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Sustainable Building

Using Sustainable Building Guides

Anna Jones-Crabtree, Bighorn National Forest — Steve Oravetz, Program Leader

This Tech Tip, the third of a series, analyzes several sustainable building guides to determine how they might be integrated into Forest Service work. This series of Sustainable Buildings Tech Tips will form a sustainable building resource guide for the Forest Service. The guide will provide ready reference to sustainable products, practices, and information for facility managers, designers, and contractors. This Tech Tip moves from specific products and recycling to the bigger picture of building design practices.

Sustainable Building Guides—Help or Hindrance?

You may be thinking:

> *Just what I need. Another set of guidelines to follow. I can't even do the work I have, let alone spend time learning something totally new.*

Well, it will help to know that sustainable design isn't necessarily new. It is something many of us in the Forest Service are attempting because policies relating to energy efficiency, water usage, and waste reduction direct us to do so. In addition, sustainability ties in with our stewardship and conservation values as an agency.

Many times we are not aware of references that are available to help us. The guides reviewed in this Tech Tip can help. Spend a little time with them and they can provide you with a better viewpoint of the built environment's role in human sustainability. They can also help you plan, design, construct, operate, and maintain facilities that better reflect our values as a conservation agency. They may also offer suggestions that can help you save money.

What Makes a Sustainable Design Different?

Although the concept of sustainability isn't difficult to understand, implementing sustainability can require you to do things differently. It requires different ways of thinking about design at each stage of a facility's life. Sustainable design is based on the idea that the sum of the parts is greater than the whole. Stated another way, sustainability depends on a systems perspective. Sustainable design may lead to other benefits such as economic savings, energy efficiency, waste reduction, and improved worker efficiency and productivity. Sustainability calls for building systems, building products, and all other items in a facility to be designed based on their interactions over time, rather than independently. For example, sustainable design requires us to think about how the paint we select will affect indoor air quality, as well as the air quality outside the building, and how the air quality might impact the HVAC (Heating, Ventilating, Air-Conditioning) system. It requires us to select not only recycled building materials, but also to be aware of the impacts associated with the manufacture, production, and transport of those materials. It requires us to think about how we might deconstruct a building at the end of its life, salvaging and reusing the resources. It requires us to site the building carefully to take advantage of indigenous materials and natural heating and cooling.

Most of all, sustainable design requires us to think deeply about the specific context of the building, system, material, or product over time. For every building-related decision, it becomes important to ask: who, what, when, where, why, and how. Unless these questions are asked, you may miss an important interaction that will help the entire facility perform better—efficiently using resources,

For additional Information contact: *Steve Oravetz, Program Leader, Missoula Technology & Development Center, 5785 Hwy. 10 West, Missoula, MT 59808-9361. Phone: (406) 329-1037; Fax: (406) 329-3719; IBM: soravetz/wo,mtdc*

conserving the natural environment, and creating a healthy built environment. Every choice has an impact. Sustainability requires that we understand those impacts in the context of our project before making a decision.

> *Sustainable Design is not a new building style. Instead it represents a revolution in how we think about, design, construct, and operate buildings. The primary goal of sustainable design is to lessen the harm poorly designed buildings cause by using the best of ancient building approaches in logical combination with the best of new technological advances. (Rocky Mountain Institute, 1995)*

Sustainable Building Guides: What's in Them?

This Tech Tip provides a review of eight guides. For the most part, these publications are strictly guides. That is, they suggest possible solutions to issues relevant to sustainability throughout the building process. They provide practical information for the person seeking to implement sustainability. These guides also list other relevant references and some even list products. Product listings were described in *Sustainable Buildings: What are Green Building Products and Where Do I Find Them? (9871-2351-MTDC).* Most of the guides target new construction with a strong emphasis on the design phase of a building's life cycle. Many of the suggestions made about design apply to other stages during the life cycle, such as construction and operation and maintenance. Table 1 lists each of the guides reviewed. It includes ordering information so you can obtain a copy of the guide. Almost all of the guides were available on the Internet at no charge. The table also briefly describes each guide's organization and includes general comments about each entry.

Title of Guide	Source Information	Organization of Guide	Description/ Comments
Building Science Corporation Builder's Guide - Mixed Climates (1997)	Building Science Corporation, 70 Main Street Westford, MA 01886 Phone: (508) 589-5100 http://www.buildingscience .com	Twelve chapters ranging from the house system, designer, foundations, framing, HVAC, plumbing, electricity, insulation, drywall, and painting. Each chapter describes concerns about a particular building element and then goes into further detail on specific actions.	Guides are available for different climate types. Excellent use of icons and detailed drawings of building elements. The most technical of the guides reviewed.
Guiding Principles of Sustainable Design National Park Service (1993)	National Park Service http://www.nps.gov/	Nine chapters. Topics include natural and cultural resources, site and building design, energy, water, waste prevention, and operation and maintenance.	This document is referenced frequently in sustainable building guides. Because of its concentration on guiding principles, it has a more philosophical slant. Checklists and tables connect the guide to implementation actions. Easy to read. Probably the best match for Forest Service facilities.
A Primer on Sustainable Building (1995)	Rocky Mountain Institute 1739 Snowmass Creek Road, Snowmass, CO 81654-9199 Phone: (970) 927-3851 $17 http://www.solstice.crest.org	Fifteen easy-to-read chapters. Topics include green building design, site selection, transportation, building shell, energy, water, building ecology, and operations. Includes text rather than tables and checklists, although a checklist is available in the appendix.	This document does an excellent job of highlighting the integrative nature of sustainable building and discussing economic tradeoffs.

Title of Guide	Source Information	Organization of Guide	Description/ Comments
Sustainable Building Technical Manual (1996)	Public Technology, Inc., in conjunction with U.S. Greenbuilding Council, Department of Energy, and Environmental Protection Agency Phone: 800-PTI-8976 $30 hard copy http://www.pti.nw.dc.us	Chapters relate to life-cycle phases: predesign, site issues, design, construction, and operation and maintenance. Emphasis is on design. Chapters are organized by the significance of the topic to sustainability, suggested practices and checklists, and references.	The format makes the guide difficult to use if you don't have reading time available. The sections on significance are particularly relevant. The local government chapter in each section listing examples of implementation is interesting. Concentrates on commercial developments.
Sustainable Building Sourcebook	City of Austin, TX http://www.greenbuilding.com (much other relevant information at this Web site)	Sections are grouped by topic: water, energy, building materials, and solid waste. Each section is divided into overview, guidelines, and resources. Numerous tables and checklists aid in comparing alternatives.	Although targeted for the area of Austin, TX, this guide does a good job of highlighting key considerations for implementing certain technologies. The most comprehensive and the most focused on implementation of any of the guides reviewed. Easy to use. Targeted toward residential and commercial facilities. Austin, TX, is viewed as a forerunner in the area of sustainable building.
Greening Federal Facilities: An Energy, Environmental, and Economic Resource Guide for Federal Facility Managers (1997)	U.S. Department of Energy, Federal Energy Management Program http://www.eren.doe.gov/femp/greenfed Phone: (800) 363-3732	Targeted specifically for Federal facilities, the guide has three sections: introduction, energy/environmental systems, and opportunities for change.	Does a good job introducing many of the technologies associated with greening. Good use of icons make the guide easy to use.

This listing of publications is not meant to be all-inclusive, but represents some of the mainstream guides that exist. If you are using other guides that you have found to be particularly helpful, please contact Anna Jones-Crabtree.

How to Make Sustainability an Integral Part of any Project and Not Just Nice to Do

- **Incorporate sustainable goals from the beginning of a project—**Any project, from a large-scale office facility to a campground toilet, has objectives for its design, construction, and operation and maintenance. The objectives probably have been detailed within a design narrative. Work to make sustainability an integral part of the project objectives by including it from the beginning. Consider the design narrative for a visitor center project. How much more difficult is it to include objectives such as reducing energy usage from the average visitor center by 10%, providing recycling and other waste management facilities as an integral part of the building design, using three or more green building materials, and incorporating the building itself into an interpretive display.

- **Have sustainability reviews during a project's design, construction, and operation and maintenance phases—**The level of sustainability of a project is a direct reflection of how well sustainability objectives were carried out through the life of the facility. During the design phase, discuss the design objectives regularly. At other phases in the facility's life cycle, work to let those involved understand the original objectives. Sustainability isn't an add-on activity. It is an integral part of a facility's management.

- **Remember, forward thinking goes a long way—**While it may seem like a lot of work to incorporate sustainability into your projects at the beginning, the payoff can be great. New ways of thinking about buildings can reduce energy use over the building's life cycle, increase the building's durability, and make building users happier and more productive. Choosing sustainable options can produce significant cost savings in the long run.

- **Enlist the help of other government agencies—**Many times we tend to use only the information close at hand or from our past experience. A wealth of information on greening and sustainability is available through other Government agencies such as the Department of Energy, Environmental Protection Agency, and Government Services Administration. A few moments spent on a good web search can go a long way in identifying someone else who may have worked on a project similar to yours.

Coming next... How to rate your project's level of sustainability.

About the Authors…

Anna Jones-Crabtree is a licensed Professional Civil Engineer on the Bighorn National Forest in Sheridan, WY. During 1996 and 1997, she studied concepts of sustainable design and construction, and facilities operation and maintenance at Georgia Tech.

Steve Oravetz graduated from the University of Washington in Civil Engineering and is a licensed Professional Civil Engineer. He began his career on the Wenatchee National Forest in 1980. He became Chief Engineer for the Northeastern Research Station in 1993. In 1996, he became Engineering Program Leader at MTDC.

Additional single copies of this document may be ordered from:

USDA Forest Service
Missoula Technology and Development Center
5785 Hwy 10 West
Missoula, MT 59808
Phone: (406) 329-3900
FAX: (406) 329-3719
E-mail: wo_mtdc_pubs@fs.fed.us

For more information about sustainable building, contact:

Anna Jones-Crabtree
Bighorn National Forest
1969 South Sheridan Avenue
Sheridan, WY 82801
Phone: (307) 672-0751

Steve Oravetz
Phone: (406) 329-3184
E-mail: soravetz@fs.fed.us

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http://fsweb.mtdc.wo.fs.fed.us/pubs/lc/lc99712311.htm