

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: The Compost Fairy**

County: Shelby

Category: Materials Management

The Compost Fairy is the first and only organization in Memphis to actively address residential and commercial food waste through composting. While composting as a strategy to manage food waste is not new, providing access to composting services is an original solution for this region. The Compost Fairy is a non-profit organization staffed and led by an all-volunteer workforce and leadership team. One of the organization's commitments to Memphis, is that all residents, regardless of economic status, have free access to compost drop-off at several locations; Cooper-Young Farmers Market, the Downtown Farmer's Market, and soon to the Chelsea and South Memphis Farmers Markets. As long as The Compost Fairy exists, there will always be a no pay barrier option for composting in Memphis. In 2018, the Compost Fairy diverted 257,556 pounds from the landfill, and created finished compost amounting to 38,633 pounds.

In addition to providing organic collection and drop-off services, The Compost Fairy promotes public awareness through presentations and workshops at community events, churches, garden clubs, schools, and community groups. Their free community drop-off stations at multiple farmers markets provide information about composting and are manned by volunteers when possible to offer one-on-one education to market-goers.

Without advertising, The Compost Fairy has significantly grown residential services and is exploring expansion to accommodate requests to manage food waste from the commercial sector. The Compost Fairy is serving as a critical catalyst for furthering sustainability in the City of Memphis, now and in the future.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Cumberland International**

County: Davidson

Category: Clean Air

Cumberland International, a sales, parts, and service provider for trucks and trailers, launched and funded the "C10 Project: Keeping Tennessee Beautiful" in order to reduce the company's greenhouse gas emissions. The project was designed to increase the fuel economy of one of International's Class 8 long-haul diesel trucks from 6-8 miles per gallon (mpg) to upwards of 10 mpg. C10 edition trucks feature a custom-designed chassis, engine, and transmission parameters developed by Cumberland International as part of the C10 project. The modified C10 semi-truck routinely outperforms generic semi-trucks of the same size by around 2-3 mpg. Tennessee area trucking companies were allowed to demo this truck free of charge, seeing proof for themselves of the C10 ability to increase fuel economy. Across numerous demo runs, the C10 regularly achieved fuel economies above 9 mpg, easily outperforming "standard" semi-trucks and their typical 6.5 mpg fuel economy.

Every gallon of diesel fuel combusted results in roughly 22.4 pounds of CO<sub>2</sub> released into the atmosphere, so the C10's increased fuel economy results in a 1 pound per mile reduction in CO<sub>2</sub> released. In 2018, the C10 demo truck traveled around 168,000 miles, meaning this single truck reduced CO<sub>2</sub> output by 84 tons (relative to a "standard" semi-truck). These savings equate to approximately 30 fewer tons of CO<sub>2</sub> emissions per truck per year, or 3,000-5,000 gallons of diesel fuel. Over the past two years 1,000 of these C10 trucks were launched and sold, bringing the total fuel savings to 3-5 million gallons of diesel fuel per year and total CO<sub>2</sub> emissions reductions to 50,000 tons per year, the equivalent of replacing 1.7 million incandescent light bulbs with LEDs. By the end of 2019, there will be over 3,000 C10's sold. Their actions have also earned them recognition as a 2018 Sustainable Transportation Award winner.

The C10 project was able to develop a fuel-efficient semi-truck that not only dramatically reduces the CO<sub>2</sub> footprint of Tennessee's trucking companies, but is also practical, affordable, and immediately available for the trucking fleets of Tennessee.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Cumberland River Compact**

County: Davidson

Category: Natural Heritage

Cumberland River Compact enhances the health and enjoyment of the Cumberland River and its tributaries through education, collaboration and action. An important tributary to the Cumberland River is the Mill Creek Watershed. Mill Creek flows from Nolensville, Tennessee, past rapidly expanding subdivisions, under I-24, alongside car dealerships, through big box parking lots, behind strip malls, past the Nashville airport and finally into the Cumberland River. Mill Creek and the habitat it provides are considered by Tennessee's State Wildlife Action Plan (SWAP) as very valuable, but at risk for potential harm amidst rapid urban growth over the next 20 years. Many groups have worked to reduce that risk while enhancing and restoring this ecological gem. Four years ago the flow of Mill Creek was so obstructed that species migration and recreational use was near impossible.

Through the Mill Creek Connectivity Project, the Cumberland River Compact and its partners opened roughly 28 miles of water within the Mill Creek Watershed through three dam removals on Mill Creek's main-stem, one dam removal on Sevenmile Creek, and two dam removals on Cathy Jo Branch. The length of Mill Creek's mainstem is safe and paddle-able, except during the driest parts of the year. For the first time in over 100 years, Mill Creek and its tributaries are flowing freely.

The dams removed were barriers to fish and macroinvertebrate passage. The federally endangered Nashville Crayfish is endemic to Mill Creek, and populations were found as well as the streamside salamander.

Further work to improve the stream has included 19 stewardship events featuring clean-ups and riparian buffer plantings. In 2018 alone, these events resulted in the removal of 4,850 pounds of trash and 875 pounds of recyclables from Mill Creek and its tributaries. Additionally, 500 tree seedlings were planted by adopters.

## **2019 Governor's Environmental Stewardship Award Winners**

### **Winner: Mitchell Heights Neighborhood Association**

County: Shelby

Category: Land Use

Mitchell Heights Neighborhood Association (MHNA), which covers 40 blocks between Tillman and Holmes streets and Summer and Jackson avenues, is dedicated to reducing litter and blight in their community and enhancing the health and well-being of its residents. A number of recent efforts have served to strengthen the community while improving the environment.

To get a better understanding of the current community landscape, MHNA started cataloging vacant and blighted properties and hot spots of criminal activity in their boundaries. These efforts revealed that there are 1,100 vacant properties in the neighborhood, which can sit empty or in disrepair for months or even years without action by landlords or the city. MHNA also began using block captains to report houses in disrepair, trash, high grass, criminal activity, and other concerns.

To enhance the community, the neighborhood association has created or expanded community gardens and worked to transform vacant lots into community green spaces, such as pocket parks, which can serve as an environment conducive to stormwater management, physical activity, community-building for children and adults, and increased property values. Transformation of space in the community has led to significant achievements such as the launch of what is likely Memphis' only minority-owned plant nursery (which now serves as a major contractor for plants purchased by the City of Memphis) and the addition of horticulture, urban farming, and entrepreneurship classes for neighborhood youth at the 761 Gracewood Street community garden, a formally overgrown city property with historic ties to the Civil War-era.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Norris Water Commission**

County: Anderson

Category: Sustainable Performance

Beginning in 2016, Norris Water Commission took the initiative to learn and pursue innovative low-cost approaches to optimizing water quality and reducing energy consumption at its aging wastewater treatment plant through voluntary participation in TDEC's Wastewater Nutrient Optimization program. Through their efforts, the Norris Water Commission decreased contributions to phosphorous and nitrogen loads in receiving streams.

Nutrient loading within Tennessee's waters contributes to stream eutrophication, impairing our state's water bodies. As nutrients travel downstream through the Mississippi River, they contribute to the Hypoxic Zone in the Gulf. By making slight modifications to how existing wastewater treatment plant equipment is used, Norris Water Commission wastewater treatment plant staff were able to reduce nitrogen loading in effluent below 5 mg/l. Following continued implementation of nutrient optimization techniques over the past 3.5 years, these efforts have been so successful that Norris Water Commission operators recently achieved 80-90% reductions to phosphorous concentrations to levels of less than 1 mg/l in their effluent.

Through trial and error, Norris plant operators discovered an approach to aeration equipment cycling in plug flow treatment processes unique to their operations that was successful in removing nitrogen. An added innovative benefit of this approach is that it not only results in positive environmental outcomes at very minimal cost, it also results in providing professional development opportunities for the plant's operators at low cost.

Additional environmental benefits have also been achieved beyond just reduced nutrient loads: the volume of sludge produced has decreased and electricity consumed by the plant for water treatment has also decreased. They average around \$1,800-\$2,000 in energy savings each year along with reduction in hauling sludge.

This project is particularly groundbreaking due to its use of training and knowledge enhancement of Norris Water Commission wastewater treatment plant operators and minor modifications to the operation of existing plant equipment to positively influence water quality, rather than making capital intensive investments to wastewater treatment plant infrastructure.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Ruby Falls**

County: Hamilton

Category: Building Green

Ruby Falls receives over 500,000 visitors annually, coming to catch a glimpse of the tallest underground waterfall open to the public in the U.S. Now, reimagined venues at Ruby Falls represent a new chapter for the historic destination. An environmentally sustainable transformation, completed in 2018, involved repurposing the National Register of Historic Places 1929 Cavern Castle, a two-story, 13,000 square foot building expansion, and a 4,000 square foot outdoor venue addition. These additions nearly tripled the under-roof capacity of Ruby Falls. Highlights of the project include a new entrance and Ticket Atrium with expanded guest services, the Blue Heron Overlook, the Back Porch featuring seasonal open-air dining, Village Gift Shop, administrative offices, and the Ruby Falls Village Plaza.

Ruby Falls is already Green Globe Certified and Tennessee Green Hospitality Certified and is on its way to achieving LEED certification. The building was designed and placed in a fashion that complements and emphasizes the location's soaring limestone. During the expansion over 22,716 tons of rock were repurposed, more than 75% of all construction waste was recycled, and more than 20% of materials were manufactured within a 500-mile radius.

Sustainable site features were leveraged and enhanced throughout the facility expansion, such as maintaining the same number of parking spaces, protecting habitat, maximizing the amount of vegetated open space, and utilizing responsible stormwater management strategies to control the amount of runoff from the site. Water conserving plumbing fixtures were installed in all new bathrooms and break rooms. These fixture selections improved indoor water consumption by 38,287 gallons per year; a 39% water use savings. A modern rainwater collection and filtration system featuring two 8,000 gallon water tanks is utilized for landscape irrigation, effectively reducing stormwater runoff.

An energy-efficient building envelope, low-E windows, LED lighting and controls, efficient HVAC system, and a building automation system were all part of the new additions at Ruby Falls. Daylighting, specifically controlled admission of natural light, direct sunlight, and diffused light, is incorporated into the facility. They were able to relocate their existing solar panels to continue to help offset utility costs and reduce greenhouse gas emissions. Healthy indoor air quality materials, including polished concrete, low-emitting paints, sealants, and flooring were used to protect the health and well-being of occupants from the volatile organic compounds (VOCs). Ruby Falls also incorporated informational digital sign boards around the property and the website to educate the public on their sustainable features. Remarkably the large tourist attraction remained open during this large expansion.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Tennsco Corporation**

County: Dickson

Category: Energy and Renewable Resources

Tennsco is the largest manufacturing company in Dickson County, employing over 700 people in eight different facilities spanning 1.6 million square feet. The company manufactures various metal storage and filing products. Manufacturing at Tennsco involves stamping, forming, welding, and painting, which all require extensive use of electricity, natural gas and water. They strive to be good corporate citizens and an important aspect of that commitment is finding ways to reduce the site's carbon footprint. In addition to participating in Tennessee Valley Authority's (TVA) "Green Power Switch" program since inception, the facility has constructed four different solar arrays with a capacity of 350 kWh.

In 2018 Tennsco greatly expanded their solar electricity generating capacity. In cooperation with Dickson Electric Company and TVA they signed on to the "Dispersed Power Production" program developed by TVA. Through this agreement they purchased and installed an additional 794 kWh of photovoltaic cells on three facilities. The benefits of this program reach beyond the utility bills of Tennsco. They now have seven PV systems with a total capacity of 1.15 Mega Watts. In its first full month of production the solar system displaced over 112 MWh of electricity, thus saving 67,773 kg of CO<sub>2</sub> from being released into the atmosphere every month. This is equal to powering 111.5 average households per year.

Tennsco has also performed LED upgrades to include motion detection controls to the indoor and outdoor lights at various buildings resulting in over 3,101 light bulbs being replaced and incentivized savings of 501,977 kWh. Two washer system upgrades to their variable frequency drives resulted in over \$27,250 in annual energy savings. The facility also converted all 183 industrial lift trucks from propane to electric and implemented a "Power to Peddle" which offsets vehicles travel throughout the compound by providing bikes for staff to use. Lastly, they transitioned to use of one 200-horse powered air compressor instead of two 125-horse powered air compressors, which saves the company 150,000 kWh's per year.

## **2019 Governor's Environmental Stewardship Award Winners**

### **Winner: Turnip Green Creative Reuse**

County: Davidson

Category: Environmental Education and Outreach

Turnip Green Creative Reuse (TGCR) aims to reduce waste and divert materials from the landfill, to be put to the highest best use. TGCR does this in many ways, including facilitating waste reduction education programs that educate and empowering tens of thousands of Tennesseans to be environmental stewards. Programs are taught through hands-on art projects using 100%, second-hand, environmentally sourced supplies from the organization's creative reuse shopping and donation center. Since 2014, TGCR has diverted nearly half a million pounds from the landfill, and in 2018 alone, educated nearly 40,000 residents on waste reduction practices.

Environmental education and outreach is TGCR's largest area of service and has had a tremendous impact on the Nashville community. These programs are designed to educate community members on effective ways to eliminate waste through reducing, reusing, recycling, composting, and picking up litter. Programs are modified to meet the needs of all ages and abilities and include audiences such as local schools, homeschool groups, neighborhood associations, businesses, corporations, faith-based groups, summer camps, and more.

In 2018, TGCR's staff of 65 educators facilitated 962 waste reduction education programs in Davidson County to over 34,000 residents. The materials donation center, which sources materials for TGCR's programs, collects over 100 pounds of hard-to-recycle materials every hour they are open. Target audiences for the waste reduction programs are local schools in underserved communities. TGCR's 65 environmental educators have facilitated waste reduction programs in 60 Metro Nashville Public Schools (MNPS), and have completed "recycling takeovers" in 11 schools. This consists of educating every student and staff member on the proper rules of recycling, distributing recycling bins to every classroom, and launching a green team of students who are in charge of implementing recycling practices in their schools.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Urban Green Lab**

County: Davidson

Category: Environmental Education and Outreach (Schools)

Urban Green Lab has created Tennessee's first-ever standards aligned K-12 curriculum on waste prevention and the basics of sustainable living. Urban Green Lab transforms spaces into "labs" of learning to teach about living sustainably, with a systemic focus on preventing waste in Tennessee's classrooms, households, and workplaces. When Urban Green Lab launched its school-based work, the organization taught MNPS students directly. By working one-on-one with students, UGL learned firsthand the challenges and opportunities of sustainability education in schools. These insights led the organization to adopt a train-the-trainer method, saving valuable resources and reaching more students. To change that, Urban Green Lab teamed up with Vanderbilt University's Peabody College of Education, the Tennessee Department of Environment & Conservation, the Tennessee Department of Transportation, MNPS, Kroger, the Memorial Foundation, NRDC, and others to create "Sustainable Classrooms", Tennessee's first sustainable living curriculum.

As part of Sustainable Classrooms, Urban Green Lab created a curriculum with seven lessons tied to student-led household waste audits known as "Home Investigations." Audits are take-home assignments where students use investigations to measure wasted resources in their own homes, like food, energy, water, and plastic. Investigations empower youth, build personal responsibility, and expose family members to the learning process to a vital crossroads of project based learning, social emotional learning, service learning, civic leadership, and the four "Cs" of STEAM education. In addition to teacher professional development credit, Urban Green Lab partners with the U.S. Green Building Council in Washington, DC, to certify participating K-12 teachers as Green Classrooms Professionals, helping advance their careers, credibility, and confidence to teach sustainable living.

The Sustainable Classrooms program certifies and trains K-12 public school teachers how to integrate sustainable living strategies into their classrooms year-round and empowers students to deliver those messages in their own households. Sustainable Classrooms allows Urban Green Lab to reach more students over time by training teachers (rather than students one-by-one) to be career-long educators, innovators, and passionate advocates for sustainable living within school communities. For every teacher trained, Urban Green Lab reaches 150 students per year or 750 students over an average five-year teaching career.

## 2019 Governor's Environmental Stewardship Award Winners

### **Winner: Belmont University**

County: Davidson

Category: Pursuit of Excellence

Belmont University sits on 75 immaculate acres in southeast Nashville, near 16<sup>th</sup> Avenue South and Wedgewood Avenue. The University has taken the initiative and made major commitments to make the campus as sustainable as possible. The University was the past 2016 Building Green and 2017 Sustainable Performance Governor's Environmental Stewardship Award winner.

Since winning GESA awards in 2016 and 2017, the University has continued to make sustainability a significant focus through education and service learning, sustainable construction projects, energy efficiency retrofits, and the installation of a 250 kW photovoltaic solar array on the Curb Event Center.

Belmont recently completed construction of a 243,000 square foot building on campus making it the 4th LEED certified building. Most existing buildings have been upgraded to LED lighting and web-based controls installed throughout, which utilize stand-a-lone sensors to turn lights on/off automatically. Many of Belmont's parking garages were designed to be underground in order to avoid contributing to the urban heat island effect in the area, while also preserving green space around campus.

Fourteen green roofs across five buildings serve as gardens for native plant and bug species, including two honey bee hives, lawn and green spaces, and serve as outdoor laboratories for biology and environment science research. The University is designated as an arboretum featuring over 100 species of trees and shrubs as well as being recognized as a Tree Campus USA by the Arbor Foundation. They have planted specimens of the American Chestnut Tree on campus to help restore the endangered species.

Belmont continues to achieve excellence by incorporating sustainability into every new and old building and through student education and engagement.