WASTE TIRE Program

Annual Report to the General Assembly

CY 2015

COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
WASTE.KY.GOV

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EEC Mandate

This report has been prepared as required by KRS 224.50-872. The purpose of the report is to provide information related to the commonwealth's waste tire program. Specifically, the report includes information related to the expenditures and revenues, the effectiveness in developing markets, the effectiveness of the fee in funding the cabinet's implementation of the waste tire program, and recommendations for improvement.

> *KRS 224.50-872 "The cabinet shall report to the General Assembly no later than January 15 each year on the effectiveness of the waste tire program in developing markets for waste tires, the amount of revenue generated and the effectiveness of the fee established in KRS 224.50-868 in funding the cabinet's implementation of the waste tire program, to include any waste tire amnesty program established by the cabinet as provided for in KRS 224.50-880(1)(b), whether the fee should be extended, comparative data on the number of waste tires generated each year, the number disposed of, the number of orphan tire piles, and the cost of tire disposal by counties in the Commonwealth."*

HISTORY & PURPOSE OF THE FUND

In 1990, the General Assembly passed House Bill 32 creating the waste tire control program and establishing the Waste Tire Trust Fund (WTTF) to eliminate existing and prevent future waste tire piles. The original program imposed a $1.00 fee on retailers of new motor vehicle tires sold in Kentucky, created requirements for tire accumulation and storage, and resulted in the removal of many tires from the environment. However, hundreds of thousands of tires continued to be stockpiled in anticipation that waste tire markets would develop in the future. In 1994, the General Assembly extended the program an additional four years and added a prohibition on open burning of waste tires.

Off-Site Tire Pile in Estill County, KY – Cleanup of this site (Johnny Riddle Property) began in December 2015 and is currently ongoing. An access road is being constructed to gain access to the tires. Due to the location of this site, estimation of the number of tires has been difficult. Photo by Richard Thomas.

In 1998, the General Assembly repealed the then-existing waste tire control program and created a brand new program with a new approach. The revised statute retained the $1.00 fee collected on new motor vehicle tires, the Waste Tire Trust Fund, and registration requirements

for accumulators of waste tires. New additions to the waste tire management program included financial assurance requirements for accumulators, processors, and transporters of waste tires, grants for projects that manage waste tires, and reporting requirements for the Energy and Environment Cabinet regarding the effectiveness of the program. The fee is collected from consumers by retailers and paid monthly to the Department of Revenue (DOR). The cabinet uses the fee to implement the waste tire program, including the waste tire amnesties, remediation, and to fund grants that manage and develop markets for waste tires. The program has been successively extended by the General Assembly in 2002, 2006, 2010, 2012, and 2014. It is set to expire on June 30, 2016. A request has been submitted for a four-year extension of the program, set for consideration during the 2016 legislative session.

Off-Site Tire Pile in Estill County, KY – Johnny Riddle Property. Photo by Chris Craig.

During 2011, the legislature passed House Bill 433 establishing the Waste Tire Working Group (WTWG). The purpose of the WTWG is to review numerous aspects of the Kentucky waste tire program and to advise the cabinet on changes that could improve the program.

Currently, the WTWG consists of the following positions:

(1) Mr. Christopher "Kitt" Tuttle, M.S., Environmental Scientist for the Recycling and Local Assistance Branch and Chairman of the Committee;
(2) Mr. Gary Logsdon, Manager, Recycling and Local Assistance Branch;
(3) Mr. Harland Hatter, Deputy Director, Office of Consumer & Environmental Protection in the Department of Agriculture;
(4) Ms. Kelly Chapman, Boone County Solid Waste Coordinator;
(5) Mr. Scott Tussey, Madison County Solid Waste Coordinator;
(6) The Honorable James R. Townsend, Webster County Judge-Executive;
(7) The Honorable Martin L. Voiers, Mayor of Flemingsburg; and
(8) Mr. Joe T. Durkin, Assistant Manager of a Lexington tire retailer.

Off-Site Tire Pile in Metcalf County, KY – Tire pile/Illegal open dump in Metcalf County, KY. An estimated 3,187 tires were removed from the site by Liberty Tire in 2015. Photo by Chris Craig.

The cabinet held two business meetings this year for the WTWG, familiarizing the new members with each other and ongoing waste tire issues. The meetings were held on June 17 and December 15, 2015. Presentations were made on waste tire amnesties and market trends, the waste tire manifest system, the on-going rubber-modified asphalt grant program, visits made by state employees to tire processors and end-users, the state of crumb rubber nationally, and thoughts for improving the waste tire program. A committee was formed to research the regulation of used tires and the waste tire manifest system.

REVENUES

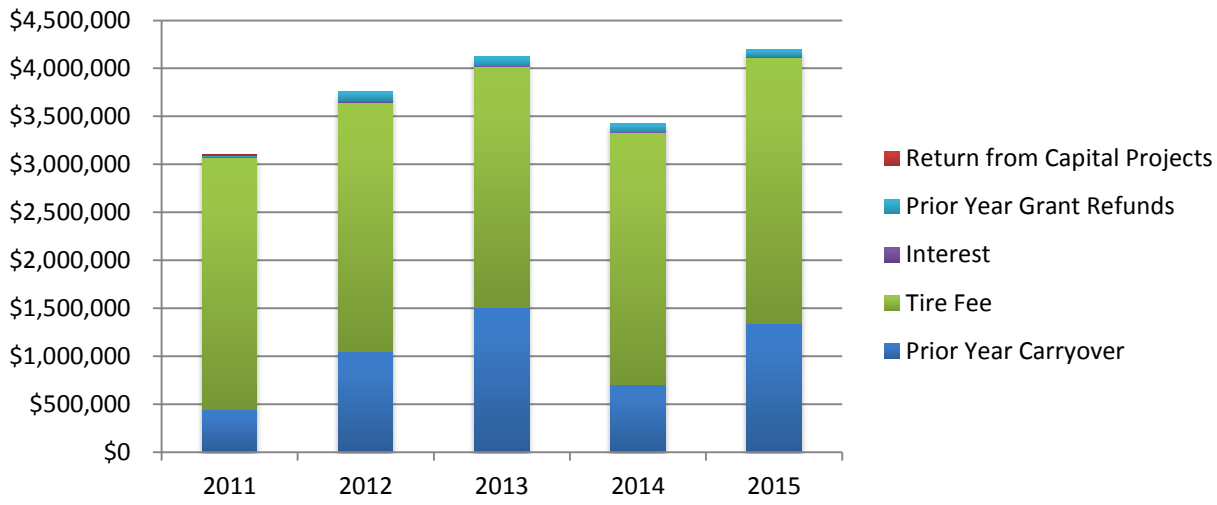
Off-Site Tire Pile in Metcalf County, KY – Tire pile/Illegal open dump in Metcalf County, KY. An estimated 3,187 tires were removed from the site by Liberty Tire in 2015. Photo by Chris Craig.

Kentuckians buy approximately 3,700,000 new replacement tires each year. Subtracting about 6.8% for internet sales, the commonwealth could be collecting about $3.4 M per year.[1] Kentucky is receiving an average of $2.65 million per year, or approximately 75% of the money that could be collected from the new motor vehicle tire fee. Figure 1 depicts tire fee receipts, as well as the other revenue in the WTTF for the last five years.

A number of possible explanations exist to explain why all of the fees are not being collected, including:

- *Not all retailers are collecting and remitting the proper amount of tire fees;*
- *No fee is being paid by trucking companies when purchasing large numbers of tires through fleet sales from wholesalers; and*
- *Department of Revenue (DOR) is paid a flat fee of $50,000 per year instead of a percentage of what they collect, as in some other states, providing inadequate resources and no incentive to pursue non-payers.*

Figure 1: Waste Tire Trust Fund Revenues



Off-Site Tire Pile in Metcalf County, KY – Recycle Assistance Section Supervisor JR Holt inspects tire pile in Gallatin County KY. An estimated 8,683 tires were removed from the site by Liberty Tire in 2015. Photo by Chris Craig.

A second issue involving the DOR includes the handling of the fee paid to revenue for their collection services as an "administrative cost" under the statute. The law requires the WTTF to reimburse DOR for its costs incurred in assessing and collecting fees, not to exceed $50,000 per year. Currently, the payment to DOR is considered to be an administrative cost to the cabinet, and thus a portion of the cabinet's 25% allotted for administration of the program. The statute could specifically exclude DOR's reimbursement from being a portion of the cabinet's administrative costs since this funding is not made available to the cabinet.

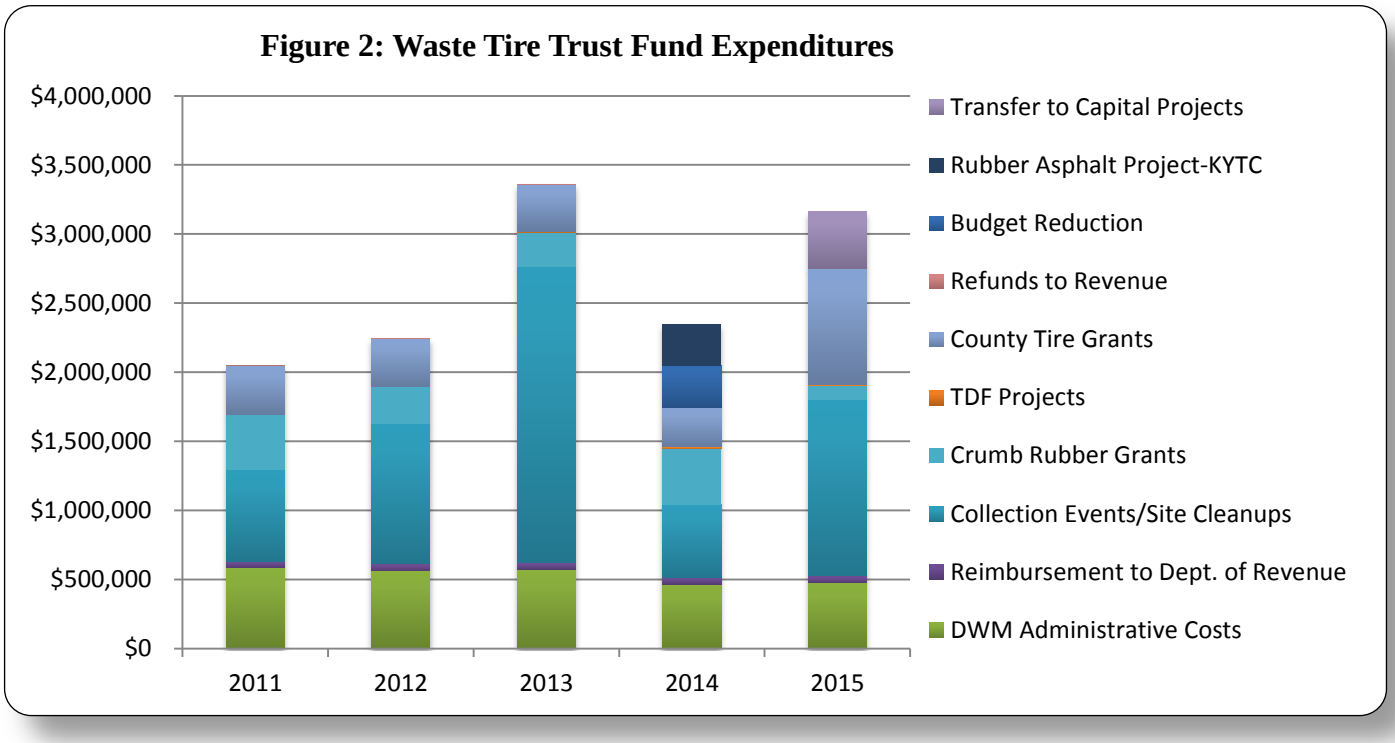
EXPENDITURES

Bourbon County Waste Tire Collection Event (WTCE) – Bourbon County's event was held at the state Department of Highways (DOH) facility in Paris, Kentucky October 1st, 2nd, and 3rd, 2015. A DOH employee and Liberty tire representative stack tires to make room for more of the estimated 21,191 tires collected during the event.
Photo by Chris Craig.

A waste tire is most commonly measured in 20-pound units or Passenger Tire Equivalents (PTEs), which is the approximate average weight of a passenger automotive tire. A light truck tire is 30 pounds, or 1.5 PTEs, while a medium truck tire, such as a tractor-trailer tire at 110 pounds, is 5.5 times heavier than an automotive tire, or 5.5 PTEs. Conversion of tire units into a uniform weight basis (100 PTE = 1 ton) allows comparison of waste tire generation to markets that are tracked in tons.

During 2015, the cabinet expended waste tire funds to conduct waste tire collection events, provide funding directly to counties for the removal of waste tires, and to remediate tire piles. Collection events held by the cabinet recycled 767,119 PTEs and cost $1,212,047. Grants awarded by the cabinet to Kentucky counties primarily funded $368,103 for disposal and recycling of 242,686 PTEs. In addition, the cabinet spent $507,177 to clean up 191,383 PTEs collected from orphan tire piles. Overall, state and county government efforts represented the cleanup of 1,201,188 PTEs during 2015. Kentuckians generated 5.3 M PTEs as waste tires in calendar year 2015, thus the state and county handled 23.6% of the PTEs sent to market. The private sector handled the remaining 76.4% of waste tires.

Figure 2 below depicts expenditures from the WTTF for the last five years.



One of the biggest potential costs the cabinet faces is the cleanup of facilities after tire fires at sites where the responsible parties are unable to remediate the sites themselves. The burning of tires results in a release of hazardous substances into the environment and cleaning a post-fire site is much more costly than removing the same volume of tires at a typical dump site. In November of 2015, a fire occurred at a tire-processor that had gone out of business and was under state enforcement. Investigation into this incident is on-going and the economic cost of this fire is yet to be determined. This fire was not comparable to the Liberty Tire fire of 2014 in Louisville. These are not predictable planned expenses and in some cases can cut into the funding earmarked for grants, market development, and cleanup of additional sites.

COUNTY GRANTS

Reduced Waste Tire Collection Event (amnesty) costs have allowed the cabinet to award grant funds directly to counties to assist them in addressing waste tires. During fiscal year 2014, the cabinet was able to increase the grant amount per county from $3,000 to $4,000 per year to transport and dispose or recycle waste tires. The cabinet expended $408,000 to 102 counties. Of the money the cabinet awarded, the counties spent $368,103 to dispose or recycle 242,686 PTEs. In addition, counties spent $54,157 of their own money toward waste tire remediation. Counties returned $94,904 of unspent state grant funds. This counts for a grand total of $463,007 of both state and county funding for an average cost of $1.51 per PTE to the taxpayer. Notice that the cost is slightly lower than the state amnesty contract price of $1.58 per PTE even though counties must often remove these tires from roadsides and dumps, thus increasing total disposal cost. The typical charge from waste tire processors is $1.00 for cutting and land-filling, up to $1.50 for recycling.

Woodford County Waste Tire Collection Event (WTCE) – The Woodford County event was held at the County DOH facility in Versailles, Kentucky on September 17th, 18th, and 19th, 2015. A trucking company drops off tires at the event. An estimated 14,399 tires were collected during the event. Photo by Chris Craig.

In addition to the waste tire grants to counties, the cabinet uses monies from the WTTF to provide grants to counties for crumb rubber. See Appendix B for a list of the Kentucky counties that received a crumb rubber grant during FY2015.

Lastly, the cabinet awarded 24 grants to counties for illegal open dumps that contained waste tires during the previous grant cycle. These grants allowed counties to clean up a total of 21,278 waste tires from illegal open dumps.

WASTE TIRE MANAGEMENT PROGRAM

Since 1998, the waste tire program has funded the removal and disposal of approximately 24.2 million PTEs at a cumulative cost of $23.9 million. These tires were collected from 120 counties as part of the management program and the remediation of numerous tire piles.

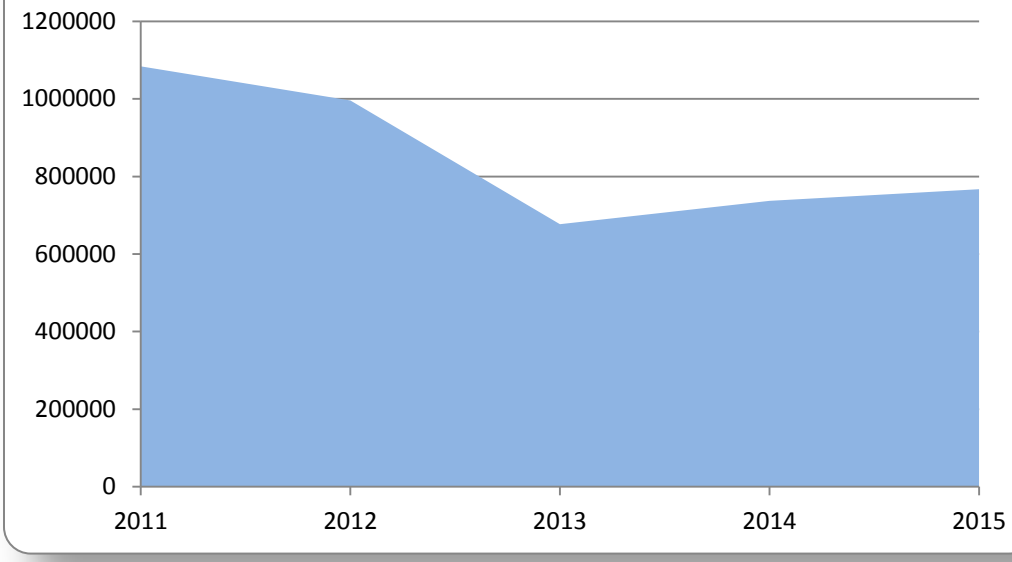
During the spring of 2015, the cabinet conducted collection events in the Green River, Barren River, and the Pennyrile Area Development Districts (ADD). These events garnered 455,262 PTEs at a cost of $719,313 or $1.58 per PTE. During the fall months, the cabinet conducted events in the Bluegrass ADD netting 311,857 PTEs at a cost of $492,734; $1.58 per PTE. The 2015 Waste Tire Collection Events netted a total of 767,119 PTEs for a cost of $1,212,047.

Daviess County Waste Tire Collection Event (WTCE) – The Daviess County event was held at the state DOH facility in Owensboro, Kentucky June 18th, 19th, and 20th, 2015. Members of the Owensboro Regional Recovery Center were on hand to help unload just a few of the estimated 31,623 tires collected tires collected during the event.
Photo by Chris Craig.

Waste Tire Collection Events have been effective in reducing the amount of waste tires in the environment as evidenced by an initial decline followed by a stabilization of the trend in the number of tires collected at each event. Figure 3 summarizes the amount of PTEs collected per year for the last four years.

Waste Tire Collection Events are conducted in each county every three years, on a repeating schedule. Therefore, to compare total tires collected over time, it is appropriate to look at three-year cycles. There was a noticeable decrease in PTEs collected in 2015 as it compares to the last year in which the counties were serviced in 2012. Although there is considerable variability, the general trend shows a clear decrease in total tires collected for each three-year period.

Figure 3: Waste Tires Collected (PTEs)



Waste Tire Collection Events scheduled for 2016 include Lincoln Trail, Lake Cumberland, Buffalo Trace, and FIVCO ADDs.

GENERATION & DISPOSAL

Henry County Waste Tire Collection Event (WTCE) – The Henry County event was held at the state DOH facility in Campbellsville, Kentucky on October 16th, 17th, and 18th, 2014. DOH and Henry County employees observe a Liberty tire contractor sorting some of the estimated 30,654 tires collected during the collection event.
Photo by Chris Craig.

Kentuckians generated an estimated 5.3 million PTEs in 2015. There is no known statistical database for waste tires generated in individual states, therefore this was an estimate drawn from national data prorated based on the commonwealth's population, gasoline consumption, and number of motor vehicle registrations.

A waste tire is generated for each replacement tire sold. A waste tire is most commonly measured in 20-pound units or PTEs, which is the approximate average weight of a passenger automotive tire. A light truck tire is 30 pounds or 1.5 PTEs, while a medium truck tire, such as a tractor-trailer tire at 110 pounds, is 5.5 times heavier than an automotive tire, or 5.5 PTEs. Conversion of tire units into a uniform weight basis (100 PTE = 1 ton) allows comparison of waste tire generation to markets that are tracked in tons.

Waste tires are also generated from vehicle salvage operations. Junked vehicles generally have tires, some of which are recovered and resold as used tires while others are eventually disposed of as waste. For this report, waste tires from vehicle salvage operations are considered to represent 5% of replacement tire sales.

Challenges within the current waste tire program:

- *It is highly likely that some percentage of retailers were collecting disposal fees and then stockpiling waste tires until a waste tire collection event was conducted in their area.*
- *Some retailers were suspected of transferring tires to an unpermitted hauler who then illegally dumped them on a roadside or elsewhere. Discovery of such piles required a response from a county or state government to recover the tires at taxpayers' expense.*
- *Individuals have chosen to retain their waste tires to avoid additional fees charged by tire retailers for waste tire disposal, taking these tires out of the recycling stream. Also, these tires, or a portion thereof, may have been later mismanaged and dumped into the environment which burdened counties with continued waste tire management issues. It has been reported that some tire retailers charged a higher fee of $3.00-3.50 to discourage individuals from leaving waste tires with the retailer, instead of the average $1.50-2.00 tire disposal/recycling fee. As an alternative, this situation could be improved by requiring the disposal price to be included in the sale price or list the actual state-wide average disposal rate on a notice and let the free market handle the situation. If there is a significant decrease in the amount of waste tires managed by the commercial processors, the WTTF would be insufficient to manage the increase in the number of waste tires that would become a public liability.*
- *KRS 224.50-868(3) gives the DOR the authority to collect the waste tire fee. The statute requires up to $50,000 per year be transferred to DOR for collection of the fee. This neither provides enough money (approximately $75,000 is needed to employ one person per year) or incentive for DOR to enforce the collection. States that have specified a percentage to be awarded to the collection agency have a higher collection rate.*
- *Many tires collected by registered waste tire transporters are still being legally disposed of in landfills rather than being recycled. It is less capital intensive to cut or shred and landfill a tire than to install equipment required to produce a recyclable product. Some states have fixed this problem by banning all tire material, including cut or shredded tires, from landfills, except for pre-approved constructive civil engineering applications within landfills.*

MARKET DEVELOPMENT

The WTTF helps support the continued removal of waste tires from the environment to prevent fires and reduce breeding grounds for mosquitoes. The cabinet has removed waste tires from the environment, funded crumb rubber grant projects, and assisted in developing markets for waste tires.

The statewide recycling rate for tires was 86.8% for 2015 compared to 80.1% for 2014. This figure is comparable to the 95% in the U.S. for 2013[2], the latest available national data, but this is generally believed to be overstated. The commonwealth has increased its recycling rate in the short-term by working to increase the in-state Tire Derived Fuel (TDF) market and could increase the reuse percentage in the future through the diversification of markets. Although TDF is expected to remain the largest end use of waste tires for the foreseeable future, ground tire rubber is considered a higher-end market than TDF, as the properties of the original tire are carried forward to the new product rather than using the one-time energy value of the waste tire as TDF.

Off-Site Tire Pile in Gallatin County, KY – Recycle Assistance Section Supervisor JR Holt and property owner inspect site for future tire removal. An estimated 8,683 tires were removed from the site by Liberty Tire in 2015. Photo by Chris Craig.

TDF applications include use in boilers at paper mills, cement kilns, and utilities that use whole or processed tires as a supplemental energy resource, displacing a small percentage of coal usage. These facilities operate in full compliance with all applicable federal, state, and local environmental regulations. The largest ground rubber applications include playground safety cushioning, colored landscape mulch, and athletic fields.

The cabinet conducted several steps to gather information about the commonwealth's waste tire recycling markets. Since the processors and landfill owners have no knowledge of open tire dumps, the cabinet did not include the number of waste tires at open dumps in the recycling report. Since the cabinet gives $4,000 grants to counties to assist in remediating tire piles,

and the counties expend some additional funds cleaning up tire dumps; the percentage for tires remaining in dumps in Kentucky may be lower.

Woodford County Waste Tire Collection Event (WTCE) – The Woodford County event was held at the county DOH facility in Versailles, Kentucky September 17th, 18th, and 19th, 2015. Inmates from the local jail unload tires from a truck. An estimated 14,399 tires were collected during the event. Photo by John Carlton.

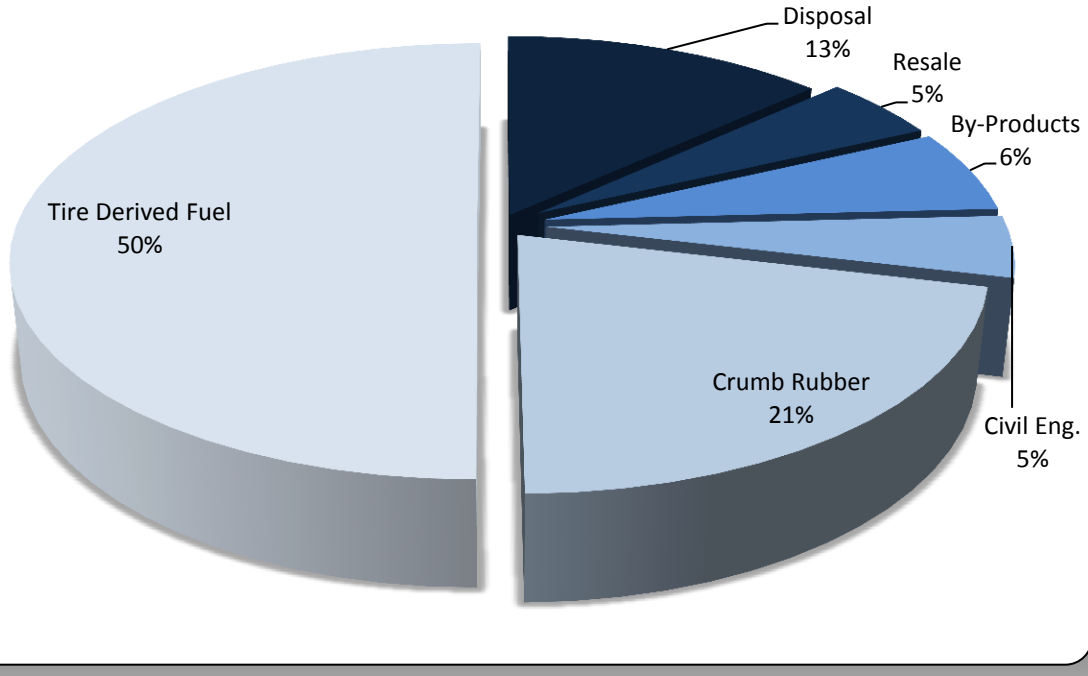
The steps the cabinet took to obtain information for this report include:

- *Obtaining recycling market information from each major in-state processor;*
- *Compiling total tonnage of disposal of waste tires and processing wastes from each landfill;*
- *Differentiating tires collected in Kentucky from those collected out-of-state based on the processors' records and knowledge;*
- *Identifying and contacting out-of-state processors believed to collect tires from Kentucky;*
- *Contacting users of the tire products to verify the receipt of processed tires and the landfill owners to verify disposal amounts.*

Comparing Kentucky to other national markets shows:

- *TDF is the largest Kentucky market at 50%, but this is below the national average of 53%[3];*
- *About the same reliance on playground mulch and ground rubber;*
- *Less use in civil engineering applications;*
- *Slightly less reselling of used tires;*
- *Limited exporting to other countries; and*
- *Slightly more landfill disposal.*

Figure 4: Kentucky Waste Tire Markets



Kentucky has gone from no in-state markets in 2000 to a point where potentially all TDF produced in Kentucky could be consumed in constructive applications. The cabinet has been involved in several initiatives to encourage growth in the TDF market, providing both grant funding and technical assistance. There have been several success stories in this field:

- *In 2001, Kentucky spent $454,276 on capital equipment to assist Owensboro Municipal Utility (OMU) in using TDF. Although the contract expired in 2004, OMU still uses TDF. Its consumption in 2015 was limited by power generation equipment outages, but is expected to rebound in 2016. In 2001, TDF production in Kentucky was about 1.1 million tires, all shipped out of state because there were no in-state users. In 2015, TDF users in Kentucky consumed 3.86 million PTEs, almost 3 million of which were produced by in-state and out-of-state producers from tires generated in Kentucky. Some TDF produced in Kentucky is still exported to neighboring states because of transportation logistics.*

- *Kosmos Cement, a partnership between CEMEX and Lone Star Cement, began using whole tires as TDF in 2010 and has increased usage each year to become one of the two largest in-state users. The company uses a unique tire machine, similar to a baseball or softball pitching machine, to toss whole tires into the center of the kiln for a more efficient burning. The reinforcing wire in the tire is incorporated into the clinker. Compliance air emission testing revealed no significant change in emissions from using waste tires and coal as opposed to only coal. In fact, Nitrogen Oxide emissions, a major greenhouse gas, were reduced 37% when using TDF with coal.[4] Kosmos has begun using chips in addition to whole tires to increase its capacity for recovering the energy from tires, so additional growth is anticipated.*

- *Another progressive company using TDF is East Kentucky Power Cooperative (EKPC). The cabinet submitted a letter in support of EKPC's petition to the Public Service Commission (PSC) during 2012 to use the Fuel Adjustment Clause for TDF which was subsequently granted during 2013. Use of the provision allows for quicker recovery of TDF cost from the electrical customer and makes the use of alternative fuels more economical. EKPC has become one of the largest TDF users and could use up to 4 million PTEs per year to provide 2-4% of its energy requirements.*

The use of TDF helps further the use of coal as it makes the fossil fuel more environmentally friendly. According to the United States Environmental Protection Agency (EPA), greenhouse gas (GHG) emissions have been reduced as a co-benefit of the use of secondary materials. The GHG rate associated with the combustion of scrap tires is approximately 0.09 million metric tons of carbon dioxide equivalent ($MtCO_2e$) per million BTU of scrap tires combusted,

while the GHG emissions rate for coal is approximately 0.094 $MtCO_2e$ per million BTU. Combined with the avoided extraction and processing emissions 1.6 $MtCO_2e$/million BTU for coal, the total avoided greenhouse gas is 0.010 $MtCO_2e$ per million BTU. Also, substituting TDF for coal would avoid an estimated 0.246 lbs/million BTU of particulate matter associated with the extraction and processing of the coal.[5] Multiplying the 2015 use of 38,650 tons TDF with coal in Kentucky by these factors shows a savings of almost 13,000 tons carbon dioxide (CO_2) and 147 tons of particulate matter not emitted each year. The use of TDF to reduce certain pollutants makes the long-term use of coal more viable.

The ground rubber market has remained steady over time. Since 2004, the commonwealth has awarded 390 grants totaling over $7.1 million, primarily to schools and municipalities, for crumb rubber uses. The uses were crumb rubber spread on athletic fields to increase turf life and playgrounds to reduce injuries. In October 2014, NBC News presented a story about possible health threats associated with the use of crumb rubber on athletic fields, and later presented a similar story on concerns with the use of crumb rubber mulch on playgrounds. A premise of these studies is that exposure to crumb rubber and playground mulch may result in exposure to constituents in crumb rubber that could result in adverse health effects. At this time there is no documented and peer reviewed evidence that substantiates these concerns. Existing studies conducted by industry and third parties have indicated that exposure to recycled waste tires under these scenarios does not result in harmful effects. At this time, there appears to be a growing divide between these two interests. In light of these issues and out of an abundance of caution, the cabinet did not provide crumb rubber grants for playgrounds and athletic fields as part of its grant portfolio in 2015. Crumb rubber grants were still made available to counties for landscaping applications. As noted by Figure 4, the suspension of crumb rubber grants for playgrounds and athletic fields did significantly affect crumb rubber production in the state.

Manufacturing of ground rubber and mulch from Kentucky tires increased from near zero in 1998 to 823,000 PTEs in 2015. Liberty Tire (formerly Martin Tire) in Union County manufacturers a large quantity of colored mulch for outlets such as Lowes, Home Depot and Wal-Mart. Dalton Tire Recycling in Boyd County produces ground rubber for playgrounds and horse arenas. Porter Tire in Carter County started producing crumb rubber in 2013.

Another market for ground rubber, and one that has grown in significance in other states in recent years, is rubberized asphalt. The cabinet is looking for ways to help this market grow in Kentucky and in 2013 partnered with the Kentucky Transportation Cabinet on a rubberized asphalt pilot project. The cabinet covered the $70,000 additional cost of using crumb rubber from waste tires for a portion of the asphalt mix, as well as $15,000 for some additional testing. While the project exhibited suspected cold-weather cracking in the control and rubberized lanes, it appears to have been a success. Final data assessing the asphalt performance is pending.

The cabinet is currently considering a new grant program to encourage counties to use rubberized asphalt in their chip seal paving projects, as well as developing another pilot study for rubberized asphalt paving.

Kentucky has developed diverse product markets, producing more TDF and ground rubber than the national average. However, it produced less ground rubber for synthetic turf, molded rubber products, and rubber modified asphalt. When considering possible new areas for growth in waste tire markets, it should be noted that in 2014, Kentucky ranked third in the U.S. for auto industry employment.[6] The commonwealth could consider assisting the three major automotive manufacturers in Kentucky in using waste tire ground rubber in molded automotive parts to broaden this important potential application.

Woodford County Waste Tire Collection Event (WTCE) – The Woodford County event was held at the County DOH facility in Versailles Kentucky September 17th, 18th, and 19th, 2015. DEP employee Alexandra Ballard talks with Liberty Tire employee Fred Kirchoff . An estimated 14,399 tires were collected during the event. Photo by John Carlton.

Market diversity is a critical component of successful waste tire management programs. Developing additional civil engineering markets for shredded tires would enhance the diversity of Kentucky's markets and provide constructive applications for shredded tires that are currently landfilled.

MARKET DYNAMICS

Due to the volatile nature of the scrap tire market, it is not uncommon for tire processors to quickly accumulate more tires than they can reasonably manage during busy times, processing equipment outages or changes in product markets. When shredded tires are improperly stored, specifically in large, deep, compacted piles, there is the possibility of auto-ignition. When a large pile of whole or shredded tire material catches fire it is extremely hard to extinguish. Permitted tire processors are required to have a bond equal to $1.00 per on-site PTE, with a minimum of $10,000. One common problem with this system is that facilities often bond for the minimum amount, and then accumulate well over 10,000 tires, putting themselves in a situation where the bond is not nearly adequate in the event a cleanup is required. In addition to stronger enforcement of the bonding requirement, some solutions to be considered in funding remediation of tire fires include a statutory increase in the amount of the bond required. The bond amount in KRS 224.50-862 could be increased from $1.00 per tire to $1.50 to cover all cleanup costs. Or, as done in several other states, the legislature could consider requiring a cost estimate for closure to determine the amount of financial assurance requirement.

Scott County Waste Tire Collection Event (WTCE) – The Scott County event was held at the County DOH facility in Georgtown, Kentucky September 24th, 25th, and 26th, 2015. DWM employees Alexandra Ballard and Grant White, pictured, were in attendance. An estimated 14,399 tires were collected during the event. Photo by John Carlton.

Kentucky experienced one large tire fire in CY 2014. Liberty Tire Recycling in Louisville caught fire on November 3rd, creating a plume of smoke visible more than 10 miles away, and resulting in a temporary shelter-in-place order for local residents. After extensive remediation efforts, Liberty permanently ceased operations at this location. One fire did occur in CY 2015, though it was not on the scale of Liberty Tire in 2014. Investigation into this incident is on-going and the full economic impact to the state has yet to be realized.

In 2014, the cabinet was aware of three sites that posed a fire or safety threat. At the time, there were well over one million PTEs stored at these sites with a potential cleanup cost of roughly $2 million in the event of a fire. The current bond requirement is $10,000 per site which would result in the Waste Tire Trust Fund paying most of the costs. The new tire fee collections average

$2.65 M per year, therefore a fire at any of these sites would significantly impact the WTTF. Such a remedial action could end waste tire collection events, grants and market development for one year or severely restrict funding availability over several years.

One potential problem for tire processors is the maturation of national TDF markets, reflecting a general downturn in the U.S. manufacturing and reduction in coal usage. However, unlike many states Kentucky's TDF market is fairly healthy and has potential for continuing growth, which may help alleviate some of the problems noted above.

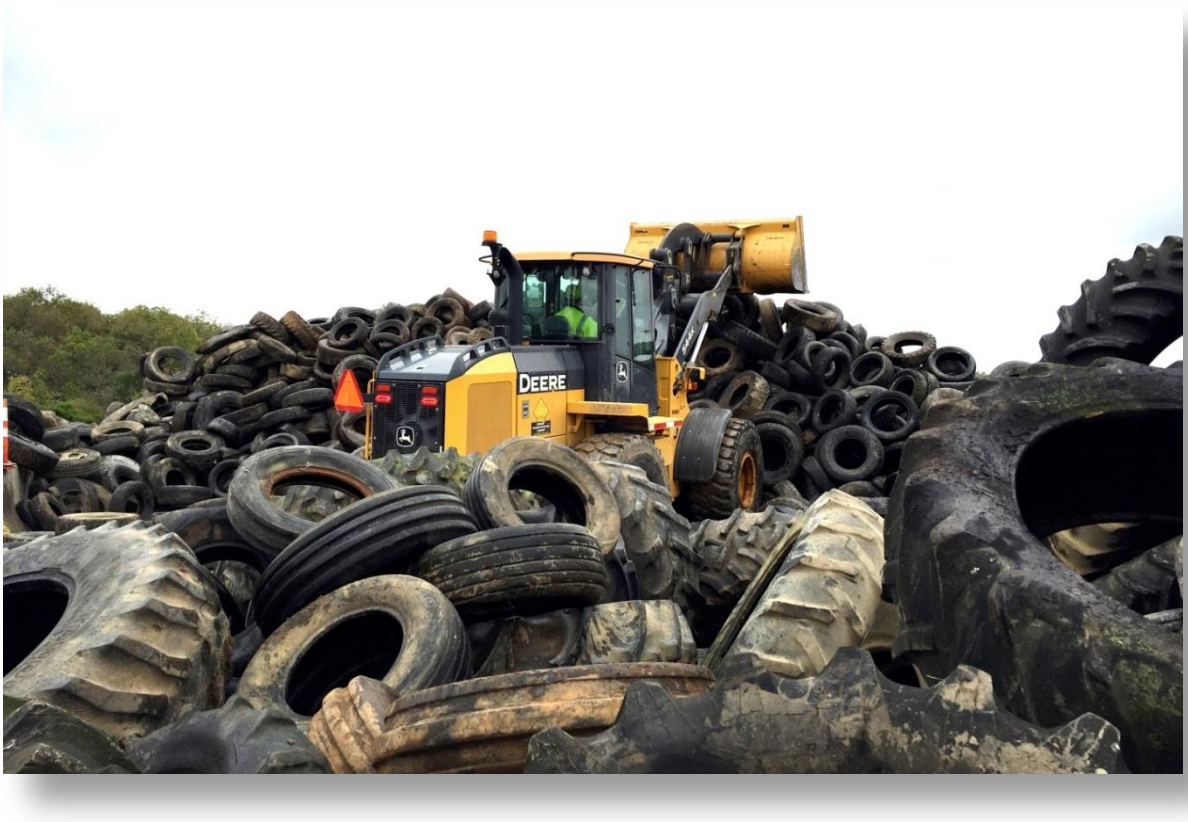
Major TDF markets in Kentucky include:

- **East Kentucky Power Cooperative (EKPC), Maysville:**
  - Cabinet submitted a letter to PSC in support of EKPC use of a fuel adjustment clause for possible TDF use;
  - EKPC could use over 4 M PTEs per year based on projections; and
  - Ways to increase supply to EKPC from local processors will be explored.
- **Kosmos Cement (CEMEX-Lone Star Cement partnership) Louisville:**
  - CEMEX utilizes whole-tire PTEs and has added a shredded tire supply line that has significantly increased this number.
- **Owensboro Municipal Utility**
  - Due to restrictions in the equipment on-site, OMU cannot use more TDF than the current level of 2% TDF replacement.

The in-state TDF market could potentially handle all scrap tires generated in Kentucky.

FUTURE OF THE FUND

The waste tire program exemplifies the cabinet's mission of protecting human health and the environment by encouraging waste reduction, reuse, and recycling. The WTTF supports statewide waste tire collection events on a three- year rotation, remediates large tire piles, provides direct grants to counties, and develops markets for TDF and ground rubber. If the waste tire fee is not extended, program funds will not be available to conduct collection events, provide grants to counties to remove illegally dumped tires, and Kentucky businesses involved in tire processing and remediation would be negatively impacted.



Bourbon County Waste Tire Collection Event (WTCE) – A DOH employee seperates and stacks tires during the collection event. 21,191 tires were collected during the event.
Photo by Chris Craig.

Waste tire funds discontinued in other states resulted in illegal waste tire dumps reappearing. These states were faced again with a recurrence of the original emergency situation which necessitated the fee, including remediation of large tire piles and fires. Legislators and governors were asked to remedy a problem that was previously solved.

A total of 35 states have a mandated tire fee[7]. The median fee is $1.00 per new tire sold. The highest fee is $2.50 in Alaska, Illinois, New York, and Oklahoma while the lowest fee is $0.25 in Indiana and Kansas.

Some examples of problems encountered by states that discontinued their waste tire fee include[8]:

- Minnesota: An increase in waste tire tipping fees and an increase in monofilling (landfilling of tires in a disposal cell and a loss to the recycling market);
- Wisconsin: Product markets crashed without the state subsidy;
- Texas: $9.5 million in general funds to clean up two waste tire piles and buy TDF metering (feed) systems for industry. Saw an increase in land reclamation using waste tires in conjunction with soil to fill excavated sites, and still have major legacy stockpiles;
- Missouri: No fee for two years during which the state saw an increase in fires. The legislature reinstated the fee for five years in 2009; and
- Recycling rates dropped an average of 25% in seven states after discontinuance of the fee.

In addition to the repercussions discussed above, the following impacts could happen in Kentucky as a result of the fee expiring:

- Counties would not receive the $4,000 annual grant to clean up abandoned waste tires;
- Rural areas would be impacted by abandoned waste tires on farms and roadsides;
- Counties may not be able to rely on the commonwealth for tire pile remediation; and
- Rubberized asphalt and extruded molding (auto parts) market development would cease.

The waste tire program faces many challenges:

Currently, the cabinet is working to refine a voluntary system for proper manifesting of tire transfer in an effort to alleviate issues related to unregistered tire dealers and illegal dumping of waste tires.

- The free market handled approximately 76.4% of the PTEs in Kentucky, with state-funded programs paying for 23.6%. Coverage of all areas by processors is necessary for the free market to work. Transportation distance translates into higher costs for certain areas if a good tire processor is not reasonably near.

- The reporting requirement in KRS 224.50-872 could be more efficient if the requirement was for a report every two fiscal years. This would allow for changes to the program to be realized before a report was due. It would also place reports in conjunction with the state budget cycle.

- The Waste Tire Working Group could be expanded in order to examine more thoroughly how the program might be improved. The work group currently consists of the members required by statute: Two cabinet members, two SWaCK members, a representative of the Kentucky Department of Agriculture, one county Judge-Executive, one Mayor and one member of the tire retail establishment. Additional representatives might come from the Department of Revenue, tire wholesalers, scrap tire experts, Rubber Manufacturers Association, tire processors, tire accumulators, tire transporters, TDF users, Kentucky Trucking Association, County Clerks, salvage yards, school districts, and others as necessary. The trucking association is important because trucks use about half of all rubber, by weight, in the tire market. TDF users consume most of the waste tire rubber in the commonwealth.

- A change to how the DOR is reimbursed could help close the gap between the possible $3.6 million that could be collected and the $2.6 million actually received.

- Kentuckians buy approximately 530,000 used tires each year based on the national average, 10% of all waste tires.[9] A recent tire industry survey showed that 88% of all tire repairs are performed incorrectly.[10] One example of an incorrect repair is the

failure to apply a patch from the inside of the tire when plugging a puncture. KRS 224.50- 868(2)(c) encourages reuse of waste tires "…for its original intended purpose…". With such a high defective repair rate, this is a safety issue.

In conclusion, the cabinet strongly recommends that the General Assembly extend the waste tire fee and continue the waste tire program.

FOOTNOTES

[1] U.S. Census Bureau News, November 22, 2013, http://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf

[2] 2013 US Scrap Tire Management Summary, Rubber Manufacturers Association, November 2014

[3] Rubber Manufacturers Association, 2013

[4] Cement Kiln Burns Scrap Tires, *The Courier-Journal*, November 26, 2012.

[5] 76FR15494, 40 CFR Part 241, EPA, Identification of Non-Hazardous Secondary Materials That Are Solid Waste, Final Rule, March 21, 2011 *Federal Register.*

[6] 2014 Kentucky Automotive Industry, Kentucky Cabinet for Economic Development, Office of Research and Public Affairs, http://www.thinkkentucky.com/kyedc/pdfs/kyautoquickfacts.pdf

[7] *State Scrap Tire Legislation Summary*, Rubber Manufacturers Association, 2015, http://www.rma.org/download/scrap-tires/state_&_federal_reports/legislation_chart_2015.pdf

[8] *Waste Tire Management Program Closure-Precedents/Experience in Other States*, Terry Gray, TAG Resource Recovery, Inc., Houston, TX 2011

[9] *Used Tires Businesses Balloon*, Feb. 2011, Mike Breslin, http://www.americanrecycler.com/0211/814used.shtml

[10] *RMA: 88% of Tire Repairs Done Incorrectly*, 2008 http://www.tirebusiness.com/article/20080228/NEWS/302289997?template=printart

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APPENDICES

Appendix A: FY 2015 Waste Tire Grant Awards

COUNTY	AWARD	FUNDS USED	PTEs	FUNDS
Adair Co.	$4,000.00	$4,575.55	523	$0.00
Allen Co.	$4,000.00	$3,878.55	2,692	$121.45
Anderson Co.	$4,000.00	$4,098.30	2,042	$0.00
Ballard Co.	$4,000.00	$4,755.60	5,100	0
Bath Co.	$4,000.00	$506.50	427	$3,493.50
Bell Co.	$4,000.00	$2,450.00	700	$1,550.00
Boone Co.	$4,000.00	$9,000.00	6,750	$0.00
Boyd Co.	$4,000.00	$4,230.50	1,852	$0.00
Boyle Co.	$4,000.00	$6,554.75	3,543	$0.00
Bracken Co.	$4,000.00	$3,974.27	1,136	$0.00
Breathitt Co.	$4,000.00	$3,692.00	660	$308.00
Breckenridge Co.	$4,000.00	$3,437.00	1,388	$563.00
Bullitt Co.	$4,000.00	$924.67	492	$3,075.33
Butler Co.	$4,000.00	$4,000.00	2,963	$0.00
Caldwell Co.	$4,000.00	$4,000.00	4,700	$0.00
Campbell Co.	$4,000.00	$6,944.07	9,588	$0.00
Carlisle Co.	$4,000.00	$4,000.00	4,200	$0.00
Carrol Co.	$4,000.00	$4,755.22	2,638	$0.00
Casey Co.	$4,000.00	$3,741.00	1,609	$259.00
Christian Co.	$4,000.00	$4,000.00	4,000	$0.00
Clark Co.	$4,000.00	$4,135.00	2,700	$0.00
Clinton Co.	$4,000.00	$641.60	321	$3,358.40
Crittenden Co.	$4,000.00	$4,000.00	4,000	$0.00
Cumberland Co.	$4,000.00	$3,954.40	3,008	$45.60
Daviess Co.	$4,000.00	$4,019.00	4,019	$0.00
Edmonson Co.	$4,000.00	$1,162.25	491	$2,837.75
Elliott Co.	$4,000.00	$1,651.75	1,208	$2,348.25
Fayette Co.	$4,188.60	$4,188.60	2,051	$0.00
Fleming Co.	$2,325.76	$2,325.76	665	$1,674.24
Floyd Co.	$4,226.00	$4,226.00	2,000	$0.00
Franklin Co.	$4,000.00	$2,050.00	1,250	$1,950.00
Gallatin Co.	$4,000.00	$2,127.83	797	$1,872.17
Garrard-Lincoln Co.	$4,000.00	$3,334.05	1,773	$665.95
Grant Co.	$4,000.00	$7,764.01	14,346	$0.00

Appendix A: FY 2015 Waste Tire Grant Awards continued…

Graves Co.	$4,000.00	$3,780.00	953	$220.00
Grayson Co.	$4,000.00	$4,000.00	2,000	$0.00
Green Co.	$4,000.00	$3,041.10	1,795	$958.90
Hancock Co.	$4,000.00	$4,033.55	1,503	$33.55
Hardin Co.	$4,000.00	$3,598.00	1,088	$402.00
Harlan Co.	$4,000.00	$10,380.00	6,400	$0.00
Harrison Co.	$4,000.00	$3,187.00	1,523	$813.00
Hart Co.	$4,000.00	$1,615.75	570	$2,384.25
Henderson Co.	$4,000.00	$4,800.00	5,600	$0.00
Hopkins Co.	$4,000.00	$3,571.20	4,164	$428.80
Jackson Co.	$4,000.00	$3,990.00	1,785	$0.00
Jessamine Co.	$4,000.00	$7,378.00	2,770	$0.00
Johnson Co.	$4,000.00	$4,102.50	1,641	$0.00
Knott Co.	$4,000.00	$4,605.27	673	$0.00
Knox Co.	$4,000.00	$4,037.00	1,748	$0.00
LaRue Co.	$4,000.00	$5,400.00	3,400	$0.00
Laurel Co.	$4,000.00	$4,568.00	1,699	$0.00
Lawrence Co.	$4,000.00	$4,188.00	2,211	$0.00
Leslie Co.	$4,000.00	$4,000.00	580	$0.00
Lewis Co.	$4,000.00	$2,600.70	2,201	$1,399.00
Livingston Co.	$4,000.00	$1,596.40		$2,403.60
Logan Co.	$4,000.00	$303.00	142	$3,697.00
Lyon Co.	$4,000.00	$2,248.00	1,249	$1,751.20
Madison Co.	$4,000.00	$3,584.80	1,713	$415.20
Magoffin Co.	$4,000.00	$4,000.00	4,000	$0.00
Marion Co.	$4,000.00	$3,088.65	905	$911.35
Mason Co.	$4,000.00	$8,005.60	10,664	$0.00
McCracken Co.	$4,000.00	$12,000.00	8,010	$0.00
McCreary Co.	$4,000.00	$1,287.25	882	$2,712.75
Mclean Co.	$4,000.00	$3,999.25	3,522	$0.00
Meade Co.	$4,000.00	$6,918.00	2,740	$0.00
Menifee Co.	$4,000.00	$2,625.75	1,727	$1,374.25
Mercer Co.	$4,000.00	$2,047.00	1,017	$1,925.30
Metcalfe Co.	$4,000.00	$4,129.00	1,543	$0.00
Monroe Co.	$4,000.00	$4,274.00	2,152	$0.00

Appendix A: FY 2015 Waste Tire Grant Awards continued…

Montgomery Co.	$4,000.00	$2,552.00	1,276	$1,448.00
Muhlenberg Co.	$4,000.00	$4,322.40	3,098	$0.00
Ohio Co.	$4,000.00	$4,000.00	1,695	$0.00
Oldham Co.	$4,000.00	$1,036.25	632	$2,963.75
Owen Co.	$4,000.00	$2,862.35	1,177	$1,137.65
Owsley Co.	$4,000.00	$2,839.00	1,670	$1,161.00
Pendleton Co.	$4,000.00	$2,779.00	451	$1,221.00
Pike Co.	$4,000.00	$4,000.00	9,000	$0.00
Pulaski Co.	$4,000.00	$5,140.10	2,110	$0.00
Rockcastle Co.	$4,000.00	$1,425.00	735	$2,575.00
Rowan Co.	$4,000.00	$178.00	94	$3,822.00
Scott Co.	$4,000.00	$4,117.82	788	$0.00
Shelby Co.	$4,000.00	$3,915.00	4,400	$0.00
Simpson Co.	$4,000.00	$449.15	183	$3,550.85
Spencer Co.	$4,000.00	$4,638.53	3,892	$0.00
Taylor Co.	$4,000.00	$3,998.40	2,352	$0.00
Todd Co.	$4,000.00	$4,650.00	720	$0.00
Trigg Co.	$4,000.00	$183.10	*	$3,816.90
Trimble Co.	$4,000.00	$960.00	192	$3,040.00
Union Co.	$4,000.00	$8,000.00	6,450	$0.00
Washington Co.	$4,000.00	$4,142.85	1,450	$0.00
Wayne Co.	$4,000.00	$153.00	60	$3,847.00
Webster Co.	$4,000.00	$4,382.46	5,168	$0.00
Whitley Co.	$4,000.00	$0.00	150	$4,000.00
Wolfe Co.	$4,000.00	$4,989.80	902	$0.00
Woodford Co.	$4,000.00	$2,173.20	1,596	$1,286.80
GRAND TOTALS	$400,000.00	$368,102.81	241,889	$79,788.69

Appendix B: FY 2015 Crumb Rubber Grant Awards

COUNTY	APPLICANT	LOCATION	PROJECT	AWARD
Barren	Barren County Board of Education	Temple Hill & Park City Elementary Schools	Landscaping	$16,870
Boone	City of Florence	World of Golf (Mini Golf)	Landscaping	$37,350
Green	City of Greensburg	City of Greensburg	Landscaping	$14,890
Hart	Hart County Fiscal	Hart County Judicial Center	Landscaping	$5,425
Henderson	Henderson County Fiscal Court	Henderson County Courthouse, Judicial Center	Landscaping	$14,575
Pike	City of Coal Run Village	Coal Run Village City Hall, Community Center, Fire Department and City Park	Landscaping	$3,710
Trimble	City of Bedford	Morgan Community Center	Landscaping	$6,855
Whitley	Whitley County Fiscal Court	Whitley County Courthouse and Judicial Center	Landscaping	$5,625
			GRAND TOTAL	**$105,300**

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