



DEPARTMENT OF
**Civil and
Environmental Engineering**
UNIVERSITY OF WISCONSIN-MADISON

VISION

Within the next decade, (i) markets for recycled materials in transportation infrastructure are enabled nationwide and (ii) recycled materials become commonplace in transportation infrastructure projects at the federal, state, and local levels.

MISSION

The RMRC will develop and distribute technology needed to use recycled materials in the transportation infrastructure in a cost-effective and environmentally sound manner.

PLANS

1. Develop effective technology transfer mechanisms that will educate designers, regulators, and end users regarding (i) appropriate uses of existing recycled materials, (ii) procedures to evaluate the environmental suitability of recycled materials, (iii) procedures to design with recycled materials, and (iv) methods to evaluate the short-term and life-cycle economics of infrastructure constructed recycled materials.
2. Create resources needed to enable a nationwide market for using recycled materials in the transportation infrastructure.
3. In conjunction with federal and state agencies, develop a methodology for evaluating the environmental suitability of using recycled materials in transportation infrastructure that can be used nationwide and considers
4. Conduct applied research to address technology gaps that constrain implementation of Plans 1-3.

METHODS

Technology Transfer – Technology transfer will be conducted at two levels: face-to-face workshops and webenabled methods. One-day workshops should be conducted in each of the four thematic areas in Plan 1, with items 1 and 3 being covered in workshops focusing on a particular material (e.g., coal combustion products) and items 2 and 4 being covered in a more general workshops focusing on using recycled materials in construction. Webinars should be developed that mimic the content offered in the workshops and should be offered in a series of modules that culminate into the content covered in a workshop. Workshops should be offered primarily when funding opportunities exist that can provide significant leveraging of RMRC resources.

Enabling Recycling Markets – Political and/or economic incentives are needed that encourage the use of recycled materials in transportation projects. The RMRC should enable markets to develop by:

1. develop, offer, and promote a Green Highway/Green Roadway program that can be used by state and local authorities to demonstrate their contribution to a sustainable society,
2. develop economic evaluation tools/software to assess short-term costs and life-cycle costs of using recycled materials in transportation infrastructure, Strategic Plan for The Recycled Materials Resource Center 2007-2011
3. develop specifications, standards, and design guides that provide all information needed to design and evaluate use of a recycled material in transportation construction.
4. develop a web-based marketplace/exchange for distribution of recycled materials.

Environmental Assessment Guideline – The RMRC should form a working group with leadership at USEPA and key state agencies to develop a nationwide guidance document or an ASTM/AASHTO Standard Guide regarding evaluation of the environmental suitability of a recycled material in an expedient, cost-effective, conservative, and straightforward format. States that might be involved include Arizona, California, Ohio, Wisconsin, New Hampshire, New York, Texas, Washington, and Florida. This group should identify technology gaps as one of its first tasks.

Applied Research – Technology gaps identified in the technology transfer, market development, and environmental assessment themes would be addressed through tasked research efforts intended to address specific questions. RMRC faculty would conduct the research needed to address these technology gaps.

Priority Materials – The RMRC leadership (Benson, Edil, Gardner, Melton) should identify materials that will receive the greatest focus. Factors to consider include potential for large impact, volume of material available, status of current technology, and potential for leveraging from outside sources. Materials from the AB visioning meeting included recycled aggregates, coal combustion products, and automotive byproducts. Others that may be priorities include other C&D residuals and foundry byproducts.

GOALS

Technology Transfer

- develop two new workshops and corresponding webinars each year
- train at least one state materials engineer and state pavement engineer in each state
- train at least one public works engineer in each of the top 25 US metropolitan areas

Markets

- develop Green Highway/Roadway program
- have certified highways/roadways in 10 states and 10 large metropolitan areas
- develop economic evaluation software and have it used in 10 projects nationwide

- develop a design and evaluation guideline document for each priority material that includes specifications/standards.

Environmental Assessment

- develop and publish standard method to evaluate environmental suitability of recycled materials
- have method adopted by 10 states

Applied Research

- fill each of the identified knowledge gaps
- develop a standard or specification from each applied research project
- provide matching support for all applied research efforts