CALENDAR
YEAR 2023

WASTE TIRE PROGRAM ANNUAL REPORT

DEPARTMENT FOR ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

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ENERGY AND ENVIRONMENT CABINET MANDATE

This report has been prepared as required by KRS 224.50-872. The purpose of this report is to provide information relevant to the commonwealth's waste tire program. Specifically, it includes information pertinent to expenditures and revenues, effectiveness in developing markets, benefits of the fee in funding the Energy and Environment Cabinet's (EEC) implementation of the waste tire program, and recommendations for program improvements.

> *KRS 224.50-872 states, "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 Kentucky General Assembly passed House Bill 32 creating the waste tire control program and establishing the Waste Tire Trust Fund (WTTF) to eliminate existing and to 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 future waste tire markets would develop. In 1994, the General Assembly extended the program an additional four years, adding a prohibition on open burning of waste tires.

In 1998, the General Assembly repealed the waste tire control program and created a program with a renewed approach. The revised statute retained the $1.00 fee collected on new motor vehicle tires, the WTTF, 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 EEC regarding the effectiveness of the program. This fee, collected from consumers by retailers, is paid monthly to the Department of Revenue (DOR). The EEC uses the fee to implement the waste tire program, which includes waste tire collection events (WTCE), cleanups, and grant funding to manage and develop markets for waste tires. The program has been extended during each General Assembly regular session since 2002 and the tire fee was increased from $1.00 to $2.00 in 2018. Additional revenue generated from the increased fee may not all be allocated to the waste tire program. In 2020, KRS 224.50-868 was revised to extend the tire program to June 30, 2024.

In 2011, House Bill 433 established the Waste Tire Working Group (WTWG), a Division of Waste Management (DWM) committee. This committee is tasked to discuss and research topics in waste tire management, and to make recommendations to the EEC in efforts to improve Kentucky's programs. The committee is charged to convene twice annually, and its meetings are open to the public. The WTWG consists of two ex-officio members of DWM's Recycling and Local Assistance (RLA) Branch, and six appointed members. The six WTWG committee members are appointed by the governor in accordance with KRS 224.50-855.

Current membership of the WTWG:

Director, DWM or Designee ..... Darin Steen, Branch Manager, RLA (ex-officio)
Manager, RLA Branch or Designee ..... Donny Atha, RLA (ex-officio)
Kentucky Department of Agriculture Representative ..... Harlan Hatter
Kentucky Solid Waste Coordinator Representative ..... Bryon Miles (LGE)
Kentucky Solid Waste Coordinator Representative ..... Sherri McDaniel (LGE)
Mayor Representative ..... Tracy Neice (Hyden)
County Judge/Executive Representative ..... Pending appointment
Private Retail Tire Sales Representative ..... Pending appointment

REVENUE

Precise data on statewide replacement tire sales are not readily available, but by reviewing national sales totals and population, gasoline consumption and vehicle registration statistics, it is estimated that Kentuckians annually purchase approximately 4.0 million new replacement tires[1]. Over the past two years, Kentucky has received an average of $6.77 million per year from the motor vehicle retail tire fee, or approximately 81 percent of the money that could be collected. Figure 1 illustrates tire fee receipts, as well as the other revenue generated from the WTTF for the past five years.

There are several possibilities for why not all of the fees are being collected, including:

- *Not all retailers collect and remit the proper amount of tire fees;*
- *Fees are not paid by some trucking companies when large quantities of tires are purchased through fleet sales from wholesale companies;*

[1] *Tire dealers are anything but average,* Modern Tire Dealer, January 1, 2018, www.moderntiredealer.com/uploads/stats/facts-section-2018-1.pdf

- *DOR is paid a flat annual fee of $50,000. Insufficient resources and a lack of incentive to monitor non-paying entities could be reduced by paying DOR a percentage of collections, reflective of several states with similar programs; and*
- *The tire fee may be collected with other taxes and fees. Some fees may be inadvertently misallocated to the wrong fund's ledger. This has occurred in at least one other state, and was detected when their collection mechanism changed.*

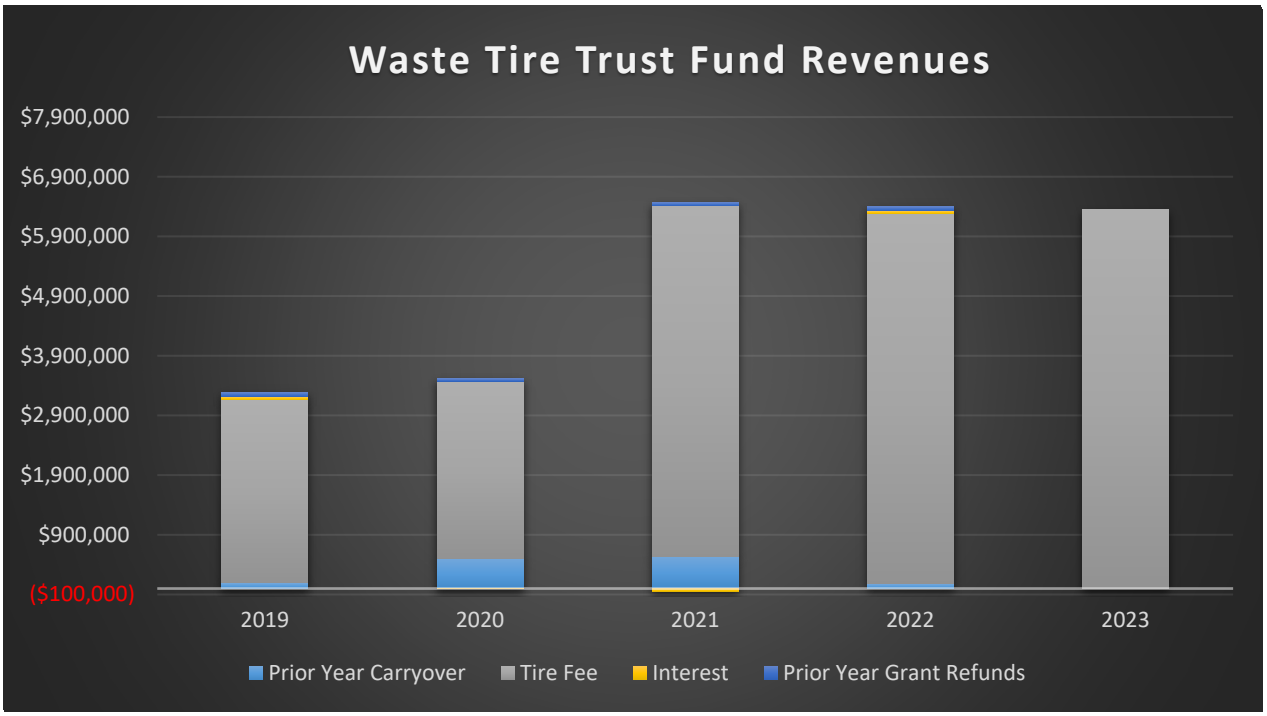

Figure 1: Waste Tire Trust Fund Revenues

EXPENDITURES

WTTF receipts are used by the EEC to fund several programs, assisting in the management of waste tires. These programs include WTCEs, direct grants to counties, crumb rubber/tire-derived products (CR/TDP) grants, rubber-modified asphalt (RMA) grants, and tire dump site cleanups. Kentuckians generated 46,642 tons (4.66 million PTEs) of waste tires in calendar year 2023, the state and counties handled 16.6 percent of the Passenger Tire Equivalent (PTEs) generated. The private sector handled the remaining 83.4 percent of waste tires. Figure 2 provides a five-year synopsis of expenditures for the WTTF.

WASTE TIRE COLLECTION EVENTS AND DUMP CLEANUPS

The WTCE program, formerly referred to as "tire amnesty," was established in 1998 as part of the EEC's continuing effort to clear waste tires from Kentucky's landscape. WTCEs are conducted in rotating, three-year cycles for each of Kentucky's 120 counties. Each county provides a suitable

location and assists with logistics for a three-day waste tire drop-off event, open to private citizens or businesses with the exception of tire dealers or automotive scrap yards. The EEC contracts for removal and delivery of recovered tires to a processor where they are recycled into products (usually tire-derived fuel or ground rubber). Since 1998, the waste tire program has funded the removal and disposal of approximately 29.2 million PTEs at a cumulative cost of $33.6 million.

A waste tire is most commonly measured in Passenger Tire Equivalents (PTEs), which is the approximate average weight of a passenger automotive tire (20 pounds). A light truck tire weighs approximately 30-35 pounds, or 1.5 PTEs, while a medium truck tire, such as a tractor trailer tire, weighs roughly 110-120 pounds, and is about 5 times heavier than an automotive tire, or 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. This average weight has historically varied from 17 to 25 pounds based on the sizes of tires used in the operating vehicle inventory.

During FY 2023 the EEC conducted WTCEs for the Buffalo Trace, FIVCO, Cumberland Valley, Gateway, Big Sandy and Kentucky River Area Development Districts (ADD's). These events collected a total of 555,352 PTEs at an overall cost of $1,379,688.40. WTCEs scheduled for FY 2024 include Northern Kentucky, KIPDA, Purchase, Barren River, Green River and Pennyrile ADDs. WCTE historic charts for each ADD from the inception of the program to most recent events are included in Appendix D. All charts report a high collection total in the initial collection year. As time has progressed, the totals have trended generally downward with some ADDs showing a slight uptick in recent rounds.

The EEC also spent $309,145.38 to clean up 111,556 PTEs collected from multiple tire dump sites where a responsible party is either unknown or incapable of paying for cleanup. Figure 2 includes this total as "Collection Events/Site Cleanups."

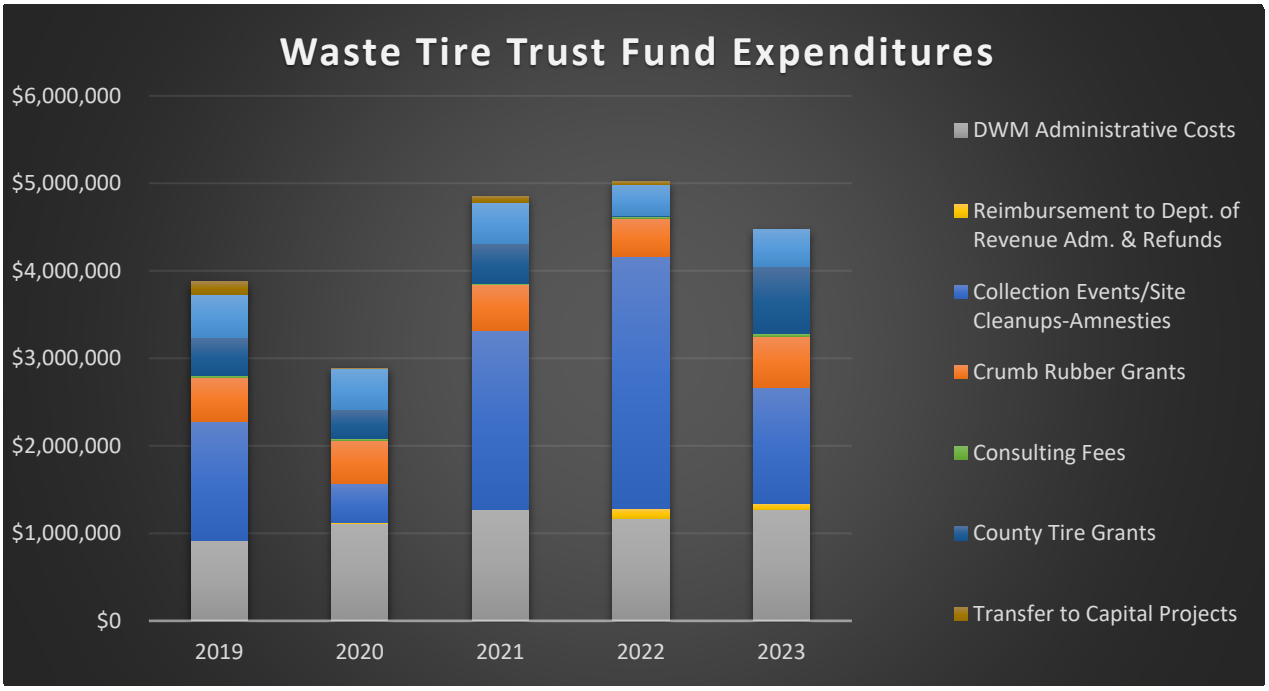

Figure 2: Waste Tire Trust Fund Expenditures

COUNTY GRANTS

Counties are provided an annual Direct Grant to manage waste tires. This grant pays for transportation and recycling or disposal. The EEC increased the annual direct tire grant amount to counties from $3,000 to $4,000 in 2015. The EEC awarded $400,000 to 100 counties in 2023 Direct Tire Grants. Counties returned $70,402.65 of unspent state grant funds but spent $168,106.06 of their own money toward waste tire remediation. This totals $556,106.06 of both state and county funding to dispose or recycle 261,939 PTEs for an average cost of $2.12 per PTE.[2] See Appendix A for details on the most recent cycle of Direct Tire Grants.

The Crumb Rubber/Tire Derived Product Grant funds the purchase of tire-derived materials or products for landscaping projects, pour-in-place playgrounds, walking trails, horse trailer or stall mats, tree wells, picnic tables, benches and other products utilizing recycled Kentucky tires. Since 2004, the commonwealth has awarded 767 grants totaling over $11 million, primarily to schools and municipalities, for projects using crumb rubber or other tire-derived products. See Appendix B for details on the most recent cycle of CR/TDP Grants.

Rubber Modified Asphalt Grants pay for the application of RMA, requiring counties to fund the installation of an equivalent area of standard asphalt on a similar road. The performances of the

[2] Data is based on reported counties.

standard and RMA paving are monitored and compared over a five-year period. The purpose of this grant is to encourage recycling of Kentucky tires, demonstrate the benefits of RMA, collect performance data for the different types of asphalt, and create opportunities for county governments and paving contractors to gain experience working with RMA. Since the RMA grants were initiated, the WTTF has funded 44 different road projects totaling $3,689,270 to counties for RMA paving. In 2023, $607,885 was set aside for six grant projects, which expended approximately 4,000 tires. This grant is expected to continue in 2024, and we expect program changes in the coming years to accommodate more applicants each year, based on funding availability. Appendix C includes grant recipient information.

All RMA projects have passed tests in 2023 to meet existing Kentucky Transportation Cabinet (KYTC) standard specifications. These tests, which compared RMA surfaces to conventional asphalt surfaces of similar area, included compaction density, asphalt content, voids, rutting, and performance grade (resistance to hot and cold weather under load).

Photo 1: Testing Rubber Modified Asphalt - Southland Drive, Lexington, KY
Photo by Donny Atha

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 EEC has removed waste tires from the environment, funded CR/TDP grant projects, and assisted in developing markets for waste tires. The U.S. Tire Manufacturers Association has placed emphasis on the importance of waste tire cleanups in relation to threats borne by mosquitoes carrying the Zika virus. Waste tires are a haven due to their ability to retain heat, collect water, and offer protection from predators.[3]

Photo 2: Menifee County Waste Tire Collection Event
Photo by Donny Atha

The statewide recycling rate for tires was 77.6 percent for 2023 compared to 71.7 percent for 2022. This figure is slightly above the 71.0 percent national average in the U.S. for 2022, the latest available national data. However, national recycling rates are declining, and Kentucky's 2023 rate is comparable to 2022 national projections. The commonwealth increased its recycling rate initially by working to increase the in-state tire derived fuel (TDF) market, but this market is being negatively impacted in Kentucky, and nationally, by decreased solid fuel usage in general, increased competition from low-cost natural gas, international manufacturing competition, and

[3] *Recycling Today*, October 3, 2016, Recycling Today Staff, www.recyclingtoday.com/article/rubber-manufacturers-tire-piles-declined/

environmental regulations unfavorable to coal and other solid fuels like TDF. The EEC has expanded and broadened its market development efforts, using grants to encourage the use of ground rubber in several major applications. It is appropriate for the EEC to consider additional efforts to increase the reuse percentage in the future through the diversification of markets. TDF is expected to remain one of the largest end-uses of waste tires for the foreseeable future. Ground tire rubber is considered a higher-end market than TDF, because properties of the original tire are carried forward to the new product rather than use of a one-time energy value of the waste tire as TDF. Additional market development efforts for civil engineering application of tire-derived aggregate (TDA) in highway, landfill, foundation backfill, and similar projects could enhance market diversification, offsetting the potential for additional future declines in TDF markets.

TDF applications include use in boilers at paper mills, cement kilns, and utilities that use processed tires as a supplemental energy resource, displacing a small percentage of coal usage. These facilities are required to 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. Rubber-modified asphalt is a smaller but growing application for ground rubber.

The EEC has conducted the following to gather information about the commonwealth's waste tire recycling markets, generation, and other data required for this report:

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

Based on this analysis, a brief summary of Kentucky's major markets in 2023 compared to 2022 national markets shows:

- TDF is one of the largest Kentucky markets at 24.9 percent, below the national average of 20.2 percent in 2023.[4] Total TDF usage in Kentucky has fluctuated over the past 10 years but has remained strong compared to many other regions of the country. As predicted, usage by East Kentucky Power Cooperative (EKPC) has remained strong and

[4] U.S. Tire Manufacturers Association, 2019 Summary

has potential to increase if a second unit initiates TDF. The Owensboro Municipal Utility (OMU) power boiler and New Page paper mill historically used TDF but both have been closed permanently due to competitive and economic factors. Cemex has continued to use TDF steadily. Large TDF users typically utilize both in- and out-of-state waste tires, so large swings in volume are not always reflected in the calculation of TDF as a percentage of the market for Kentucky generated tires;

- Kentucky's ground rubber applications remained Kentucky's largest market in 2023 at 31.3 percent, surpassing the national average of 28.0 percent, for a range of applications including landscape mulch, playground cushioning, synthetic turf infill, rubber modified asphalt and ground rubber;
- Kentucky's civil engineering applications used 2.9 percent compared to the national average of 5.4 percent. This market segment offers substantial opportunity for growth, but will require technical and educational efforts;
- Limited but stable volume in reselling used tires;
- Limited exporting to other countries; and
- Landfill disposal of tires generated in Kentucky decreased from 28.3 percent in 2022 to 22.4 percent in 2023 due to lower cumulative markets.

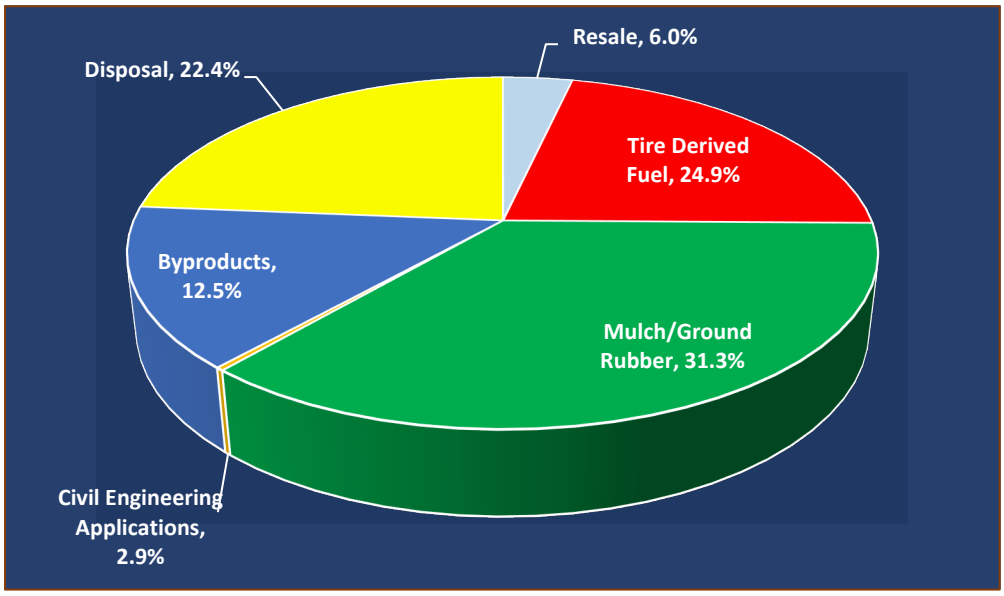

Figure 3: 2023 Kentucky Waste Tire Markets

Kentucky has transitioned from no in-state markets in 2000 to a point where potentially all TDF produced in Kentucky could be consumed in constructive applications. The EEC is involved in

several initiatives to encourage TDF market growth, providing both grant funding and technical assistance. There are several success stories in this field, a few mentioned below:

- In 2001, Kentucky spent $454,276 on capital equipment to assist OMU in using TDF. Although their contractual obligation expired in 2004, OMU continued to use TDF. Its consumption since 2016 has been limited by power generation equipment outages, as well as economic and other operational factors. Their boiler using TDF was permanently shut down in 2019 due to a major scheduled maintenance expense and poor economics, but the cumulative consumption of TDF to date has greatly exceeded the contractual obligation. In 2001, TDF production in Kentucky was an estimated 1.1 million tires, all shipped out of state because there were no in-state users. In 2022, TDF users in Kentucky consumed about 4.9 million PTEs, almost 1.4 million of which were produced from tires generated in Kentucky. Some TDF still crosses into and out of Kentucky based on regional markets and transportation logistics.
- Kosmos Cement, recently purchased by Eagle Materials, began using whole tires as TDF in 2010, and has added the use of tire chip TDF to become one of the two largest in-state users. The company uses a unique tire machine, similar to a baseball 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 (GHG), were reduced by 37 percent when using TDF with coal.[5] By increasing the use of tire chips, in addition to whole tires, Kosmos may further increase its capacity for recovering the energy from tires, so additional growth is possible, but is dependent on competitive economics. An automated whole tire feeding system could improve economics and allow increased whole tire usage.
- Another progressive company using TDF is EKPC. The EEC 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 granted in 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, potentially using up to 4 million PTEs per year to provide two to four percent of its energy requirements. The operating rates for this efficient, environmentally sound fluidized bed boiler can be impacted by low-cost natural gas boilers. EKPC has made changes to allow additional TDF usage depending on availability of the high quality TDF required in the facility.

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

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), GHG emissions can be reduced as a co-benefit of the use of secondary materials. Specifically, TDF combustion results in slightly lower GHG emissions per British Thermal Unit (BTU) than coal, and when considering emissions related to extraction and processing of coal, this difference becomes even more significant. Similarly, TDF combustion generates a slightly lower volume of particulate matter per BTU compared to coal.[6]

Substituting TDF for coal would also help avoid an estimated 0.246 lbs./million BTUs of particulate matter associated with the extraction and processing of the coal. Multiplying the 2020 use of 37,100 tons of TDF with coal in Kentucky by these factors shows a savings of nearly 13,000 tons of carbon dioxide and 147 tons of particulate matter not emitted each year. The use of TDF to reduce certain pollutants makes the use of coal more environmentally viable as we transition to alternative energy sources.

Manufacturing of ground rubber and mulch from Kentucky tires increased from an essentially nonexistent product in 1998 to 1.5 million PTEs in 2023. Liberty Tire Recycling, LLC, in Union County, manufactures a large quantity of colored mulch for retail outlets including Lowes, Home Depot, and Wal-Mart. Dalton Tire Recycle, in Boyd County, produces ground rubber for playgrounds and horse arenas. Porter's Tire and Auto Service, in Carter County, initiated crumb rubber and rubber mulch production in 2013. Ground tire rubber used in RMA is emerging nationally as an important market. The EEC promotes this type of asphalt as an additional option to increase scrap tire recycling and has offered the RMA grant since 2016. This grant is applied as a reimbursement to county or urban-county government recipients for paving a segment of roadway with RMA.

Market diversity is a critical component of successful waste tire management programs. Kentucky has developed diverse product markets, producing TDF and ground rubber products, representing approximately 50 percent of Kentucky's waste tire generation. However, developing civil engineering markets for shredded tires could further enhance the diversity of Kentucky's markets, providing constructive applications for shredded tires that are currently landfilled. Additionally, when considering possible new areas for growth in waste tire markets, it should be noted that in 2017, Kentucky ranked second in the U.S. for car and truck production per capita.[7] The commonwealth could consider assisting the three major Kentucky automotive manufacturers in

[6] 76FR15494, 40 C.F.R. Part 241, EPA, Identification of Non-Hazardous Secondary Materials that Are Solid Waste, Final Rule, March 21, 2011, *Federal Register*

[7] Mark Crawford, *Big Manufacturing Investments Keep Kentucky's Automotive Industry Rolling Along*, https://www.areadevelopment.com/stateResources/kentucky/big-manufacturing-investments-kentucky-automotive-industry.shtml

using waste tire ground rubber in molded automotive parts to expand this important potential application.

CRUMB RUBBER ISSUES

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 that could result in adverse health effects. In light of these concerns, and out of an abundance of caution, the EEC has not provided grant funding for loose shredded or crumb rubber on playgrounds and athletic fields as part of its grant portfolio since 2014.

In 2016 the EPA, Centers for Disease Control (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR), and Consumer Product Safety Commission (CPSC) initiated the Federal Research Action Plan (FRAP) on Recycled Tire Crumb Used on Playing Fields and Playgrounds to address concerns raised by the public about the potential health risks associated with the use of crumb rubber on athletic fields. Previous, but limited studies have not shown an elevated health risk. The study consists of two parts: Part 1 - tire crumb rubber characterization, and Part 2 – exposure characterization study. On July 25, 2019, EPA released the Part 1 report with plans to release the Part 2 report at a later date. The results of Part 1 included the following: a range of chemicals were observed for both metals and organics, chemical concentrations were similar to other published studies, and both air emissions of most organic chemicals and bio accessibility of metals were low. Part 2 will include data to characterize potential human exposures to chemicals found in the tire crumb rubber material along with results from a biomonitoring study to be conducted by CDC/ATSDR. The CDC determined it needed to conduct a more robust biomonitoring study to investigate potential exposure to constituents in tire crumb rubber with field activities/data collection scheduled to begin in spring of 2020.

As the COVID-19 outbreak evolved, CDC developed recommended actions to protect people's health and for these reasons, ATSDR temporarily postponed the initiation of the Synthetic Turf Biomonitoring Study. Exposure characterization and measurement activities will resume as soon as possible. Upon completion of the biomonitoring study, the FRAP Part 2 report will be released.

Concurrently the DWM is continuing to follow studies related to the safety of recyclable materials with a focus on tire crumb and its various potential reuse applications including athletic fields, landscaping, park/trail benches, picnic tables, and solid poured-in-place surfaces for hiking trails and playgrounds.

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 peak times, processing equipment

outages, or changes in product markets. When shredded tires are improperly stored, specifically in large, deep compacted piles, the possibility of auto-ignition exists. When a large pile of whole or shredded tire material ignites, it is extremely difficult 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. A common problem with this system is that facilities often bond for the minimum amount, then accumulate well over 10,000 tires, resulting in circumstances where their bond is inadequate to cover a required cleanup. In addition to stronger enforcement of the bonding requirement, a solution for consideration could be realized by funding remediation of tire fires to 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 cleanup costs. Similar to other states, the legislature could consider requiring an actual cost estimate for closure to determine the amount of financial assurance requirement.

A potential problem for tire processors is the maturation of national TDF markets, reflecting a general downturn in U.S. manufacturing, and reduction in coal usage. Unlike many states, Kentucky's TDF market remains robust and has ongoing potential to continue as a major use of waste tires for the commonwealth. However, use of all solid fuels, including coal and TDF, is expected to decline in the foreseeable future. Continuing efforts to further diversify markets are critical to maintaining a high rate of constructive utilizations of waste tire resources.

FUTURE OF THE FUND

The waste tire program exemplifies the EEC's mission of protecting human health and the environment by encouraging waste reduction, reuse, and recycling. The WTTF supports statewide WTCEs, remediates large tire piles, provides direct grants to counties, and promotes market development for TDF and ground rubber. If the waste tire fee is not extended, program funds will not be available to Kentucky businesses involved in tire processing, and remediation would be negatively affected.

A total of 38 states have mandated tire fees[8]. These fees are collected in different ways, but 32 of the 38 add a fee to retail tire sales. Some state fees are as low as $0.25, but most are in the $1 to $3 range. A total of five states charge a fee per vehicle registration, ranging from $1.50 to $5.00 per vehicle. Hawaii's fee is collected by an importer.

Over the years there have been several examples of states that discontinued their tire fee programs with negative results. Washington state and Missouri have since re-instated their tire fee to address these problems. Oregon, Wisconsin, Idaho, and Texas are examples of states that discontinued waste tire fees, and experienced problems such as increased stockpiles, decreased monitoring of

[8] Where To Recycle Tires + State-by-State Disposal Fees - Tire Reviews, Buying Guide & Interesting Facts - Utires.com

processors and haulers, and decline in waste tire recycling markets leading to lower tire recycling rates.[9]

In addition to the repercussions discussed above, the following impacts could happen in Kentucky as a result, if the fee were to expire:

- 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 might be unable to rely on the commonwealth for tire pile remediation; and
- Market development would likely cease.

The waste tire program faces many challenges, common to similar programs throughout the country:

- It is probable that some retailers collect disposal fees and stockpile waste tires until a WTCE is conducted in their area, or otherwise mismanage their waste tires.
- 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. Some of these tires may later be mismanaged, burdening counties with continued waste tire management issues.

It has been reported that some tire retailers charge higher tire disposal/recycling fees to discourage individuals from leaving waste tires with the retailer, compared to the average $1.50 to $2.50 fee. As an alternative, this situation could be improved by requiring the disposal price to be included separately and alongside the sale price and tire fee or list the actual statewide average disposal rate on a notice and allow the free market to manage the situation.

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 corrected this problem by banning all tire material, including cut or shredded tires, from landfills except for pre-approved construction applications within landfills.

Statewide coverage by reputable tire processing facilities is essential for the free market to work. Long transportation distances translate into higher costs that keep tire recycling from being economically feasible.

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

Aligning the reporting schedule of the WTTF within the state budget cycle of two fiscal years, could improve the efficiency of the report. A revision to KRS 224.50-872 from annually to a two-year reporting cycle would become necessary.

KRS 224.50-868(3) authorizes the DOR to collect the waste tire fee. The statute requires up to $50,000 per year be transferred to DOR for collection of this fee. This neither provides enough money (estimated cost of $75,000 to employ one person annually) nor incentive for DOR to enforce the collection. States incorporating a specific percentage to be awarded to the collection agency have higher collection rates than Kentucky.

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

CREDITS & ACKNOWLEDGEMENTS

Commonwealth of Kentucky

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Energy and Environment Cabinet

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Deputy Secretary John Lyons

Department for Environmental Protection
Commissioner Anthony R. Hatton, P.G.
Deputy Commissioner Amanda LeFevre

This annual report is intended to provide a concise set of facts and measurements to support environmental decision making. We welcome your questions and comments to the contacts below:

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January 2024

APPENDICES

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APPENDIX D: WASTE TIRE STATISTICS HISTORY BY AREA DEVELOPMENT DISTRICT

APPENDIX A: Fiscal Year 2023 Waste Tire Grants*

County	Award	Funds Spent	Funds Returned	Number of PTEs
Adair Co.	$ 4,000.00	$ 1,883.50	$ 2,116.50	496
Allen Co.	$ 4,000.00	$ 28,701.45	$ -	4,318
Anderson Co.	$ 4,000.00	$ 6,523.00	$ -	2,528
Ballard Co.	$ 4,000.00	$ 4,337.50	$ -	3,770
Barren Co.	$ 4,000.00	$ 4,079.60	$ -	884
Bath Co.	$ 4,000.00	Not reported	Not reported	Not reported
Bell Co.	$ 4,000.00	$ 3,033.50	$ 966.50	1,164
Boone Co.	$ 4,000.00	$ 4,250.00	$ -	2,000
Bourbon Co.				
Boyd Co.	$ 4,000.00	$ 4,121.50	$ -	1,496
Boyle Co.	$ 4,000.00	$ 5,090.00	$ -	1,518
Bracken Co.	$ 4,000.00	$ 3,768.50	$ 231.50	877
Breathitt Co.				
Breckinridge Co.	$ 4,000.00	$ 3,626.00	$ 374.00	1,609
Bullitt Co.	$ 4,000.00	$ -	$ 4,000.00	Not reported
Butler Co.	$ 4,000.00	$ 4,000.00	$ -	1,207
Caldwell Co				
Calloway Co.	$ 4,000.00	$ -	$ 4,000.00	-
Campbell Co.	$ 4,000.00	$ 14,110.40	$ -	8,964
Carlisle Co.	$ 4,000.00	$ 4,000.00	$ -	4,000
Carroll Co.	$ 4,000.00	$ 6,600.00	$ -	3,423
Carter Co.				
Casey Co.	$ 4,000.00	$ 2,312.00	$ 1,688.00	939
Christian Co.	$ 4,000.00	$ 6,467.50	$ -	2,399

Clark Co.	$ 4,000.00	$ 7,320.50	$ -	5,618
Clay Co.				
Clinton Co.	$ 4,000.00	$ 4,170.25	$ -	1,643
Crittenden Co.	$ 4,000.00	$ 8,000.00	$ -	10,400
Cumberland Co.	$ 4,000.00	$ 5,628.25	$ -	3,062
Daviess Co.	$ 4,000.00	$ 4,356.20	$ -	1,982
Edmonson Co.	$ 4,000.00	$ 3,305.00	$ 695.00	661
Elliott Co.	$ 4,000.00	$ 2,622.00	$ 1,378.00	825
Estill Co.	$ 4,000.00	$ 4,114.50	$ -	1,921
Fayette Co.	$ 4,000.00	$ 4,000.00	$ -	2,285
Fleming Co.	$ 4,000.00	$ 645.00	$ 3,355.00	129
County	Award	Funds Spent	Funds Returned	Number of PTEs
Floyd Co.	$ 4,000.00	$ 4,515.00	$ -	6,450
Franklin Co.	$ 4,000.00	$ 3,590.00	$ 410.00	284
Fulton Co.				
Gallatin Co.	$ 4,000.00	$ 8,976.46	$ -	430
Garrard-Lincoln	$ 8,000.00	$ 3,822.50	$ 4,177.50	1,161
Grant Co.	$ 4,000.00	$ 4,666.00	$ -	6,663
Graves Co.	$ 4,000.00	$ 19,500.00	$ -	15,600
Grayson Co.	$ 4,000.00	$ 4,255.75	$ -	940
Green Co.	$ 4,000.00	$ 3,651.00	$ 349.00	745
Greenup Co.	$ 4,000.00	$ 6,010.00	$ -	3,472
Hancock Co.				
Hardin Co.	$ 4,000.00	$ 4,000.00	$ -	926
Harlan Co.	$ 4,000.00	$ 29,250.00	$ -	11,050
Harrison Co.	$ 4,000.00	$ 4,075.00	$ -	1,851

Hart Co.	$ 4,000.00	$ 3,992.50	$ 7.50	1,014
Henderson Co.	$ 4,000.00	$ 8,886.00	$ -	8,751
Henry Co.				
Hickman Co.	$ 4,000.00	$ 5,445.00	$ -	3,630
Hopkins Co.	$ 4,000.00	$ 15,894.50	$ -	5,925
Jackson Co.				
Louisville-JCMG				
Jessamine Co.	$ 4,000.00	$ 6,020.50	$ -	1,805
Johnson Co.				
Kenton Co.	$ 4,000.00	$ 6,300.00	$ -	3,000
Knott Co.	$ 4,000.00	$ 3,924.65	$ 75.35	611
Knox Co.	$ 4,000.00	$ 4,107.50	$ -	1,570
LaRue Co.	$ 4,000.00	$ 4,030.00	$ -	2,600
Laurel Co.	$ 4,000.00	$ 1,521.00	$ 2,479.00	551
Lawrence Co.	$ 4,000.00	$ 4,195.00	$ -	1,224
Lee Co.				
Leslie Co.	$ 4,000.00	Not reported	Not reported	Not reported
Letcher Co.				
Lewis Co.	$ 4,000.00	$ 4,256.00	$ -	1,418
Livingston Co.	$ 4,000.00	$ 4,200.00	$ -	4,800
Logan Co.	$ 4,000.00	$ 4,712.00	$ -	1,537
Lyon Co.	$ 4,000.00	$ 4,566.00	$ -	4,200
County	Award	Funds Spent	Funds Returned	Number of PTEs
Madison Co.	$ 4,000.00	$ 3,311.00	$ 689.00	1,311
Magoffin Co.	$ 4,000.00	$ 3,600.00	$ 400.00	2,000
Marion Co.	$ 4,000.00	$ 3,962.00	$ 38.00	883

Marshall Co.	$ 4,000.00	$ 4,530.00	$ -	1,704
Martin Co.	$ 4,000.00	$ 2,200.00	$ 1,800.00	585
Mason Co.	$ 4,000.00	$ 13,450.75	$ -	9,510
McCracken Co.	$ 4,000.00	$ 2,725.00	$ 1,275.00	1,500
McCreary Co.	$ 4,000.00	$ 6,114.00	$ -	1,027
McLean Co.	$ 4,000.00	$ 5,700.00	$ -	3,900
Meade Co.	$ 4,000.00	$ 4,719.00	$ -	1,426
Menifee Co.	$ 4,000.00	$ -	$ 4,000.00	-
Mercer Co.	$ 4,000.00	$ 4,742.25	$ -	1,604
Metcalfe Co.	$ 4,000.00	$ 3,568.20	$ 431.80	1,169
Monroe Co.	$ 4,000.00	$ 4,001.95	$ -	1,426
Montgomery Co.	$ 4,000.00	$ 3,290.00	$ 710.00	800
Morgan Co.	$ 4,000.00	$ 4,646.00	$ -	884
Muhlenberg Co.	$ 4,000.00	$ 3,626.20	$ 373.80	1,435
Nelson Co.	$ 4,000.00	$ 11,408.00	$ -	7,360
Nicholas Co.				
Ohio Co.	$ 4,000.00	$ 4,800.00	$ -	3,726
Oldham Co.	$ 4,000.00	$ 3,146.00	$ 854.00	1,123
Owen Co.	$ 4,000.00	$ 5,364.00	$ -	2,327
Owsley Co.				
Pendleton Co.	$ 4,000.00	$ 4,125.25	$ -	3,157
Perry Co.	$ 4,000.00	$ 8,755.00	$ -	4,400
Pike Co.	$ 4,000.00	$ 16,610.00	$ -	6,600
Powell Co.	$ 4,000.00	$ 4,326.00	$ -	1,274
Pulaski Co.	$ 4,000.00	$ 5,251.00	$ -	2,188
Robertson Co.	$ 4,000.00	Not reported	Not reported	Not reported
Rockcastle Co.	$ 4,000.00	$ 4,003.25	$ -	1,535

County	Award	Funds Spent	Funds Returned	Number of PTEs
Rowan Co.	$ 4,000.00	$ 4,029.00	$ -	1,083
Russell Co.				
Scott Co.	$ 4,000.00	$ 4,000.00	$ -	1,123
Shelby Co.	$ 4,000.00	$ 8,100.00	$ -	3,940
Simpson Co.	$ 4,000.00	$ 3,908.30	$ 91.70	584
Spencer Co.				
Taylor Co.	$ 4,000.00	$ 1,220.00	$ 2,780.00	396
Todd Co.	$ 4,000.00	$ 4,000.00	$ -	3,000
Trigg Co.				
Trimble Co.	$ 4,000.00	$ 3,245.00	$ 755.00	501
Union Co.	$ 4,000.00	$ 16,650.00	$ -	8,150
Warren Co.	$ 4,000.00	$ 21,154.60	$ -	11,134
Washington Co.	$ 4,000.00	$ 5,306.00	$ -	1,219
Wayne Co.	$ 4,000.00	$ 2,098.50	$ 1,901.50	581
Webster Co.	$ 4,000.00	$ 6,232.50	$ -	891
Whitley Co.				
Wolfe Co.				
Woodford Co.	$ 4,000.00	$ 4,758.80	$ -	2,157
	$ 400,000.00	**$ 556,106.06**	**$ 42,402.65**	**261,939**

*Totals reflect counties that have reported as of 11/8/2023

APPENDIX B: Calendar Year 2023 Crumb Rubber/Tire-Derived Products Grants

APPLICANT	PROJECT BY LOCATION	GRANT AMOUNT
Bracken	Bracken County Fiscal Court, Horse Trails & Big Bass and Beaver Lakes – Poured-In-Place Unloading Pads and Trails to Fishing Lakes	$67,000
Elliott	Elliott County Board of Education, Elliott County Middle School – Poured-In-Place Commons Area (Outdoor Classroom)	$35,150
Fayette	Fayette County Board of Education, Sandersville Elementary School – Poured-In-Place Playground	$63,000
Floyd	Floyd County Fiscal Court, Minnie Park – Poured-In-Place Playground & Areas	$73,500
Gallatin	Gallatin County Fiscal Court, County Park – Poured-In-Place Playground	$29,000
Grant	City of Dry Ridge, Piddle Park – Poured-In-Place Playground	$59,000
Hart	Hart County Solid Waste/109 Board, Solid Waste Facility – Park Benches and Picnic Tables	$3,400
Hopkins	City of Dawson Springs, City Park – Poured-In-Place Playground	$35,000
Knox	Barbourville Independent Schools, School Campus – Park Benches and Picnic Tables	$4,000
Laurel	East Bernstadt Independent Schools, School Campus – Poured-In-Place Playground	$75,000
Powell	Powell County Fiscal Court, Schools/City Parks/Courthouse – Park Benches and Wheelchair Accessible Picnic Tables	$24,000
Shelby	City of Simpsonville, Commons Park – Poured-In-Place Playground, Park/Trail Benches and Wheelchair Accessible Picnic Tables	$15,000

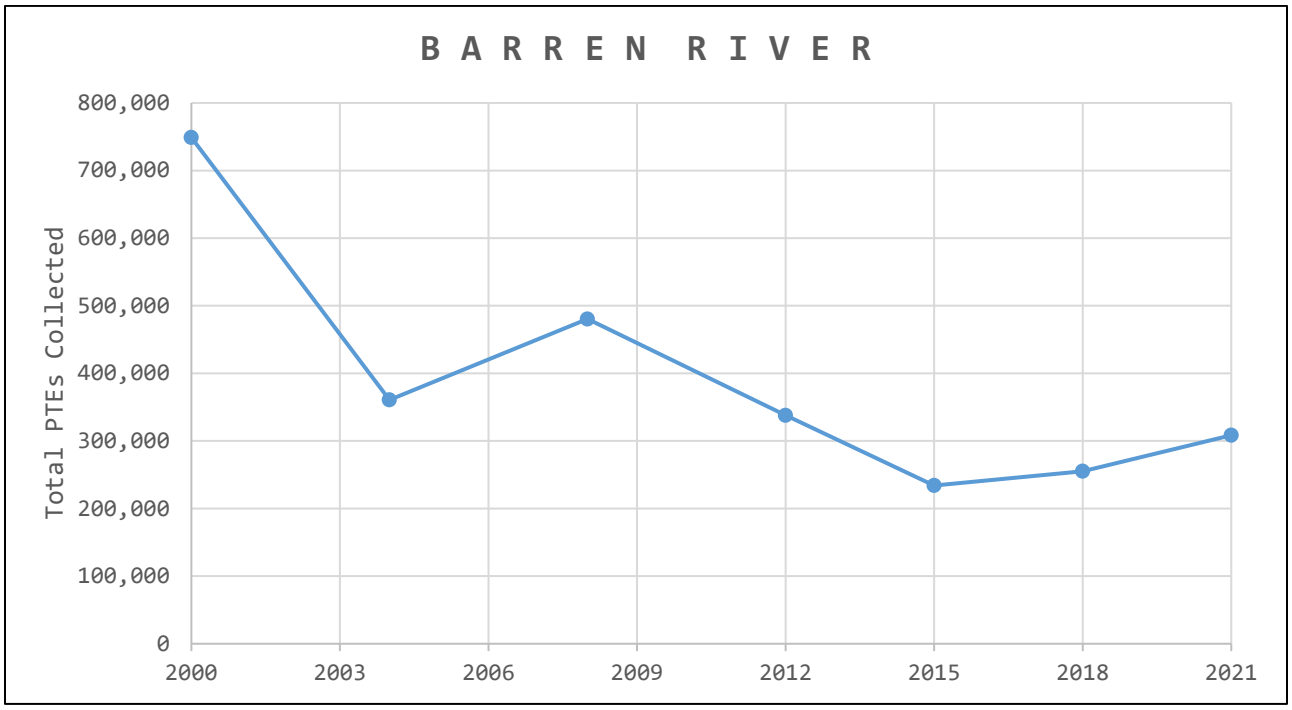
Taylor	Taylor County Fiscal Court, Veterans Memorial Park – Park Benches and Picnic Tables (Including Wheelchair Accessible)	$9,300
Wayne	City of Monticello, Memorial Park – Poured-In-Place Playground	$60,500
Webster	City of Dixon, Baker's Park – Poured-In-Place Surfacing	$21,300
APPLICANT	**PROJECT BY LOCATION**	**GRANT AMOUNT**
Woodford	Versailles-Woodford County Parks and Recreation, Huntertown Community Interpretive Park – Picnic Tables	$11,000
Total		**$585,150**

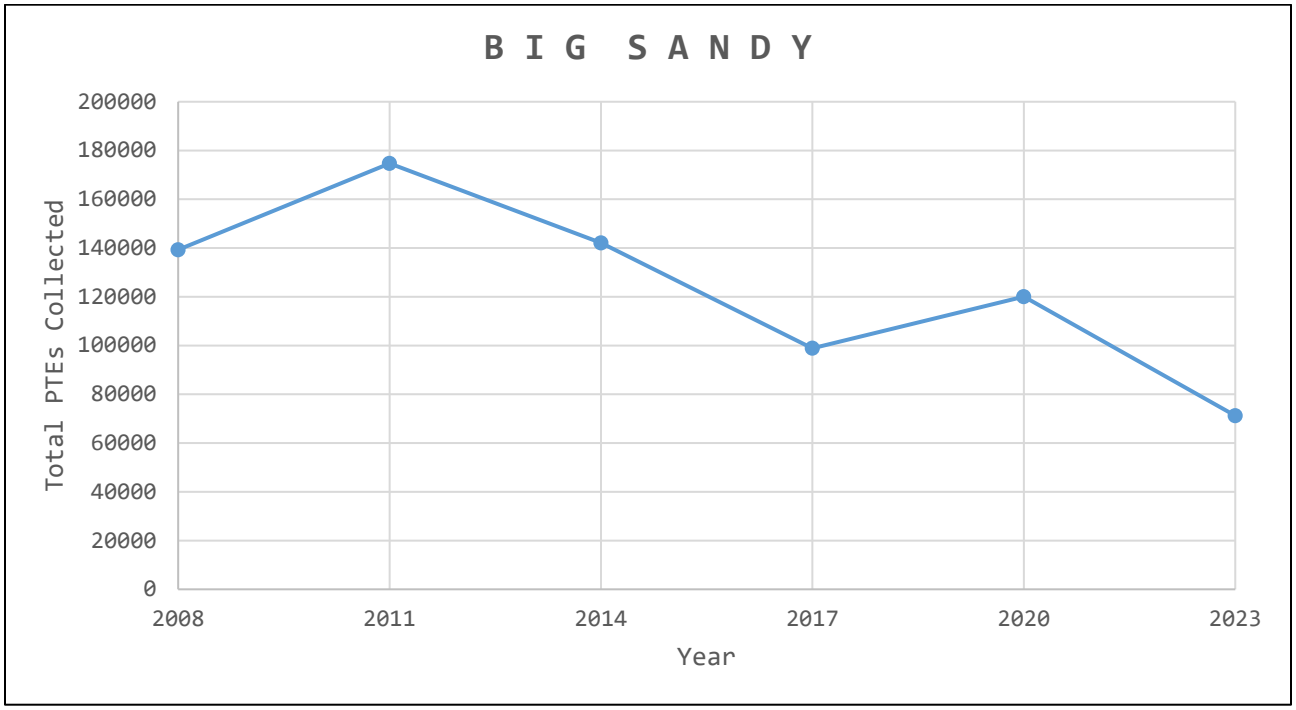
APPENDIX C: Calendar Years 2020 – 2023 Rubber Modified Asphalt Grants

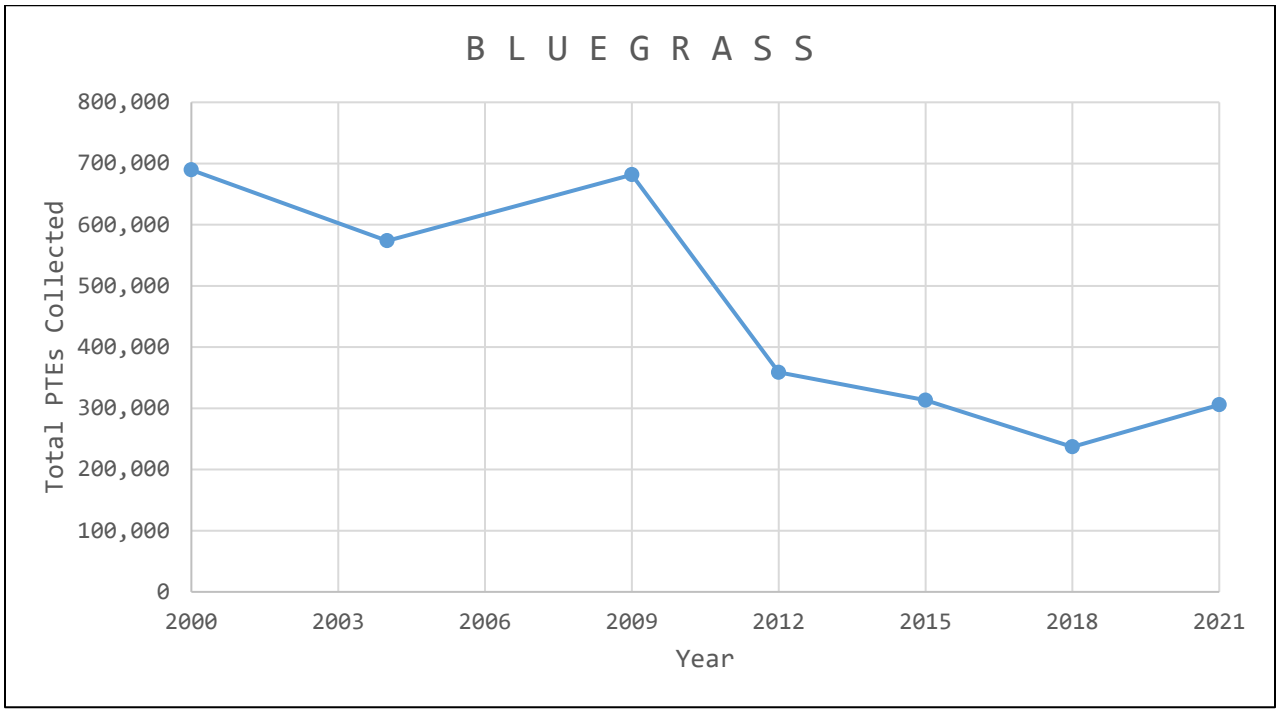
COUNTY	APPLICANT	LOCATION/ROAD	SURFACE TYPE	AWARD
CY2021 Grant Cycle				
Allen	Allen Co. Fiscal Court	New Buck Creek Rd 1.6 mi	Thin Overlay	$115,425.00
Grayson	Grayson Co. Fiscal Court	Sulphur Wells Rd 1.0 mi	Thin Overlay	$98,947.00
Hardin	Hardin Co. Fiscal Court	Smith Mill Rd. 2.1 mi	Chip Seal	$67,500.00
Henderson	Henderson Co. Fiscal Court	Old Corydon Rd. 0.42 mi	Thin Overlay	$27,016.00
Marshall	Marshall Co. Fiscal Court	Dusty Trail 1.1 mi	Thin Overlay	$87,889.00
Muhlenberg	Muhlenberg Co. Fiscal Court	Cleaton Rd. 1.0 mi	Thin Overlay	$105,720.00
CY2022 Grant Cycle				
Christian	Christian Co. Fiscal Court	Witty Lane 1.04 mi	Thin Overlay	$107,561
Kenton	Kenton Co. Fiscal Court	Staffordsburg Rd 1.2 mi	Thin Overlay	$155,116
LaRue	LaRue Co. Fiscal Court	Veirs Rd 1.2 mi	Thin Overlay	$137,575
Oldham	Oldham Co. Fiscal Court	Lock Lane 0.3 mi	Thin Overlay	$43,111
CY2023 Grant Cycle				
Allen	Allen Co. Fiscal Court	Blankenship Road .69 mi	Thin Overlay	$78,825.00

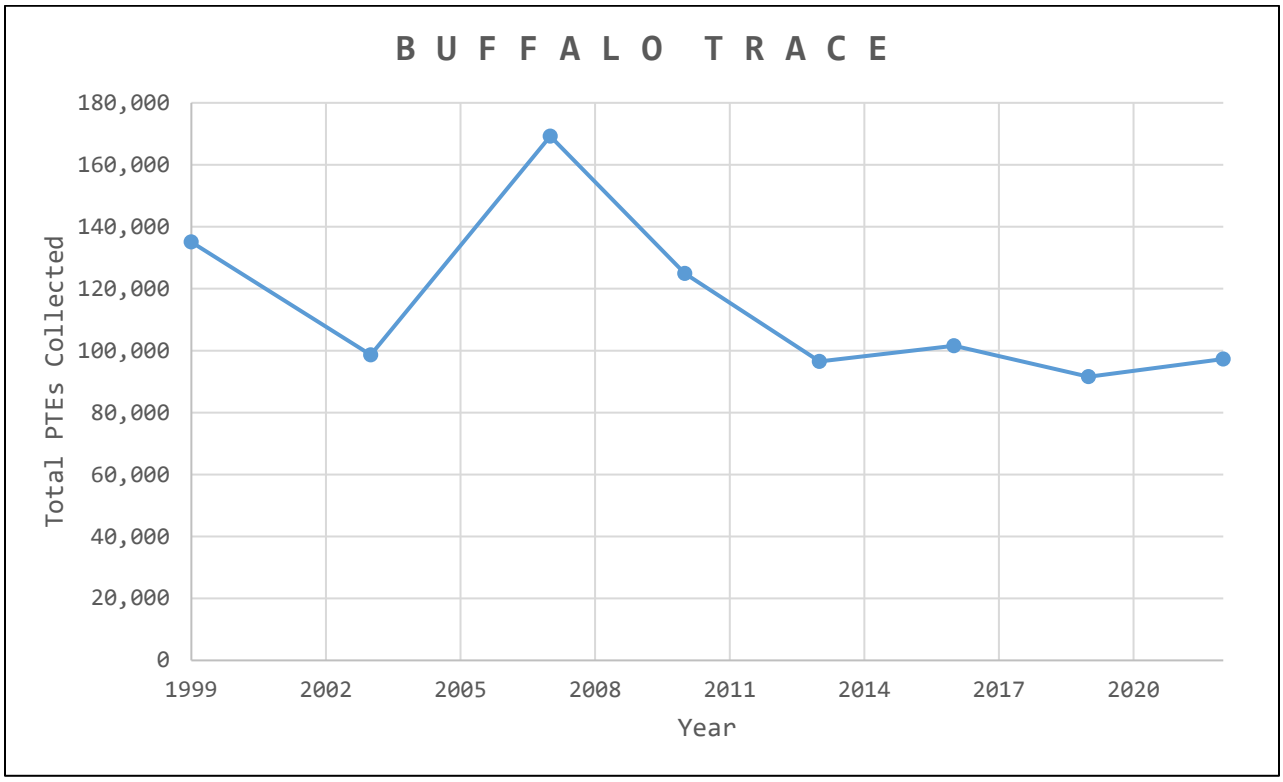
Hancock	Hancock Co. Fiscal Court	Hilldale Road 1.2 mi	Thin Overlay	$93,960.00
Jefferson	Louisville Metro	Grade Lane 0.94 mi	Thin Overlay	$126,613.86
Livingston	Livingston Co. Fiscal Court	Coon Chapel Road 1.07 mi	Thin Overlay	$158,448.00
McLean	McLean Co. Fiscal Court	Dillahay Dame Loop 0.5 mi	Thin Overlay	$52,312.50
Pulaski	Pulaski Co, Fiscal Court	Bourbon Road 0.69 mi	Thin Overlay	$97,725.55

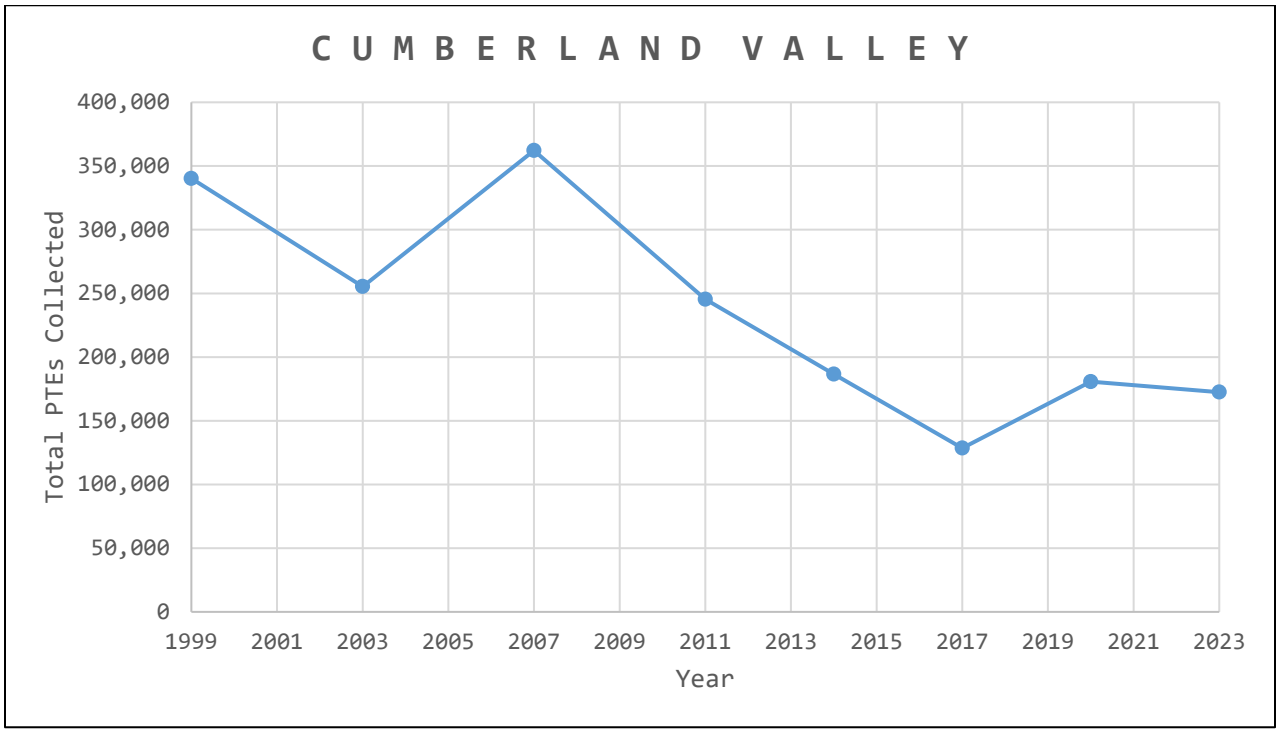
APPENDIX D: Waste Tire Statistics History by Area Development District

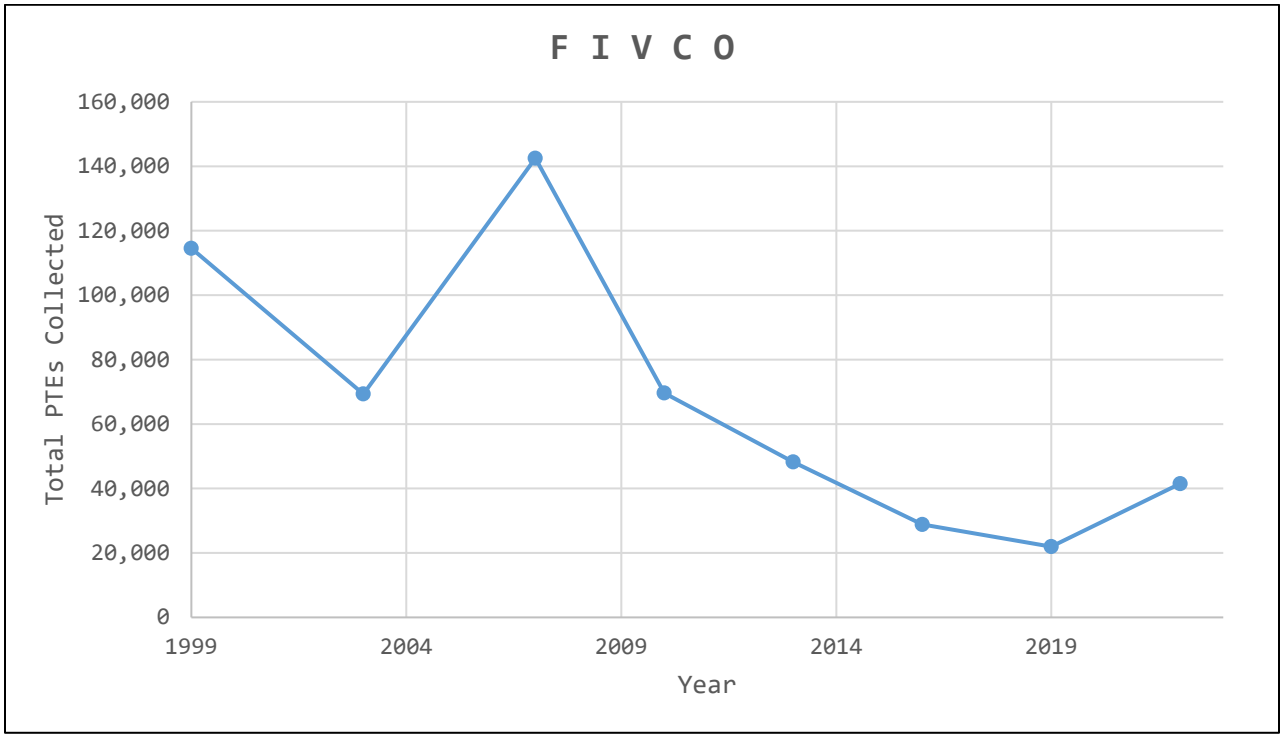


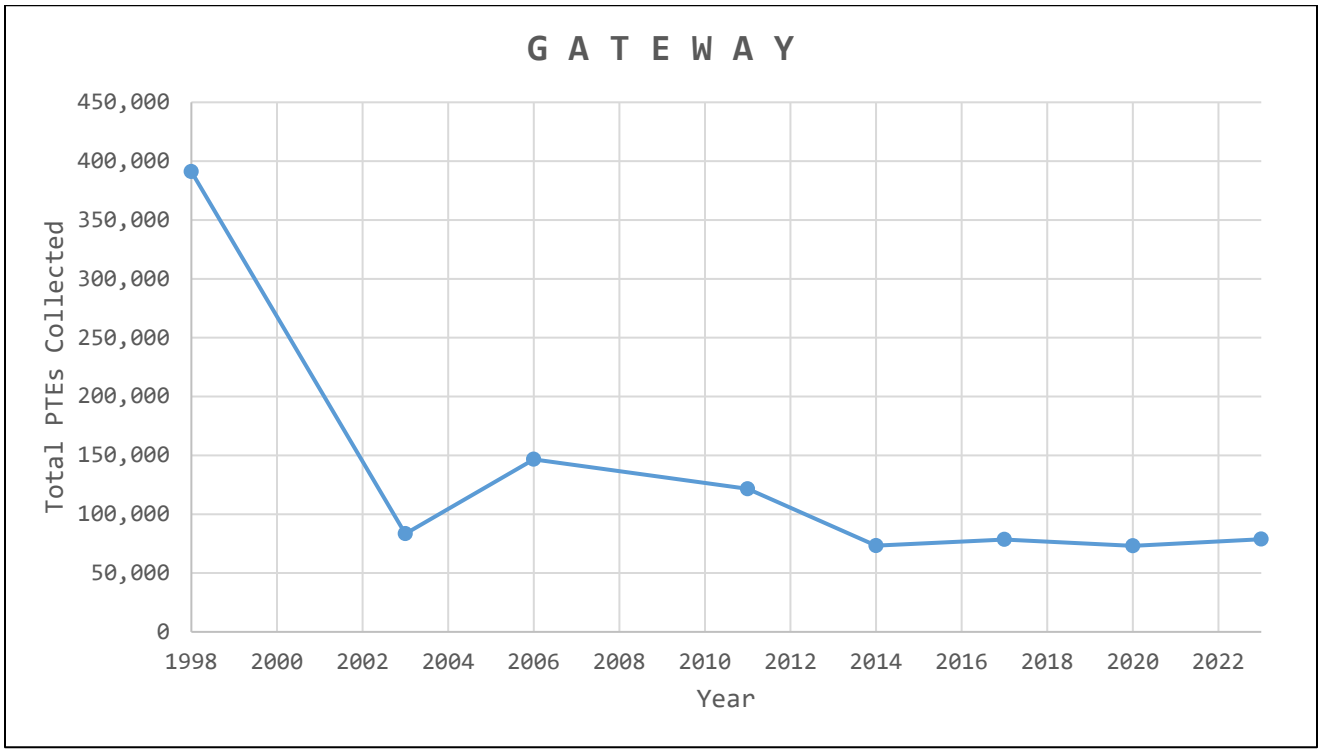



BLUEGRASS
Total PTEs Collected
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2000
2003
2006
2009
2012
2015
2018
2021
Year


BUFFALO TRACE
Total PTEs Collected
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1999
2002
2005
2008
2011
2014
2017
2020
Year


CUMBERLAND VALLEY
Total PTEs Collected
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Year


FIVCO
Total PTEs Collected
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1999
2004
2009
2014
2019
Year


GATEWAY
Total PTEs Collected
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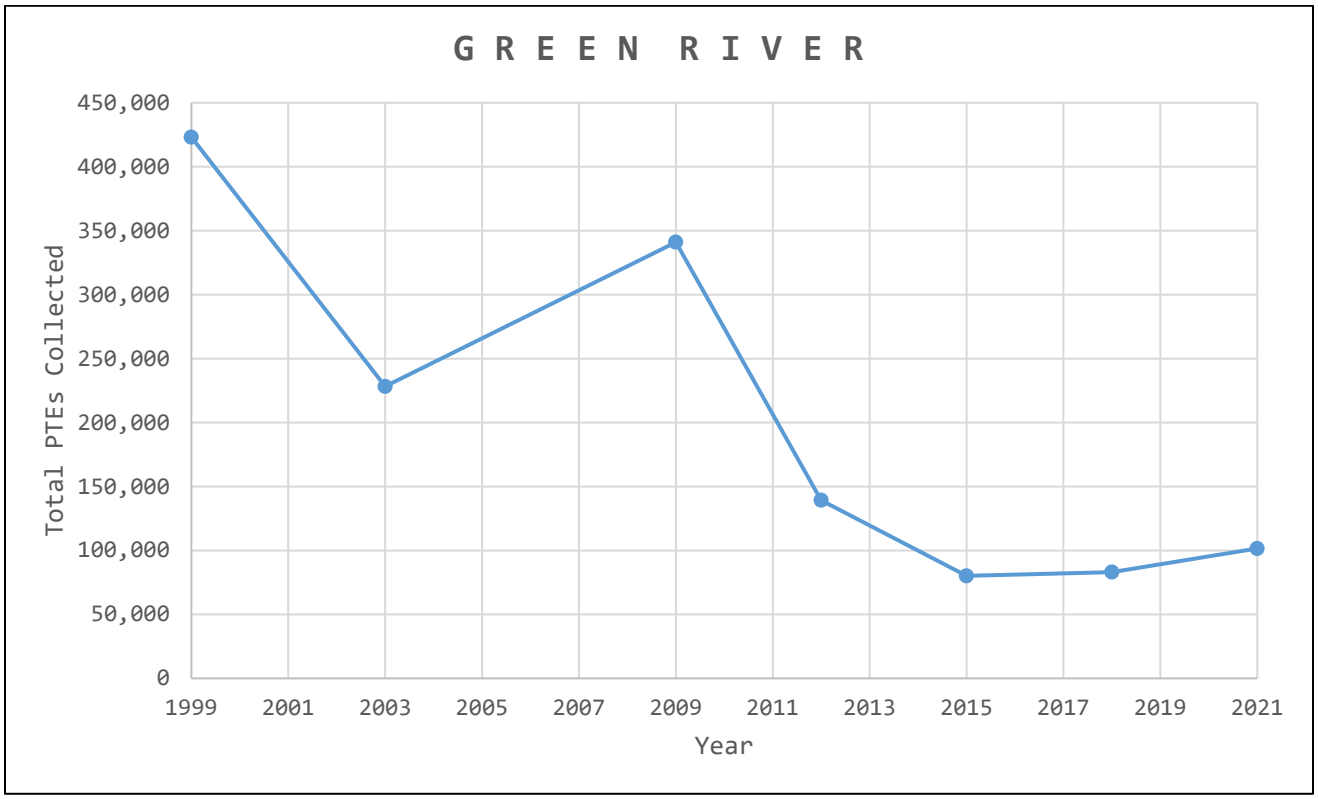
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Year


GREEN RIVER
Total PTEs Collected
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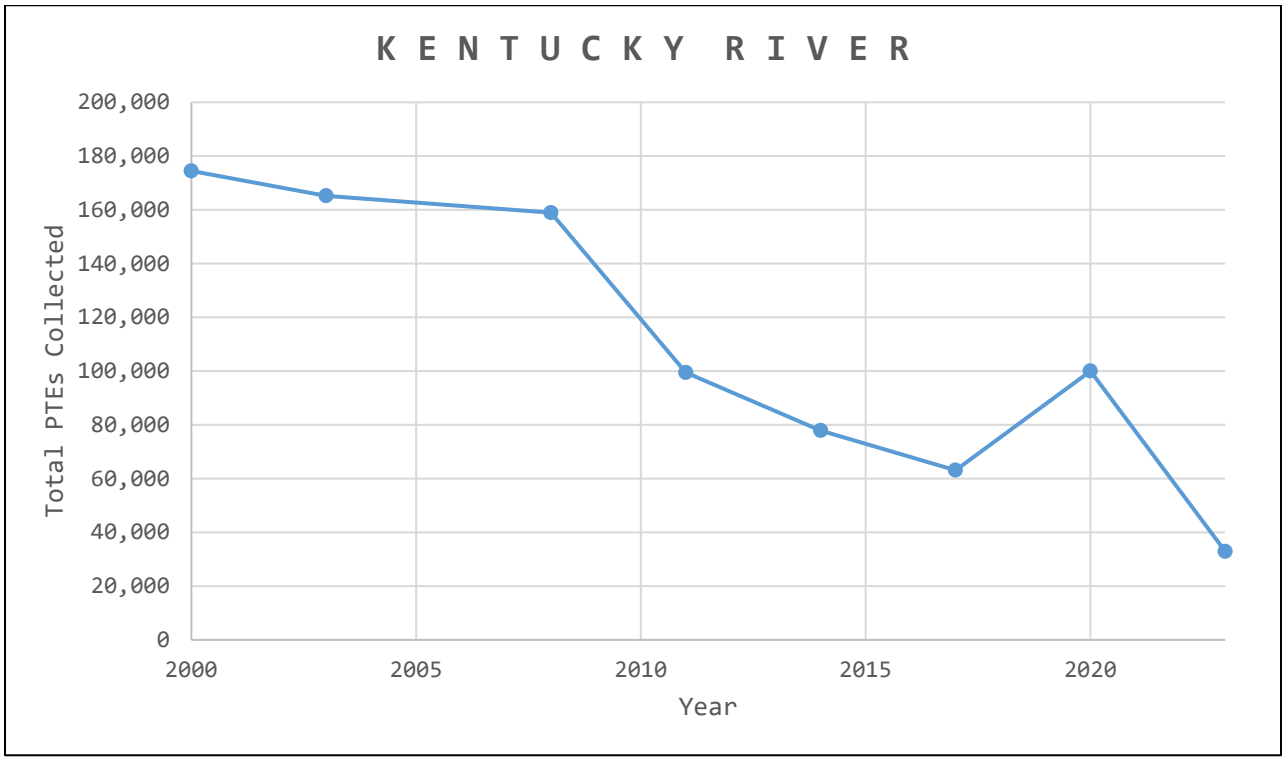
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
Year


K E N T U C K Y R I V E R
Total PTEs Collected
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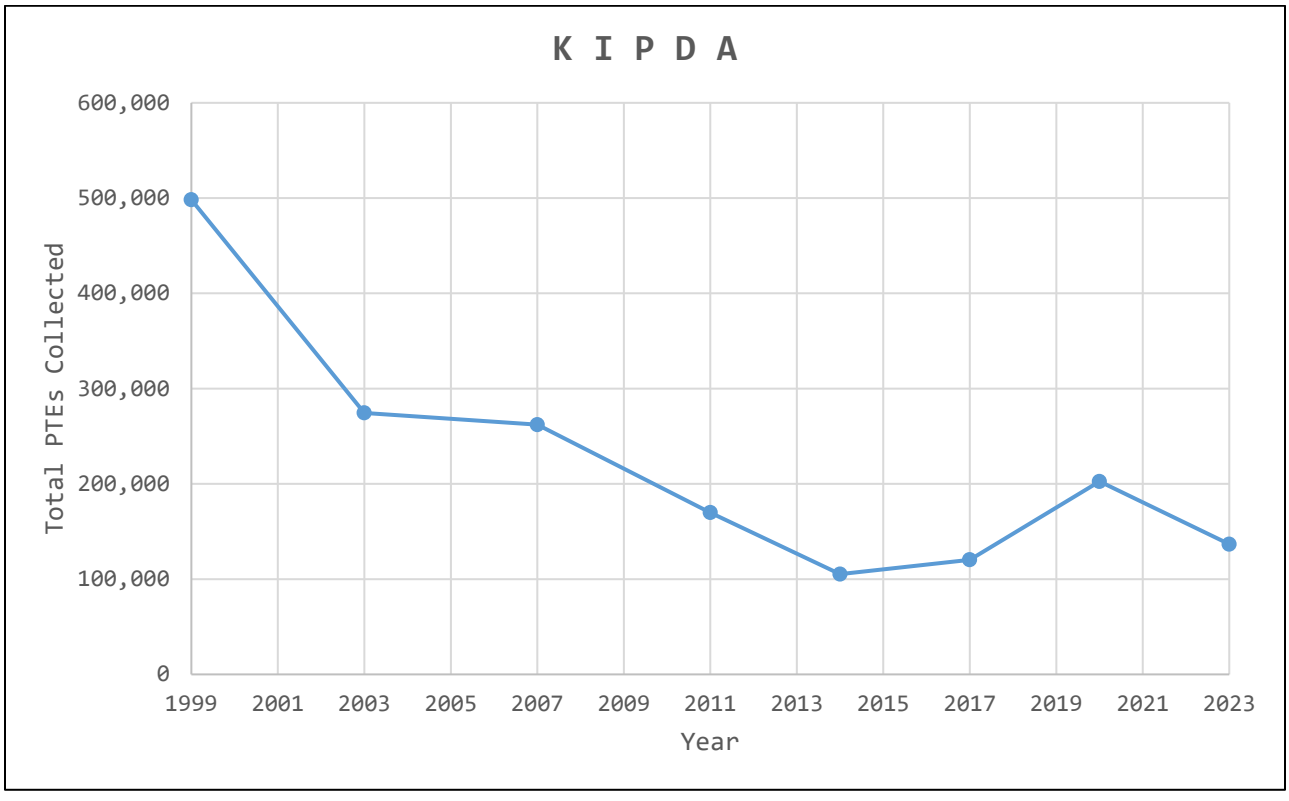
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
2000
2005
2010
2015
2020
Year


K I P D A
Total PTEs Collected
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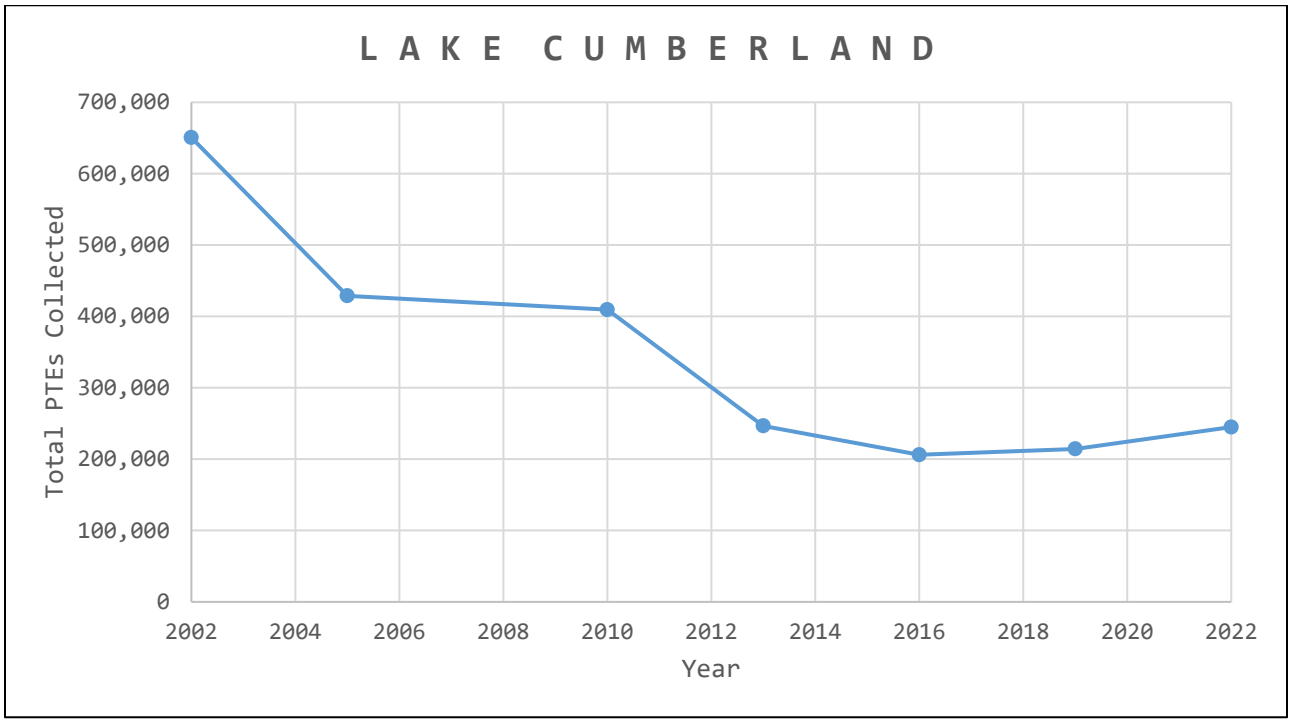
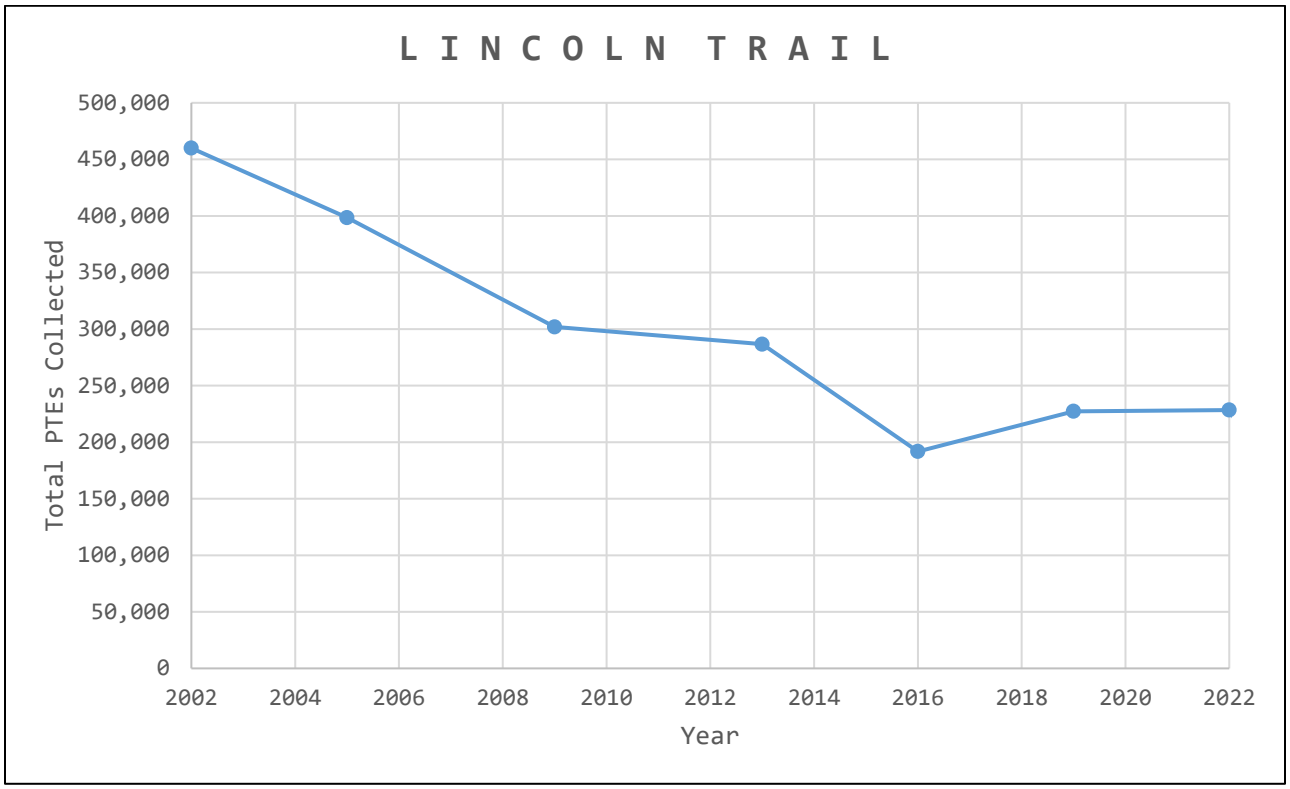
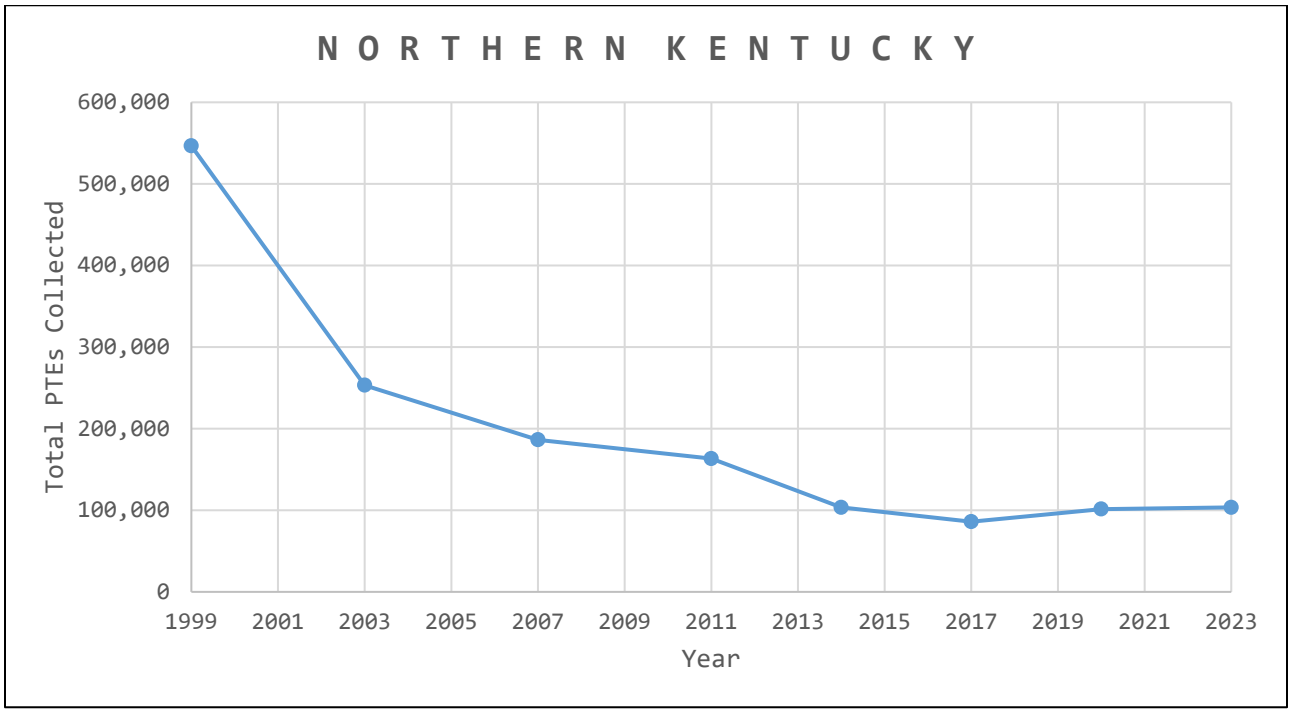
500,000
400,000
300,000
200,000
100,000
0
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Year


LAKE CUMBERLAND
Total PTEs Collected
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Year


LINCOLN TRAIL
Total PTEs Collected
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Year


NORTHERN KENTUCKY
Total PTEs Collected
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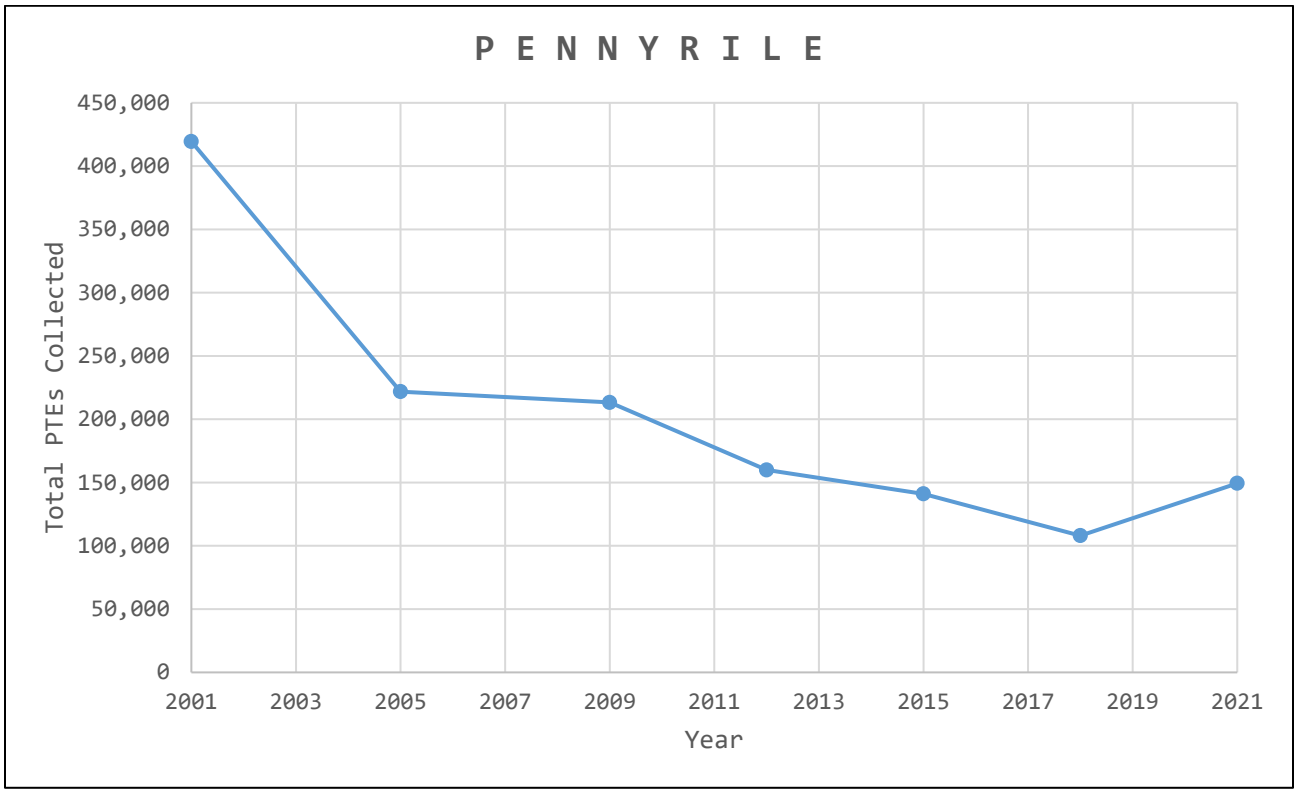
500,000
400,000
300,000
200,000
100,000
0
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Year


PENNYRILE
Total PTEs Collected
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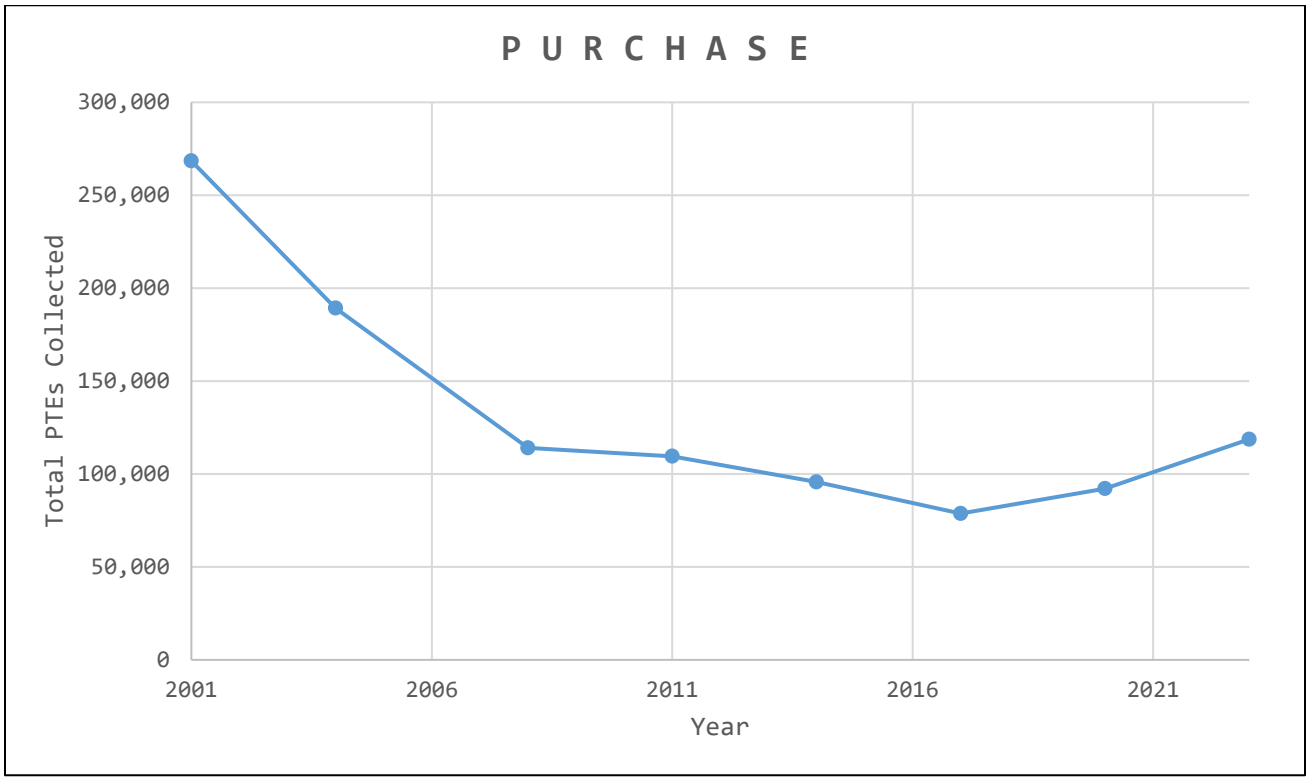
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
Year


P U R C H A S E
300,000
250,000
200,000
150,000
100,000
50,000
0
Total PTEs Collected
2001
2006
2011
2016
2021
Year

ACRONYMS

ADD	Area Development District
ATSDR	Agency for Toxic Substances and Disease Registry
BTU	British Thermal Unit
CDC	Centers for Disease Control
CPSC	Consumer Product Safety Commission
CR/TDP	Crumb Rubber/Tire-Derived Products
DOR	Department of Revenue
DWM	Division of Waste Management
EEC	Energy and Environment Cabinet
EKPC	East Kentucky Power Cooperative
EPA	U.S. Environmental Protection Agency
FRAP	Federal Research Action Plan
GHG	Greenhouse Gas
KYTC	Kentucky Transportation Cabinet
OMU	Owensboro Municipal Utility
PSC	Public Service Commission
PTE	Passenger Tire Equivalent
RLA	Recycling and Local Assistance
RMA	Rubber-Modified Asphalt
TDA	Tire-Derived Aggregate
TDF	Tire-Derived Fuel
WTCE	Waste Tire Collection Event
WTTF	Waste Tire Trust Fund
WTWG	Waste Tire Working Group

Kentucky Division of Waste Management

300 Sower Boulevard, Second Floor

Frankfort, KY 40601

Report an Environmental Emergency,

24 hours to Environmental Response Team

502-564-2380 or 800-928-2380