

SAN LUIS SUSTAINABILITY GROUP

RESEARCH AND DEVELOPMENT

Sustainable design is a new approach that requires research and development be integral parts of architectural practice. SLOG has been in the forefront of research, development, and application of affordability, regional considerations, passive design, green materials, and water resource issues as they affect sustainable design.



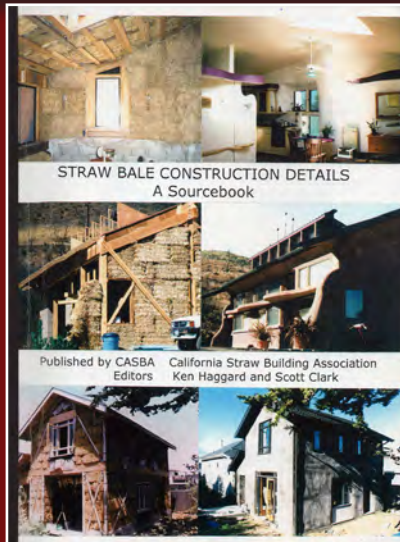
Camp Ocean Pines,
Cambria, California

A good example of **affordability** is the rejuvenation of **Camp Ocean Pines** in Cambria, California. This old YMCA camp had worn out infrastructure and an extremely low budget for new buildings. For its transformation into a local arts and conservation camp we developed 12 twelve-person cabins at a very low cost by:

1. Research on camp regulatory and permitting issues, which streamlined the process and greatly reduced fees.
2. Reduction of materials costs by the use of site milled lumber from dead trees on site and straw bale shear walls.
3. Design and construction of a prototype cabin using a design-build process costing \$50 per square foot.
4. Construction of remaining cabins with volunteer workshops.

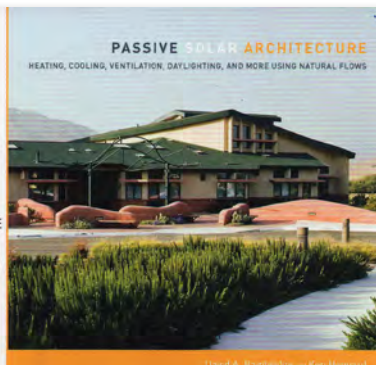
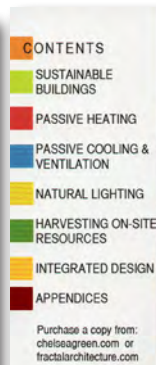
These efforts have resulted in the following SLOG milestones:

- First passive solar building in California
- First Place Award AIA International Competition on Sustainable Communities
- First Net Zero energy commercial building in California
- First LEED certified synagogue in the United States
- First book on straw bale construction details for the California Straw Bale Association
- Selection among the top ten green architectural firms by Natural Homes Magazine

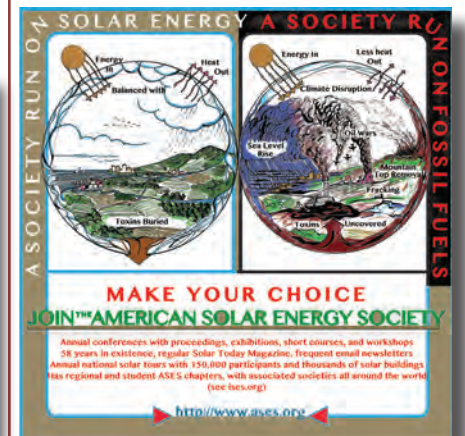


Community workshop for cabin construction at Camp Ocean Pines in Cambria California shown left. Rainwater catchment systems and a rain garden were later installed at Camp Ocean Pines through a similar community workshop led by SLOG in conjunction with SLO Green Build's Appropriate Technology Coalition.

San Luis Sustainability Group has been involved in the development of **Passive Design** from its beginning, designing over 200 passive buildings and developing technical publications such as: *The Passive Solar Handbook for California* for the Energy Commission, *The Passive Solar Architecture Pocket Reference* for the International Solar Energy Society, *Passive Solar Architecture*: a text book on the subject published by Chelsea Green in 2013.

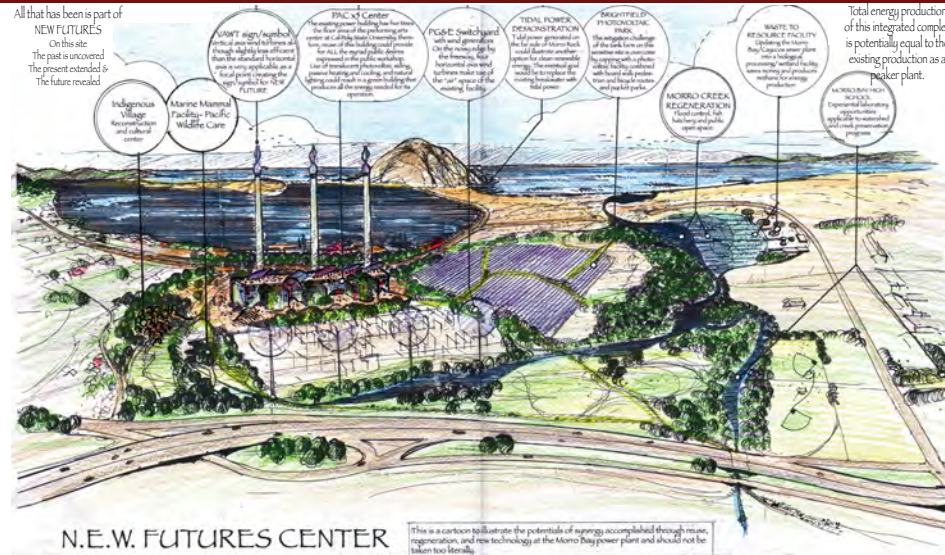


Poster graphic created by SLOG for the American Solar Energy Society.

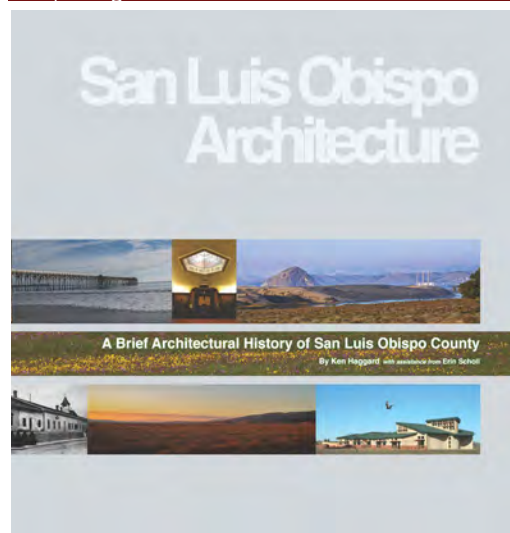


OTHER RESEARCH AND PUBLICATIONS

Sustainable design places a new emphasis on localism with less importing of energy and resources required. SLOSG has been involved in the development of materials that allow for this. For example, the N.E.W. Futures Center project shown below is a conceptual study for the conversion of the obsolete power plant in Morro Bay to a coastal energy/environmental cultural facility with efforts that allow sustainable approaches to water use and reclamation as well as sustainable energy production.



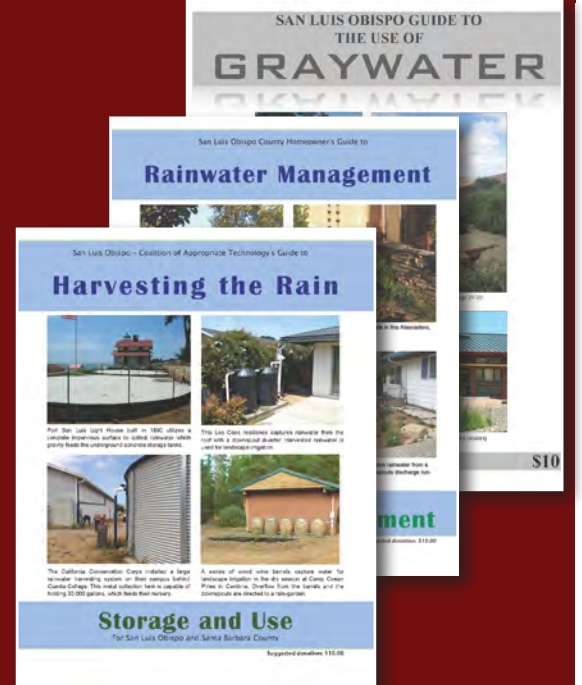
This new localism requires a deeper understanding of place. The book shown below about the architectural history of San Luis Obispo called *San Luis Obispo Architecture*, was produced to educate clients, planners, and politicians about the unique place in which we are privileged to live and build.



It is our opinion that sustainable design is not just modern architecture in 'green' clothing, but a new architecture for the 21st century. The implications of this on the architectural vocabulary of geometry, history, and aesthetics are explored in this book *Fractal Architecture*.



A. CONCEPTS				B. CONTEXTS			
1. Sustainability	2. Fractal Geometry	1. Time	2. Place	1. Time	2. Place	1. Time	2. Place
definitions and concepts 11	definitions and concepts 11	fractal time & history 87	our dynamic fractal planet 111	fractal time & history 87	our dynamic fractal planet 111	fractal time & history 87	our dynamic fractal planet 111
conceptual problems & approaches 12	fractal primer 50	some patterns in environmental design 95	scaling of place 112	some patterns in environmental design 95	scaling of place 112	some patterns in environmental design 95	scaling of place 112
language for a sustainable era 31	tools for reintegration 75	historical transformation 97	dynamics of place 119	historical transformation 97	dynamics of place 119	historical transformation 97	dynamics of place 119
aesthetics of sustainability 25	aesthetics and geometry 75	aesthetics and symbolism 98	aesthetics of place 123	aesthetics and symbolism 98	aesthetics of place 123	aesthetics and symbolism 98	aesthetics of place 123
sustainable systems 84	fractal architecture 95	prototypes of sustainable design 100	regenerative, and life cycle design 107	prototypes of sustainable design 100	regenerative, and life cycle design 107	prototypes of sustainable design 100	regenerative, and life cycle design 107
Los Osos 10	a small cottage 28	Ubid region of San 107	Trout Farm Complex 125	a small cottage 28	Ubid region of San 107	Trout Farm Complex 125	Trout Farm Complex 125
31-34 general design principles for sustainability	82-84 changes in the design process via fractal geometry	108 the new millennium and cultural era	109-114 reconnecting human and natural processes in a planetary context	82-84 changes in the design process via fractal geometry	108 the new millennium and cultural era	109-114 reconnecting human and natural processes in a planetary context	109-114 reconnecting human and natural processes in a planetary context



Various publications by SLOSG in combination with SLO Green Build's Appropriate Technology committee shown above.

Option 3 Rainwater Harvesting for Indoor Use				Option 4 Treated Graywater for Indoor Use			
Combining Option 3, which uses harvested rain water for indoor, non-potable uses, with direct use of graywater for landscape irrigation increases the water conservation advantages of the system.				Combining Option 4, which uses treated graywater for indoor, non-potable uses, an additional rainwater harvesting system for landscape irrigation, and reuse of the leach field to infiltrate stormwater makes this 3-way combination the most comprehensive.			
Benefits	Effectiveness Rating			Benefits	Effectiveness Rating		
Reduce Runoff	Less turbulent flow on your lot allows greater stormwater capture by directing rainwater from roof to cistern	6		Reduce Runoff	Directing stormwater into the leach field reduces community drainage cost by minimizing water flowing off your site	3	
Recharge Ground Water	Stormwater channeled from hardscape into the leach field recharges groundwater	3		Recharge Ground Water	Stormwater channeled from roof and hardscape into the leach field recharges groundwater	4	
Improve Water Quality	First flush and filter components increase water quality by eliminating ground contact and blocking debris from roof	6		Improve Water Quality	A Filter system improves water quality by active treatment of graywater	8	
Conserve Water	Harvested rainwater via the cistern reduces the use of potable water for non-potable indoor uses	6		Conserve Water	Constant source of water via graywater allows greater conservation of indoor use year-round	8	
Estimated Cost	Total 21			Estimated Cost	Total 25		
Estimated Savings				Estimated Savings			

A page from an informational pamphlet showing research conducted by SLOSG and SLO Green Build for the County of San Luis Obispo's Septic Decommissioning and Reuse Plan for the Los Osos Wastewater Project.