

Re-Arch: *The Initiative for Renewable Energy in Architecture*

Renewable Energy in Commercial Buildings

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

By Loren Abraham, AIA, LEED AP

Project Team:

University of Minnesota College of Design (CDes)

Minnesota Renewable Energy Society (MRES)

Center for Sustainable Building Research (CSBR)

Midwest Renewable Energy Association (MREA)

American Institute of Architects Minnesota (AIA MN)

Green Institute

Funded in part by the Minnesota Pollution Control Agency (MPCA)



Re-Arch: **The Initiative for Renewable Energy in Architecture**

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

Spring Workshops: register at www.iamn.org (\$60 each)

April 4, 2007: Rochester

Best Practices in Daylighting and Passive Systems for Small Commercial Buildings

Tom Brown, HSW credits: 3.75; *Time:* 8:00-12:00

Radisson Plaza Hotel, 150 South Broadway, Rochester, MN

April 16, 2007: Duluth

Designing Solar Hydronic Space and Hot Water Heating Systems for Single and Multi-family Residential Buildings;

Bob Ramlow, HSW credits: 3.75; *Time:* 1:00-5:00

Radisson Hotel Harborview, 505 West Superior St, Duluth, MN

May 16, 2007: St. Paul

Designing Solar Hydronic Space and Hot Water Heating Systems for Single and Multi-family Residential Buildings;

Bob Ramlow, HSW credits: 3.75; *Time:* 8:00-12:00,

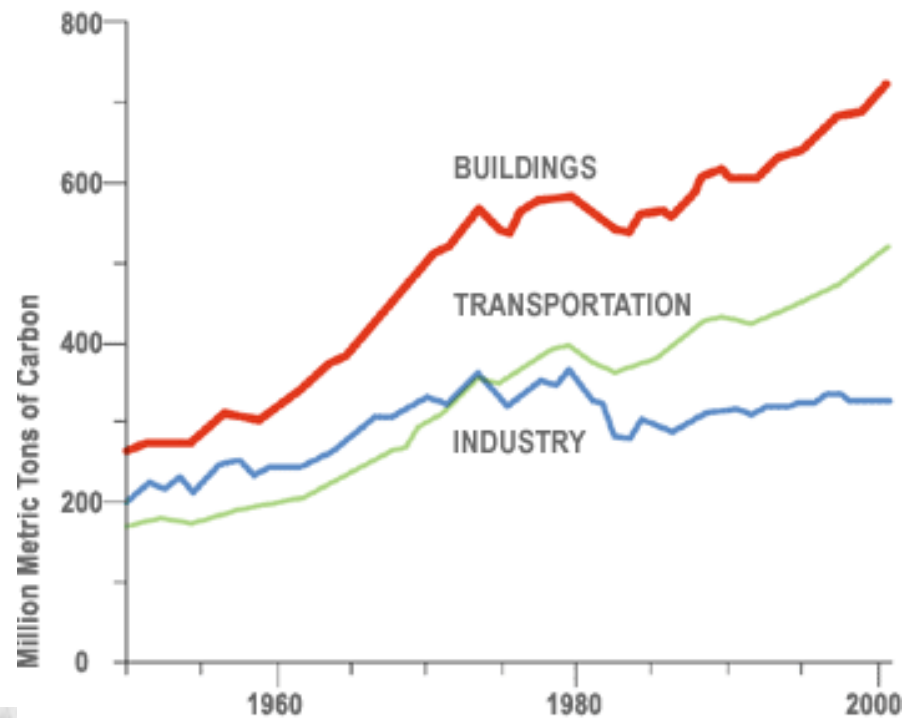
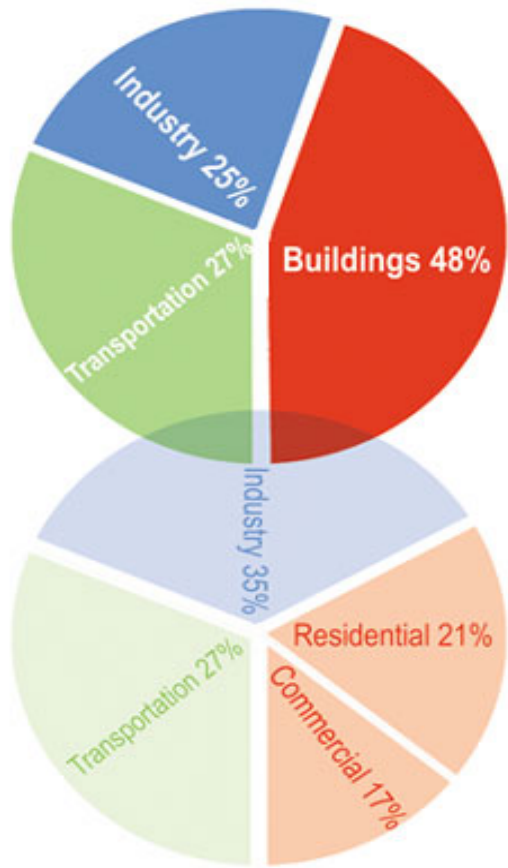
Continuing Education and Conference Center, University of Minnesota, St. Paul, MN

Re-Arch: The Initiative for Renewable Energy in Architecture

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

American Institute of Architects Minnesota (AIA MN)

Context: Architecture and Global Warming Emissions



Re-Arch: **The Initiative for Renewable Energy in Architecture**

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

National & Local Carbon Reduction Initiatives in Architecture

AIA Minnesota 2004 Climate Change Position Statement

Energy Efficient Residential and Commercial Buildings
20% Renewable Energy by 2020

Architecture 2030 Challenge - Carbon Neutral Buildings

(adopted by AIA National and US Council of Mayors)

60% CO2 Reduction by 2010
70% CO2 Reduction by 2015
80% CO2 Reduction by 2020
90% CO2 Reduction by 2025
Carbon Neutral by 2030



Re-Arch: The Initiative for Renewable Energy in Architecture

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

Workshop Schedule (4 Hour)

I.	Schedule, Context, Goals & Objectives	10 Min.
II.	The process of designing buildings with RE	15
III.	Overview of Renewable Energy Choices	20
IV.	General Rules and Design Guidelines	50
	Q & A	10
	BREAK	15 Min.
V.	Finance: Incentives and Calculating ROI	20
VI.	Analysis Tools and Other resources	20
VII.	Case Examples	50
VIII.	Conclusion	10
	Q&A	20



Re-Arch: The Initiative for Renewable Energy in Architecture

Design Guidelines for Integrating Renewable Energy in Commercial Buildings

Course Goals

Participants in this workshop will learn about:

- setting energy goals & optimizing building energy loads.
- determining the feasibility for integration of Renewable Energy (RE) Technologies.
- applying various Renewable Energy strategies in a variety of design applications.
- specific Renewable Energy options & general principals, design guidelines & rules.
- software tools and financial analysis methods.

Objectives

Workshop leader will review:

- preferred process for designing buildings with RE systems.
- various solar, wind and other RE options for commercial projects.
- diverse applications for solar, wind and other renewable technologies.
- current best practices & rules for integrating RE systems into commercial projects.
- financial incentives available for RE systems.
- provide examples of successful RE installations including local projects.



A close-up, profile view of a baby's face, showing the nose, mouth, and chin. The baby's eyes are closed, and the skin is smooth and light-colored. The background is a soft, out-of-focus purple and blue gradient.

Our Hope for the Future?

"How do we love all children of all species for all time? It's a fundamental question of human rights."

_William McDonough