2022 Governor's Environmental Stewardship Award Winners

Winner: **225 Polk Avenue – Hastings Architecture**
County: Davidson
Category: Building Green

After lying dormant for almost two decades, this example of adaptive reuse revitalizes Nashville's former Main Public Library building as creative office space. The Carnegie Library of Nashville at 225 Polk Avenue opened to the public in 1904. By 1963, the city's growth necessitated a larger facility, and a new building was commissioned to be built on the same site. In 2001, after 36 years as Nashville's Main Public Library, 225 Polk Avenue was abandoned for an even larger facility two blocks away.

After the library relocated, the building remained mostly dormant until 2017 when it was purchased from the city. The new owners — partners in a fast-growing architecture firm — identified with the building's firm roots in the city and its timeless flexibility. Hastings Architecture was intent on restoring the original structure and giving the building new life as a creative office space, including its own studio. The design concept focused on respecting and celebrating the rich history of the building while introducing a modern interior intervention for future flexibility.

In a state of disrepair, the 55-year-old building required a $12-million restoration including extensive façade repair, a complete replacement of all building systems, and the introduction of new technologies and optimizing energy efficiencies. In March 2021, 225 Polk Avenue achieved GOLD LEED Building Design and Construction: Core and Shell. Georgia Cherokee marble panels were cleaned, repaired, and/or replaced with new stone matched from the original quarry. The original curtainwall frames were preserved, replacing only the dated, inefficient glass. The original terrazzo floor in the lobby and the terrazzo-clad monumental stair were also refurbished. Hasting Architecture took building life-cycle impact reduction; construction and demolition waste management; and surrounding density and diverse into consideration during the design and remodel.

Honoring the original building, the adaptive reuse maintained the open floorplan and improved overall sightlines and circulation. As with a library, the space offers varying degrees of privacy from individual focused workspace to a large café and open studio. A walnut slat wall — directly inspired by a slat wall in the original library auditorium — delineates between public space and the studio.

A minimalist black and white palette with walnut accents was inspired by original interior details. Existing concrete columns, shear walls, and one-way ribbed slabs were stripped, cleaned, and left exposed to reveal the historic architecture. Illuminating the history of the building, linear pendant lights run diagonally across the studio referring to the angled library stacks that once occupied the same space. Inspired by classic library tables, walnut topped desks sit in long rows throughout the studio.
The spirit of the former library auditorium remains intact with The Athenaeum — a 1,500-square-foot community room located directly off the building's main lobby is accessible to the public and intended for use by community organizations and non-profit groups.

Today, 225 Polk Avenue stands newly restored and thriving as a creative hub, home to the Hastings Architecture firm that restored it and the Nashville Office of United Talent Agency.

2022 Governor's Environmental Stewardship Award Winners

Winner: **City of Maryville Water and Sewer Department**
County: Blount
Category: Water Quality

The Maryville Regional Wastewater Treatment Plant (MRWWTP) serves over 22,000 sewer customers from the cities of Maryville and Alcoa as well as the Knox Chapman Utility District. In 2021, the facility underwent major expansion and renovations that included biological nutrient removal, utilizing anaerobic and anoxic zones in combination with oxidation ditches, the Autothermal Thermophilic Aerobic Digestion (ATAD), and the launch of a composting facility. Through this composting initiative, city employees are leading the charge to redefine the wastewater process by taking a portion of the "waste" out of the East Tennessee waterways and landfills. It is estimated that the city has saved over $200,000 annually in tipping fees, not including associated hauling costs.

As a result of an effective and thorough evaluation, the MRWWTP installed Tennessee's first ThermAer™ – a 2nd generation ATAD. After careful evaluation, ThermAer provided Maryville the ability to utilize existing tankage, reduced capital cost and provided an odor-free Class A Exceptional Quality product. Currently, Maryville is one of 11 facilities in the state with the Exceptional Quality status on their biosolids permit. ATAD technology provides solutions to the foaming and odors which have continued to be a problem for years. The ATAD process utilizes heat produced by the breaking down of the biosolids to raise the temperature to levels that stops bacteria and destroys biosolids without the use of an external heat source. The process reduces solids by approximately 50 percent of its original mass.

Biosolids from the ATAD reactors are mixed with waste wood chips from the local electric utility tree-trimming program in a windrow method composting process, which uses a self-propelled windrow turner. No other external energy source is needed to aerate the compost. Partnership with the local tree trimming programs of the electric utilities has provided enough wood chips for the biosolids produced. The compost is an organic material made from wastewater solids, called biosolids – byproducts of the wastewater treatment process that are mixed with wood chips. Compost is offered free to individuals for personal use on a first-come first-served basis with over tens of thousands in cubic yards of material available annually. City departments also utilize the compost mixed with soil for cleanup on job sites. The compost provides an environment which fosters the growth of grass more quickly than just soil.

2022 Governor's Environmental Stewardship Award Winners

Winner: **FirstBank Amphitheater at Graystone Quarry**
County: Williamson
Category: Natural Resources

FirstBank Amphitheater opened in 2021 and is a world-class 7,500-seat boutique amphitheater and a spacious 1.5-acre plaza nestled as part of the 138-acre site within a beautiful, wooded, natural stone and park-like setting. Located at the Graystone Quarry in Thompson's Station, the new amphitheater is uniquely positioned in a limestone quarry.

By creating a venue that fits harmoniously with the attractive Tennessee landscape and preserves its cultural resources, this venue offers a unique outdoor, under-the-stars entertainment experience and is a magnet for local area economic growth. The amphitheater is positioned at the base of a limestone rock quarry surrounded by 70–100-foot cliffs. The reclaimed quarry was active 50 years ago, with the rock from it used in the construction of Highway 65 through Williamson County. During the site cleanup process, over 900 tons of trash and debris were cleared off the property to be recycled. Cement culverts leftover from Interstate 65 construction were crushed and used to build the roads on the property. Nearly 250 tires and stacks of wire were recycled, and existing ponds and trails underwent intensive environmental remediation to create the pristine, park like venue that exists today.

Clearing out years of overgrowth and invasive species, the site was able to keep heritage trees and use native plantings for additional landscaping. During construction the project team only removed trees that it absolutely had to, conserving as much green space as possible. For trees that had to be removed there was a sawmill on site that would cut each large tree into reusable boards that were used across the site for fireplace mantels, shelves, and tabletops. Timber used in building was locally grown and milled in Williamson County and used through the property.

The amphitheater has an on-site water purification system that sustainably processes every drop of wastewater into a drinkable level of purity before its reintroduced to nature. All water for irrigation comes from a well on the property. All water run-off from rain is captured in two ponds with fountains and waterfalls attracting animals. Electric vehicles are used throughout the property and electric charging stations are available for guest use.

The amphitheater embodies the values of preservation of the environment, utilization of national resources, recycle values in terms of infinitely recyclable aluminum and zero land-fill composting of everything else. FirstBank Amphitheater beverages are served in infinitely recyclable aluminum – including being one of the first venues to break tradition with plastic water bottles and serve all water in BPA free aluminum bottles. The food is served in compostable packaging including bar cups and utensils that are corn and plant based, and all paper and carboard is compostable.

2022 Governor's Environmental Stewardship Award Winners

Winner: **Florim USA Inc.**
County: Montgomery
Category: Sustainable Performance

Located in Clarksville, Florim USA is the largest single-site porcelain tile manufacturer in the United States. At the foundation of Florim USA's industrial operations is preservation of the environment. At Florim USA, sustainability efforts are intertwined with the company's business and financial goals, such that the facility is consistently implementing innovative sustainable practices and continually seeking opportunities to support business and financial goals. A few of the ongoing sustainability efforts at Florim USA include: utilizing internally generated production scrap, various post-industrial wastes, and post-consumer scrap glass as novel raw materials; landfill diversion of many materials used at the facility; repurposing scrap pallets as well as reuse of supersacks and recycling 100 percent of plant washdown water into the production process area.

Florim USA uses post-consumer glass in their products. Nearly 15 million pounds of post-consumer glass has been used to make its tiles since 2019 with 5.6 million pounds in 2021. A second post-consumer glass supplier was identified in 2021, which allowed the facility to nearly double the amount of glass deliveries. The relationship between Florim USA and the glass recycler works well because the recycler's business model includes transportation to the end user. Florim receives aggregate product in a one-ton capacity polypropylene industrial supersack that, when emptied, is reused and shipped to a post-consumer glass stream, which then fills with recycled glass and is shipped back to Florim. To date, Florim has repurposed approximately 9,500 supersacks to its recycled glass provider, keeping 41,000 pounds of waste out of the landfill and saving approximately $56,000, after which the used supersacks are sent off for final recycling.

Florim USA re-uses all of its facility's process water, which is used to produce material before it is fired and is captured in a series of trenches and sumps, pumped to the beginning of the process and used in the ball-mills where the raw materials are wet ground to a fine slurry. The industrial production of high-end porcelain tile requires large volumes of water for both production and cleaning. Florim captured and reused more than 19 million gallons of water without any industrial wastewater discharge to the local sewer system in 2021.

In 2021 Florim recycled into its process more than 11 million pounds of internal scrap representing 99 percent of scrap produced. This scrap consists of material from all phases of the manufacturing process but generally consists of two distinct types: fired and unfired. The unfired material is introduced to the process "as is" without further processing, while the fired material must be crushed to a size small enough for the milling process to manage. The use of these materials in conjunction with the recycled glass and water allows Florim USA to declare a recycled content more than 45 percent, including a post-consumer recycled content in excess of 3 percent for much of the product line in 2021.

With the growth of the circular economy the adage of "One man's trash is another man's treasure" has never been truer. Florim USA has formed a strong strategic relationship with many vendors in the United States, which has aided Florim's search for novel raw materials and to allow Florim to act as a champion for the circular economy in Tennessee.

2022 Governor's Environmental Stewardship Award Winners

Winner: **Pathway Lending**
County: Statewide
Category: Energy and Renewable Resources

Pathway Lending is a Community Development Financial Institution (CDFI) serving the state of Tennessee by providing financial and advisory services to underserved businesses and organizations. In 2008, Pathway Lending recognized a financing gap in Tennessee for energy and utility related projects and implemented the Tennessee Energy Efficiency Loan Program (TNEELP). In May 2009, it was awarded a $125,000 planning grant from the U.S. Department of Commerce's Economic Development Administration to support the development of the infrastructure of a program that would create jobs by providing direct, low-cost loans to businesses in Tennessee for energy efficiency upgrades.

This effort was a public-private partnership with the U.S. Department of Energy, TVA, the State of Tennessee, Oak Ridge National Laboratory, financial institutions, and Pathway Lending. The proposed TNEELP would help companies create jobs by increasing access to financing and to support energy efficiency projects. Utility bill savings from the implemented projects would be the source of repayment for these loans. After a two-year development period, Pathway Lending launched the TNEELP and had a $50 million loan program available to Tennessee businesses and organizations. Initial loans ranged from $20,000 to $5 million with low cost, fixed rates up to 10 years covering a wide range of energy efficient and sustainability projects.

In 2013, Pathway Lending announced an enhancement of the TNEELP, offering 2 percent interest rates for energy projects requiring financing for five years or less. As the years progressed, they continued to modify the TNEELP to allow borrowing from city and county governments throughout Tennessee. In 2017, Pathway Lending launched a Five-Year Strategic Plan (2017 to 2021) that emphasized priorities including maximizing the deployment of the TNEELP Funds. As a result of the quick repayment and short amortization periods of the TNEELP loans, Pathway Lending strategically re-sized the fund to $24 million allowing for a targeted use of borrowing capacity to fulfill its CDFI mission and provide lending solutions and educational services that support the development, growth, and preservation of underserved small businesses, affordable housing, and sustainable communities.

This loan program serves as a source of capital for flexible, below-market-rate loans to implement projects that would reduce energy use, improve cash flow, and provide opportunities for growth and job creation. A total of 327 loans totaling $60.5 million have been provided, resulting in reduction in energy use by 76M kWh annually. Loans were made to a range of entities, including 116 small businesses, 29 women-owned businesses, 82 non-profit organizations, 36 religious organizations, 24 private schools, and 6 farmers.

2022 Governor's Environmental Stewardship Award Winners

Winner: **Rockwood Sustainable Solutions LLC.**
County: Wilson
Category: Materials Management

Rockwood Sustainable Solutions LLC. (RSS), located in Lebanon, has been growing its recycling company since 2014, serving in the areas of shingle, wood, tire, plastic, cardboard, glass, and construction and demolition recycling. RSS has developed both a collection and a recycling infrastructure that accommodates and projects size and implemented valuable end markets for recycled products to be used in the local market.

RSS started in the business of collecting and grounding shingles for hot mix asphalt. In 2017, it began recycling wood as a feedstock for the gasification project in Lebanon, and in 2019 it began a mult-pronged approach of various other feedstock materials for recycling. To date RSS has recycled 59,000 tons of shingles, 76,000 tons of wood and 2,650 tons of tires, with a total of 275 million pounds of material recycled, which equates to about 250,000 cubic yards of landfill air space.

RSS partners with the City of Lebanon and Aires Green to provide feedstock for the downdraft gasification unit. This unit utilizes up to 30 tons of wood waste per day that is gasified to create up to six tons of bio-char and up to 300KW of sustainable power. In addition, RSS uses the remaining wood for various landscaping materials, bedding, and alternative energy sources. They also work with local industry and universities to help increase the use of construction materials in the local market. In 2021, RSS worked with the University of Tennessee on biochar and recycled drywall studies and numerous other recycling innovations to increase shingle, tire, and concrete recycling options in the state.

RSS is the only tire recycler that provides two-inch tire derived aggregates to be used in septic tank fill lines to reduce the need for aggregate rock. It also accepts up to eight tires per year at no cost from residents of Wilson County. RSS focuses on recycling and sustainable material management and their commitment and leadership is seen across all levels of the organization. From 2019 to 2020 alone, RSS grew more than 54 percent in volume and continues to increase every year. This increase shows an excellence in service and customer care as well as a drive to develop innovative ways to recycle materials on a day-to-day basis. Rockwood Sustainable Solutions LLC. has been a vital part of sustainable outreach and education in Wilson County.

2022 Governor's Environmental Stewardship Award Winners

Winner: **Sam Pleasants Cattle Farm**
County: Fayette
Category: Agriculture and Forestry

Sam Pleasants resides on a cattle farm in the southern part of Fayette County in the small town of Rossville. In 2016, Pleasants visited the Fayette County Soil and Water Conservation (FCSWCD) office to discuss a textbook gully erosion issue forming in one of his pastures. After several site visits were made by the FCSWCD and Natural Resources Conservation Service (NRCS) employees, the specialists concluded Pleasants had a serious issue that needed to be addressed. The gully was protruding 100 feet into Pleasants' pasture at a width of 20 feet. Pleasants' project was entered into the Environmental Quality Incentive Program (EQIP) provided by NRCS, and the Agricultural Resources Conservation Fund (ARCF) provided by the Tennessee Department of Agriculture (TDA). The project consists of two structures. The first structure is an existing wet grade stabilization structure that needs to be brought up to the NRCS Standards and Specs to relieve pressure off the gully. The second structure was a dry grade stabilization structure that was built across the head of the gully to prevent any further erosion.

The wet grade stabilization structure used 2,781 yards of soil to build it to specifications and will collect 46.3 acres of drainage and slowly release excess water through a pipe, utilizing an emergency spillway designed to a 100-year storm event. The drainage is mainly coming from pasture around Pleasants' farm. The dry structure used 19,758 yards of soil and will collect 418.1 acres of drainage and slowly release water through a 24-inch pipe under the dam with a 36-inch riser. The spillway was designed to a 50-year storm event to prevent flooding over a public road 0.25 miles away. The structure will be collecting water that is draining north from Mississippi and coming onto Pleasants' farm in Tennessee. All soil used came from Pleasants' pasture located near the structures. The four-acre area was stripped of topsoil and stockpiled for when the project was completed, to which it could be spread back over the borrow area to promote a faster healing of the land.

Between the time the original site visit was made in 2016 and when construction started in spring of 2021, the gully had extended itself another 40 feet into Pleasants' pasture. In addition, the gully expanded from 20 feet to 60 feet wide, with a depth of over 13 feet. It is estimated that 4,000 tons of soil was lost in the gully. The total project cost was roughly $199,000. This project will save sediment from entering Tennessee streams and rivers, which provides environmental benefits.

2022 Governor's Environmental Stewardship Award Winners

Winner: **SkyNano Technologies**
County: Knox
Category: Clean Air

Imagine if we could capture the carbon dioxide that power plants put into the air and make it into something useful. One East Tennessee startup, SkyNano, is trying to make that possible. The company has produced its first nanotube made from carbon emitted by the Tennessee Valley Authority's John Sevier Combined Cycle Plant in Rogersville. The carbon nanotubes the company manufactures could be used to make practical, durable items like batteries and tires.

Carbon nanotubes have been used to make ultralight bicycles for the Tour de France, extremely dark pigments, un-manned boats, and components in NASA spacecraft. You might also find them in rechargeable batteries for your phone. Vanderbilt nanoengineer and SkyNano co-founder Cary Pint called them "black gold". Carbon nanotubes are super strong, flexible, lightweight, and are atomic tubes with a hexagonal pattern like a soccer ball, and so small they're not visible under a traditional microscope. Put millions of carbon nanotubes into plastic and it can become as light and strong as aluminum or steel. Change their chemistry slightly and they can conduct electricity.

The final product looks like a black powder but under a powerful microscope it looks more like spaghetti. SkyNano's nanotubes were made by piping carbon dioxide from a smokestack into a lithium salt reactor and spinning it into nanotubes. Naturally formed nanotubes occur in quantities that are very small and hard to trace. Some carbon nanotubes form naturally in the smoke of forest fires. Every time you light a candle at home there's a chance the wick might release some carbon nanotubes as a component of the smoke. The process turns pollution into a useful and environmentally safe material.

The global market is still small because carbon nanotubes are expensive, starting at about $100 a kilogram. The typical process to make them comes with high energy costs and toxic byproducts. SkyNano aims to change that by using a process that is cleaner and requires less energy. Instead of the "chemical vapor deposition" method, which requires vacuum conditions at high temperatures, they use an electrochemical process that requires less energy and can suck carbon out of harmful airborne carbon dioxide. A $2.5 million grant from the Department of Energy was secured to demonstrate how carbon nanotubes could be made using emissions from natural gas plants.

For now, SkyNano is producing small amounts of research-grade nanotubes for specific clients. But its leaders hope to scale up to serve commercial clients in the next few years. Next, SkyNano will focus on scaling up the technology to manufacture more and make a reactor that can suck emissions out of a power plant and covert them to nanotubes on site.

2022 Governor's Environmental Stewardship Award Winners

Winner: **West Tennessee Regional Recycling Hub**
County: Chester
Category: Environmental Education and Outreach

In 2011, the West Tennessee Regional Recycling Hub (WTRRH) in Henderson, became the first government agency in Tennessee to adopt a hub and spoke model for recycling. This model has proved to be a successful strategy in overcoming barriers for rural recycling programs and involves one county or city acting as a central processing center, or "hub," that receives materials from surrounding municipalities that act as the "spokes." The hub began in 2011 with only three spokes and has now grown to 13 spokes throughout West Tennessee and serves over 250,000 residents. The Hub's Education and Outreach Program was created to educate and increase public awareness about environmental sustainability; pollution prevention; solid waste and recycling; and energy and water conservation while also introducing skills to identify and help resolve environmental challenges in residents' daily lives. The Hub's outstanding Education and Outreach Program is credited for a 58 percent increase in recycling and a 52 percent decrease in litter in Chester County over the last four years, as well as a 14 percent decrease in single-stream contamination at the Hub in 2021. As the number of spokes, recycling tonnage, and facility continue to increase, the Education and Outreach Program continues to grow and develop throughout the region.

The framework for the Hub's Education and Outreach Program consists of restoration and protection, everyday choices, and community awareness. This is achieved by utilizing presentations, social media campaigns, and unique environmental events, projects, and programs within the local governments, businesses, communities, K-12 school systems, and higher education. To create continuity throughout the region, WTRRH created an ongoing enforcement program within the hub and spokes in January 2018. The *Volunteer to Recycle* program serves as the Hub's guiding basis for the participating spokes' Education and Outreach Programs by providing a unified logo, consistent messaging, and Educational Toolbox to assist and guide coordinators. The Educational Toolbox includes personal guidance to coordinators, social media content, advertisements, presentation, and lesson plan templates, and educational tools such as the Hub's Education and Observation Classroom, Mobile Classroom, and Binny the Recycling Bin mascot.

To supplement the Hub's Education and Outreach Program, the Hub utilizes Keep Chester County Beautiful and the TDOT Litter Grant to promote litter prevention, recycling, and environmental awareness in Chester County. Creating these meaningful partnerships within the community, the Tennessee Department of Environment and Conservation, Keep America Beautiful, and Keep Tennessee Beautiful and other environmental agencies such as Tennessee Department of Transportation's (TDOT) Beautification Office, help guide the program to be one of the most extensive in the state. With funding from TDOT's Special Litter Grant, an Education and Observation Classroom was constructed and is used by surrounding counties, local schools, and other government organizations for meetings, school field trips, litter prevention events, and tours of the recycling hub. The classroom is equipped with a 20-foot observation window overlooking the recycling building where visitors can safely observe the operations of the recycling facility and 11 interactive environmental education stations. Environmental lessons taught in the classroom include landfills, the 3 R's (reduce, reuse, recycle,) litter prevention, composting with worms, conservation, and pollution.

2022 Governor's Environmental Stewardship Award Winners

Pursuit of Excellence Award

Winner: **Turnip Green Creative Reuse**
County: Davidson County

Turnip Green Creative Reuse (TGCR) has maintained its commitment to sustainability since receiving the 2019 Environmental Education and Outreach Governor's Environmental Stewardship Award. TGCR's mission is to foster creativity and sustainability through reuse. TGCR diverts valuable materials from landfills and reconnects the materials with community members through four areas of service that have been growing rapidly since the nonprofit's inception in 2011. They are: Creative Reuse Shopping and Donation Center, Green Galleries, Open Studio, and education and outreach programs. In 2021, TGCR hit the milestone of diverting over 1 million pounds from landfills in the lifetime of the organization. One avenue where TGCR has continued to grow and meet community need with excellence is its transformation of 13,200 e-leather airline seat covers (~100,000 pounds) within a year through Southwest Airlines Repurpose with Purpose initiative. The Turnip S.E.A.T., Sustainability, Education, Arts, Transformation project, was born out of resourceful ingenuity and partnership that came to embody a large-scale example of how areas of service come together to provide solutions for diverting material from the landfill. Through this project, TGCR was able to divert 50 tons of material, distribute thousands of education kits, teach dozens of community classes, exhibit student work to millions of airport goers, provide material at no cost to local artists, and connect with organizations across the country.

During 2020, while people were trying to stay home, Turnip Green pivoted to continue providing paid jobs for its employees, volunteer work for those looking for purpose, and art opportunities for marginalized youth and families. Material donations continued to flow in from June to December at an average rate of 17,800 pounds a month. The idea for take-home creativity art kits came from a need to continue to reconnect the materials being donated to community members who needed them. For volunteers, this looked like preparing donated materials, such as ribbon, beads, and fabric.

Employees then utilized this prepped material to make art and STEM education kits for local youth. Over the course of 2020, 6,133 education kits were distributed to students, who used the materials to create STEM activities, fine art, stuffed animals, collages, and more. In total, 11,029 kits were distributed between May of 2021 and March of 2022. Of these kits, 8,606 were distributed to Metro Nashville Public School students, making this one of the largest universal student activities that the district has ever seen. Their traditional education programming saw 41,773 participant hours over the course of 2021. In 2020, despite being shut down to the public for a quarter of the year, 168,919 pounds were diverted; in 2021, that number jumped to 381,107.