Green Energy Summit

Topical Session 3-6

Date: **Friday, March 26, 2010**

Time: **5:15 p.m. – 5:30 p.m**

Presenter: ***"Reuse of Wind Turbine Blades Course Initiative"***

Joel H. Goodman
Design researcher, PVO-Pergolas.com

Engineering student design course projects are outlined based on schematic architectural studies of modified fiberglass blades for: structural elements of buildings and solar collector shade structures that include economic study of blade salvage value compared to costs of conventional structural materials to avoid broken sharp shards fiberglass in land fills. Many blades will be replaced after 15-30 years of use. Estimates by Prof. Albers were: 10 tons of blade material per MWturbine, and around 225,000 tons/yr of blades will have to be recycled by 2034 worldwide. Used blade (34m/112ft to 70m/230ft lengths) projects include: towers and signposts; long span sloped roofs (with PV, thermal collectors, and daylighting); partial shade PV pergolas; radiating blade plans supporting two-axis tracking small heliostats; radialfparallel blades supporting hanging fabric roof membranes; structural modification of blade cantilever structures to a two-supports beam structure with cantilevered tip and A-frames with added structure (cables, rods, etc.); columns, and building structures and elevated solar tower receivers on vacated wind tower/foundations.

See presenter biography next page

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Presenter Biography:

Joel H. Goodman

Education; Massachusetts Institute of Technology 1968 M. Architecture; U. of Minn. 1966 B. Arch. w/distinction Teaching: U. of Minnesota, Assistant Professor (1971-72,74-76,82); Texas Technical University (1983). Research/Grants completed: Solar energy studies for State of Wisconsin DOAIFocus on Energy: 2006- PVO-Pergolas, Wisconsin Focus on Energy;2004- Wood PVOLT-2 project; 2001-2- Wood PVOLT project (2001-#80071)(2002- #82025); 1999-Building Integrated Tracking PV and Daylighting #88016;1995-Solar Heating with Seasonal Storage (SHSS) Prefeasibility Study, #85054 1991-93: Solar Concentrating Architectonics, Design Arts Grant #91-4259-0121, US National Endowment for the Arts. 1983: Research Associate, Crosbyton Solar Power Project, US DOE funded, at Texas Technical University 1977-82, 1984, & 1987: Auroville, India, resident researcher in the fields of water conservation, reforestation, renewable energy and building technology. 1975- Educational Development Grant, to develop Earth Awareness Portable Classrooms, U. of Minnesota, with Criteria Foundation. Previous architectural employment: Rapson, FAIA, Parker FAIA, The Architects Collaborative, Building Systems Development. Recent Publications: "Building Interior Evacuated Tubes and Reflectors", Solar 2009 ASES Conf., Buffalo, NY May 2009. "Architectural Active Solar Energy Reflector Collector Studies", Solar 2008 ASES Conf., San Diego."Architectonic Studies with Selected Reflector Concentrating Solar Collectors", 2007 J. of Green Building V2#2