Two Commercial Passive House Retrofits

Laura Nettleton & Michael Whartnaby of Thoughtful Balance
Community Health Center

Branch Library and Family Center
Community Health Center

- Masonry building built 1920’s
- LEED Gold – Mid-Rise Multi-Family Pilot
- Urban Setting

Branch Library and Family Center

- Masonry building built 1950’s
- Urban Setting
Library

thoughtful balance inc
sustainable architecture and design
Issues in Retrofits
Community Health Center

Branch Library and Family Center

Southeast Corner

South Facade

Existing Orientation
Community Health Center

Branch Library and Family Center

Wall Sections
Windows may meet energy demand criteria but may not meet comfort and durability criteria!

- Recently installed ‘High Performance’ windows
- Aversion to European windows
  - Lead Time
  - Cost
  - Money Up Front
  - Repair
  - Schedule
- Value engineering?
  - No tools to compare American & European
• Existing un-insulated slabs
• Existing head height
• Room for MEP and windows
• Existing hazardous conditions
• Climate specific benefits
Value Engineering in an Integrated System

Budget Constraints
Smoke Sticks

Fog Machines

Blower Door Testing
Mechanical Equipment & Sizing
Industry Standard

Passive House Reduction

- Peak Load Conditions
- Ventilation Rates
- Standard Energy Model vs. PHPP
COMMERCIAL DAY

COMMERCIAL NIGHT

RESIDENTIAL DAY

RESIDENTIAL NIGHT

Commercial Use
How Many Electronics Can You Count?

Plug Loads
Design vs. Reality
Looking Ahead
Branch Library and Family Center

$117 per sf core & shell
$37 per sf library interiors
$45 per sf family center interiors
Community Health Center

$149 per sf
RADON & Outdoor contaminants
No PASSIVE HOUSES, only PASSIVE HOUSE USERS

Winter?

Summer?
Close but No Cigar...

Retrofits are not for Sissies
References

• “Pinpointing Leaks With a Fog Machine” Internet Magazine – GreenBuildingAdvisor.com Martin Holladay September 18, 2009

• “Insulating Your Body Is Cheaper and More Effective Than Heating Your Home” Internet Magazine - Treehugger Lloyd Alter February 28, 2011