U.S. Department of Transportation
Research and Innovative Technology Administration

RITA Office of Research, Development, and Technology

UTC Spotlight

University Transportation Centers Program

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Greenroads: Sustainability Counts

Research by the University of Washington and partners has led to the creation and implementation of a roadway sustainability rating system called Greenroads®. The Greenroads Rating System (www.greenroads.org) is an independent third-party system that awards points for sustainable design and construction practices and can be used to certify projects. Greenroads started as a small, unfunded research project at the University of Washington in 2007 and has since grown through the Region 10 UTC and other sponsorship to become a fully functional rating system owned and operated by its own nonprofit company, the Greenroads Foundation. It has been, and continues to be, used by roadway projects throughout the United States and globally to deliver sustainable transportation infrastructure. Studies show that a road built to Greenroads standards can result in reduced costs (both initial and long-term), reduced environmental impact, increased livability, and innovation in sustainable practices and markets.

Greenroads Foundation

Sustainability Matters

In 2011, the United States built over $82 billion worth of highway and street infrastructure, generating $168 billion in total economic activity and over 1 million jobs. This construction helps provide access, mobility, safety, freight movement, and cultural value for communities across the country. However, this same work is also responsible for the release of 108 million metric tons of greenhouse gases and the consumption of 22.8 billion kWh of energy. This work can also unintentionally divide communities, fragment or destroy habitat, pollute, and deplete natural resources.

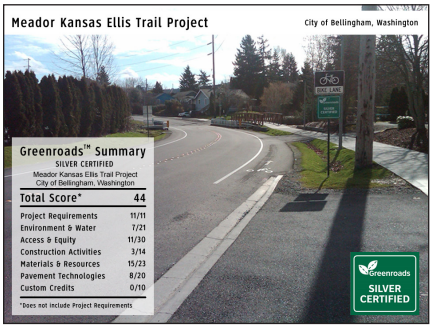
How Greenroads Can Help

Meeting existing regulatory and standards-based minimums do not result in the level of roadway sustainability that the industry is capable of producing—levels capable of going far beyond these regulations and standards and producing substantially more sustainable roads. To attain these higher standards the industry must (1) commit to being more sustainable and (2) change existing institutional processes. Greenroads can help in this effort because it:

1. sets a recognizable standard for roadway sustainability,
2. recognizes owners/designers/contractors for their sustainability efforts,
3. communicates sustainability efforts succinctly and effectively, and
4. grows the market for sustainable products.

Ultimately, Greenroads provides the standard, motivation, and recognition needed to help the roadway industry move towards more sustainable solutions.

How Greenroads Works



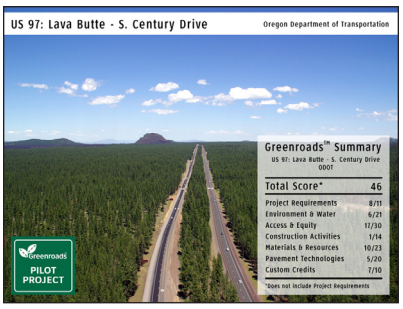
Freeman Anthony (City of Bellingham)

The first certified Greenroads project in the world. Located in Bellingham, WA, this project was less than $900,000 to construct but was able to achieve the silver level of certification through ingenuity and progressive thinking. It even used 400 recycled toilets as aggregate in its concrete trail.

The Greenroads Rating System is essentially a collection of 48 sustainability best practices that can be applied to roadways. Eleven are required, and the remaining 37 are voluntary with project earning points based on the voluntary "credits" achieved. There is also a "Custom Credit" section where project teams can propose their own credits and have them adopted by Greenroads. A project can become "certified" at one of several levels if it meets all 11 Project Requirements and scores the required number of Voluntary and Custom Credit points.

Implementing Greenroads

The Greenroads rating system has been tested on road projects worldwide and is already used to rate and certify projects through the Greenroads Foundation.



Oregon Department of Transportation (ODOT)

A Greenroads Pilot Project just south of Bend, OR on US 97. This project that converted a two-lane road to a divided four-lane highway actually returned more land to the surrounding Deschutes national forest than it took to build the new lanes. It also included two wildlife undercrossings, preserved a beautiful vista and recycled all clearing and grubbing onsite.

Testing and Pilot Projects

Since 2008, Greenroads has been tested on 120 road projects from around the world. These efforts helped refine Greenroads, and have also produced a state-of-the-art art snapshot of the roadway sustainability. A few observations from this snapshot are:

- Current practices fall just short of the Greenroads certified level. However, on almost all projects there are opportunities to score at certification levels for no additional cost.
- Projects typically score best in the "Access & Equity" category, which reflects the use of a context sensitive solutions approach and attention to multimodal access.
- Larger projects (>$100 million) and smaller local projects (e.g., cities and towns) equally score well but larger projects are usually under a mandate to be more sustainable and given the resources to do so. Importantly, however, sustainability does not have to cost more and is within reach for even small projects, which, on average, outperform larger projects.
- Alternative project delivery (i.e., design-build) projects tend to score higher. Presumably, the better integration of design and construction offered by such delivery methods helps produce more sustainable projects.

Carrying on Implementation Through the Greenroads Foundation

In late 2010, the Greenroads Foundation, a private, nonprofit company, was founded in order to be the caretaker of the Greenroads Rating System and manage the rating of roadway projects for certification. Currently, four projects are already certified (total construction cost of $15.2 million), another nine projects are pursuing certification ($54.3 million), and three are participating as pilot projects ($329.1 million).

How the RITA/UTC Program Has Helped

Greenroads is a great idea that may have never gotten off the ground but for some initial RITA/UTC Program funding in 2007 ($50,000). Support for Greenroads grew from that initial amount to over $500,000 (from 7 different sponsors) plus an equal contribution of uncompensated labor from CH2M HILL. Only recently have requests for proposals begun to emerge on a national scale for similar type efforts (e.g., NCHRP, ACHRP, etc.). Early support from the RITA/UTC Program allowed Greenroads to make substantial progress in this field of research and begin implementation on a commercial level about five years ahead of the more traditional way large-scale transportation research is funded. In essence, the Region 10 UTC at the University of Washington has served as an "Angel Investor" in cutting edge research and a green future.

About This Project

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This newsletter highlights some recent accomplishments and products from one University Transportation Center (UTC). The views presented are those of the authors and not necessarily the views of the Research and Innovative Technology Administration or the U.S. Department of Transportation, which administers the UTC program.

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