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Every Day is Earth Day: State DOTs Use New Technologies to Reduce, Reuse, and Recycle - Saving Taxpayers Millions

WASHINGTON D.C. – Earth Day goes hand in hand with raising environmental awareness – and this year the American Association of State Highway and Transportation officials is using the occasion to share the many ways our members are protecting the environment.

“State transportation departments are finding ways to strike a balance between building the highways, bridges and mass transit systems America desperately needs, while being responsible environmental stewards,” said John Horsley, AASHTO executive director. “Earth Day is an excellent time to draw attention to the many state DOT success stories that might otherwise go untold.”

States are utilizing a comprehensive approach to minimize their carbon footprint, save precious resources and protect and preserve sensitive ecosystems.

California Shrinks Its Carbon Footprint with New LED Street Lights

The California Department of Transportation (Caltrans) is dramatically reducing energy usage while improving safety by installing 40,000 LED street lights to replace existing fixtures over a two-year period.

The cost of the lights is estimated to be between \$25 million and \$30 million (not including rebates). These units require 60 percent less electricity than their predecessors and will reduce lighting demand by 4.5 megawatts, saving taxpayers an estimated \$2 million in annual energy costs.

They will also reduce Caltrans' carbon footprint by an estimated 10,000 tons of CO₂ per year. The LED street lights will be able to operate at least 15 years between scheduled maintenance, instead of four years for the current high-pressure sodium lights.

“LED lights are just one example of how we are using new technology to improve California’s roadways,” said Acting Caltrans Director Malcolm Dougherty. “These cost-effective and earth-friendly lights are also brighter and long-lasting, which increases safety for motorists who can see better, and workers who now have less exposure to traffic because they don’t have to replace the lights as often.”

Louisiana Tests Solar Powered Airport Lighting

In May 2010, the Louisiana Department of Transportation and Development (LDOTD) launched a first-of-its-kind, pilot program using a new LED solar-powered airport lighting system at the False River Regional Airport in New Roads. The advanced system is expected to reduce the airport's taxiway energy consumption by more than 90 percent and the program may serve as a model for airports worldwide. The solar panels charge a bank of batteries which can power the taxiway lighting system up to fourteen days with little or no sunlight.

"In Louisiana, we are always striving to find and implement methods that not only enhance our infrastructure, but also are environmentally sensitive," said LDOTD Secretary Sherri H. LeBas. "Utilizing these innovative solutions isn't just smart; it's the right thing to do."

Oklahoma Deconstructs and Recycles 47-Year-Old Bridge

The Oklahoma Department of Transportation (ODOT) is embarking on a first-of-its-kind, large-scale, bridge recycling project. This past February when ODOT opened the new Crosstown Expressway in Oklahoma City, it took the I-40 Crosstown Bridge out of service. Instead of tearing down and scrapping the 47-year-old structure, ODOT decided to recycle the bridge, awarding a \$10 million contract to deconstruct it.

A majority of the bridge's 1,900 beams are expected to pass inspection and be made available at no cost to county governments for use in bridge projects statewide. ODOT estimates that the recycled beams could help counties construct more than 300 bridges, saving Oklahoma taxpayers millions of dollars.

North Carolina Uses Recycled Roof Shingles to Make Asphalt Pavement

This past fall, North Carolina Department of Transportation (NCDOT) implemented a change in policy that allows for the recycling of residential roof shingles in the production of asphalt pavement. About 260,000 tons of used shingles went into landfills last year. If this many shingles were diverted from landfills, the annual cost savings would be about \$32 million. NCDOT's new policy is preventing a portion of these shingles from entering landfills statewide, and helping the department to cut costs at the same time.

"This practice allows us to take roof shingles that would otherwise be filling up landfills and reuse them to make our roads safer and smoother," said NCDOT Communications Director Greer Beaty. "It's a way to save money in a challenging economy while making a positive environmental impact."

Michigan and Florida Use Sustainable Energy Systems to Power Transportation Facilities

The Florida Department of Transportation (FDOT) estimates that by July of this year, an array of more than 400 solar panels will provide 70% of the electricity used at its new Turnpike retail facility at the Turkey Lake Service Plaza. Eight Turnpike service plazas are undergoing a \$162 million renovation. The new facilities are being designed and built using strategies to gain Leadership in Energy and Environmental Design (LEED) certification by the U.S. Green Building Council. LEED certification provides independent, third-party verification that a building is achieving high performance in key areas of human and environmental health

In 2011, Michigan Department of Transportation (MDOT) began using a combination of wind and solar photovoltaic energy systems to power three rest areas and two welcome centers near Seney, and St. Ignace, in the Upper Peninsula and Clare, Chelsea, and New Buffalo, in the Lower Peninsula.

A 100 kilowatt solar array was also installed at a rest area near Grand Rapids, to generate energy for freeway interchange lighting and to be used for the entire metropolitan area. MDOT also has installed geothermal heat pump systems at 10 rest areas. These ground source systems, which extract heat from the ground and distribute heat energy through a radiant floor system and to hot water heaters, will be included in future rest area projects where feasible. MDOT is also using LED light fixtures to illuminate both the interior and exterior of rest areas buildings. MDOT estimates a 30 percent reduction in annual, energy costs for rest area lighting alone.

Arizona and Nevada Turn Recycled Rubber Tires into a Smoother, Safer Ride

In 2011, the Nevada Department of Transportation resurfaced Interstate 15 using pavement made from approximately 20 percent ground, recycled rubber tires. With the flexibility of rubber incorporated into new asphalt, ride smoothness nearly doubles and roadway surface deterioration is reduced.

I-15 which cuts through the heart of Las Vegas now provides a smoother, safer drive for the approximately 250,000 vehicles driven daily through the corridor. From an environmental perspective, the project prevented the equivalent of 56,000 scrap tires, from being dumped at a local landfill.

The Arizona Department of Transportation (ADOT) has repurposed more than 15 million recycled tires as part of a technique it calls "Quiet Paving." Engineers estimate that approximately 1,500 tires are used per lane mile of rubberized asphalt paving. The technique was most recently used on Interstate 17 north of Loop 101 in Phoenix and on U.S. 60 west of Phoenix.

"Rubberized asphalt paving addresses a pressing environmental issue while contributing to an improved quality of life for Arizona residents," said ADOT Assistant Commutations Director Timothy Tait. "The public enjoys the quieter and safer ride and the Arizona Department of Transportation benefits from a longer-lasting roadway that keeps old tires out of landfills."

Idaho Fish Passage Project Restores Stream Ecosystem

In 2011, the Idaho Transportation Department (ITD) began work on a \$1.2 million fish-passage project near Lowman. The U.S. Forest Service determined that a culvert at that location was blocking fish and other aquatic species from swimming upstream to Five Mile Creek. ITD removed the 300-foot long, 72-inch wide culvert and replaced it with a 125-foot wide pre-stressed concrete girder bridge, opening up the entire Five Mile Creek watershed to a healthier, more balanced ecosystem. The project, which is being funded by the U.S. Forest Service, will be completed early this year.

Kentucky Goes Paperless to Cut Costs, Paper Usage and Pollution

The Kentucky Transportation Cabinet (KTC) contracts for about 700 construction projects each year. Contractors had to purchase bid proposal packets containing upwards to 400 pages each for every project in which they were interested. This required KTC to keep multiple bid packets on hand. In addition, bids had to be submitted on paper and delivered in person to KTC's Central Office. Beginning in April 2010, bidders were required to register online, eliminating mandatory trips to the KTC offices and the need to print an estimated 200,000 pages of bid related documents each year.

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The American Association of State Highway and Transportation Officials (AASHTO) is the "Voice of Transportation" representing state departments of transportation in all 50 states, the District of Columbia, and Puerto Rico. AASHTO is a nonprofit, nonpartisan association serving as a catalyst for excellence in transportation. Follow us on Twitter at <http://twitter.com/aashtospeaks>.