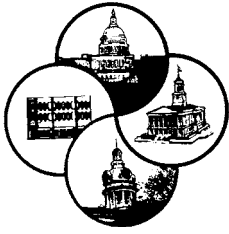




**Closing Gaps in Tennessee's Waste Tire Program  
and Giving Local Governments More Flexibility  
to Prevent Illegal Tire Dumping**



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## **Closing Gaps in Tennessee's Waste Tire Program and Giving Local Governments More Flexibility to Prevent Illegal Tire Dumping**

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Cliff Lippard, Executive Director

January 16, 2020

The Honorable Randy McNally  
Lieutenant Governor and Speaker of the Senate

The Honorable Cameron Sexton  
Speaker of the House of Representatives

The Honorable Steve Dickerson  
Chair, Senate State and Local Government Committee

The Honorable Steve Southerland  
Chair, Senate Energy, Agriculture and Natural Resources Committee

State Capitol  
Nashville, TN 37243

Dear Gentlemen:

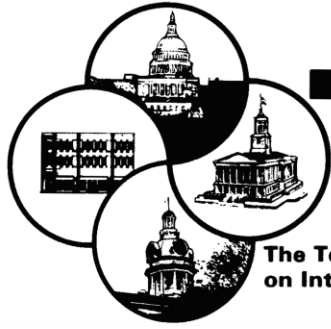
Transmitted herewith is the Commission's report on illegal tire dumping and Tennessee's waste tire program, prepared in response to Senate Joint Resolution 344 and at the request of Chairman Dickerson and Chairman Southerland. The report finds that taxing used tire sales the same as new tire sales, and regulating the transport of waste tires would improve local governments' ability to track the sources of scrap tires in their communities and reduce illegal dumping. It also suggests giving counties more flexibility to spend money they receive from tire disposal fees on outreach and enforcement. The report was approved on January 16, 2020, and is hereby submitted for your consideration.

Respectfully yours,

Representative Mike Carter  
Chairman

Cliff Lippard  
Executive Director





# TACIR

The Tennessee Advisory Commission  
on Intergovernmental Relations



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## ***MEMORANDUM***

**TO:** Commission Members

**FROM:** Cliff Lippard  
Executive Director

**DATE:** 16 January 2020

**SUBJECT:** Senate Joint Resolution 344 (Illegal Tire Dumps)—Final Report for Approval

The attached Commission report is submitted for your approval. It was prepared in response to Senate Joint Resolution 344, introduced by Senator Dickerson in March 2019, which directed the Commission to study the overall effects of illegal waste tire dumps in Tennessee. After the General Assembly adjourned without voting on the resolution, Senator Dickerson, with support from Senate Energy, Agriculture, and Natural Resources Committee Chairman Southerland, sent a letter formally requesting that TACIR take up the study, which the Commission voted to do at its May 2019 meeting.

Since the Commission's December meeting supporting information has been added throughout the report to describe how funding and responsibility for waste tire disposal has shifted over time from the state to county governments and the effects these changes have had on counties' options for handling waste tires. While the language of the three recommendations presented in the draft report has been revised for clarity, their intent has not changed.

First, the report finds that taxing used tire sales the same as new tire sales and regulating the transport of waste tires would improve local governments' ability to track the sources of scrap tires in their communities and reduce illegal dumping. The final report adds one detail to the draft's second recommendation that Tennessee require permits for waste-tire haulers—that waste tire-generating businesses transport

their own tires or be required to use only permitted haulers. Additional information also explains that such permit requirements would give law enforcement officers an opportunity to stop and inspect vehicles that are transporting tires.

The report's third recommendation, to give counties more flexibility to spend tire pre-disposal fee money, has been expanded upon to better address two separate concerns. The final report recommends giving counties clear authority to use that revenue to fund public education, inspections, and enforcement efforts to prevent tire dumping. Next, the report suggests counties should also be allowed to use pre-disposal fee revenue to shred and dispose of waste tires in landfills when circumstances are such that a beneficial end-use is documented to be cost-prohibitive.

These revisions and additional supporting information throughout the report have been highlighted in this final draft for your consideration and approval.



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## Summary and Recommendations: Closing Gaps in Tennessee's Waste Tire Program and Giving Local Governments More Flexibility to Prevent Illegal Tire Dumping

Illegal dumping can be a problem in any community—urban, rural, and everywhere in between. From the smallest scrap of litter to a mountain of trash, improper disposal of waste material is more than a nuisance; it is a public health risk, a sign of neglect, and a drain on public resources because of cleanup costs. Abandoned tires are particularly problematic. Illegally dumped tires and unmanaged outdoor stockpiles provide breeding grounds for pests—particularly mosquitoes—that spread dangerous diseases. Tires that catch fire are difficult to put out, and water used to extinguish a tire fire leaves behind harmful pollution. Tires are bulky and heavy, making cleanup costly and burdensome, particularly when large numbers are discovered in remote locations. In Knox County, for example, one hillside location where more than 4,000 illegally dumped tires have been found—along with other garbage—would cost approximately \$120,000 to clean up.

The extent to which tires are dumped illegally in Tennessee is unknown. However, over the last ten years, the Tennessee Department of Environment and Conservation (TDEC) has received and investigated nearly 800 complaints of illegal dumping that included tires, with 89 of the state's 95 counties having at least one complaint reported. Moreover, approximately 5.4 million new tires were sold last year in Tennessee, generating a growing number of waste tires that must be managed. In response to constituent complaints and widespread concern among lawmakers across the state, Senator Dickerson and Senator Southerland requested that the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) study problems stemming from illegal waste tire dumps in Tennessee (see appendix A and B). The Commission finds that a combination of tax and regulatory changes, along with improved public education and outreach, would improve the state's current efforts to address illegal tire dumps.

### ***Tennessee has a program to manage waste tires and reprocess them for beneficial end uses.***

Tennessee's Solid Waste Management Act of 1991 established a policy to reduce and minimize the need for solid waste treatment and disposal "through source reduction, reuse, composting, recycling, and other methods" and to "promote markets for and engage in the purchase of goods made from recovered materials and goods which are recyclable." The Act took steps to better manage the state's growing number of waste tires, requiring each county to provide a location to receive and store waste tires and, effective in 1995, banning whole tires from Tennessee's

Over the last ten years, the Tennessee Department of Environment and Conservation (TDEC) has received and investigated nearly 800 complaints of illegal dumping that included tires.

In fiscal year 2019, counties received \$5.4 million from tire pre-disposal fees and the Tennessee Department of Environment and Conservation received \$1.4 million.

landfills—though landfills can continue to accept shredded tires. Since 1998, the state has directed counties to dispose of waste tires in a way that creates a beneficial end-use—such as cutting tires up for use as industrial fuel, grinding tires into crumbs for recreational applications, or using tires in civil engineering projects, including rubberized asphalt—by providing financial assistance to do so and prohibiting counties from shredding tires and landfilling them when less expensive beneficial end uses are available.

To provide funding for counties and the state to manage waste tires, Tennessee, like many other states, collects a fee on the sale of new tires. This pre-disposal fee of \$1.35 per tire is a privilege tax imposed on retail sales of new tires only—there is no fee collected on the resale of used tires. Tire retailers in Tennessee collected \$6.3 million in tire disposal fees last year; online and out-of-state sales of tires delivered to Tennessee for installation generated another \$380,000. From the pre-disposal fees collected, counties receive \$1.00 per new tire sold by retailers within their jurisdiction (and a proportionate share of out-of-state sales) and TDEC receives \$0.25 per new tire—tire dealers keep the remaining \$0.10 per new tire sold to offset the costs of accounting for and remitting collections to the Tennessee Department of Revenue. In fiscal year 2019, counties received \$5.4 million from pre-disposal fees and TDEC received \$1.4 million.

The market for recycled tire products is affected by ever-changing global conditions, and the value of Tennessee's used tires depends greatly on recycling businesses finding end customers for products. Each of the last two years, Tennessee counties reported collecting approximately 60,000 tons of tires—an estimated 5 million individual tires or more—and with private contractors charging a reported average of \$90-per-ton, counties collectively spend about \$5.4 million annually to process those tires for beneficial end use. Under state law, counties may use funds from the pre-disposal fee only towards beneficial end uses of waste tires, and in many cases the money they receive is not enough to operate their collection site and pay to have their tires processed. To cover the full cost of collecting and processing tires for beneficial end-use—and to fund the cleanup of any illegal dumps—counties charge additional disposal fees, which vary; some counties give credit or reduced disposal fees to tire businesses that have collected new-tire pre-disposal fees, while others do not.

TDEC's share of pre-disposal fees is deposited in the state's Solid Waste Management Fund (SWMF),<sup>1</sup> is used for a variety of purposes, including technical and solid waste planning assistance for local governments, grants to improve recycling facilities and equipment, collection of household hazardous waste, and landfill cleanup. TDEC can use SWMF money to investigate and clean up illegal dumpsites, including those with large numbers of tires, and can assist with waste tire collection and disposal,

<sup>1</sup> Tire pre-disposal fees comprise less than 20% of the SWMF; the majority comes from a \$0.90-per-ton surcharge on municipal solid waste sent to landfills.

but only one cleanup grant has been awarded since 2017, and there is no existing grant program designed to help local governments prevent illegal dumping before it starts.

### ***Improving Tennessee's waste tire program could help reduce illegal dumping.***

Additionally, even though used tire dealers and the contractors that haul away waste tires are likely responsible for many illegal tire dumps—discarding worn-out tires rather than paying the cost of proper disposal—local governments and the state have no simple way to determine who is selling and hauling used tires or where these tires are going under Tennessee's current waste tire program.<sup>2</sup> Only the identities and locations of retailers selling new tires in Tennessee are known because they must register with the Tennessee Department of Revenue to remit pre-disposal fees. Given the potential dangers of illegal tire dumps and the costs to clean them up, local governments in Tennessee would benefit from being able to identify all retailers that are sources of waste tires in their communities. For this reason, and because additional efforts to prevent dumping will require funding, **the General Assembly should expand the current privilege tax (tire pre-disposal fee) on the retail sale of new tires to include retail sales of used tires as is done in six other states.**

Although anyone with a strong back and a truck can call themselves a waste tire hauler in Tennessee, most states require tire haulers to obtain permits given the notable hazards associated with illegally dumping tires. In these states, businesses selling tires are held responsible for proper disposal of their scrap tires, either on their own or by contracting with permitted tire haulers. Manifests are used to document how many tires are in each load, where those tires came from, where they are going, and who is taking them. Requiring tire haulers to obtain permits and display that they are registered allows law enforcement to stop unpermitted vehicles carrying tires.

Moreover, several states require tire haulers to provide financial assurance before obtaining a permit. In Tennessee, TDEC requires financial assurance from many types of businesses, including solid and hazardous waste storage facilities, oil and gas wells, and processors of radioactive materials, to ensure that these businesses can be held financially responsible when they cause damage requiring cleanup. One type of financial assurance is a surety bond, "a contract between a surety (i.e., an insurer) and the site's owner/operator (i.e., the principal), in which the surety agrees to be financially responsible for any necessary clean up on the site should the principal default on its obligations."

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<sup>2</sup> The state does not track how many used tires are sold in Tennessee each year, though industry reports and consumer surveys suggest they may account for 10% of tire sales.

Most states require tire haulers to obtain permits.

Establishing a relationship between local governments and tire businesses could be an effective way to hold businesses accountable and monitor activity.

Because it could help local authorities identify and inspect vehicles carrying tires, facilitate better tracking of waste tires through the use of a standard manifest to document tire disposal, and provide restitution when haulers are found responsible for illegal dumping, **the state should require commercial waste tire haulers to obtain a permit from TDEC and provide proof of financial assurance in the form of a surety bond, while requiring registered tire retailers to use only permitted haulers or document and transport their own waste tires for proper collection.**

Beyond the inability to identify all potential sources of illegally dumped tires, local officials interviewed said that the state's current tire program places too many restrictions on both the use of pre-disposal fees and the disposal of waste tires. These officials said they would like to use revenue from pre-disposal fees to fund outreach, education, and other actions designed to prevent illegal dumping. Residents and business owners may not know about their county's collection site, whether they can dispose of some tires for free, or what the penalties are for illegal dumping. And more awareness of the issue—including education about the spread of disease and other public health risks—could increase support for preventing tire dumping and lead to tips about illegal activity. Cities in several states are also using cameras and launching other types of surveillance programs to catch and prosecute individuals for criminal dumping. But under current law, revenue from the pre-disposal fees can't be used for these purposes. As a result, these officials say they cannot afford to dedicate personnel to inspect and educate tire businesses and monitor suspected dumpsites or prioritize law enforcement resources for what is considered to be a nuisance.

Current law prohibits counties from shredding tires and disposing of them in landfills unless they show it would be cheaper than processing them for beneficial end uses; under all circumstances, the law prohibits pre-disposal fees from being used to dispose of tires in landfills. When cleaning up large illegal dumps, the cost of processing tires for beneficial end uses could be a substantial burden, and some officials have said they would like more flexible cost-effective disposal options.

Because allowing local governments greater flexibility for disposing of waste tires could lead to a more efficient use of the limited revenue generated by pre-disposal fees and because establishing a relationship between local governments and tire businesses could be an effective way to hold businesses accountable and monitor activity, **the General Assembly should consider amending Tennessee Code Annotated, Section 67-4-1610 to authorize counties to**

- **use tire pre-disposal fee revenue to fund public education, inspections, and enforcement efforts to prevent tire dumping and**
- **allow pre-disposal fee revenue to be used for disposing of shredded waste tires in landfills in certain circumstances, where the beneficial end-use is documented to be cost-prohibitive.**

## Managing Waste Tires Responsibly to Reduce Illegal Dumping

In the 1990s, Tennessee was among the many states responding to a scrap tire crisis. Millions of old tires each year were being sent to landfills or piled up waiting for disposal—the tire industry estimated there were possibly two billion tires sitting in stockpiles across the country—and only a small portion of the growing number of scrap tires generated each year were being repurposed or recycled.<sup>3</sup> Tennessee's Solid Waste Management Act of 1991 sought to reduce the amount of all types of solid waste sent to the state's landfills, through reuse, composting, and recycling, and established a policy to promote and purchase goods made from recovered and recycled materials. To help fund waste tire cleanup efforts and support the beneficial end use of scrap tires, the Act established a \$1.00 tire pre-disposal fee on the sale of new replacement tires and banned whole tires from the state's landfills beginning in 1995.<sup>4</sup>

Today in Tennessee, there are only a few of the type of giant tire stockpiles once common in the 1980s and 1990s, and about two dozen known sites with even 1,000 tires left to clean up.<sup>5</sup> With 6.1 million registered vehicles on the road,<sup>6</sup> more than five million new replacement tires are sold each year,<sup>7</sup> and the Tennessee Department of Environment and Conservation (TDEC) reports approximately 60,000 tons of scrap tires—between five to six million tires—were collected and processed for beneficial end uses in each of the last two years.<sup>8</sup>

### ***Tire dumping is a widespread problem throughout Tennessee.***

Unfortunately, some of the tires removed from vehicles and replaced don't get disposed of properly. Instead, they get dumped illegally in the state's forests and waterways or piled and abandoned in empty buildings and vacant city lots. For example, one nonprofit cleanup project found 42 tires

Tennessee's Solid Waste Management Act of 1991 established a \$1.00 tire pre-disposal fee on the sale of new replacement tires.

<sup>3</sup> Kearney 1990.

<sup>4</sup> Public Chapter 451, Acts of 1991; Tennessee Code Annotated Title 67, Chapter 4, Part 16, and Title 68, Chapter 211, Part 8. This fee has since been raised to \$1.35.

<sup>5</sup> Email correspondence with Larry Christley, environmental manager, Tennessee Department of Environment and Conservation, November 18, 2019; and Tennessee Department of Environment and Conservation, "Waste Tire Cleanup Grant."

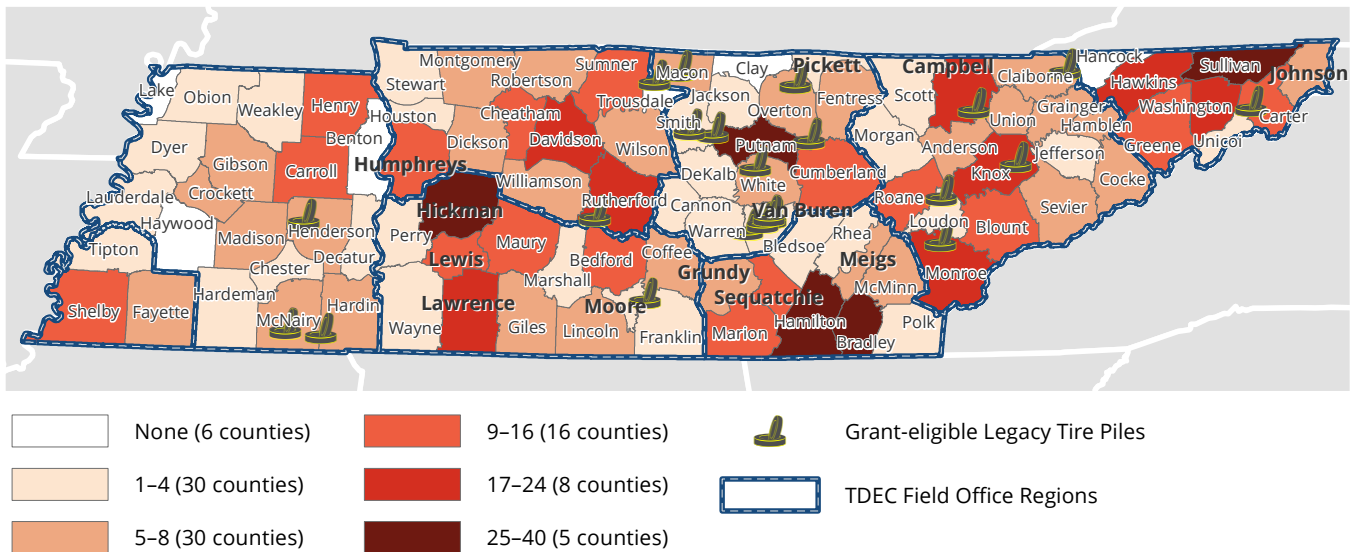
<sup>6</sup> Alliance of Automobile Manufacturers, "State Facts: Autos Drive Tennessee Forward."

<sup>7</sup> The Tennessee Department of Revenue received \$6,737,308 in pre-disposal fees in fiscal year 2019, which, divided by \$1.25 per tire (dealers keep \$0.10 from the \$1.35 fee) equals 5,389,847 new tires sold. See appendix D.

<sup>8</sup> Data from Tennessee Department of Environment and Conservation Annual Solid Waste Progress Reports, 2017 and 2018, via email correspondence with Bob Fletcher, problem waste consultant, Tennessee Department of Environment and Conservation, July 11, 2019. See appendix E. One commonly used industry estimate for counting tires is 20 pounds per tire (see Ohio EPA, "Measuring Tire Piles"). A study of actual scrap tire weights (Badila 2013) determined an average weight of 10.78 kg or 23.8 pounds.

among the 2,600 pounds of trash that it removed from the Cumberland River in November 2019.<sup>9</sup> The full extent to which tires are dumped illegally in Tennessee is unknown, but over the last ten years, TDEC has received and investigated nearly 800 complaints of illegal dumping that included tires, with 89 of the state’s 95 counties having at least one complaint reported. See figure 1. In 2019 alone, the department received 101 complaints concerning tires and issued 49 notices of violation in 28 separate counties.<sup>10</sup>

**Figure 1. Illegal Tire Dumpsites Reported, 2009-2019**



County names in **Bold** have the highest rate of tire dumps reported **per capita**.

Sources: Tennessee Department of Environment and Conservation “Solid Waste Management Dataviewer,” “Waste Tire Cleanup Grant,” and “TDEC Field Offices.” Reports per capita based on US Census Bureau 2018 County Population Estimates.

**Legislation was introduced to require a study of illegal tire dumping.**

While Tennessee’s existing waste tire program has been successful at diverting tires from landfills and recycling them, and many of the worst illegal tire piles have been cleaned up, it doesn’t specifically address illegal dumping issues. Although the program has changed in the years since its inception, its purpose remains focused on the collection and recycling process. The Solid Waste Management Act required each county in Tennessee to operate a collection site for scrap tires.<sup>11</sup> Initially, TDEC received the money from tire pre-disposal fees, and the state was responsible for distributing grants to counties to help build the necessary

<sup>9</sup> Summers 2019.

<sup>10</sup> Tennessee Department of Environment and Conservation, “Solid Waste Management Dataviewer” returns 101 complaints where row text contains ‘tires,’ year received is ‘2019,’ and status is ‘NOV.’

<sup>11</sup> Tennessee Code Annotated, Section 68-211-866.



infrastructure for the waste tire program.<sup>12</sup> Responsibility shifted more towards county governments in 2014, in response to feedback from county mayors that tire-fee revenue should be sent back directly to the counties where tires were being sold.<sup>13</sup>

On March 28, 2019, Senator Steven Dickerson introduced Senate Joint Resolution 344, directing the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) to study problems stemming from illegal waste tire dumps in Tennessee. See appendix A. Senator Dickerson's office had been receiving complaints from constituents, and he found widespread concern among his legislative colleagues from both urban and rural areas of the state.<sup>14</sup> The resolution was referred to the Senate Energy, Agriculture, and Natural Resources Committee on April 1, but the 111<sup>th</sup> General Assembly adjourned without taking up the resolution. Senator Dickerson, with support from the Senate Energy, Agriculture, and Natural Resources Committee's Chairman, Senator Southerland, sent a letter to formally request that TACIR undertake the study proposed in the resolution. See appendix B.

### ***Illegal tire dumping is harmful to Tennesseans and the environment and expensive to clean up.***

Wherever they are found, abandoned tires are problematic—a public health risk, a sign of neglect, and a drain on public resources to clean up. Illegally dumped tires and unmanaged outdoor stockpiles provide breeding grounds for pests—particularly mosquitoes—that spread dangerous diseases. Tires that catch fire are difficult to put out, produce noxious smoke, and runoff from water used on tire fires leaves behind harmful pollution. Tires are bulky and heavy, making cleanup costly and burdensome, particularly when large numbers are discovered in remote locations.

### **Abandoned tires make ideal breeding grounds for pests that spread dangerous diseases.**

The design of tires makes them an ideal nursery for mosquito larvae; their shady interior cavities trap rainwater and keep it from evaporating, while their rubber construction retains heat that speeds up mosquito egg hatching and larval growth. They also collect leaf litter and debris that provides nutrition for the larvae.<sup>15</sup> One study, with field data collected from used tire shops and discarded tires in Argentina, found that 65% of locations studied were infested with mosquitoes. Half of all tires found contained

Illegally dumped tires and unmanaged outdoor stockpiles provide breeding grounds for pests—particularly mosquitoes—that spread dangerous diseases.

<sup>12</sup> Public Chapter 451, Acts of 1991, Sections 33 and 36.

<sup>13</sup> Public Chapter 457, Acts of 2013. See also Tennessee Department of Environment and Conservation, "Waste Tire Program Transition."

<sup>14</sup> Interview with David Solon, legislative assistant to Senator Dickerson, May 13, 2019.

<sup>15</sup> Anderson 2015.

The transportation of  
tires helped the Asian  
Tiger mosquito (*Aedes  
albopictus*) spread  
across the Southeastern  
US.

water and a third of those held mosquito larvae. The study notes that “the percentage of infested tires in shaded microhabitats was double that for sun-exposed tires.”<sup>16</sup> A report on mosquito control from the National Association of County and City Health Officials advises, “[l]arval source reduction is the most effective means of vector control. Mosquito larvae develop in standing, fresh water: through environmental modifications you can limit the water sources thereby reducing mosquito larvae.”<sup>17</sup>

### *Mosquitoes and other insects spread many diseases, and mosquitoes themselves are spreading.*

Some of the world's deadliest diseases are carried and transmitted by mosquitoes. Vector Disease Control International estimates that “up to a million people die every year from mosquito-borne illness, with many countries around the world ravaged by malaria, yellow fever, and dengue-hemorrhagic fever.”<sup>18</sup> According to the US Centers for Disease Control and Prevention (CDC), nine new germs spread by mosquitoes and ticks—including the Chikungunya and Zika viruses—were identified in the US between 2004 and 2016.<sup>19</sup> See appendix C for common vector-borne disease cases reported in Tennessee and the US. In 2017, scientists in Colorado found three species of mosquito that had not previously been recorded in the state, raising questions as to the effect human migration has on insect habitats and territories. One scientist noted that “[u]sed tires have allowed the notorious *Aedes albopictus* (Asian Tiger mosquito) and *Aedes aegypti* (Yellow Fever mosquito) to increase their range as tires are transported to recycling facilities across the country.”<sup>20</sup>

### **West Nile Virus**

West Nile virus (WNV)—the leading cause of mosquito-borne disease in the US—is most commonly spread to people by the bite of an infected mosquito. The mosquitoes spread infection by feeding on infected birds.<sup>21</sup> The CDC documented 2,647 cases of WNV in 2018, including 167 fatalities. Tennessee only reported 12 cases of WNV in 2018, but four of those cases were fatal.<sup>22</sup>

### **La Crosse Encephalitis**

At the Commission's September 2019 meeting, Dr. Abelardo Moncayo, director of the Vector-Borne Diseases Program at the Tennessee Department of Health, explained how the transportation of tires helped the Asian Tiger

<sup>16</sup> Rubio, Cardo, and Vezzani 2011.

<sup>17</sup> National Association of County and City Health Officials 2017.

<sup>18</sup> Vector Disease Control International 2018.

<sup>19</sup> Centers for Disease Control and Prevention 2018.

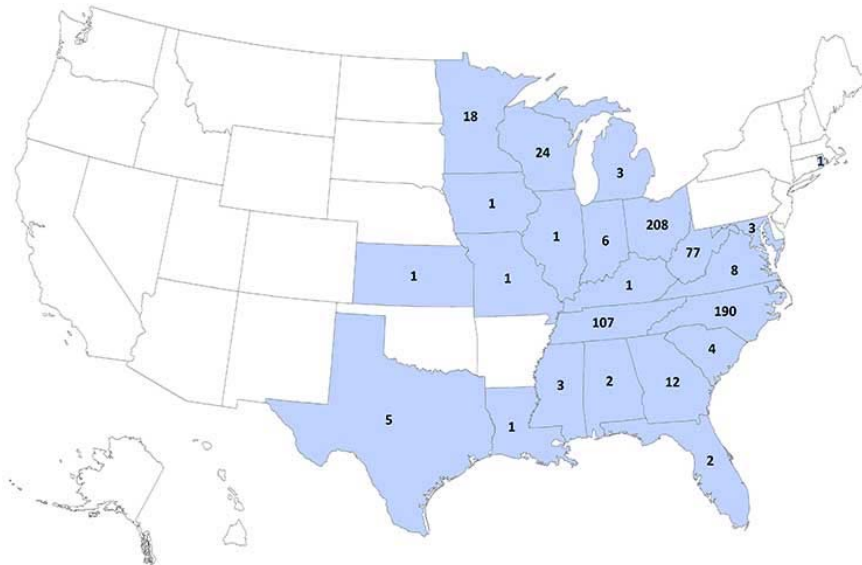
<sup>20</sup> Renfro 2019.

<sup>21</sup> Centers for Disease Control and Prevention 2019f.

<sup>22</sup> Centers for Disease Control and Prevention 2019a.

mosquito (*Aedes albopictus*) spread across the southeastern US after its arrival in Houston. He showed that the spread of this mosquito led to the spread of La Crosse encephalitis—previously common in the upper Midwest, but now widespread throughout southern Appalachia, including Tennessee. See figure 2. La Crosse encephalitis is the leading mosquito-borne disease among children in North America.<sup>23</sup>

**Figure 2. La Crosse Encephalitis Cases Reported by State, 2009-2018**



Source: Centers for Disease Control and Prevention 2019d.

### Zika Virus

After 62 cases of Zika virus symptoms in travelers returning from affected areas were reported to the CDC in 2015, the spread of the Zika virus took off in 2016. There were 5,168 symptomatic Zika virus disease cases reported to the CDC, including 224 cases acquired through presumed local mosquito-borne transmission in Florida (218) and Texas (6). Sixty-one cases were reported in Tennessee in 2016, dropping to just two in 2017 as the disease waned across the country. In 2018 and 2019, there were no reports of local mosquito-borne Zika virus transmission in the continental United States.<sup>24</sup> Symptoms of Zika are mild in most people, but the disease is particularly dangerous for pregnant women and their babies.<sup>25</sup>

### Chikungunya

Chikungunya virus is another disease transmitted to people by the bite of an infected mosquito, rarely seen in the US before 2006. According to the

La Crosse encephalitis is the leading mosquito-borne disease among children in North America.

<sup>23</sup> National Institute for Mathematical and Biological Synthesis 2017.

<sup>24</sup> Centers for Disease Control and Prevention 2019e.

<sup>25</sup> Centers for Disease Control and Prevention 2019g.

The 2016 American Heartworm Society Incidence Survey listed Tennessee among the top five states for heartworm cases.

CDC, Chikungunya disease does not often result in death, but the symptoms can be severe and disabling. The first reports of local transmission of chikungunya virus in the Americas were identified in the Caribbean in 2013, meaning that mosquitoes in the area have been infected with the virus and are spreading it to people. In 2014, a total of 2,811 chikungunya virus disease cases were reported among US travelers returning from affected areas—45 in Tennessee—and cases of local transmission were identified in Florida, Puerto Rico, and the US Virgin Islands. The number of cases has dropped to 115 in 2019, all travel-related, including three in Tennessee.<sup>26</sup>

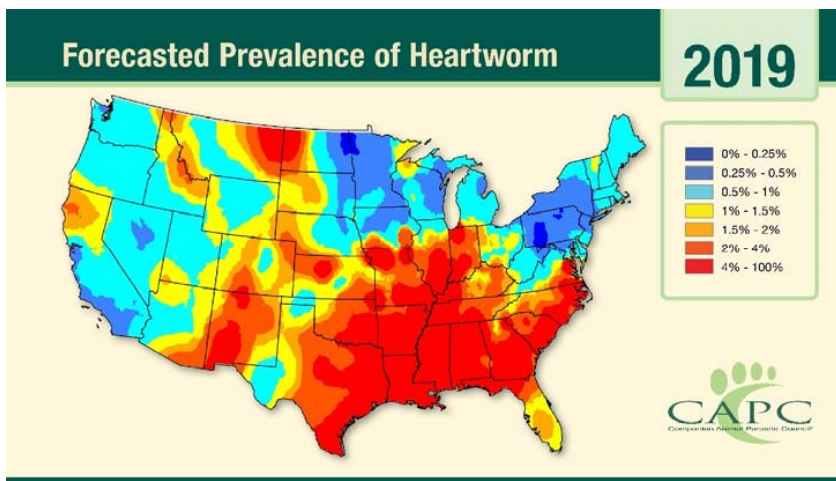
#### Dengue Fever

The same *Aedes* mosquitoes that spread Zika and Chikungunya can carry the dengue virus, which sometimes develops quickly into a severe illness. There were 1,203 US dengue cases reported in 2019; 8 in Tennessee. Dengue is a disease typically brought back to the US by travelers who were bitten by infected mosquitoes in other parts of the world, but local cases of dengue have been observed in Florida and Texas, and a small number of infected mosquitoes from those states could begin to spread.<sup>27</sup>

#### Heartworm (*Dirofilaria immitis*)

Humans aren't the only victims of mosquito-borne diseases. Heartworm disease, so-called because it is caused by a parasitic worm that lives in the heart, lungs, and associated blood vessels of an infected animal, is spread to dogs and cats through the bite of a mosquito.<sup>28</sup> The 2016 American Heartworm Society Incidence Survey listed Tennessee among the top five states for heartworm cases, and the Companion Animal Parasite Council shows pets in Tennessee are at very high risk for heartworm in 2019.<sup>29</sup> See figure 3.

Figure 3. Forecasted Prevalence of Heartworm, 2019



Source: Companion Animal Parasite Council 2019.

#### Tickborne disease cases in Tennessee outnumber those spread by mosquitoes.

There were nearly seven times as many tickborne disease cases reported in Tennessee in 2016 than mosquito-borne, the most common being spotted

<sup>26</sup> Centers for Disease Control and Prevention 2019b.

<sup>27</sup> Centers for Disease Control and Prevention 2019c and Maron 2013.

<sup>28</sup> US Food and Drug Administration 2019.

<sup>29</sup> American Heartworm Society 2017 and Companion Animal Parasite Council 2019.

fever rickettsiosis (commonly known as Rocky Mountain spotted fever.)<sup>30</sup> In June of 2019, the Health Department was reporting increased cases of tickborne illness with 532 Spotted Fever cases and 127 reports of Lyme disease.<sup>31</sup> Doctors and researchers at the University of Tennessee are noticing more cases of Lyme disease in East Tennessee.<sup>32</sup> “White-footed mice are the principal natural reservoirs for Lyme disease bacteria,” followed by chipmunks and shrews.<sup>33</sup> To prevent rodent infestations, the CDC advises people to remove “old trucks, cars, and old tires that mice and rats could use as homes.”<sup>34</sup>

### **Tire fires are difficult to fight and pollute the environment.**

The US Fire Administration has long warned of the “serious fire protection challenges” scrap tires present to fire departments across the country. The agency said in 1998:

Tires burn with a higher per-pound heat output than most coal, and the high heat production of tire rubber makes extinguishment very difficult. Tire fires yield large amounts of oil that are flammable and environmentally contaminating. Tire fires frequently become major hazardous materials (Hazmat) incidents affecting entire communities, often requiring neighborhood evacuations and protracted fire operations. These fires threaten pollution of the air, waterways, and water table.<sup>35</sup>

In September 1999, lightning struck a tire stockpile in Stanislaus County, California, igniting the nearly seven million tires in a blaze that took the response team 30 days to fully extinguish. The US Environmental Protection Agency’s (EPA) report cites “extremely hot and unstable fire conditions, heavy equipment operations on steep slopes, deep and spongy tire piles, [and] controlling massive volumes of oil and water runoff” among the most difficult problems. The fire produced large quantities of pyrolytic oil from melting tires that flowed into the drainage of an intermittent stream—over 250,000 gallons of the oil was recovered from a retention pond, and an estimated 4 million gallons of contaminated firefighting water was impounded on-site in a series of constructed retaining basins. The EPA estimated its total response costs were about \$3.5 million.<sup>36</sup> The oil created when tires melt contains naphthalene, trichloroethane, tetrachloroethane, ethylene, toluene, polyaromatic hydrocarbons (PAHs), and heavy metals; air pollutants from burning tires include benzene, PAHs, phosgene,

Tire fires yield large amounts of oil that are flammable and environmentally contaminating.

<sup>30</sup> Centers for Disease Control and Prevention 2017.

<sup>31</sup> Miller 2019.

<sup>32</sup> Hickling et al. 2018.

<sup>33</sup> Cary Institute of Ecosystem Studies, “Lyme Disease Research.”

<sup>34</sup> Centers for Disease Control and Prevention 2010.

<sup>35</sup> US Fire Administration 1998.

<sup>36</sup> Shane 2000.

Small fire departments  
in rural areas could easily  
become overwhelmed  
by a fire at an illegal  
dumpsite.

naphthalene, toluene, styrene, acrylonitrile, formaldehyde, carbon disulfide, sulfuric dioxide, carbon dioxide, and numerous heavy metals.<sup>37</sup>

In a more recent example, the Liberty Tire Recycling facility in Louisville, Kentucky, caught fire in November 2014. The state had been in an ongoing enforcement battle with the company over the number of tires it was storing and how they were being stored. After the fire broke out, nearby residents were asked to seal windows, doors, and ventilation systems, and officials cautioned those with respiratory problems against going outside, while police established a barricade about a mile around the fire.<sup>38</sup> Because these events are not predictable, planned expenses, responding to a large tire fire, can cut into the funding earmarked for other projects. After the Liberty fire, Kentucky expressed concern about an estimated one million tires stored at other known sites, with a potential cleanup cost in the case of a fire of roughly \$2 million. In comparison, the state was generating about \$2.6 million annually from new tire fees, so another large-scale fire could severely restrict funding availability over several years.<sup>39</sup>

When the locations of potentially dangerous tire piles are known, at least governments have some ability to monitor conditions and be prepared. Being unexpectedly faced with an unknown tire fire adds even more difficulty. In August 2018, firefighters in Atlanta, Georgia, battled a “massive” fire at an abandoned apartment building where fire officials discovered hundreds of tires had been dumped illegally.<sup>40</sup> This is a situation that could have happened in any Tennessee city, with first responders arriving unaware of the hidden dangers they will face. Memphis, for example, is plagued by abandoned properties. The city’s environmental enforcement manager told staff that abandoned houses are often “stacked to the ceiling with illegally dumped used tires.”<sup>41</sup>

Small fire departments in rural areas could easily become overwhelmed by a fire at an illegal dumpsite and may not be trained in proper techniques or have the necessary equipment to extinguish a tire fire and contain the run-off. A pile of 100,000 tires in rural Odessa, Texas, caught fire in 2017, and the nearest fire hydrant was four miles away. The fire grew larger as firefighters drove tanker trucks back and forth, and officials called in the EPA for assistance. Without an adequate water supply, the fire burned for a week while crews smothered it with dirt.<sup>42</sup> Even when water is available, tire fires should be handled differently than other, more common fires. The US Fire Administration says, “direct application of water and/or foams generally does not provide effective extinguishment in tire fires. Rather,

<sup>37</sup> USFA 2002.

<sup>38</sup> Glowicki 2014 and Peterson 2015.

<sup>39</sup> Kentucky Division of Waste Management 2015.

<sup>40</sup> Prince 2018.

<sup>41</sup> Interview with Torian Harris, environmental enforcement manager, City of Memphis, June 4, 2019.

<sup>42</sup> Schlanger 2017.

water is best used to keep the unburned tires from igniting.” It adds, perhaps counterintuitively, that air pollution can often be minimized by letting the fire “free burn,” consuming most of the fuel. It recommends concentrating on removing unburned tires from the fire to take away its fuel. The bigger concern, it says, is the large volume of run-off oil produced by tire fires, which should be contained and collected to avoid contamination of ground and well water.<sup>43</sup>

According to data from the Tennessee State Fire Marshal, tires were noted as present at 32 outside property fires reported from 2014 to 2018, and an additional 25 “natural vegetation and outside rubbish fires” included tires in the narrative report. However, the vast majority of the 44,000 total reports in that period do not list any specific on-site materials.<sup>44</sup>

### **Cleaning up illegal tire dumps can be expensive, even more so after a fire.**

The very conditions that make a remote, hidden location susceptible to illegal dumping can cause cleanup costs to skyrocket. One steep hillside in Knox County had reportedly been troubled with illegal dumping for nearly 50 years. In 2018, the county estimated that more than 4,000 tires were among the assorted garbage discovered when it began cleanup efforts. “It’s really bad, and it’s really difficult to get to because of the steep slopes,” Knox County Solid Waste Director Drew Thurman told reporters.<sup>45</sup> County commissioners estimated a budget of \$120,000 to clean the site, which doesn’t include the additional \$42,000 or more a nearby church agreed to pay for a fence along the road to deter future dumping.<sup>46</sup> For small-scale, common tire cleanup projects, costs are less substantial, but illegal dumping still places a strain on tight county budgets—especially those without the financial resources of a county like Knox. In 2018, for example, Putnam County applied for a grant to help recoup \$5,663 it spent collecting and disposing of 829 tires from four separate locations.<sup>47</sup>

Counties in Tennessee often use jail work crews to pick up litter and smaller amounts of tires, but one report from Knox County said a 2016 change to the state’s penalty for drivers under the influence (DUI) reduced the number of offenders available for cleanup. “Before the law was changed in 2016,” the report says, “first-time DUI offenders . . . were required to complete a 24-hour litter pickup service, done in three eight-hour installments,” and that “[t]he county has struggled to clean its roads

The very conditions that make a remote, hidden location susceptible to illegal dumping can cause cleanup costs to skyrocket.

<sup>43</sup> US Fire Administration 1998.

<sup>44</sup> Data from the National Fire Incident Reporting System provided by Dennis Mulder, Tennessee Fire Marshal’s Office, July 26, 2019.

<sup>45</sup> Halm 2018.

<sup>46</sup> Whetstone 2018.

<sup>47</sup> Email correspondence with Cavene McHayle, solid waste financial officer, Tennessee Department of Environment and Conservation, November 20, 2019.

The Solid Waste Management Act of 1991 established source reduction, reuse, composting, recycling, and the promotion of recycling markets as a strategy to reduce wastes.

ever since [the law was changed].”<sup>48</sup> Section 14 of Public Chapter 876, Acts of 2016, did amend Tennessee Code Annotated, Section 55-10-402(a), to remove mandatory litter cleanup for first-time (and repeat) drunk-driving offenders, but left intact paragraph (d)(1), which gives judge’s discretion to order additional litter cleanup duty after offenders have served their minimum jail sentences.<sup>49</sup> The law was changed, according to Knox County Commissioner Carson Dailey, because smaller counties couldn’t afford to maintain the litter crews. A later news story said the county worked with its district attorney to make sure more offenders had litter cleanup added to their sentences, and that it hired full-time litter staff to fill in the gap—something else those small counties may not have the budget to afford.<sup>50</sup>

No matter how counties struggle with the costs of illegal tire dumping, the possibility of a tire fire adds a significant amount of risk. The State of Kentucky noted in its 2014 Waste Tire Program Report that cleaning a post-fire site is much more costly than removing the same volume of tires at a typical dumpsite, citing a 2013 fire that cost the state’s Waste Tire Trust Fund \$649,050. The report says that, when the responsible party is unable to remediate a fire site themselves, the state’s potential liability for cleanup after tire fires is “one of the highest potential costs the cabinet faces.”<sup>51</sup>

### ***The goal in Tennessee is to find a beneficial end use for waste tires.***

In 1991, Governor Ned McWherter issued executive orders to merge environmental programs from what was then the Department of Health and Environment with those in the Department of Conservation, creating Tennessee’s current Department of Environment and Conservation.<sup>52</sup> The same year, the General Assembly passed the Solid Waste Management Act of 1991, which established a policy to reduce and minimize the need for solid waste treatment and disposal “through source reduction, reuse, composting, recycling, and other methods” and to “promote markets for and engage in the purchase of goods made from recovered materials and goods which are recyclable.”<sup>53</sup> The Act created a statewide waste tire program under the direction of TDEC, which contained several provisions regarding how waste tires would be managed in Tennessee:

- Beginning October 1, 1991, the state imposed a \$1.00 pre-disposal fee on the sale of each new replacement tire in Tennessee, which required retailers selling new tires to register with the

<sup>48</sup> Whetstone 2017.

<sup>49</sup> See 2015 Tennessee Code Annotated, Section 55-10-402 and current version.

<sup>50</sup> Whetstone 2018.

<sup>51</sup> Kentucky Division of Waste Management 2015.

<sup>52</sup> Tennessee Department of Environment and Conservation, “TDEC at 25.”

<sup>53</sup> Public Chapter 451, Acts of 1991, Section 3. Codified as Tennessee Code Annotated, Section 68-211-803.



Department of Revenue and to remit fees quarterly, keeping 10% to compensate their overhead costs when paid on time.

- The Act created a Solid Waste Management Fund (SWMF) from which funds could not be diverted to the state's general fund, and imposed a surcharge of \$0.85 per ton on municipal solid waste received at landfills, to be deposited into the SWMF.
- Effective January 1, 1995, whole (unshredded) waste tires could not be accepted at any landfill. Using money from the SWMF, the law said the state intended to either purchase its own mobile tire shredders or contract with businesses to provide tire-shredding services.
- Each county was required to provide at least one site to collect and store waste tires.
- From the SWMF, the state offered counties a one-time-only grant to assist the establishment of waste tire collection sites.<sup>54</sup> In 1996, this part was amended, authorizing TDEC to continue offering assistance grants to counties for locating, collecting, and appropriately disposing of waste tires.<sup>55</sup>

In 1998, Tennessee Code Annotated, Section 68-211-867, regarding waste tire disposal, was completely rewritten.<sup>56</sup> Up to that point, the direction of the waste tire program had been to reduce stockpiles of scrap tires by shredding them, still allowing for the disposal of shredded tires in landfills. The 1998 law, however, directed TDEC to develop a program to manage waste tires "for beneficial end use." Beneficial end uses were—and still are—defined in the statute to include the production and burning of tire-derived fuel, cement manufacturing, crumbling or pyrolysis of tire material, or any other use approved by TDEC, so long as the state was not mandating that anyone is required to use products derived from waste tires.<sup>57</sup> The law continued to allocate SWMF money for mobile tire-shredding, allowed TDEC to contract directly with beneficial end users for recycling waste tires, and continued to offer grants to counties. After July 1, 2002, the law required counties to find a beneficial end-use for waste tires unless the counties documented that sending waste tires to the landfill was a less expensive alternative.

As time passed, county governments sought to take on more direct responsibility for their waste tire management. According to TDEC, the statewide shredding service provided to counties was discontinued on

Public Chapter 587, Acts of 1998, directed the Tennessee Department of Environment and Conservation to develop a program to manage waste tires "for beneficial end use."

<sup>54</sup> Public Chapter 451, Acts of 1991.

<sup>55</sup> Public Chapter 846, Acts of 1996. Codified as Tennessee Code Annotated, Section 68-211-831.

<sup>56</sup> Public Chapter 587, Acts of 1998.

<sup>57</sup> Public Chapter 462, Acts of 2007, added "recreational applications, including but not limited to, playgrounds, running tracks, and walking paths" to the definition of beneficial end use, and authorized TDEC to use SWMF money for "grants to local education agencies, municipalities or counties to utilize recycled shredded tires for recreational applications."

In 2007, the State of  
Tennessee raised the tire  
pre-disposal fee from  
\$1.00 to \$1.35.

July 1, 2002.<sup>58</sup> State shredding contractors were unable to keep up with the growing number of tires, often leaving counties to stockpile tires with no means for disposal.<sup>59</sup> However, language stating, “the department shall contract for services of a mobile tire shredder to operate throughout the state as waste tire disposal needs may require” remained in statute until 2007.<sup>60</sup> That year, the state raised the tire pre-disposal fee from \$1.00 to \$1.35; retailers were allowed to keep \$0.10 from every tire instead of 10%,<sup>61</sup> and the remaining \$1.25 continued to flow through the SWMF to be distributed as grants back to counties “to assist counties in locating, collecting and appropriately disposing of waste tires.”<sup>62</sup> Public Chapter 462, Acts of 2007, added a requirement for counties receiving grants from the SWMF to submit a work plan and budget, stating that, “grants or contracts are to fulfill the objective of recycling waste tires and to assure that all expenditures of the contracts, grants, or any additional local tipping fees are not exceeding the cost of the county’s waste tire management program.”<sup>63</sup>

Examples of tire cleanup grants awarded during these years include:

- 2007—A \$40,000 Waste Tire Cleanup Grant for Greene County “to help fund the cleanup of thousands of tires that were dumped in the Nolichucky River decades ago.”<sup>64</sup>
- 2007—A \$7,500 Waste Tire Cleanup Grant for Marion County where “Approximately 1,500 to 2,000 tires were dumped at each of the sites on Francis Springs Road and Bessie Jones Road in Jasper.”<sup>65</sup>
- 2008—A \$5,850 Waste Tire Cleanup Grant for Smith County to clean up “an unknown number of tires mixed with large appliances and other debris.”<sup>66</sup>
- 2008—A \$163,305 Waste Tire Cleanup Grant for Fayette County to clean up a site that “contains more than 100,000 used tires.”<sup>67</sup>
- 2009—A \$115,000 Waste Tire Cleanup Grant for Hickman County for a site with “approximately 10,000 tires.”<sup>68</sup>

In 2009, “a Waste Tire Task Force comprised of members recommended by professionals in Tennessee tire management programs and selected

<sup>58</sup> Tennessee Department of Environment and Conservation, “Waste Tire Program.”

<sup>59</sup> Tennessee Department of Environment and Conservation 2017a.

<sup>60</sup> Public Chapter 462, Acts of 2007. Also see version of Tennessee Code Annotated, Section 68-211-867(c), current as of 2006.

<sup>61</sup> Public Chapter 602, Acts of 2007, amending Tennessee Code Annotated, Section 67-4-1603.

<sup>62</sup> See version of Tennessee Code Annotated, Section 68-211-867(c), current as of 2007.

<sup>63</sup> Public Chapter 462, Acts of 2007, Section 19.

<sup>64</sup> Tennessee State Government 2007a.

<sup>65</sup> Tennessee State Government 2007b.

<sup>66</sup> Tennessee State Government 2008a.

<sup>67</sup> Tennessee State Government 2008b.

<sup>68</sup> Tennessee State Government 2009.

by the commissioner of the Tennessee Department of Environment and Conservation met to review the existing waste tire program and make recommendations for change.”<sup>69</sup> The state’s tire grant program at the time required counties to be able to match tires eligible for grant funding to fees collected, and members of the task force recognized several difficulties stemming from reporting problems, dealer monitoring, and unregulated tire haulers. Ultimately, however, the group did not find enough support for many of its ideas. A few years later though, responding to continued calls from county mayors for more direct control of pre-disposal fees, the General Assembly passed Public Chapter 457, Acts of 2013, phasing out the state’s waste tire recycling grant programs and amending the law to distribute revenue from tire fees directly to the counties where the tires are sold.<sup>70</sup> Since the passage of this act, \$0.25 from each tire sold is sent to the SWMF, and \$1.00 is returned to the county in which the tire was sold “to be used for beneficial end use of waste tires in accordance with [Tennessee Code Annotated,] Section 68-211-867 and not used for any other purposes.”<sup>71</sup>

### **Tennessee’s counties are responsible for their own waste tire management.**

Since 2014, counties have been responsible for managing waste tires generated within their own boundaries, receiving \$1.00 from each new tire sold by businesses located in their jurisdiction to help cover the cost of collecting and processing those tires for beneficial end-use.<sup>72</sup> In fiscal year 2019, \$5.4 million in tire fees was returned to counties; Shelby County received the most, over \$590,000, while 18 counties where fewer new tires are sold received less than \$5,000 each. See appendix D. In 2018, counties reported collecting and disposing of more than 60,000 tons of tires—perhaps as many as 6 million tires in all. See appendix E. Counties (or multi-county planning regions) are required to include this information in their Annual Progress Report to TDEC, which covers many other waste reduction and recycling topics aimed toward meeting the goals set by the state’s Solid Waste and Materials Management Plan.<sup>73</sup> TDEC staff acknowledge that these tire reports may not include all waste tires in the state, because not every waste tire goes through a county collection facility.<sup>74</sup>

Since 2014, counties have been responsible for managing waste tires generated within their own boundaries.

<sup>69</sup> Tennessee Department of Environment and Conservation, “Waste Tire Task Force.”

<sup>70</sup> Tennessee Department of Environment and Conservation, “Waste Tire Program Transition.”

<sup>71</sup> Tennessee Code Annotated, Section 67-4-1610(b).

<sup>72</sup> Ibid. Counties also receive a proportionate share of fees received from out-of-state sales made to buyers in Tennessee. (Interview with Amanda McGraw, chief financial officer, Tennessee Department of Revenue, June 18, 2019.)

<sup>73</sup> Tennessee Department of Environment and Conservation, “Annual Progress Report.”

<sup>74</sup> Email correspondence with Larry Christley, environmental manager, Tennessee Department of Environment and Conservation Materials Management, December 11, 2019.

High fees charged to tire businesses for disposal penalize those who handle their waste tires appropriately.

*Counties and tire businesses bear the high cost of processing waste tires for beneficial end use.*

County governments don't have the equipment or business capabilities to recycle their own tires and market the resulting products and materials to customers on their own. What was originally handled at the state level is now left to each county to contract. Liberty Tire Recycling, headquartered in Pittsburgh, Pennsylvania, provides these services to 85 of the state's 95 counties.<sup>75</sup> Liberty claims to process a third of the nation's scrap tires with its 26 facilities.<sup>76</sup> It has one location in Nashville, but most of Tennessee's tires are trucked to nearby facilities in Kentucky, Mississippi, and Georgia.<sup>77</sup> At a reported average cost of \$90-per-ton, counties statewide spent most of the \$5.4 million they received from tire fees in fiscal year 2019 to pay Liberty to process the 60,000 tons of waste tires the counties received, leaving counties with little for the costs of operating their collection sites. The rate each county pays may range from \$55 to \$155 per ton, according to a consultant with the state's County Technical Assistance Service (CTAS).<sup>78</sup> Some counties seem to dispose of more tires than they sell, and others sell more new tires than they dispose of;<sup>79</sup> rural counties may need to dispose of more large, heavy truck and farm tires which, because they pay for disposal by weight, could place financial stress on some counties trying to manage their waste tires. Several county officials told TACIR staff that their tire collection programs operate at a substantial loss.<sup>80</sup>

Counties can charge additional disposal fees to finance their tire programs,<sup>81</sup> which could include tire cleanups, and those fees vary. However, high fees charged to tire businesses for disposal penalize those who handle their waste tires appropriately, creating a financial incentive for some to dump their tires illegally. Some counties give credit or reduced disposal fees to tire businesses that have collected new-tire, pre-disposal fees.<sup>82</sup> While this encourages responsible dealers to dispose of waste tires properly, used tire dealers and other automotive businesses that don't sell new tires are faced with higher costs and are more likely to cut corners by dumping. Used tire dealers acquire tires from other tire dealers, collecting and inspecting their unwanted tires to find those with enough tread and in good enough condition for drivers to use safely. Stakeholders interviewed repeatedly told staff that used tire shops and the unregulated hauling contractors that

<sup>75</sup> Testimony by Dewey Grantham, Liberty Tire Recycling, at TACIR's September 2019 meeting.

<sup>76</sup> Liberty Tire Recycling 2018.

<sup>77</sup> Interview with Dexter Matthews, Liberty Tire Recycling, June 4, 2019.

<sup>78</sup> Interview with Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, June 11, 2019.

<sup>79</sup> Tennessee Department of Environment and Conservation 2015.

<sup>80</sup> Email correspondence with Randy Porter, mayor, Putnam County, November 21, 2019; Geoff Trabalka, solid waste supervisor, Anderson County, October 4, 2019; Ronald Watkins, solid waste director, Henry County, September 24, 2019.

<sup>81</sup> Tennessee Department of Environment and Conservation 2018b.

<sup>82</sup> Email correspondence with Geoff Trabalka, solid waste supervisor, Anderson County, July 10, 2019, as an example.

supply them are likely responsible for many illegal tire dumps, discarding worn-out tires rather than paying the cost of proper disposal.<sup>83</sup> A study done by the Connecticut Department of Energy and Environmental Protection put it simply: “It is clear that the primary reason individuals or businesses engage in illegal dumping is to avoid tipping fees.”<sup>84</sup>

*Counties in Tennessee can only use tire fee revenue for limited purposes that don't include preventing illegal dumping.*

Tennessee law says that the money counties receive from tire fees may only be used “for beneficial end use of waste tires in accordance with § 68-211-867 and not used for any other purposes.”<sup>85</sup> The stipulation that money from tire fees can only go towards the beneficial end use of waste tires has discouraged counties from considering sending shredded tires to a landfill—which is permissible under Tennessee Code Annotated, Section 68-211-867(d) when the net cost to do so is less than the cost of an available beneficial end-use. Although the Solid Waste Management Act of 1991 declared it the state’s public policy to “reduce and minimize to the greatest extent possible the amount of solid waste which requires collection, treatment, incineration or disposal,” it has been argued that recycling tires isn’t always economically feasible. At the commission’s September 2019 meeting, one panelist said counties should have more flexibility to send some tires to a landfill, particularly when large illegal dumps are discovered, as those waste tires are an unexpected burden the county did not receive tire-fee money to process.<sup>86</sup>

County officials also believe this language prevents them from spending tire fee revenue on activities that could prevent illegal dumping, like buy-back events, surveillance, and business inspections.<sup>87</sup> One county solid waste director said his county had been hesitant to spend any tire fee money until it received clarification from TDEC.<sup>88</sup> These types of activities have been useful in cities around the country, but it is unclear whether tire fee revenue can fund them in Tennessee under current law. Memphis and Shelby County have held tire buyback events but ran out of money after an overwhelming response from residents.<sup>89</sup> More than 20,000 tires were collected on day one of the 2019 event, but problems with the

“It is clear that the primary reason individuals or businesses engage in illegal dumping is to avoid tipping fees.”

Connecticut Department of Energy and Environmental Protection 2016.

<sup>83</sup> Interview with Bob Fletcher, environmental consultant, and Jeremy Hooper, environmental consultant, Tennessee Department of Environment and Conservation, Division of Solid Waste Management, May 23, 2019.

<sup>84</sup> Connecticut Department of Energy and Environmental Protection 2016.

<sup>85</sup> Tennessee Code Annotated, Section 67-4-1610(b)(1)(A).

<sup>86</sup> Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, in testimony at TACIR’s September 2019 meeting, and interview with TACIR staff June 11, 2019.

<sup>87</sup> Email correspondence with Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, October 3, 2019.

<sup>88</sup> Interview with Ronald Watkins, solid waste director, Henry County, September 23, 2019.

<sup>89</sup> Interview with Torian Harris, environmental enforcement manager, City of Memphis, June 4, 2019.

TACIR staff identified  
tire-disposal fees in 32  
states, ranging from  
\$0.25 per tire in Indiana  
and Kansas to \$3.00 per  
tire in Arkansas.

recycling contractors hired resulted in 50,000 tires piled up on a vacant lot for months.<sup>90</sup>

In 2013, Montgomery County, Ohio (and its largest city, Dayton) introduced a scrap tire buyback, collecting 15,488 tires in six hours. The event cost the county over \$92,000, but \$35,000 of that was tire disposal costs that would have been incurred regardless of how the tires had been collected. According to the program summary, the City of Dayton spent a monthly average of \$2,353 collecting scrap tires in the year preceding the event. In the months after the city spent a monthly average of \$974, a decrease of more than 58%.<sup>91</sup> The program won a 2014 Special Waste Management Excellence Award from the Solid Waste Association of North America,<sup>92</sup> and in 2019 the county surpassed 100,000 tires collected in event history.<sup>93</sup>

### **Tennessee is one of many states that collects tire disposal fees.**

According to the latest information from the US Tire Manufacturers Association (USTMA), Tennessee is one of 37 states that collects a tire pre-disposal fee.<sup>94</sup> In fiscal year 2019, tire retailers in Tennessee collected \$6.3 million in tire disposal fees; online and out-of-state sales of tires delivered to Tennessee for installation generated another \$380,000. See appendix D. TACIR staff identified fees in 32 states, ranging from \$0.25 per tire in Indiana<sup>95</sup> and Kansas<sup>96</sup> to \$3.00 per tire in Arkansas.<sup>97</sup> Six states—Tennessee not among them—also collect disposal fees on the sale of used tires. See table 1.

The USTMA reports that 13% of scrap tires collected get culled for possible resale<sup>98</sup> and that 10% of drivers surveyed say their current vehicle has a purchased used tire.<sup>99</sup> If an estimated 5.5 million tires are being disposed of each year in Tennessee (based on reports to TDEC in appendix E), then an additional 800,000 used tires are potentially being culled for resale, and 10% of the 6.1 million registered vehicles in the state<sup>100</sup>—more than 600,000—could have used tires purchased in Tennessee without a pre-disposal fee. If the fee was applied to these sales, then it could possibly generate \$150,000 in additional revenue for TDEC and \$600,000 across all counties. How much each county gains would depend on its local used tire sales, which are unknown at this point. Since the state of Arkansas started

<sup>90</sup> WMC Action News 2019 and Jacobson 2019.

<sup>91</sup> Montgomery County, Ohio, 2014.

<sup>92</sup> Solid Waste Association of North America, “Special Waste Management Excellence Award.”

<sup>93</sup> WHIO 2019.

<sup>94</sup> US Tire Manufacturers Association 2018a.

<sup>95</sup> Burns Indiana Code Annotated, Section 13-20-13-7. Includes a fee for tires on new vehicles sold.

<sup>96</sup> Kansas Annotated Statutes, Section 65-3424d. Includes a fee for tires on new vehicles sold.

<sup>97</sup> Arkansas Code Annotated, Section 8-9-404. \$3.00 is the fee for new tires; a \$1.00 fee is charged to replace a tire with a used tire.

<sup>98</sup> US Tire Manufacturers Association 2018a.

<sup>99</sup> US Tire Manufacturers Association 2017.

<sup>100</sup> Alliance of Automobile Manufacturers 2019.

**Table 1. States with Tire Pre-disposal Fees**

State	Fees Collected		
	New Tires	Used Tires	New Vehicle Tires
Alabama	\$1.00	\$1.00	—
Alaska	\$2.50	—	—
Arizona	2% (\$2.00 max)	—	\$1.00 per tire
Arkansas	\$3.00	\$1.00	—
California	\$1.75	—	\$1.75 per tire
Colorado	\$0.55	—	—
Delaware	\$2.00	\$2.00	—
Florida	\$1.00	—	\$1.00 per tire
Georgia	\$1.00	—	—
Illinois	\$2.50	\$2.50	—
Indiana	\$0.25	—	\$0.25 per tire
Kansas	\$0.25	—	\$0.25 per tire
Kentucky	\$2.00	—	—
Louisiana	\$2.25	\$1.25	—
Maine	\$1.00	—	—
Maryland	\$0.80	—	\$0.80 per tire
Mississippi	\$1.00 (>24" = \$2.00)	—	—
Missouri	\$0.50	—	—
Nebraska	\$1.00	—	\$1.00 per tire
Nevada	\$1.00	—	—
New Jersey	\$1.50	—	—
New York	\$2.50	—	—
North Carolina	2% (>20" = 1%)	—	—
Ohio	\$1.00	—	—
Oklahoma	\$2.90	\$2.90	—
Pennsylvania	\$1.00	—	—
Rhode Island	\$0.50	—	—
South Carolina	\$2.00	—	—
Tennessee	\$1.35	—	\$5.00 vehicle total
Utah	\$1.00	—	—
Virginia	\$0.50	—	—
Washington	\$1.00	—	—

Sources: US Tire Manufacturers Association 2018b. Staff researched fee amounts based on USTMA information.

tracking whether old tires are replaced by new or used tires, approximately 12% of total tire sales have been used tires.<sup>101</sup> Although it is responsible for collecting the fees from dealers and distributing payments to TDEC and counties, the Department of Revenue does not receive a portion of tire fee

<sup>101</sup> Arkansas Department of Finance and Administration 2019.

Nearly all states require  
scrap tire generating  
businesses to obtain  
permits or have other  
statewide regulations for  
scrap tire storage.

revenue. The department estimates that it would need an additional full-time position to manage and audit additional tire accounts.<sup>102</sup>

*Many states require tire retailers—new and used—to apply for permits.*

While most states choose not to collect disposal fees from the sale of used tires, nearly all require scrap tire generating businesses to obtain permits or have other statewide regulations for scrap tire storage. Tennessee is one of only six states (Alaska, Hawaii, Massachusetts, Nebraska, and West Virginia are the others) that the USTMA says do not have “storage and disposal regulation” or permits.<sup>103</sup> The cost of permits varies by state. In Alabama, for example, a Class One “Scrap Tire Receiver” includes all retail tire dealers, retreaders, and used tire dealers. There is no fee to register, but it means the Alabama Department of Environmental Management is aware of all tire businesses in the state.<sup>104</sup> Kentucky law says anyone who accumulates more than 25 waste tires for purposes of processing, transports more than 50 tires at a time or accumulates more than 100 waste tires shall register with the state, post financial assurance and receive approval before beginning operation. The amount of financial assurance required is \$1 per passenger tire equivalent, with a minimum amount of \$10,000.<sup>105</sup> Arkansas charges \$200 for an initial tire collection permit and \$50 each year after for renewal.<sup>106</sup>

*Tennessee charges a separate fee on the sale of tires with a new vehicle.*

Seven states apply the same disposal fee to the sale of replacement tires and for tires sold as part of the purchase of a new vehicle. Alternatively, Tennessee has created a separate program, funded by fees on the sale of new vehicles. In 2015, the Tennessee General Assembly approved the Tire Environmental Act<sup>107</sup> to establish a fee on each purchase of a new motor vehicle. TDEC administers the fee, but revenue is entirely separate from the Solid Waste Management Fund and is intended to be used for tire environmental programs, including local grants, subsidies or loans to recycle tires, develop products, and conduct research towards the development of beneficial end uses for tires. For most vehicles—those with four or fewer wheels—the fee is \$5.00. There is a \$10.00 fee for vehicles with up to ten wheels and \$15.00 for vehicles with 11 or more. The fund has collected approximately \$1.2 million in each of the three full fiscal years since its inception.<sup>108</sup> More than \$2.8 million has been awarded to date, including a \$1.3 million grant to Patriot Recycling, located in

<sup>102</sup> Email correspondence with Barbara Sampson, deputy commissioner, Tennessee Department of Revenue, October 29 and 31, 2019.

<sup>103</sup> US Tire Manufacturers Association 2018b.

<sup>104</sup> Alabama Department of Environmental Management, “Scrap Tire Program.”

<sup>105</sup> Kentucky Division of Waste Management 2016.

<sup>106</sup> Arkansas Department of Environmental Quality, “Tire Accountability Program.”

<sup>107</sup> Public Chapter 525, Acts of 2015. Tennessee Code Annotated, Title 68, Chapter 211, Part 3.

<sup>108</sup> Email correspondence with Amanda McGraw, chief financial officer, Tennessee Department of Revenue; August 5, 2019.



Bristol, Tennessee, for the company to purchase the equipment needed to produce crumb rubber products that can be used for playgrounds, trails, and tree surrounds. TDEC staff say, "Since this project began operation, we continue to see increased interest in the beneficial end-use market and see this opening the doors for many of our communities."<sup>109</sup>

**Tennessee's Solid Waste Management Fund supports many programs besides waste tire management.**

The Solid Waste Management Fund created by the Solid Waste Management Act of 1991 funds the personnel and operating costs of the Materials Management Section within the Division of Solid Waste, which administers several programs—including the state's Waste Tire program. Besides the tire program, Materials Management's "Problem Waste" section includes used oil, batteries, anti-freeze, electronics and household hazardous wastes.<sup>110</sup>

*Revenue comes to the Solid Waste Management Fund from two main sources.*

The \$0.25-per-tire that TDEC receives from pre-disposal fees added up to an average of approximately \$1.4 million in each of the last three fiscal years. However, this is only about 18% of the total annual revenue for the Solid Waste Management Fund. The \$0.90 tipping fee surcharge on each ton of municipal solid waste received by Class I landfills and incinerators, authorized by Tennessee Code Annotated, Section 68-211-835(d), generates, on average, approximately \$6.5 million a year. See table 2.

**Table 2. Sources of Revenue for the Solid Waste Management Fund  
Fiscal Years 2017-2019**

	Fiscal Year		
	2016-17	2017-18	2018-19
Revenue from Tire Pre-disposal Fees (\$0.25 per new tire sold)	\$ 1,371,649	\$ 1,528,557	\$ 1,390,931
Revenue from Municipal Solid Waste Surcharge (\$0.90 per ton)	6,257,736	6,474,468	6,731,513
Combined Revenue into SWMF	\$ 7,629,385	\$ 8,003,025	\$ 8,122,444

Source: Email correspondence with Lisa Hughey, deputy director, Tennessee Department of Environment and Conservation, November 21, 2019.

<sup>109</sup> Email correspondence with Chad Kimes, senior policy analyst, Tennessee Department of Environment and Conservation, Office of Policy & Sustainable Practices, September 19, 2019.

<sup>110</sup> Tennessee Department of Environment and Conservation, "Materials Management."

The Waste Management Act requires the Tennessee Department of Environment and Conservation to use the Solid Waste Management Fund for a number of programs designed to help local governments meet the state's waste reduction, diversion, and recycling goals.

*TDEC is required to provide for several programs with Solid Waste Management Fund money.*

The Waste Management Act requires the department to use SWMF funds for a number of programs designed to help local governments meet the state's waste reduction, diversion, and recycling goals. The department:

- Shall award annual plan maintenance grants to development districts, and planning assistance grants to each county or solid waste region, to help develop, revise and maintain required regional solid waste plans;<sup>111</sup>
- Shall offer matching grant assistance to counties for the purpose of establishing or upgrading required convenience centers;<sup>112</sup>
- Shall establish a matching grant program for the purchase of equipment needed to establish or upgrade recycling at a public or not-for-profit recycling collection site;<sup>113</sup>
- Shall grant a rebate—in lieu of recycling equipment grants—for the five most populous counties, against the amount due to the state under the state surcharge on municipal solid waste tipping fees;<sup>114</sup>
- Shall establish an office of cooperative marketing for recyclables;<sup>115</sup>
- Shall award competitive grants to the state's largest municipalities for permanent sites for the collection of household hazardous waste;<sup>116</sup> and
- Shall provide mobile units for household hazardous waste collection in all other counties.<sup>117</sup>

For example, the following press releases describe grants awarded by TDEC for required programs:

- In 2016, a total of \$4 million in grant money was awarded for recycling equipment, including grants specific to waste reduction and composting equipment.<sup>118</sup> \$461,000 was awarded to the nine development districts for planning assistance.<sup>119</sup>
- In 2017, approximately \$650,000 was awarded for recycling equipment, and \$500,000 in recycling rebates was given in lieu

<sup>111</sup> Tennessee Code Annotated, Section 68-211-823.

<sup>112</sup> Tennessee Code Annotated, Section 68-211-824.

<sup>113</sup> Tennessee Code Annotated, Section 68-211-825(a).

<sup>114</sup> Tennessee Code Annotated, Section 68-211-825(b).

<sup>115</sup> Tennessee Code Annotated, Section 68-211-826.

<sup>116</sup> Tennessee Code Annotated, Section 68-211-828.

<sup>117</sup> Tennessee Code Annotated, Section 68-211-829.

<sup>118</sup> Tennessee Department of Environment and Conservation 2016.

<sup>119</sup> Tennessee Department of Environment and Conservation 2016b.

of grants.<sup>120</sup> Another \$3.7 million was awarded to 13 entities for equipment needed to reduce organic waste.<sup>121</sup>

- In 2018, approximately \$5 million in grants were awarded for recycling equipment, rebates, and convenience centers.<sup>122</sup>
- In 2019, \$1.9 million in grants was awarded for waste reduction equipment.<sup>123</sup>

Once budgets have been set for these required programs, it is only from any remaining available funds that TDEC may award grants in other areas – which can include helping local governments clean up unpermitted waste tire disposal sites and assisting counties in locating, collecting and appropriately disposing of waste tires.<sup>124</sup> TDEC has not awarded waste tire cleanup grants in recent years, and eligibility is limited.

As authorized by Tennessee Code Annotated, Section 68-211-831, TDEC may use SWMF money to “provide for the investigation and clean-up of unpermitted waste tire disposal sites and other unpermitted solid waste disposal sites.” Despite the department earmarking \$1 million for tire cleanup through the Waste Tire Cleanup Grant in fiscal year 2019, program staff say no counties applied for assistance, and the only county to receive a grant in recent years was Putnam County, which was awarded \$10,000 in fiscal year 2018. However, the county completed the project with less than \$6,000 and the grant was closed.<sup>125</sup>

Eligibility for tire cleanup grants reflects the 2014 change to the distribution of pre-disposal fees. Tire grant documentation states that “[e]ffective July 1, 2014, with an update to the Act, county governments became responsible for all newly identified unpermitted waste tire sites unless the site was clearly created prior to this date.” The Department lists 21 such “legacy” sites in 16 counties that are eligible for this grant program, to which funding priority would be given. For registered legacy waste tire sites, there are no required matching funds. TACIR staff contacted TDEC to determine the current condition of these legacy sites but updated information has not yet been provided. Other illegal dumpsites identified after July 2014 can be considered when TDEC determines the site “may cause harm to health, the environment, or the public,” or “is too large for the county or city resources.” The grant application sets a minimum of 1,000 tires to be considered eligible. All grant funding is given as a

Despite the Tennessee Department of Environment and Conservation earmarking \$1 million for tire cleanup through the Waste Tire Cleanup Grant in fiscal year 2019, program staff say no counties applied for assistance.

<sup>120</sup> Tennessee Department of Environment and Conservation 2017b.

<sup>121</sup> Tennessee Department of Environment and Conservation 2017c.

<sup>122</sup> Tennessee Department of Environment and Conservation 2018a. Note: The press release includes an additional \$1 million awarded in Used Oil grants, which are not funded from the Solid Waste Management Fund.

<sup>123</sup> Tennessee Department of Environment and Conservation 2019b.

<sup>124</sup> Tennessee Code Annotated, Sections 68-211-822, 830-833, 847, and 867.

<sup>125</sup> Grant application document provided via email correspondence with Lisa Hughey, deputy director and Cavene McHayle, financial officer, Tennessee Department of Environment and Conservation, Division of Solid Waste Management, November 20, 2019.

With thousands of acres  
of state land to patrol,  
Tennessee Wildlife  
Resources Agency  
officers encounter illegal  
dumping on a regular  
basis.

reimbursement for expenditures, so counties are required to pay in full for cleanup efforts at the time; non-legacy sites require a 50% local match, so the local government will only be reimbursed for half of what it spends.<sup>126</sup>

*The amount of tire fee revenue dedicated to tire management and cleanup varies among states.*

How other states distribute their tire fee revenue varies considerably. Some, like Tennessee, distribute funds to local governments to manage their own tire programs, while others do more at the state level. Arizona, interestingly, sends 96.5% of its tire fee money back to counties but does so “in proportion to the number of motor vehicles registered in the county” rather than by tire sales like Tennessee.<sup>127</sup> In Ohio, the state’s \$1.00-per-tire fees bring in \$3.6 million a year; half goes into the Scrap Tire Management Fund, providing \$1.5 million per year for grants, while the other half goes to the Soil and Water Conservation District Assistance Fund.<sup>128</sup> Individuals or agencies can apply for cleanup only when they meet certain financial requirements for sites with as few as 100 tires. Among the \$4 million Ohio Environmental Protection Agency awarded in 2019 were grants for security cameras to monitor illegal dump sites and several local tire amnesty events.<sup>129</sup> A Mississippi Department of Environmental Quality grant allowed Hancock County to purchase surveillance cameras—costing \$2,000 each—to monitor dump sites.<sup>130</sup> California approved two state-funded, \$375,000 pilot projects for Alameda and Contra Costa counties in 2019. Contra Costa was able to “authorize hiring four dedicated per-diem officers to enforce no dumping laws with the help of 10 streetlights, surveillance cameras, 50 street signs, collaboration with two truck companies, and a public outreach campaign.”<sup>131</sup>

***Other Tennessee agencies dedicate resources to clean up illegal dumpsites and help local governments prevent dumping.***

Each year, the Tennessee Wildlife Resources Agency (TWRA) uses federal aid to offer 20 Aquatic Stream Clean Up grants of up to \$1,000, “designed to assist cities, schools, community organizations, civic groups, watershed organizations, and conservation groups, with stream clean-up projects.”<sup>132</sup> With thousands of acres of state land to patrol, TWRA officers encounter illegal dumping on a regular basis. In Roane County, TWRA closed access

<sup>126</sup> Tennessee Department of Environment and Conservation, “Waste Tire Cleanup Grant.”

<sup>127</sup> Arizona Revised Statutes, Section 44-1305.

<sup>128</sup> Byer 2016 and Ohio Environmental Protection Agency 2016.

<sup>129</sup> Ohio Environmental Protection Agency 2019.

<sup>130</sup> Lacy 2019.

<sup>131</sup> Guzzetti 2019.

<sup>132</sup> Tennessee Wildlife Resources Agency 2018. And email correspondence with Della Sawyers, administrative secretary and Dave McKinney, chief of environmental services, Tennessee Wildlife Resources Agency, December 3, 2019.

roads to the Mt. Roosevelt Wildlife Management area in 2016 and 2018 in response to rampant illegal dumping. In 2018, the agency spent more than \$120,000, removing 10 tons of waste that included tires, gas tanks, building materials and household waste. Officers maintain surveillance of the area and investigate leads.<sup>133</sup>

The Tennessee Department of Transportation (TDOT) spends approximately \$15 million annually on litter prevention and pickup. Tax revenue from soft drink and beverage containers provides funding for the programs. Litter grants are available to all 95 counties, determined by a formula based on population and road miles. In FY 2018, the state distributed \$5.5 million to counties, used to remove roughly 23 million pounds of litter from Tennessee roadways and clean up 4,332 illegal roadside dumps in fiscal year 2018. Funding from TDOT for the Keep Tennessee Beautiful program helped counties hold National Planting Day events, where 96 tires were reused to make planted flower beds. Litter grant contracts require that 15-30% of the total funding go towards litter prevention education, which could be used to include information about tire dumping.<sup>134</sup>

In 2018, a \$200,000 TDOT Special Litter Grant was given to TDEC to collect 36,000 tires illegally dumped in T. O. Fuller State Park (Shelby County) and have them recycled into a multi-use path. Another \$123,000 went to Lawrence County to hire a litter enforcement officer to investigate littering and monitor and clean-up illegal dumpsites. The town of Tellico Plains used \$65,000 to hire two litter enforcement officers.<sup>135</sup>

### ***Tennessee is among the few states that doesn't regulate waste tire haulers.***

The Council of State Governments advises that to manage waste tires effectively, "a state must have several mechanisms in place: a mandatory waste tire manifest system, regular reporting requirements, waste tire fee schedules, dedicated remediation funds, permitting systems and criminal penalties for violators."<sup>136</sup> The US Tire Manufacturers Association says 36 states require tire haulers to have permits, and 17 require haulers to provide financial assurance as a condition of approval. In these states, registered tire businesses are required to use permitted tire haulers and document each load with a standard manifest, which lists how many tires there are, where they came from, and where they are going to be taken.<sup>137</sup> In Tennessee, TDEC certifies used oil transporters but "does not require specific registration for waste tire haulers nor maintain a list of them."<sup>138</sup>

<sup>133</sup> WBIR 2018.

<sup>134</sup> Tennessee Department of Transportation 2019.

<sup>135</sup> Ibid.

<sup>136</sup> Brody 2017.

<sup>137</sup> US Tire Manufacturers Association 2018b.

<sup>138</sup> Tennessee Code Annotated, Section 68-211-1014. Also Tennessee Department of Environment and Conservation, "Waste Tire Program."

The US Tire  
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Association says 36  
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Having a required statewide tire hauler permit would give law enforcement officers opportunities to stop suspicious vehicles hauling tires.

Some counties in Tennessee require manifests in order to document tires that come from dealers who collect pre-disposal fees, but there is no standardization among counties and no requirement to be a tire hauler.<sup>139</sup>

Having a required statewide tire hauler permit would give Highway Patrol officers opportunities to stop suspicious vehicles hauling tires on state highways and interstates.<sup>140</sup> This could help prevent illegal dumping from neighboring states as well. Stakeholders of all types interviewed said that permits would be a good way to increase enforcement.<sup>141</sup> Local governments have the authority to establish and enforce their own permit requirements, but even those that do are unable to enforce them. Memphis and Shelby County ordinances require \$250 tire hauler permits, but department staff say they never receive applications.<sup>142</sup> Nashville requires haulers to display a business name and telephone number on their vehicle but doesn't keep a registry of haulers or require permits.<sup>143</sup>

TDEC requires financial assurance from many types of businesses, including solid and hazardous waste storage facilities, oil and gas wells, and processors of radioactive materials, to ensure there are funds available when cleanups are required. One type of financial assurance commonly used in other states is a surety bond, "a contract between a surety (e.g., an insurer) and the site's owner/operator (called the "principal"), in which the surety agrees to be financially responsible for any necessary clean up on the site should the principal default on its obligations."<sup>144</sup>

### ***Tire dumping is a misdemeanor offense in Tennessee.***

Penalties—civil and criminal—for illegal dumping are substantial, but difficulties with enforcement and prosecution make convictions rare.<sup>145</sup> The offense of aggravated criminal littering—a Class A misdemeanor punishable by up to a year in jail and a \$2,500 fine—only requires 10 pounds of litter or less than a single tire. Offenders will be sentenced to serve up to 160 hours on a litter crew. For violations over 100 pounds (four or five tires), the fine can be up to \$4,000. Repeat offenses are felonies with a one-year minimum prison sentence.<sup>146</sup>

<sup>139</sup> Email correspondence with Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, November 14, 2019.

<sup>140</sup> Interview with Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, June 11, 2019.

<sup>141</sup> Dewey Grantham, regional vice president, Liberty Tire Recycling, June 4, 2019; Tom Salter, former solid waste director, Knox County, July 12, 2019.

<sup>142</sup> Memphis Municipal Code, Section 9-58-4; Shelby County Code, Section 8-656; interview with Jodie Dowty, support services program coordinator, Shelby County, July 1, 2019.

<sup>143</sup> Code of The Metropolitan Government of Nashville and Davidson County, Section 10.20.075.

<sup>144</sup> Tennessee Department of Environment and Conservation, "Division of Financial Assurance & Business Process Improvement."

<sup>145</sup> Discussion between Jeremy Hooper, environmental consultant, Tennessee Department of Environment and Conservation, and Mike Stooksberry, consultant, University of Tennessee County Technical Assistance Service, at TACIR's September 2019 meeting.

<sup>146</sup> Tennessee Code Annotated, Sections 39-14-505 and 40-35-111.

A violation of the Tennessee Solid Waste Disposal Act is a Class B misdemeanor, punishable by fines of up to \$500 per day, plus civil penalties up to \$5,000 per day.<sup>147</sup> According to TDEC staff, its investigators are able to keep up with complaints they receive, conducting investigations in an expedient manner.<sup>148</sup> The difficulty lies in the time it takes to prove who is responsible for an illegal dump site and to prove the person doesn't intend to simply store the tires and other materials for future use.<sup>149</sup> In January 2019, TDEC fined the owner of the former Raytheon building in Bristol more than \$492,000 for hundreds of thousands of tires that are stored on the site without a permit. However, "TDEC's documentation of the operation goes back to 2012, with the owner being issued multiple notices of violations."<sup>150</sup> The fine was appealed and was being litigated in the Administrative Procedures Division of the Tennessee Secretary of State's Office as of December 2019. The city of Bristol has spent \$20,000 in legal fees pursuing the owner, money many municipalities couldn't afford.<sup>151</sup>

### Hotlines and rewards already exist for reporting dumping.

Tennessee has multiple hotlines available for concerned citizens to report illegal dumping. "[When] you see a solid waste dump," TDEC's website instructs, "please contact your local environmental Field Office or your local public works or codes department [should] you [happen to] live within an urban area." The number is 1-888-891-TDEC (8332), and an email address is available at [Solid.Waste@tn.gov](mailto:Solid.Waste@tn.gov).<sup>152</sup> TDEC's website says that littering and dumping along Tennessee roadways should be reported to local authorities or the Tennessee Highway Patrol. In 2017, TDOT launched the "Nobody Trashes Tennessee" campaign to raise litter awareness.<sup>153</sup> Individuals can call 1-877-8-LITTER. (877-854-8837), where a recording asks for the Tennessee license number of the offender's vehicle, the type and make of vehicle, the time it happened and where, and what was tossed or blown from the vehicle. TDOT also offers an online litter hotline at <https://www.tn.gov/tdot/environmental-home/environmental-highway-beautification-office/litter.html>.<sup>154</sup>

Local governments around the country are offering rewards to fight illegal dumping.<sup>155</sup> Loudon County Mayor, Buddy Bradshaw said his county had rewarded tipsters for information used to prosecute several

To report illegal  
dumping, call 1-888-  
891-TDEC or email [solid.waste@tn.gov](mailto:solid.waste@tn.gov).

<sup>147</sup> Tennessee Code Annotated, Sections 68-211-114, 68-211-117, and 40-35-111.

<sup>148</sup> Email correspondence with Jeremy Hooper, environmental consultant, Tennessee Department of Environment and Conservation, September 24, 2019.

<sup>149</sup> Testimony by Jeremy Hooper, environmental consultant, Tennessee Department of Environment and Conservation at TACIR's September 2019 meeting.

<sup>150</sup> Hayes 2019.

<sup>151</sup> Greiss 2019.

<sup>152</sup> Tennessee Department of Environment and Conservation, "Illegal Dumping."

<sup>153</sup> Tennessee Department of Transportation 2017.

<sup>154</sup> Tennessee Department of Transportation, "Online Litter Hotline."

<sup>155</sup> Quintana 2019.

For information that leads to a criminal littering or aggravated criminal littering conviction, Tennesseans can receive a \$250 reward.

dumping violators.<sup>156</sup> One successful program in St. Louis, Missouri, has led to 36 convictions for illegal dumping. The city offers a \$100 reward for information leading to an arrest and conviction, and according to the city, fines for illegal dumping are on track to triple this year compared to 2018.<sup>157</sup> In Tennessee, a person who reports information to a law enforcement officer that leads to a criminal littering or aggravated criminal littering conviction can receive a \$250 reward.<sup>158</sup>

***Scrap tires have little value as a commodity, and the market for high-value recycled tire products is limited.***

Overall, a typical scrap tire contains only about 70% recoverable rubber by weight. Another 15% is steel from reinforcing and the rest fiber and fillers.<sup>159</sup> The US Tire Manufacturers Association reports that 43% of scrap tire material ends up as fuel, burned to power industrial processes like cement kilns, paper mills, and electric utility boilers.<sup>160</sup> Tennessee has two cement plants, one in Chattanooga and the other in Knoxville. Tire-derived fuel (TDF) is cheap to produce, but also offers little value in return for recyclers as a result of a steady supply.

About a quarter of scrap tires are ground into crumb rubber, used for playgrounds and athletic fields but also recycled into molded and extruded rubber products. Twelve percent of ground rubber is used in asphalt.<sup>161</sup> These products cost more to produce, but the relatively low demand from customers compared to TDF makes doing so a risky venture.

<sup>156</sup> Email correspondence with Buddy Bradshaw, mayor, Loudon County, December 18, 2019.

<sup>157</sup> St. Onge 2019.

<sup>158</sup> Tennessee Code Annotated, Section 39-14-510.

<sup>159</sup> Scrap Tire News, “Crumb Rubber Overview.”

<sup>160</sup> US Tire Manufacturers Association 2018.

<sup>161</sup> Ibid.



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Closing Gaps in Tennessee's Waste Tire Program and Giving Local Governments  
More Flexibility to Prevent Illegal Tire Dumping

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Office of Senator Steven Dickerson  
District 20

Steve Southerland, Senator  
District 1

## Appendix A: Senate Joint Resolution 344

<BillNo> <Sponsor>

### SENATE JOINT RESOLUTION 344

By Dickerson

A RESOLUTION to direct the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) to study the overall effects of illegal waste tire dumps in Tennessee.

BE IT RESOLVED BY THE SENATE OF THE ONE HUNDRED ELEVENTH GENERAL ASSEMBLY OF THE STATE OF TENNESSEE, THE HOUSE OF REPRESENTATIVES CONCURRING, that the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) is directed to perform a study of the overall effects of illegal waste tire dumps within the boundaries of the State of Tennessee in an effort to better understand the adverse impacts of tire dumps on the environment, review current waste tire recycling methods, and assess potential preventative measures to curb the practice of illegal tire dumping.

BE IT FURTHER RESOLVED, that the study shall focus on the following topics:

- (1) Health risks of waste tire dumps to the general public, including diseases carried by mosquitoes, rodents, and other pests that live within or potentially flock to illegal waste tire dumps;
- (2) Effects of burning or igniting fires at waste tire dumps, including the length and duration of tire fires, effects of residue left behind by tire fires, and health effects of air pollution from tire fires;
- (3) Modern recycling methods for waste tires, including shredding, pyrolysis, and other recycling methods;
- (4) Recyclable alternatives to dumping tires or placing tires in landfills, including building materials for roads and highways; construction material for Tennessee State Park trails; mulching alternatives for schools and playgrounds; barriers for reefs, riversides, sandbars, and other applicable waterway facets; and fuel sources for manufacturing companies;

(5) Waste tire dumping prevention strategies, including extra policing efforts and heavier fines and penalties; and

(6) Incentive initiatives for tire recycling practices, including buyback programs through state and local resources and tire redemption programs.

BE IT FURTHER RESOLVED, that upon completion of the study, TACIR shall report all facts and findings to the chairs of the Senate Energy, Agriculture, and Natural Resources Committee, the Senate State and Local Committee, the Senate Health Committee, the Senate Transportation Committee, the House Agriculture and Natural Resources Committee, the House State Government Committee, the House Health and Welfare Committee, and the House Transportation Committee.

BE IT FURTHER RESOLVED, that a certified copy of this resolution be prepared and transmitted to the executive director of the Tennessee Advisory Commission on Intergovernmental Relations.

## Appendix B: Formal Request for TACIR Study, May 5, 2019



**STEVEN DICKERSON**  
STATE SENATOR  
20<sup>th</sup> SENATORIAL DISTRICT

REPRESENTING PARTS OF  
DAVIDSON COUNTY

**EMAIL**  
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# Senate Chamber STATE OF TENNESSEE

NASHVILLE

**LEGISLATIVE OFFICE**  
774 CORDELL HULL BLDG.  
NASHVILLE, TENNESSEE 37243  
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**CHAIRMAN:**  
Senate State and Local Government

**COMMITTEE MEMBERSHIP:**  
Senate Education Committee

May 5, 2019

Mayor Larry Waters  
Acting Chairman  
Tennessee Advisory Commission on Intergovernmental Relations  
226 Anne Dallas Dudley Boulevard, Suite 508, Nashville, Tennessee 37243

Mr. Cliff Lippard  
Executive Director  
Tennessee Advisory Commission on Intergovernmental Relations  
226 Anne Dallas Dudley Boulevard, Suite 508, Nashville, Tennessee 37243

Executive Director Lippard and Mayor Waters,

I write to you today to formally request that the Tennessee Advisory Commission on Intergovernmental Relations to perform a study over the contents SJR0344, regarding the effects of illegal waste tire dumps in Tennessee. This issue is of particular concern to me, and other members, because illegal waste tire dumps cause great harm to the health of the citizens Tennessee, the environmental resources of Tennessee, and the natural beauty of Tennessee.

The SJR is laid out in six sections, all of which we hope that TACIR will study and find the core issues to which the legislature can then fix through regulatory and legislative actions:

1. The Health Risks of Illegal Waste Tire Dumps
2. Dangers of the Igniting and Burning of Illegal Waste Tire Dumps
3. Current Recycling Methods for Waste Tires
4. New Recycling Alternatives for Waste Tires
5. New Preventative Strategies for the Practice of Illegal Waste Tire Dumping
6. Incentives for Recycling through State and Local Programs

Chairman Southerland of the Senate Energy, Agriculture, and Natural Resources Committee has expressed interest in a study of this caliber, and we believe that a study by the Tennessee Advisory Commission on Intergovernmental Relations as well as recommendations for legislative solutions before the next legislative session it will be incredibly helpful in solving this issue.

Warmest Regards,

A handwritten signature in black ink that reads "Steven Dickerson".

Steven Dickerson  
State Senate – District 20



## Appendix C: Vector-borne Disease Cases in Tennessee and the US, 2018

Disease and Case Type	2017		2018		2019 (preliminary)	
	US Total	Tennessee	US Total	Tennessee	US Total	Tennessee
<b>West Nile virus disease<sup>a</sup></b>						
Total reported cases	2,097	30	2,646	12	917	3
Neuroinvasive	1,425	22	1,657	11	607	3
Non-neuroinvasive	672	8	989	1	310	-
Deaths	146	1	167	4	51	-
<b>La Crosse virus encephalitis<sup>b</sup></b>						
Total reported cases	63	17	86	13	50	12
Neuroinvasive	63	17	83	12	no data	no data
Non-neuroinvasive	-	-	3	1	no data	no data
Deaths	-	-	-	-	no data	no data
<b>Zika virus<sup>c</sup></b>						
Infection, non-congenital	641	2	245	-	no data	no data
Symptomatic disease, non-congenital	497	2	79	-	20	-
<b>Chikungunya virus disease<sup>d</sup></b>						
Reported cases	156	-	117	-	133	3
<b>Dengue virus infections<sup>e</sup></b>						
Dengue	437	3	424	4	1,158	9
Severe dengue	9	-	9	-	21	-

Source: Centers for Disease Control and Prevention, National Notifiable Diseases Surveillance System.

<sup>a,b</sup> TABLE 2b. Reported cases of notifiable diseases, by region and reporting area—United States and U.S. territories, 2017

<sup>a,b</sup> TABLE 2b. Annual reported cases of notifiable diseases, by region and reporting area—United States and U.S. Territories, 2018

<sup>a</sup> West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State—United States, 2017

<sup>a</sup> West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State—United States, 2018

<sup>a</sup> West Nile Virus Disease Cases by State 2019 (as of January 7, 2020)

<sup>b</sup> TABLE 1b. Weekly cases\* of notifiable diseases, United States, U.S. Territories, and Non-U.S. Residents weeks ending December 28, 2019 (week 52)

<sup>b</sup> La Crosse virus disease cases and deaths reported to CDC by year and clinical presentation, 2009-2018

<sup>c</sup> TABLE 1pp. Weekly cases\* of notifiable diseases, United States, U.S. Territories, and Non-U.S. Residents weeks ending December 28, 2019

<sup>c</sup> TABLE 2q. Reported cases of notifiable diseases, by region and reporting area—United States and U.S. territories, 2017

<sup>c</sup> TABLE 2q. Annual reported cases of notifiable diseases, by region and reporting area—United States and U.S. Territories, 2018

<sup>d</sup> TABLE 1a. Weekly cases\* of notifiable diseases, United States, U.S. Territories, and Non-U.S. Residents weeks ending December 28, 2019 (week 52)

<sup>d</sup> TABLE 2a. Reported cases of notifiable diseases, by region and reporting area—United States and U.S. territories, 2017

<sup>d</sup> TABLE 2a. Annual reported cases of notifiable diseases, by region and reporting area—United States and U.S. Territories, 2018

<sup>e</sup> TABLE 1j. Weekly cases\* of notifiable diseases, United States, U.S. Territories, and Non-U.S. Residents weeks ending December 28, 2019 (week 52)

<sup>e</sup> TABLE 2e. Reported cases of notifiable diseases, by region and reporting area—United States and U.S. territories, 2017

<sup>e</sup> TABLE 2e. Annual reported cases of notifiable diseases, by region and reporting area—United States and U.S. Territories, 2018





## Appendix D: Pre-disposal Fees Collected and Payments Distributed to Tennessee Counties

County	Tire Pre-Disposal Fees Collected by Dealers on New Tire Sales			Amounts Distributed to Counties from Tire Fees*		
	FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Anderson	\$ 63,519	\$ 61,509	\$ 74,492	\$ 53,105	\$ 51,063	\$ 63,101
Bedford	34,260	32,592	37,585	28,796	26,973	32,284
Benton	16,435	12,501	18,229	13,627	10,415	15,480
Bledsoe	3,645	6,514	896	3,063	5,460	702
Blount	149,770	148,696	123,838	125,647	124,038	105,118
Bradley	106,105	94,097	115,075	88,515	78,170	97,163
Campbell	31,776	27,131	29,580	26,465	22,410	24,870
Cannon	2,925	1,499	3,128	2,446	1,881	2,628
Carroll	19,121	19,042	17,090	15,987	15,586	14,784
Carter	26,549	29,323	33,613	22,061	24,232	28,330
Cheatham	13,608	12,574	16,672	11,349	10,480	14,185
Chester	10,789	9,910	9,340	9,002	8,163	7,933
Claiborne	19,644	19,783	17,619	16,559	16,219	14,826
Clay	1,420	3,414	1,754	1,188	3,068	1,493
Cocke	28,439	24,894	30,212	23,848	20,652	25,683
Coffee	58,199	41,978	64,553	48,792	46,663	55,014
Crockett	4,711	3,244	2,677	3,871	2,724	2,278
Cumberland	65,181	64,911	69,493	54,622	54,137	58,968
Davidson	701,789	766,368	687,432	587,660	633,807	584,096
Decatur	8,594	10,668	9,548	7,150	8,791	8,208
Dekalb	11,102	10,977	13,196	9,337	9,113	11,236
Dickson	67,887	59,270	75,247	56,779	49,473	63,815
Dyer	46,405	44,151	47,668	38,920	36,831	40,620
Fayette	19,717	21,208	26,609	16,550	17,526	22,718
Fentress	22,258	25,162	23,809	18,690	20,734	20,457
Franklin	27,447	26,291	29,280	22,993	21,788	24,937
Gibson	48,334	51,078	57,748	40,509	42,470	49,195
Giles	28,370	26,883	34,009	23,804	22,452	28,881
Grainger	6,852	6,685	6,369	5,740	5,531	5,417
Greene	59,090	62,663	62,914	49,381	51,973	53,456
Grundy	3,100	3,211	3,271	2,582	2,625	2,771
Hamblen	82,151	70,006	95,390	68,859	57,466	80,516
Hamilton	306,417	332,546	339,445	256,508	274,579	288,592
Hancock	1,844	2,093	2,555	1,532	1,744	2,175
Hardeman	14,514	9,971	12,384	12,147	9,994	10,489
Hardin	28,219	31,001	40,197	23,673	25,799	34,225
Hawkins	32,269	28,196	42,153	27,094	23,445	35,768
Haywood	22,123	21,976	20,461	18,571	18,258	17,449
Henderson	25,255	26,085	29,785	21,221	21,623	25,461
Henry	36,423	31,573	32,956	30,213	26,174	27,816

**Appendix D: Pre-disposal Fees Collected and Payments Distributed to Tennessee Counties  
(continued)**

County	Tire Pre-Disposal Fees Collected by Dealers on New Tire Sales			Amounts Distributed to Counties from Tire Fees*		
	FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Hickman	13,094	12,422	13,056	10,955	10,264	11,125
Houston	4,453	6,146	6,771	3,651	5,071	5,767
Humphreys	11,090	10,204	11,341	9,272	8,416	9,700
Jackson	4,862	4,792	3,727	4,049	3,964	3,159
Jefferson	22,984	20,722	27,223	19,217	17,264	23,241
Johnson	16,002	13,991	11,317	13,371	11,582	9,704
Knox	530,790	541,031	554,179	444,520	452,702	470,843
Lake	1,405	1,258	1,103	1,156	1,055	936
Lauderdale	12,827	13,730	14,373	10,767	11,513	12,227
Lawrence	45,952	49,979	53,942	38,448	41,536	45,788
Lewis	16,012	10,223	9,085	13,147	8,458	7,778
Lincoln	25,832	26,108	43,299	21,637	21,635	36,159
Loudon	33,782	33,072	35,758	28,302	27,579	30,466
McMinn	49,064	47,461	55,118	41,064	40,467	46,998
McNairy	15,779	16,571	18,023	13,215	13,866	15,343
Macon	26,827	27,287	28,526	22,280	22,521	23,984
Madison	153,309	151,715	160,620	128,653	125,666	136,934
Marion	27,237	28,976	31,869	22,615	24,184	27,202
Marshall	26,646	26,422	28,711	22,361	21,865	24,602
Maury	64,603	67,107	86,298	54,322	55,522	73,418
Meigs	457	660	1,178	384	555	997
Monroe	33,832	38,409	34,563	28,143	31,812	29,568
Montgomery	184,222	187,429	195,729	154,697	155,300	167,368
Moore	1,492	1,471	1,424	1,253	1,212	1,230
Morgan	5,901	5,280	4,723	4,932	4,346	4,051
Obion	44,260	33,768	25,876	37,063	27,990	22,121
Overton	20,657	21,214	20,242	17,343	17,365	17,434
Perry	2,040	1,921	1,925	1,671	1,559	1,614
Pickett	1,799	1,300	1,102	1,457	1,059	924
Polk	6,150	4,598	6,798	5,046	3,781	5,723
Putnam	100,038	94,461	105,262	83,672	78,685	89,725
Rhea	19,299	23,538	20,365	16,174	19,626	17,397
Roane	47,100	49,703	48,969	39,501	41,084	41,839
Robertson	50,025	46,419	60,850	41,701	38,575	50,497
Rutherford	348,319	358,313	382,054	292,329	297,398	325,406
Scott	14,066	13,319	15,901	11,818	11,070	13,461
Sequatchie	7,744	8,614	4,256	6,408	7,136	3,530
Sevier	69,201	66,698	78,900	57,985	55,884	67,032
Shelby	639,495	602,706	696,235	538,567	535,591	590,573
Smith	5,136	4,824	5,300	4,267	4,028	4,509
Stewart	14,440	11,456	8,778	11,994	9,460	7,580

### Appendix D: Pre-disposal Fees Collected and Payments Distributed to Tennessee Counties (continued)

County	Tire Pre-Disposal Fees Collected by Dealers on New Tire Sales			Amounts Distributed to Counties from Tire Fees*		
	FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Sullivan	149,600	128,331	153,844	125,469	106,994	130,285
Sumner	166,704	158,072	171,064	139,857	131,154	145,345
Tipton	50,318	48,287	55,042	42,196	40,239	46,495
Trousdale	6,563	7,011	7,365	5,463	5,664	6,402
Unicoi	5,596	5,185	5,170	4,706	4,375	4,398
Union	6,174	6,170	6,088	5,139	5,169	5,110
Van Buren	207	48	34	174	40	27
Warren	37,088	32,976	39,980	31,158	27,365	34,225
Washington	113,610	108,382	123,057	94,773	88,694	104,679
Wayne	6,428	6,102	4,305	5,399	5,079	3,689
Weakley	21,403	20,853	28,144	17,788	17,235	23,897
White	23,749	22,938	28,509	19,923	19,116	24,282
Williamson	296,572	308,415	327,090	250,016	255,405	278,846
Wilson	163,100	153,291	131,391	136,939	126,836	112,359
<b>Total Collections from In-State Sales</b>	<b>\$ 6,021,593</b>	<b>\$ 5,973,051</b>	<b>\$ 6,354,121</b>			
Additional Revenue from Out-of-State Sales	300,253	289,681	383,187			
<b>Total Pre-Disposal Fees Collected</b>	<b>\$ 6,321,847</b>	<b>\$ 6,262,731</b>	<b>\$ 6,737,308</b>			

**Total Distributions to Counties: \$ 5,047,261 \$ 5,006,540 \$ 5,401,127**

\*Included Amount from Out-of-State Sales: 240,203 231,745 306,550

**Amount Paid to TDEC Solid Waste Management Fund: \$ 1,359,029 \$ 1,397,880 \$ 1,477,026**

Included Amount from Out-of-State Sales: 60,051 57,936 76,637

Note: Collection amounts represent fees collected by dealers on tire sales in the actual months of that fiscal year. Fees collected by dealers on tires sold in April, May, and June are submitted to the Department of Revenue by July 25, and figures for payments to counties represent the fiscal year in which payments were actually made.



## Appendix E: Tons of Waste Tires Reported by Counties for Beneficial End Use

County	Tires Reported Sent for Beneficial End Use (Tons)	
	2017	2018
Anderson	956	900
Bedford	413	403
Benton	190	158
Bledsoe	189	195
Blount	938	771
Bradley	816	855
Campbell	140	98
Cannon	114	103
Carroll	5	2
Carter	37	38
Cheatham	53	25
Chester	125	138
Claiborne	207	243
Clay	27	31
Cocke	283	317
Coffee	652	888
Crockett	2	4
Cumberland	939	946
Davidson	7,101	7,056
Decatur	87	122
Dekalb	158	102
Dickson	1,441	1,108
Dyer	550	452
Fayette	256	161
Fentress	386	362
Franklin	452	367
Gibson	424	406
Giles	124	120
Grainger	148	132
Greene	416	390
Grundy	108	115
Hamblen	907	917
Hamilton	4,206	4,115
Hancock	59	10
Hardeman	156	81
Hardin	145	154
Hawkins	392	358

## Appendix E: Tons of Waste Tires Reported by Counties for Beneficial End Use (continued)

County	Tires Reported Sent for Beneficial End Use (Tons)	
	2017	2018
Haywood	400	400
Henderson	75	92
Henry	22	20
Hickman	199	248
Houston	157	180
Humphreys	153	177
Jackson	99	105
Jefferson	293	307
Johnson	122	140
Knox	4,065	5,492
Lake	23	100
Lauderdale	61	No Data
Lawrence	686	625
Lewis	225	280
Lincoln	414	417
Loudon	456	485
McMinn	No Data	517
McNairy	36	49
Macon	266	255
Madison	698	18
Marion	197	210
Marshall	270	274
Maury	568	478
Meigs	No Data	31
Monroe	473	336
Montgomery	1,003	796
Moore	37	60
Morgan	121	118
Obion	387	392
Overton	315	383
Perry	150	200
Pickett	55	73
Polk	No Data	112
Putnam	1,194	689
Rhea	No Data	68
Roane	346	395
Robertson	825	606
Rutherford	3,941	4,287
Scott	71	82

**Appendix E: Tons of Waste Tires Reported by Counties for Beneficial End Use (continued)**

County	Tires Reported Sent for Beneficial End Use (Tons)	
	2017	2018
Sequatchie	0	255
Sevier	748	764
Shelby	6,157	6,480
Smith	194	171
Stewart	111	168
Sullivan	777	1,928
Sumner	2,332	2,443
Tipton	497	664
Trousdale	97	88
Unicoi	193	195
Union	150	147
Van Buren	0	9
Warren	346	340
Washington	1,408	386
Wayne	230	311
Weakley	44	23
White	346	436
Williamson	2,622	3,203
Wilson	663	525
<b>Total Tonnage</b>	<b>58,920</b>	<b>60,674</b>
Estimated Number of Tires using 24 lbs per tire	<b>4,909,984</b>	<b>5,056,140</b>
using 20 lbs per tire	<b>5,891,981</b>	<b>6,067,368</b>