

CLOSING THE CIRCLE AWARD NOMINATION FOR
The Federal Highway Administration

The Environmental Protection Agency nominates the Federal Highway Administration for its success in promoting recycling as an integral part of road construction. Their research, educational, and promotional efforts are a major reason why recycling is so widespread in the road construction industry. FHWA is closing the circle by ensuring that hundreds of millions of tons of materials that are dug up from roadways and produced by industrial processes are put back into roadways instead of disposed of in landfills. In becoming a leading federal environmental steward, FHWA has gone beyond its mission to improve mobility on our nation's highways.

As a result of FHWA's environmental stewardship, the nation's largest recycling program has been established – and FHWA is busy growing the program. Each year, approximately 200 million tons of old highway/streets are and taken to processing plants where 80% of that material is reused in highway construction projects. To put the 200 million tons in perspective, the amount of municipal solid waste recycled yearly (cans, bottles, and newspapers) is 82 million tons. Much of the recycled material from highways and streets is used as its highest value, aggregate and binder for new asphalt. This use reduces the amount of costly virgin binder needed to make new asphalt, further conserving non-renewable resources of oil and aggregates. In addition to the 200 million tons of asphalt recycled off-site is the 50 million tons of asphalt paving that is recycled back directly into the road itself, which helps rehabilitate an old highway back into a smooth riding roadway. This in-place recycling process recycles 100% of the material, conserves fuel, and reduces greenhouse gas emissions. FHWA has been actively promoting the process for wider use. Four workshops for states were held in 2006 by FHWA, and FHWA also performed a State-of-Practice Review on the use and benefits of recycled in-place asphalt. Based on the total quantities that are recycled back into roads, the avoided energy consumption is 29 trillion Btu. The avoided carbon dioxide emissions for road recycling practices are 1,951,000 U.S. tons. To put this figure in perspective, in 2002, Washington D.C. electric power generators produced 279,000 tons of carbon dioxide.

Coal fly ash, a product of the burning of coal in power plants, is another material commonly recycled in roadways as a result of FHWA efforts. Not only does coal fly ash replace structural fill in road construction, it also replaces a portion of the Portland cement that is used to make concrete - thereby avoiding carbon dioxide emissions from the manufacture of cement. At current coal fly ash usage rates, (coal fly ash is replacing 15 million tons of Portland cement) 10.5 million tons of carbon dioxide emissions are being avoided.

For over a decade, FHWA has been spreading the word to the road construction community that the engineering feasibility of using recycled materials has been confirmed in research, field studies, experimental projects and long-term performance testing and analysis. One mechanism for publicizing the use of recycled materials in roadways is the FHWA-funded Recycled Materials Resource Center. The Center systematically tests, evaluates, and develops guidelines for the use of recycled materials in transportation infrastructure construction and maintenance. FHWA also published two popular factbooks for highway engineers on using coal fly ash and spent foundry sand in highway construction. The fly ash factbook is currently in its fourth edition, with over 50,000 copies printed and distributed nationwide.

Recent FHWA outreach activities include an October 2007 forum (held with EPA) on the recycling of spent foundry sand into roadways and highway embankments. Immediately following was a joint FHWA-EPA workshop for states on asphalt shingle re-use in highway

construction. Feedback from the workshop is that more states will be using asphalt shingles when making asphalt.

In 2005, FHWA joined EPA, the states, and the construction community to form The Green Highways Partnership. The Partnership promotes the incorporation of environmental considerations into the design, construction and operation of roads. For the Green Highways Partnership, environmental considerations include using recycled materials in road construction, designing roads to minimize water runoff to nearby waterways, and avoiding sensitive ecological areas when planning new roads. The Partnership recognizes existing best practices and promotes new approaches to environmental stewardship.

On August 29, 2007, FHWA and EPA sponsored a Green Highways Partnership workshop with the Mid-Atlantic States to share information on recycling. During the workshop, facilitated discussions were held that identified challenges to increasing the recycling of industrial materials. Two major action items to address the challenges came out of the workshop. First, each state agreed to identify a potential pilot project where industrial materials could be used in roadways. Secondly, the states agreed to work together in an attempt to harmonize their beneficial use regulations and material specifications for their roadways.

The unique feature of the workshop was the bringing together state environmental and transportation agencies for a joint discussion about their respective policies and procedures for approving the use of recycled materials. With FHWA's leadership, EPA has subsequently received three Mid-Atlantic state commitments for pilot projects. EPA anticipates working with FHWA to obtain a pilot project commitment from every state at the workshop. The value of FHWA's co-sponsorship of the Green Highways Partnership was demonstrated recently at the January 2008 Green Highways Partnership Leadership Forum and Recognition Program when the Administrator for the Maryland State Highway Administration renewed his organization's commitment to the Green Highways Partnership. The Administrator specifically cited the importance of FHWA's role in outreach to state transportation agencies.

FHWA was also responsible for bringing to the Green Highway Partnership the American Association of State Highway and Transportation Officials, the voice of transportation decisionmakers at the state level. At the January 2008 Green Highway Partnership Leadership Forum and Recognition Program, the Association's Executive Director pledged the Association's commitment to the Green Highways Partnership. The Executive Director cited FHWA's role in bringing state transportation agencies to the table.

Through FHWA's longstanding commitment to recycling, they achieve outstanding results in energy savings and greenhouse gas reductions. When looking at the measures of what FHWA has achieved, the results clearly justify recognition of FHWA with a Closing the Circle Award.