

Santa Barbara County Green Building Guidelines



The
Sustainability
Project

Implementing Community Solutions

Santa Barbara County Green Building Guidelines

October 2001

researched and presented by:

The Sustainability Project

contributing authors:

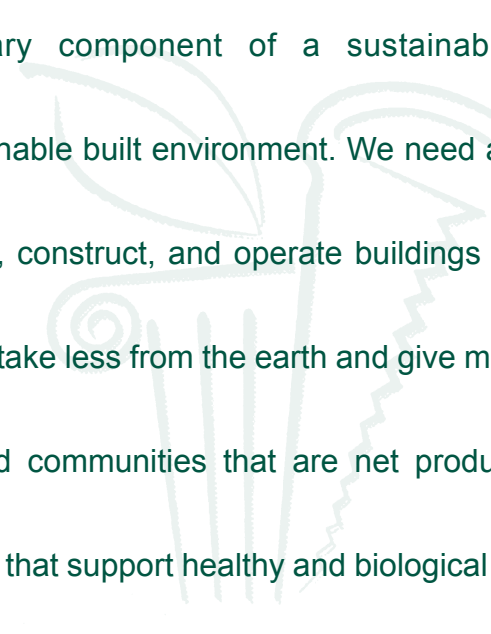
Dennis Allen	Kent Mixon
Magdalena Corvin	Brook Muller
Michelle Ganey	Paul Poirier
Isabelle Greene	Karin Swarbrick
John D. Kelley	April Wethe

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“ **A** necessary component of a sustainable future will be a sustainable built environment. We need a revolution in how we think about, design, construct, and operate buildings and communities. We need buildings that take less from the earth and give more to people. Imagine homes, offices, and communities that are net producers of energy, food, clean water and air; that support healthy and biological communities; and that achieve a natural beauty through their harmony with the earth.”

–The Sustainability Project

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Guest editing and peer review:

Michael David

Tom Hughes

Ellen Strickland

Owen Dell

Ellen A. Kelley

Irving Thomas

Yianni Doulis

John Le Fleur

Dennis Thompson

Jessica Helgerson

Bob Perry

Statistical data and background information:

Leslie Wells, Santa Barbara County Solid Waste and Utilities Division

Rory Lang and Darcy Aston, Santa Barbara County Water Agency

Alison Whitney Jordan, City of Santa Barbara Public Works Department

Kathy McNeal-Pfeiffer, Santa Barbara County Energy Division

Grant Management and Administration:

Kristen McDonald, California Integrated Waste Management Board

Stephen MacIntosh, Santa Barbara County Solid Waste and Utilities Division

Project Research and Assistance:

Amanda Eichel

Heather Rosenberg

Autumn Salamack

Publication editing and layout:

Karin Swarbrick, Terra Firma Environmental Consulting

Disclaimer:

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Prologue

South Coast Santa Barbara County is blessed, as we all know, with unique beauty – partaking of both mountains and the coast. Just as unique, is our climate – one of the most enviable on Earth, with our languorous mild summers and clear mild winters. We still share in the California Dream, the paradise where roses bloom at Christmas, orange blossoms fill whole valleys with fragrance in March, and outdoor activities are rarely spoiled by weather events.

Why not then allow a lifestyle (and style itself) to evolve specifically to this place? Our tradition of Spanish and Italian architecture evolved in similar climates, however their genesis came from a European setting. The English gardens, so popular here, evolved specifically to the very moist British Isles (nothing like ours), and additionally to the British way of life.

We, who are in California have departed from the Old World and its traditions for reasons that are still with us. Additionally, we are fortunate to live in Santa Barbara County - an even more specific culture. Surely, there is more to be gained by being inventive rather than copying the old modes.

We have abundant sunshine and light, good soils, and many natural resources upon which to draw. We are one of America's richest enclaves of biological diversity, due to our fortunate confluence of geography and climate. For over 100 years we have been attracting the best and most diverse minds and enterprise in the country, and historically we have strengths in community participation and vitality. From our riches, let us find our own vision. Let us develop an aesthetic for our area that is rich in its relationship to this place and time and is evolved out

of the very qualities we so prize. It is our timely challenge to create a uniquely fitting architecture, a beautiful and adaptive garden style, and an exemplary lifestyle that celebrates this place, that cherishes its qualities, and chooses to sustain those qualities forever.

The following guidelines are presented to enable each person's effort, each project undertaken, to reach such a compatible and sustained future.

ISABELLE GREENE, FASLA
Isabelle Greene & Associates
Landscape Architects and Land Planners



TOOLS FOR GREEN BUILDING

What is sustainability, why is it important and how can we become more sustainable?

"A building should be like a tree, it should thrive on the Sun's energy while enhancing its surroundings." —William McDonough, Architect

The United States alone has consumed more resources since 1945 than all of humanity had consumed prior to that time. This consumption is analogous to an individual keeping warm by burning down his house when he could put on a sweater instead. We are borrowing from the future to pay for our present consumption. If we continue to make withdrawals without making deposits the account will be depleted within a few generations.

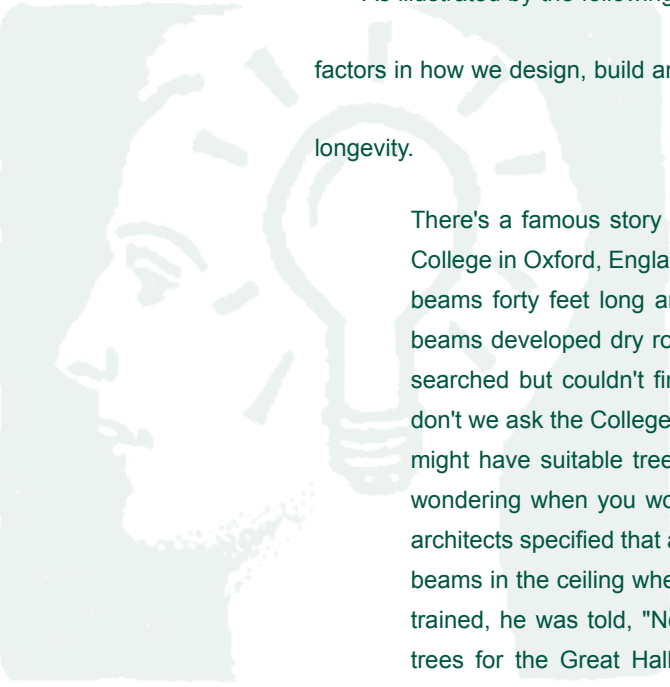
Our challenge is to combine wisdom from our distant past with present knowledge to develop new systems of living that will provide a healthy and prosperous future for humanity and the planet. The term sustainability has been described as a very old and very simple concept—the ability to keep going over the long haul. Think of it as extending the Golden Rule through time, so that you do unto future generations as you would have them do unto you.

Ecological design is an approach that addresses the issues of sustainability. It uses natural systems as models for human design. Its three defining concepts are: 1)produce no waste (waste=food); 2)use natural energy flows; and 3)protect biodiversity. In natural systems, everything is cycled constantly with all waste equaling food for other living systems. Energy comes from outside the systems in the form of perpetual solar income. Not only does nature operate on "current income," but it avoids mining or extracting energy from the past. It does not use its capital reserves and it does not borrow from the future. The characteristic that sustains

this complex and efficient system of metabolism and creation is biodiversity. What prevents living systems from running down and veering into chaos is a miraculously intricate and symbiotic relationship between millions of organisms, no two of which are alike.

By using ecological design as a model for our buildings and our communities we can realize numerous benefits. Protecting and enhancing our communities will strengthen the existing social and economic fabric. Making our buildings healthy will make us happier, healthier and more productive. Saving energy and producing renewable energy will create a sustainable energy supply. Saving and recycling water will protect this essential resource. Producing and reusing materials in a sustainable manner will assure a continuing supply in the future.

As illustrated by the following story told by the Rocky Mountain Institute, we can combine all these factors in how we design, build and maintain our buildings and communities to maximize their longevity.



There's a famous story told by the late epistemologist Gregory Bateson about New College in Oxford, England. The Great Hall had been built in the early 1600s with oak beams forty feet long and two feet thick. Three hundred fifty years later, when the beams developed dry rot, a committee was formed to find replacement trees. They searched but couldn't find any. A young don joined the committee and said, "Why don't we ask the College Forester if some of the lands that have been given to Oxford might have suitable trees?" When they queried the forester, he said, "We've been wondering when you would ask this question. When the Hall was constructed, the architects specified that a grove of oak trees be planted and maintained to replace the beams in the ceiling when they would suffer from dry rot." As each new forester was trained, he was told, "Now, don't you cut any trees from that grove. Those are the trees for the Great Hall." Bateson's comment: "That's the way to run a culture."

By building, living and working sustainably we will amortize impacts over time. This will help to create a more peaceful and harmonious world.

Who created these Guidelines and why?

The Sustainability Project (TSP) of Santa Barbara County is a non-profit organization whose purpose is to inspire change in the built environment of our region that will improve the quality of life, in harmony with nature, for this and future generations.

Our first undertaking was a very successful symposium, Designing for Sustainable Communities, held in Santa Barbara in 1994. Since then, TSP has spearheaded numerous conferences and community design workshops promoting the principles of sustainability as a guide for future development and public policy in our region.

The Sustainability Project volunteer group includes planners, architects, contractors, landscape architects, interior designers and business people who share a common passion for the environment and a vision for a sustainable future.

The Green Building Committee (GBC) of TSP provides consultations to building owners, designers and developers in the community as a means of promoting green building. These consultations have proven to be an effective way for the GBC to share resources and expertise and to encourage innovation in building design and construction.

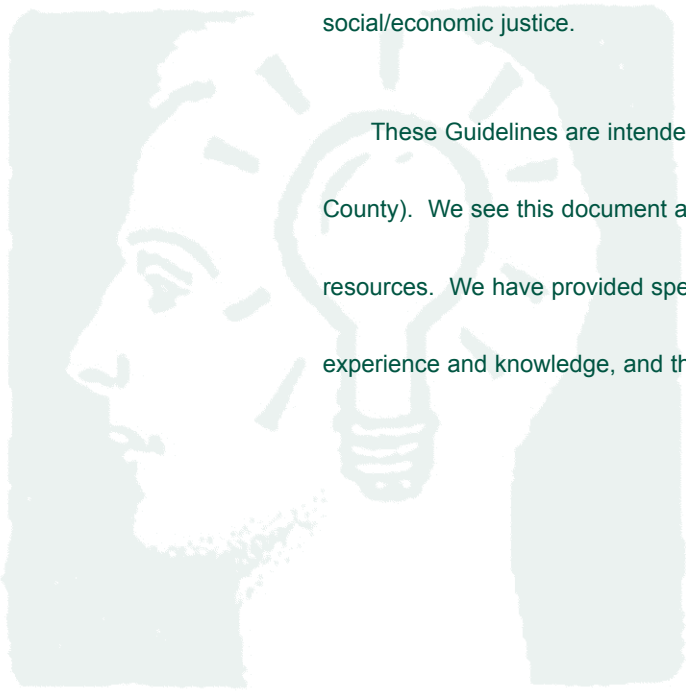
In 1999 the Green Building Committee began discussing the creation of "Green Building Guidelines" for our region. These Guidelines are a template for recommendations from GBC consultations and are a community resource. They are intended to help the GBC reach a wider audience, streamline its consultations and make its recommendations more efficient, thorough, and valuable.

The Green Building Committee has assembled its collective wisdom into these Guidelines for the general public and for practitioners in the design and construction industry. This effort was supported by a grant from the California Integrated Waste Management Board (CIWMB) and administered by the Santa Barbara County, Solid Waste Division.

What is the scope of these Guidelines?

Since the intended audience is the general public as well as practitioners in the design and construction industry, general principles of green building, as well as specific technical information, are provided. In order to focus our efforts and create a document of reasonable size we have excluded larger scale sustainable development topics such as: land use patterns, transportation, and social/economic justice.

These Guidelines are intended to be most useful for our local area (Southern Santa Barbara County). We see this document as a supplement to other more general green building guides and resources. We have provided specific recommendations and information that are based on local experience and knowledge, and that address local needs and conditions.



How to Use These Guidelines

As outlined in the Table of Contents and in the Green Building Checklist, these Guidelines are organized into Sections by broad topic as follows:

- Land, Site and Its Systems: site and landscape elements
- Green Building Material Options: building materials
- Energy Harvesting and Efficiency: energy use
- Conserving Water: water use
- Healthy Indoor Environments: indoor air quality, noise pollution, EMFs
- Waste Management: waste as a resource

Within each Section are individual subheadings that contain detailed recommendations.

Each of these subheadings is conceived as a "pattern"—a distinct piece of the whole picture of sustainability—that can be combined with other "patterns" to create a well integrated project.

This format enables people using the Guidelines to quickly compile the "patterns" appropriate to the project under consideration. There are cross-references between "patterns" to help locate related information. For a project at the beginning of the design process, the entire Guidelines will be useful. For a project further along in the process and in search of more specific information those "patterns" that pertain can be assembled.

At the end of each Section is a list of resources that can be used to connect with a whole network of green building resources. This provides the opportunity for further research and for access to information, materials and services needed.

In using these Guidelines, it is important to remember that while we have given our best effort to make them as accurate as possible, green building knowledge and technique is evolving. All recommendations and information should be verified and evaluated as you use it. Some risks are inherent in using innovative ideas but experience demonstrates that the benefits

generally outweigh the risks.

Following the topical Sections are Local Green Building Examples. They illustrate how various types of projects have incorporated green building elements. Studying them will give you a sense of the range of possibilities for green building.

Projects come in all "shades" of green, from the modest innovations of the mainstream to nationally recognized, cutting-edge designs. Because of limitations such as cost, schedule and available technology, it is rarely possible to do everything conceivable to reduce the environmental impact of a particular building project. In planning for your project the following process is recommended:

- Create a skilled green building team appropriate for your project. It may include architects, landscape architects, contractors, engineers, interior designers or other design and construction professionals.
- Establish clear goals and decision criteria for your project.
- Investigate the climate and ecology of your site.
- Design and construct your project in a sustainable manner using these Guidelines and other resources.
- Evaluate your project when completed using your original goals as a standard.
- Occupy and maintain your project in a sustainable manner after completion.

The printed version of these Guidelines is formatted for a three ring binder that will allow them to be expanded and updated in the future. We welcome your comments. The following sections and "patterns" are tools for you and your green building team to use in developing priorities and making choices for your projects. Good luck!

JOHN D. KELLEY, AIA, ARCHITECT
President of the Sustainability Project and
Chair of the Green Building Committee

GREEN BUILDING CHECKLIST

LAND, SITE AND ITS SYSTEMS

- SITUATE NEW ELEMENTS AND BUILDINGS ONTO THE LAND CAREFULLY S1
- PROTECT THE HEALTH OF SOIL S2
- MAINTAIN NATURAL DRAINAGE PATTERNS AND GROUNDWATER RECHARGE ... S3
- MAXIMIZE DROUGHT TOLERANT PLANTINGS IN LANDSCAPES S4
- CHOOSE VEGETATION APPROPRIATE TO SPECIFIC SITE CONSIDERATIONS S5
- SAVE AND INCORPORATE EXISTING SITE FEATURES AND VEGETATION S6
- CHOOSE THE PROPER MATERIALS, EQUIPMENT AND METHODS FOR SITE DEVELOPMENT S7
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- MATERIALS: BLOCK WALLS M3
- MATERIALS: BUILDING STRUCTURE: WOOD M4
- MATERIALS: BUILDING STRUCTURE: NON WOOD M5
- MATERIALS: BUILDING STRUCTURE - STRUCTURAL WALL SHEATHING M6
- MATERIALS: ROOFING M7
- MATERIALS: EXTERIOR SIDING M8
- MATERIALS: WINDOWS M9
- MATERIALS: DOORS M10
- MATERIALS: INSULATION M11
- MATERIALS: INTERIOR - PLASTER & WALL BOARD M12
- MATERIALS: INTERIOR - PAINTS M13
- MATERIALS: INTERIOR - MILLWORK AND CABINETS M14
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- EMPLOY PASSIVE COOLING STRATEGIES E2
- INTEGRATE DAYLIGHTING WITH ELECTRIC LIGHTING, OVERALL BUILDING DESIGN, MECHANICAL SYSTEMS, AND INTERIOR DESIGN. E3
- CHOOSE HIGH-EFFICIENCY MECHANICAL EQUIPMENT E4
- SELECT ENERGY CONSERVING APPLIANCES AND OFFICE EQUIPMENT E5
- HARNESS THE SUN FOR DOMESTIC HOT WATER AND POOL HEATING E6
- CONSIDER USING RENEWABLE ENERGY SOURCES E7

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- DESIGN FOR WATER USE EFFICIENCY IN BATHROOM AREAS** C2
- INSTALL WATER CONSERVING DEVICES IN LANDSCAPED AREAS** C3
- INSTALL APPROPRIATE SURFACING AND FILTERING DEVICES TO MANAGE STORM WATER RUN-OFF** C4
- CONSIDER USING WATER COLLECTION SYSTEMS ON SITE** C5
- INSTALL SYSTEMS THAT UTILIZE RECYCLED WATER** C6
- CONSIDER ON-SITE WATER TREATMENT** C7

HEALTHY INDOOR ENVIRONMENTS

- IMPLEMENT DESIGN AND CONSTRUCTION STRATEGIES THAT MINIMIZE INDOOR AIR POLLUTION** H1
- DESIGN HVAC SYSTEMS TO PROMOTE IMPROVED AIR QUALITY** H2
- INSTALL FILTRATION AND VENTILATION SYSTEMS TO PROMOTE IMPROVED AIR QUALITY** H3
- CHOOSE ZERO- OR LOW-EMISSION FINISH MATERIALS** H4
- EVALUATE YOUR HOME OR OFFICE FOR POTENTIAL SOURCES OF INDOOR AIR POLLUTION** H5
- MAINTAIN BUILDING TO AVOID INDOOR AIR POLLUTION** H6
- REDUCE INDOOR NOISE POLLUTION** H7
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WASTE MANAGEMENT

- REDUCE CONSTRUCTION MATERIAL USE AND ON SITE WASTE** W1
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- SET UP A JOB-SITE RECYCLING PROGRAM** W3
- SALVAGE REUSABLE MATERIALS** W4
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