeting, for example, increased use of scrap tires in engineering applications and in use of rubber in asphalt products. These efforts can be expected to help expand New York’s scrap tire market infrastructure and capacity in future years.

Although growing, New York’s scrap tire market infrastructure continues to suffer from the inherently poor economics of scrap tire processing and transportation.<sup>4</sup> This situation means that the industry will likely remain fragile to a degree, and disruptions such as an oversupply caused by too many producers, or newly-revealed issues that impede a particular market (e.g., cement kilns or playground products) could have a very detrimental impact on the industry. DED’s continued annual market analyses and investments provide useful tools that can be used to both anticipate and respond to any such negative trends, should they occur.

During R.W. Beck’s interviews with New York scrap tire processors and end-users, the following three topics were raised most often:

- ***The challenge of satisfying state regulation and permitting facilities and certain scrap tire uses.*** Over a quarter of respondents made comments related to the perceived challenge of complying with state regulations, or their desire to see regulations streamlined. These comments related to facility siting, operation and/or beneficial use determinations.
- ***The role of the State in expanding markets for tire-derived products.*** Nearly 20 percent of respondents made comments to the effect that the state’s highest market development priority should be expanding markets for tire-derived products. Some distinguished this from state support for production of tire-derived products, expressing concern about potentially creating an oversupply situation, and/or providing assistance that gives particular producers a competitive advantage. Such concerns are addressed by DED grant guidelines which allow all producers to seek assistance equally. Examples of market-side efforts include joint marketing, promoting product benefits to targeted customers and other public-private partnerships that aim to benefit the industry as a whole.

## Section 4

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- *The regional nature of scrap tire markets.* About 10 percent of respondents stated that, because scrap tire markets operate on a regional as opposed to state-by-state basis, market analyses and market development initiatives should be conducted on a multi-state basis to be as useful and effective as possible.

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<sup>4</sup> There is anecdotal evidence that overall, the average value of New York generated scrap tires may be increasing as production of new, value-added uses increase. However, quantification of this trend was beyond the scope of this report.

# Appendix

## METHODOLOGY AND SOURCES OF UNCERTAINTY

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### Methodology

R.W. Beck undertook the following steps to estimate the supply and demand of New York generated scrap tires in 2004:

1. Obtained and compiled data from Part 364 waste transporter annual reports from the Department of Environmental Conservation (DEC) for calendar year 2004. Each form shows the waste transporter, amount shipped, and “disposal facility” (often a recycling facility). These data were entered in to an Excel spreadsheet and sorted separately by transporter and by disposal facility. Although required, only about 48 percent of the transporter reports included a destination – a data gap that greatly complicated the analysis. Beginning September of 2005, revisions to the 364 program were made that will enhance the tracking of all regulated waste, including waste tires, to destination facilities. The more complete data will first become evident on a full year basis with the 2006 annual report data which will be available at the end of 2007.
2. A survey form was mailed to 141 firms identified as having some involvement with New York scrap tire management. Of these, 41 firms were targeted for follow-up by phone, due to their large operations or other factors of interest. From these efforts, responses from 30 firms were received, including all the New York facilities identified as top priorities to the effort.
3. Data were obtained from the Connecticut Department of Environmental Protection providing estimates of New York generated scrap tires managed by two large Connecticut processors, and the amount flowing to a large tire-derived-fuel facility in Connecticut.
4. New York State representatives at DED and DEC were interviewed to obtain additional information on stockpiled tire management, Beneficial Use Determinations (BUDs), market trends and state activities.
5. A spreadsheet was developed listing separately suppliers and end-users of scrap tires, defined strictly according to the system used throughout this report. Each identified facility for which flow data were available was assigned either as supply, demand, or both (if they both supply material and use on site). Suppliers include any facility producing a whole tire, tire shred or chip, or ground rubber for sale directly to an end-use market, or that engaged in end-use activities on site.

6. Suppliers and end use facilities were scrutinized in an effort to eliminate double-counting, and to list only those suppliers shipping directly to an end-use market.

### Potential Sources of Error

Following are the major potential sources of error in this analysis, and the steps R.W. Beck took in an attempt to reduce error:

- The potential exists to double-count tires flowing between New York facilities. R.W. Beck worked to mitigate this impact by cross checking flows wherever possible using information obtained from interviews. This factor may result in an overestimate of some categories such as TDA use at landfills.
- Throughput to retreaders was estimated based on shipments from major processors. It is possible that some quantities of scrap tires flowing to these facilities were not counted. This factor may cause R.W. Beck's estimate of total flow to be under estimated somewhat.
- Waste transporter data only listed destinations for about 48 percent of records. This eliminated a potentially valuable source of information. Nevertheless, these data were useful in verifying flows in some cases.
- New York State law exempts waste transporters hauling less than 500 pounds (25 passenger tires) of non-hazardous waste in any single shipment from having to be permitted. Additionally, those transporting via rail, water, and air are exempt from waste transporter permitting. Although R.W. Beck does not believe these exemptions are a large source of error, it is impossible to document this with certainty.
- The potential exists for waste transporters, located both in-state and out-of-state, to not obtain a permit. According to ECL 27-0303, Chapter 226, "Waste Tires shall mean waste tires transported for a fee for the purpose of reuse, recycling or disposal, except those tires collected and transported incidental to the collection and transportation of solid waste." Some haulers have indicated that they are not transporting for a fee, therefore they do not have to be permitted. The extent to which this is occurring, or what impact this would have on overall market numbers is unknown.
- Some waste transporters/processors receive stockpiled tires from smaller, locally-managed cleanup projects. R.W. Beck attempted to identify the number of stockpiled tires received vs. annually generated through the interview process; however some respondents did not know the portion, and some smaller entities were not interviewed.
- It is impossible to know the final disposition of some tires. Some resellers, for example, indicate that a portion of their tires go to Canada, but they can only speculate what is done with them there. Similarly, some respondents were unwilling or unable to share information regarding final disposition, and not every processor and producer in the State was interviewed.

- In some cases, waste transporter data may be reported incorrectly due to waste transporter errors in completing the form, or data entry errors by DEC or R.W. Beck staff.

## Recommendations to Improve Future Analyses

Despite the above data limitations and other sources of error, R.W. Beck believes these supply and demand estimates are the best available covering New York, and the best possible, given the study's available time and resources. R.W. Beck believes that they accurately indicate the relative flow of scrap tires in 2004 to broad market categories. However, the breakdown of flows to narrow sub-markets within broad market categories may be less accurate. R.W. Beck will continue to seek to refine these estimates in future annual updates.

Following are some recommendations that would improve future New York scrap tire market analyses:

- Increasing the percentage of DEC transporter forms that include destinations, as currently required, would greatly facilitate the analysis by providing an additional source of information to identify large handlers, verify survey responses and/or allow for estimates of flows where responses are not provided.
- DEC transporter forms could be adjusted to also require the source of the shipments and/or the percentage of the shipment that are New York generated tires.
- Reports could break out the "sports surfacing and horticultural" ground rubber submarket into two or more categories, to provide more detailed information on this increasingly dominant ground rubber submarket.
- Reports could be conducted on a regional, multi-state basis to reduce the challenge of identifying sources from particular states. Such an approach could still provide estimated state-specific statistics, but would also provide a more realistic reflection of the market place, which operates on a regional basis. One challenge would be the need to coordinate funding and oversight from multiple states simultaneously.

As noted previously, beginning September of 2005, the DEC made revisions to the 364 program that will enhance the tracking of all regulated waste, including waste tires, to destination facilities. The more complete data will first become evident on a full year basis with the 2006 annual report data which will be available at the end of 2007.