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Paving the way

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California recycles some 75 percent of the 42 million scrap tires it generates each year, according to the California Department of Resources, Recycling and Recovery.

Sound good? Actually, that's below the national tire recycling rate of 87 percent, according to Rubber Manufacturers Association figures.

The scrap tires in California that don't reach end-uses—about 11 million tires altogether, according to CalRecycle—end up in landfills or illegal dumps.

CalRecycle is trying to improve that tire recycling rate by taking its act on the road—and under and around it, too.

The department offers grants and technical advice to the state's local governments in its "Green Roads" program. The effort promotes recycled tire rubber as a cost-effective, environmentally friendly alternative to traditional paving and construction fill materials.

"To boost usage of TDA (tire-derived aggregate) and RAC (rubberized asphalt concrete), CalRecycle is reaching out to engineers and elected officials to inform them about these products," said a CalRecycle fact sheet. "CalRecycle's goal is to bring awareness to these products, so it can be considered an option for the next civil engineering project."

The agency promotes RAC and TDA to municipalities not only as green technologies, but as superior technologies.

RAC, according to CalRecycle publicity, requires fewer repairs than conventional paving materials, saving both the money and the greenhouse gases associated with road repairs.

Its noise-dampening properties reduce noise pollution, and its skid-resistance cuts down on accidents, the agency said. This is in addition to the 2,000 scrap tires per lane-mile that RAC accounts for, it said.

TDA incorporates shredded scrap tires in public works applications where gravel traditionally has been used.

"It is cheaper and lighter than gravel, has superior drainage properties, and reduces noise and vibration when used in light-rail projects," the agency said.

“When used in place of mined aggregates, it preserves natural resources and landscapes,” it said.

“In addition, twice as much TDA can be transported in a single truckload when compared to gravel, requiring fewer trucks, less fuel and lower emissions with every TDA project.”

How CalRecycle program works

In fiscal year 2010-11 alone, CalRecycle made more than \$5.5 million in grants available to California cities for TDA and RAC projects. The agency offered slightly more than \$3.5 million in what it called “Targeted” grants and another \$2 million in “Chip Seal” grants designed specifically to pay for paving roads with rubberized asphalt chip seals, or rubber-asphalt blends applied by hot spray.

Each grant is worth a maximum of \$250,000, with funding based on the projected amount of rubber material to be used, according to CalRecycle. Eligible applicants may receive one Targeted and one Chip Seal grant worth \$250,000 each, or a combined grant worth a total of \$250,000, the agency said.

CalRecycle posts notices regarding the grants in strategic locations where city engineers and other officials are sure to see them, according to Bob Fujii, a senior waste management engineer with the agency.

It isn’t just money, but technical help as well, that CalRecycle offers local governments interested in using RAC and TDA, he said.

“We don’t offer just the grants, and we don’t say you’re on your own,” he said. “If you’re a first-time user, we offer technical assistance. CalRecycle is very sensitive to the fact that you have to have expertise to pull off a successful RAC paving operation.”

Engineers new to RAC find it a little more challenging to apply than traditional asphalt, because there are different steps to take in applying the material, according to Fujii.

CalRecycle hires consulting firms to offer expert advice on RAC free of charge to local governments, Fujii said. The agency’s current RAC consultant is Jacobs Engineering Group Inc. of Sacramento, whose transportation project manager, Theron Roshen, laid a half-million tons of rubberized asphalt on Sacramento roads when he was the city’s chief engineer.

“We provide several aspects of support to local agencies,” Roshen said. “We’ve done dozens of individual seminars on RAC for cities, plus seminars for groups of city engineers.”

Jacobs Engineering advises local governments on RAC pavement design, inspection, specifications, lifecycle, maintenance and recycling of old pavement, Roshen said.

Roseville, Calif., a town northeast of Sacramento that has a population of 115,000, has worked extensively with CalRecycle on the use of rubberized asphalt.

Roseville first tested rubberized asphalt in 1997 on two streets, Cirby Way and Foothills Blvd., according to Jerry Dankbar, street maintenance superintendent for the City of Roseville.

The success of these projects has led Roseville to use rubberized asphalt on all its arterial roads, and for the last 11 years it has used the material on neighborhood roads as well, Dankbar said. “The rubberized asphalt is an outstanding barrier to protect the original surface from the water and hot sun,” he said.

Cheaper, safer

Rubberized asphalt is both cheaper and safer in prolonged use than conventional asphalt, according to Dankbar. It lasts longer, requires less maintenance, cracks less, is quieter to drive on, and stays black longer to allow better contrast with pavement markings.

There are, however, a couple of problems with rubberized asphalt, both related to its application, according to Dankbar.

You have to make sure you apply the material in warm or hot weather, and ensure the contractor has the experience and expertise to apply it correctly.

“It is a little harder to work with than conventional asphalt,” he said.