

"Since most of us spend our lives doing ordinary tasks, the most important thing is to carry them out extraordinarily well." - Thoreau

#### Barley & Pfeiffer Architects

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#### A More Relevant Approach to Green Building Seeing beyond the glare of "EcoBling"

#### URBAN WILDLIFE MANAGEMENT & PLANNING Conference

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#### WORLD CONSUMPTION:

**The US consumes more than China, Africa, and India combined.** What happens when they start consuming as much energy & natural resources as we do???

#### **CHANGE of MINDSET:**

Are we using the wrong tools to measure ourselves?

# The **Price** per **Square Foot** yardstick?!?!



Homes over 4000 SF have an average occupancy period of two to three years less than the typical home. National Association of Realtors study



#### <u>Homeowners wasting money on 'eco-bling' which</u> <u>makes little difference to the environment</u>

by David Derbyshire 20th January 2010 (member – British House of Parliament)

Thousands of householders, including David Cameron, have installed wind turbines on their roofs British homes and offices are being plastered with useless **'eco-bling'** which make little difference to the environment, a leading engineer has claimed.

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Prof Doug King said too many people are wasting cash on smallscale renewable energy projects such as wind turbines and solar panels that produce just a trickle of energy. **Rather than spoiling the skyline with pointless roof-top windmills, people should spend the cash on basics - such as insulation, thermostats and sensibly designed buildings and homes, he said.** 

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WHAT is **<u>GREEN</u>** Building – really???

#### the VITAMIN ENRICHED CIGARETTE

Without integrated planning the best grade you will ever get on your Green Building efforts is a "C".

- -It's first about relevance.
- It is about <u>relationships</u> between what you build and its setting.
- It is about **programming** & **design**.
- It is about construction <u>durability</u>
  & the <u>systems approach</u>.
- -It's not about solar collectors being tacked on top of an energy **inefficient** design!





#### **DURABILITY & COMFORT**



# Unsustainable LEED-Platinum projects (8/09)



- Resources needed to maintain?
- Glare & comfort issues associated with excessive solar exposure?
- Be careful about "chasing LEED points"!

#### Green Building boils down to this:

• Reduced Consumption – energy, water, nonrenewable materials.

- Improved Health Indoor Air Quality, etc.
- Reduced Environmental Impact.



**BEC** 



#### The Initial Cost versus Effectiveness Pyramid





2.55 KW solar array installed in 2004 on my house.

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#### "ACTIVE" SOLAR

 Atmospheric dirt build-up makes for
 "active" annual maintenance.

2.55 KW solar array costs \$16,000 to install.

Saves \$35 - \$45/ month (at 10 cents/ KWH electricity cost)



Sol Austin "Near Zero Energy" neighborhood

March 2010



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**Butterfly roofs:** Climatic responsive? Rain protection? or just cool looking?

Usefulness of this PV?



70% reduction in electricity: - 650 KWH/ month

- \$65/month

- Potential for <u>six</u> fewer coalfired power plants in Florida! <u>Use "low flow-resistance" plumbing:</u>

- "sweep 90's (not hard 90's)
- large diameter pool jets



For an extra investment of \$800 this pump saved more electricity than a \$26,000 solar PV system. www.Pentairpools.com



Window shading – the DESIGN of the roof overhangs with regard to the windows - saves more energy than \$16,000 solar collectors.

# **DESIGN LEADERSHIP**

#### **Compact Fluorescents**

18 watts of electricity instead of 75 watts to get the same light output.



Saves a quarter ton of coal or 1 barrel of oil... and all the associated emissions (which includes about 350 pounds of carbon)

**2007 Goal:** 100,000,000 CFL's replaces 600,000,000 incandescent bulbs. Saves 262 delivery trucks (3.5 mile long convoy) <u>each</u> year for 6 years, plus the garbage trucks <u>each</u> year for the packaging and disposal of 100,000,000 bulbs.



Light colored horizontal surfaces. All fluorescent light fixtures.

#### **Air-conditioning load reduction:**

1 Watt of electricity = 3.4 BTUs per hour of heat 1000 watts saved =  $\frac{1}{4}$  ton of air conditioning



For every 100 watt incandescent light bulb <u>NOT</u> lit equals the heat of one less person in the room.

#### **OPPORTUNITY:**

### 90% of the opportunities for a high performance green home occur in the first 10% of the DESIGN process.



#### • Layout

- # Stories
- Ceiling heights
- Roof pitch & color
- Exterior & interior colors

#### **PROGRAMMING**:

The often overlooked but necessary first step in the design process. Problem <u>seeking</u>, before problem solving. <u>How to accommodate needs with less energy use</u>?



Vertical-use living.

Thermal Siphoning stair windows on down-wind side.



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Volume of air to cool, dehumidify & heat.





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Design is problem solving - with <u>orientation</u> and <u>layout</u> as the FIRST considerations.



### **The 2010 Platinum Mueller Home**

First LEED <u>Platinum</u> speculation sale home in United States. It sold within a few months of completion.



**2010 LEED Platinum Spec House:** First LEED Platinum house in the US <u>built strictly for speculative sale</u> for a Parade of Homes. Big risk – but it sold within a few months of construction – long before the other homes!



Backyard, "garage-port", screened porch & house arranged to enhance airflow to outdoor spaces and through house.



Open living & dining area with sloped ceiling to invite daylight from stair tower. Note fluorescent light cove - not LED.



#### North

#### **LEED** Platinum Spec House – Second Floor

- Outlet for thermal siphon at top of stairs.
- Minimal west facing windows.
- Centrally located mechanical room across from Laundry. near Master Bath and kids' bath,

#### **INSULATION:**

#### **NEW STUFF**



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### **SPRAY FOAM INSULATION**

- Real "R" value
- Air flow barrier
- Humidity barrier.
- Styrofoam cup & Igloo cooler

## **Demilec USA**

www.sealection500.com



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#### **USING OUR NATURAL RESOURCES WISELY**



A typical wood framed 2500 SF house consumes 2 to 3 acres of forest timber.

Sustainably harvested lumber – certified by groups such as:

FSC (Forest Stewardship Council) SFI

(Sustainable Forestry Institute)

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#### WASTE MANAGEMENT CHOICES: house <u>Relocating</u> or <u>Deconstruction</u> but not <u>Demolition</u> nor "Scraping".

(donate it to Habitat For Humanity)



#### ENGINEERED WOOD PRODUCTS



#### Borates infused OSB **RIGID** wall sheathing.

Re-constituted wood headers.



Substitute for double 2x12 headers – saves 2 or 3 old growth trees.





#### 90% recycled content plastic

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A.E.R.T. in Texas and Arkansas (Advanced Environmental Recycling Technologies)



www.moistureshieldtrim.com





#### www.moistureshieldtrim.com

90% recycled content plastic and wood composite exterior trim.



#### **ENVIRONMENTAL BUILDING NEWS**

#### www.BuildingGreen.com



#### Hone your skills as an analytical thinker & "Inspired Generalist"!



#### ACTION PLAN

"Green Building isn't the stuff you add on after the design is done. And it not just about LEED points."

#### <u>Crow Test Ranch House</u> Livingston, Montana

- <u>Program</u> your projects thoughtfully question the status quo.
- Get the design basics right. Lay out the plan to respond to the sun and climate.
- Conserving energy & stuff makes the most sense.
- Watch out for "Eco-Bling"!

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### **Contact Information**





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I recognize the right and duty of this generation to develop and use our natural resources, but I do not recognize the right to waste them, or to rob by wasteful use, the generations that come after us.

- Teddy Roosevelt