2009 NAA Green Conference & Exposition

April 28-29, 2009 • Phoenix Convention Center • Phoenix, Arizona

Appraising Green / High Performance Property and Accessing Capital

Wells Fargo & Co.
Real Estate Technical Services
James F. Finlay

Discussion Points

- Background to Wells Fargo Bank's environmental commitment
- Measuring performance and benefits within the multi-family context
- Managing the Appraisal Process
- Looking ahead

Wells Fargo Environmental Commitment

- July 2005 adapts 10-point Environmental Commitment :
  - Finance $1 Billion environmentally sensitive projects over next 5 years
  - ***Equator Principles*** (World Bank/international financial corporations.) environmental & social risk management : transparency = tracking & reporting
  - Recycling, energy efficient operations
  - Energy, greenhouse gas tracking, reporting
  - Create Environmental Affairs Advisory Council
- Tax Equity investments: renewable energy [Nevada Solar One 64 MW], Purchase Power Agreements (PPAs)

High Performance, Environmental Projects

- **Prior to July 2005** – 11 projects, total: $590 million
  - LEED, brownfield, transit oriented housing

- **Today**

  - 44+ LEED projects, total loans $2+ billion

  - Wide range of projects

    – office, multi-family, SFR subdivisions, land, mixed-use (office/resid), retail, hotel

    – National coverage

Preferential financing for LEED / Green?

No

However, we seek quality projects

- Reduced risk: occupancy and expense
- Dependable cashflow, outperform market

- Loan depends on the deal & relationship
- Expedited processing, fees, terms, underwriting

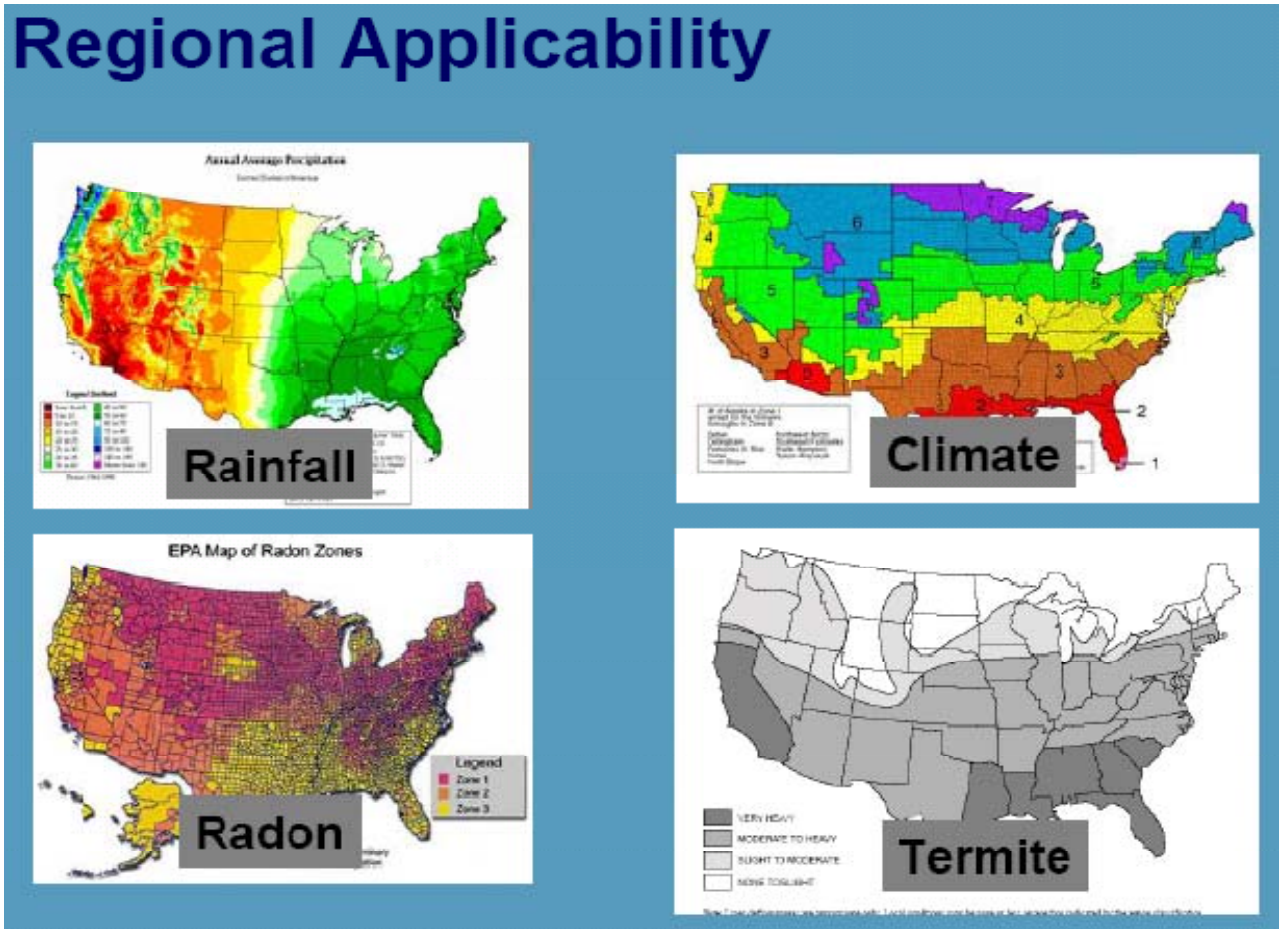
High Performance Value Elements

Fundamentally superior design process:

Design-Bid-Build replaced by ***Integrated Design***

1. **Resource conservation**: lower energy, water, waste; exploit natural systems
2. **Monitor + maintenance**: sensors, state of the art materials, real time monitoring
3. **On-site distributed power**: solar PV, solar thermal, heat pump, wind, smart grid

High Performance Design is site specific



Natural resources for power generation/saving – wind, sun, water, soil, tides, mass transit, density

Case Studies

- Multifamily projects
- High-rise class A market
- Low / moderate income
- Mixed-use
- Infill, transit oriented

The Helena, New York

Hurst Org. & Rose Assoc. - 37 floors, 597 units, 2005, LEED Gold

Clarendon Center, Arlington, VA

Rendering of South Block Residential Building (including Ground Floor Retail)
View of intersection at Clarendon Boulevard & N. Garfield Street

Mixed-use (office, retail, 244 apts), three towers, Metro adjacent

Ivy Terrace, Van Nuys, CA

Abode Communities - 56 affordable units, LEED Homes Silver

Ivy Terrace, Van Nuys, CA

Abode Communities, 56 affordable units, LEED Homes Silver,

Ivy Terrace, Van Nuys

- Designed to LEED Homes, Silver standard
- Energy Star Homes Certification, Exceed Title 24 by 15%
- Air Conditioning with outdoor air intake (exceeds ASHRAE 62.2)
- 14.5 SEER Heat Pumps at all units
- Use of MERV 8 air filters throughout
- High Performance Windows, Milgard w/ Suncoat
- High efficiency central boiler and elevator (Kone EcoSpace)
- Prefab wall, floor systems - high performance framing techniques
- Use of very low or no VOC materials (paint, flooring, cabinetry)
- Green Label Plus rated carpet throughout
- Rooftop Photovoltaics offset 50% common area electricity needs

Orange Grove Gardens, Pasadena, CA

Abode Communities - 38 units, 2005, 2&3 bedrm flats, townhomes

Orange Grove Gardens, Pasadena, CA

Abode Communities – affordable housing non-profit based in Los Angeles

***Tim Kohut**, AIA Director of Architecture*

New construction, rehab, prop. management

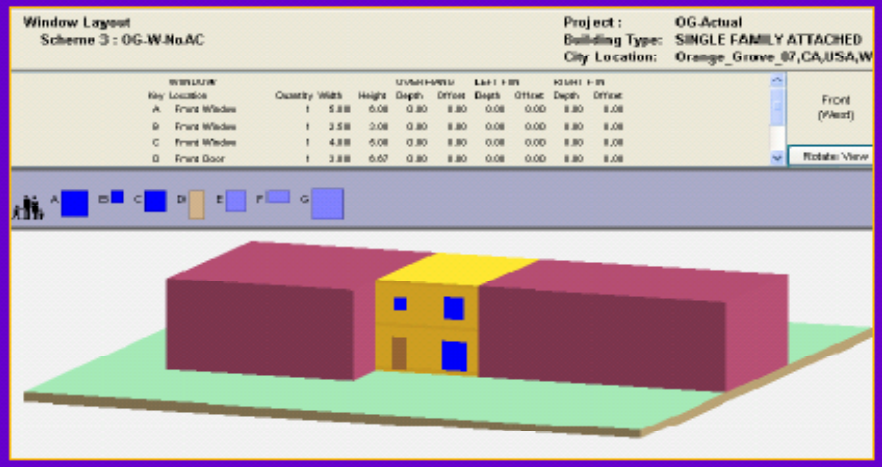
***Murray Milne**, Research Prof. UCLA*

Energy software modeling:

1. Structure - HEED (Home Energy Efficient Design)
2. Location - Climate Consultant
3. Occupant comfort - Psychometric Chart

Energy/Resource Efficient Design

ORANGE GROVE GARDENS - PASSIVE COOLING DESIGN PROCESS

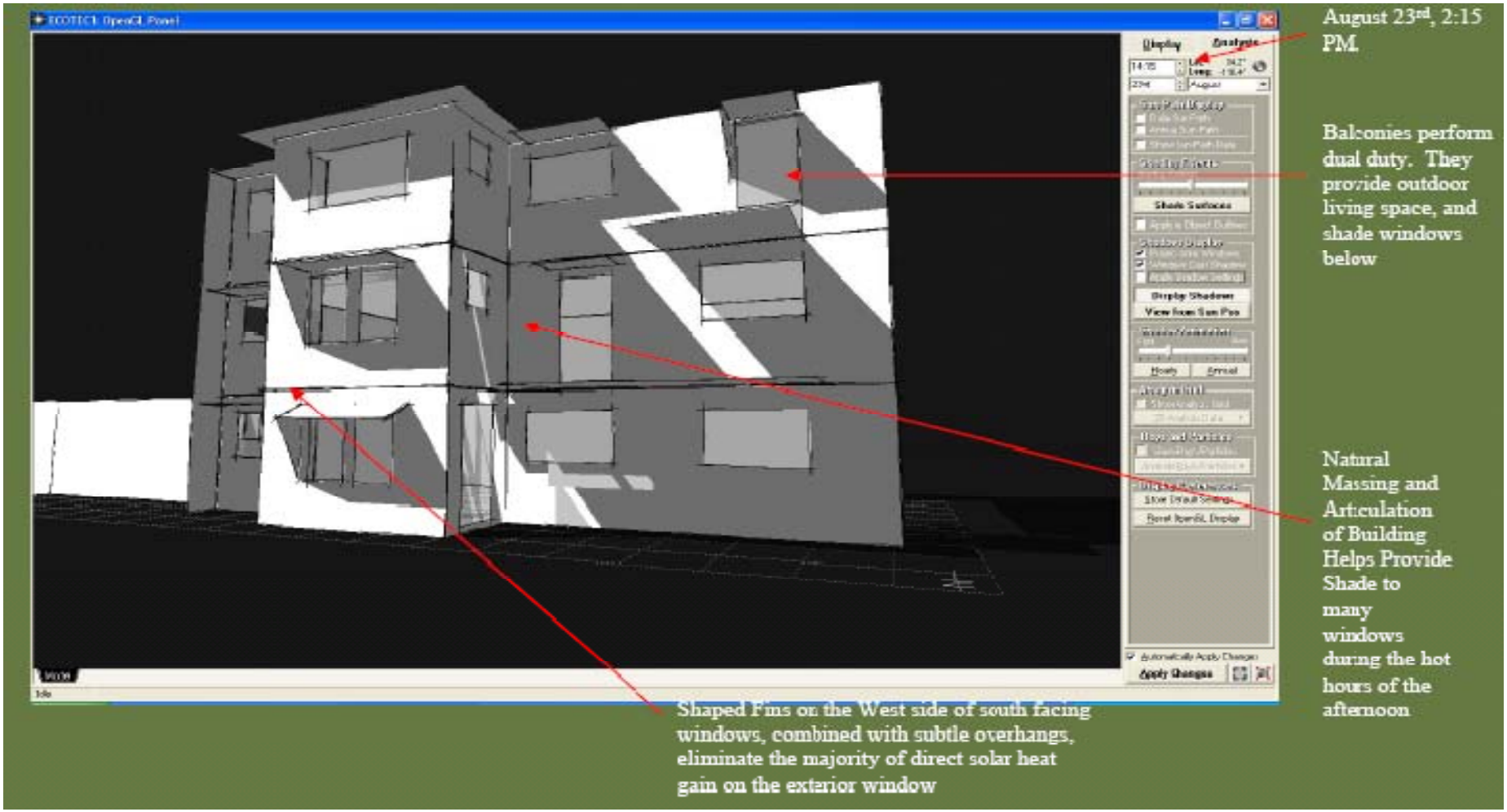


Test Unit – West Facing 2 level townhome – Passively Cooled

Test Unit – West Facing 2 level townhome -Air Conditioned

- This East-West Townhouse Unit has a number of design features that contribute to Thermal Comfort including:
  - Cross and stack ventilation for two story units (relying on residents to open windows)
  - Party walls on two sides
  - Slab on grade (high thermal mass)
  - Unit on top - no heat gain through roof
  - Good glass (0.35 SHGC)
- We used HEED (Home Energy Efficient Design) for these very early design decisions because it calculates 8760 hour building performance, including Indoor Air Temperatures.

Solar Shading design



Measure to prove the case

PASSIVE COOLING VS. AIR CONDITIONING

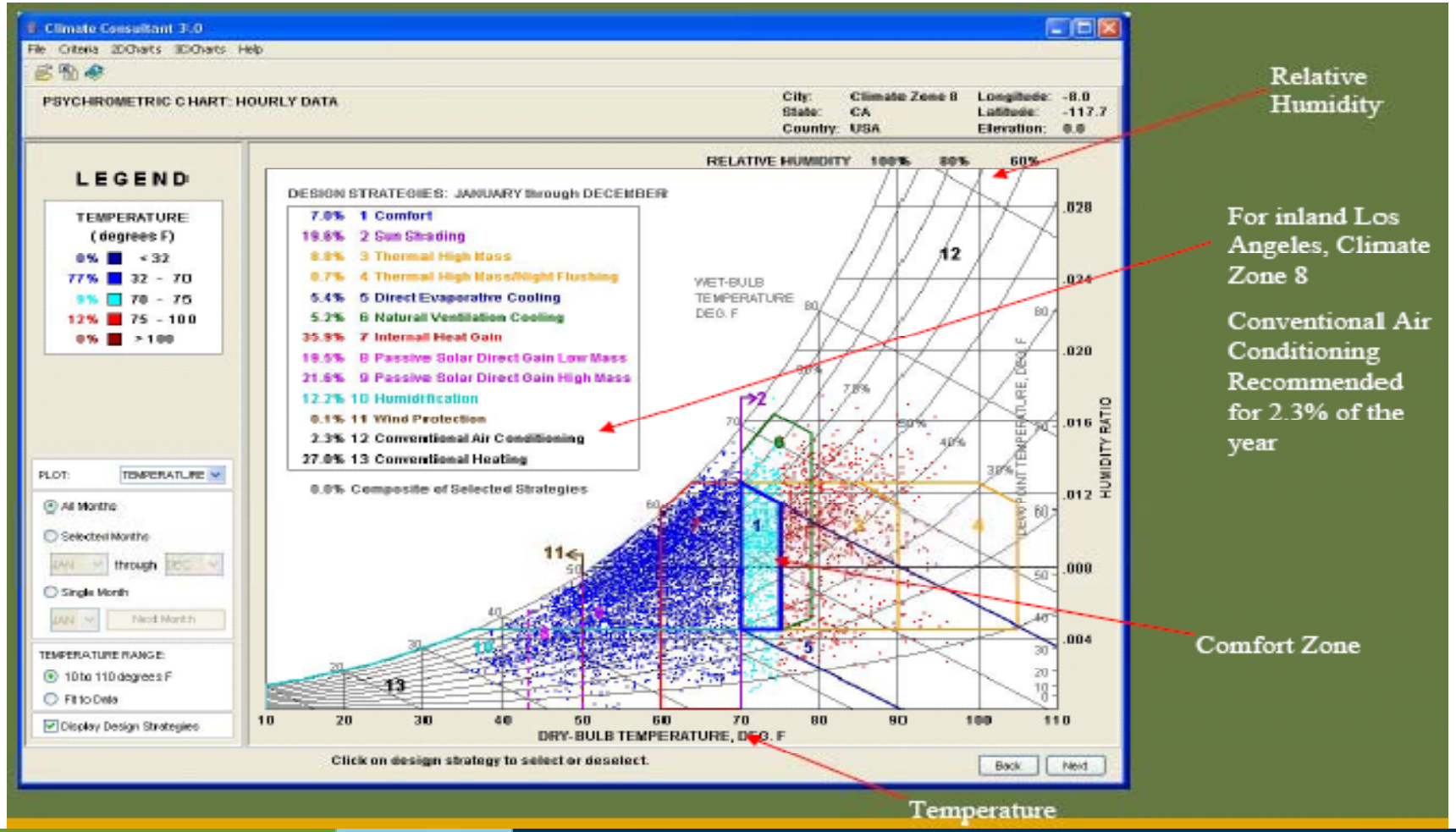
- We decided to monitor the units to see if they would remain comfortable without AC

- We instrumented 4 units: 2 NS, 2 EW. Two did not use their AC (residents were paid $50/month to allow us to shut off air-conditioning), while 2 used air conditioning as they chose
- We used HOBO data loggers that recorded temperatures every 12 minutes, then averaged this data hourly
- Note that the residents in the two air conditioned units kept their homes always around 81°F

- Bottom Line: 81°F seems to be considered a comfortable temperature by the participating residents (thus confirming ASHRAE Standard 55 parameters for summer conditions - 81°F peak comfort temperature)

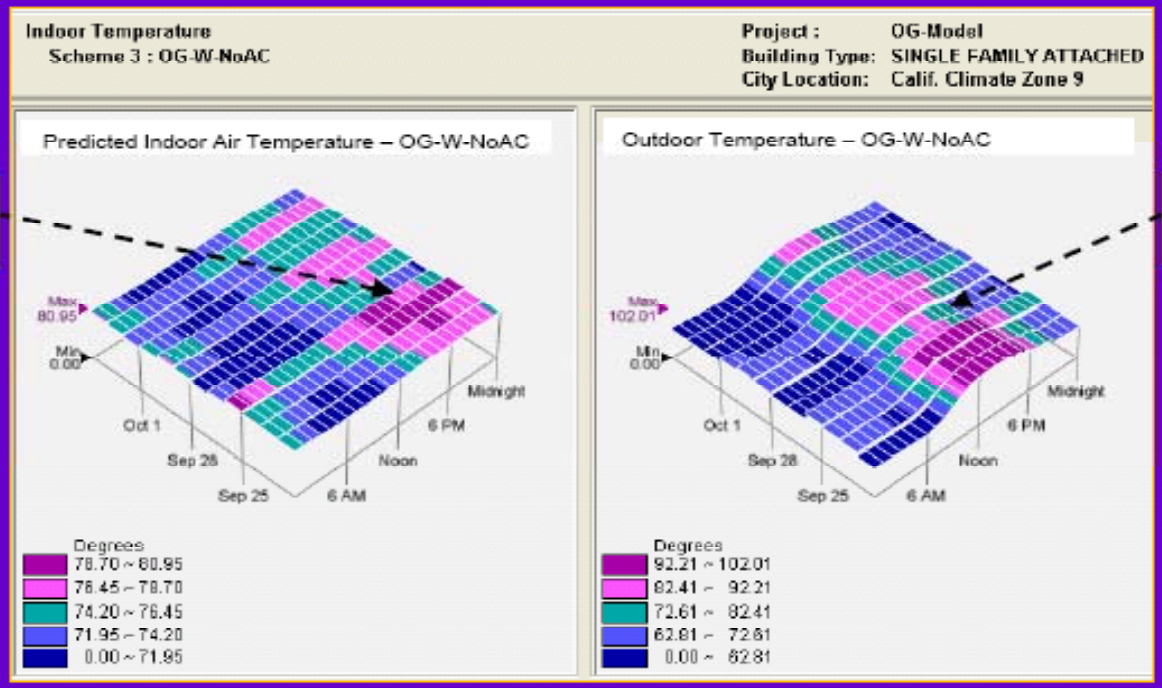
Thermal Comfort – Psychometric chart – temperature & humidity

"Typical Meteorological Year" per CA Climate Zone



Cooling system design

80.95°F – Peak Indoor



102°F – Peak Outdoor

Fig. 2 – Indoor temp. on hottest day

Fig. 1 – Outdoor temp. on hottest day

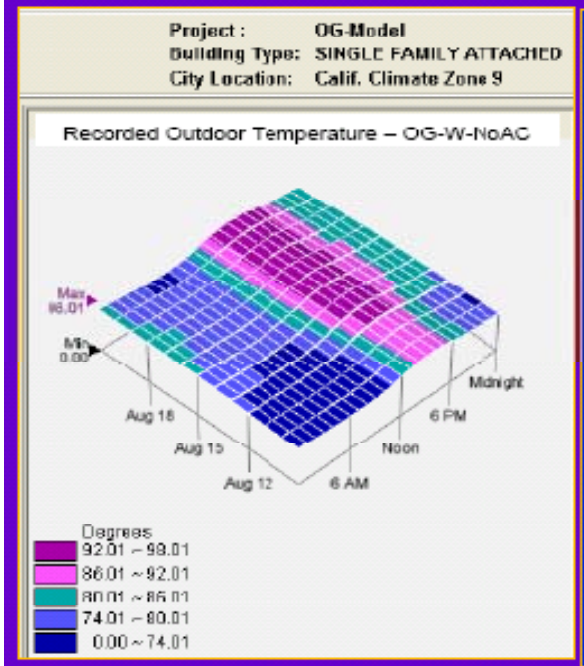
- When Outdoor Air hits the 102°F High (Fig.1), HEED shows that indoor temperatures reached only 80.7°F (Fig.2). Note that this outdoor temperature is 7°F hotter than ASHRAE prescribed design high.
- Bottom Line: This unit as designed can be quite comfortable without Air Conditioning

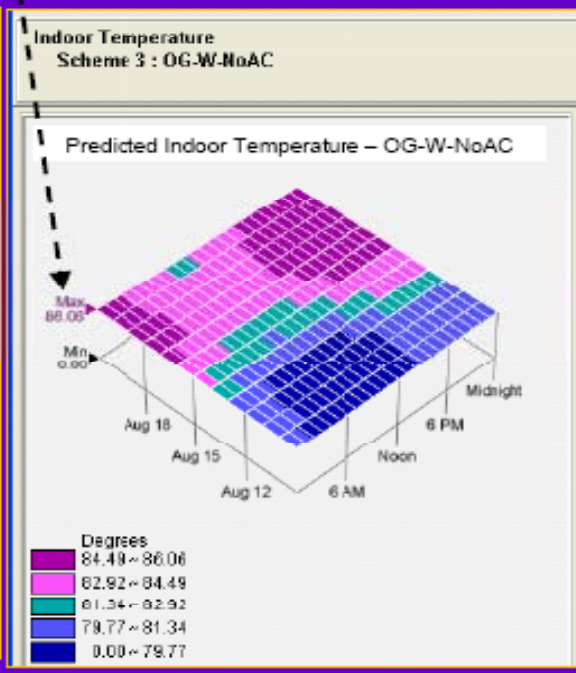
Energy/comfort model is highly accurate

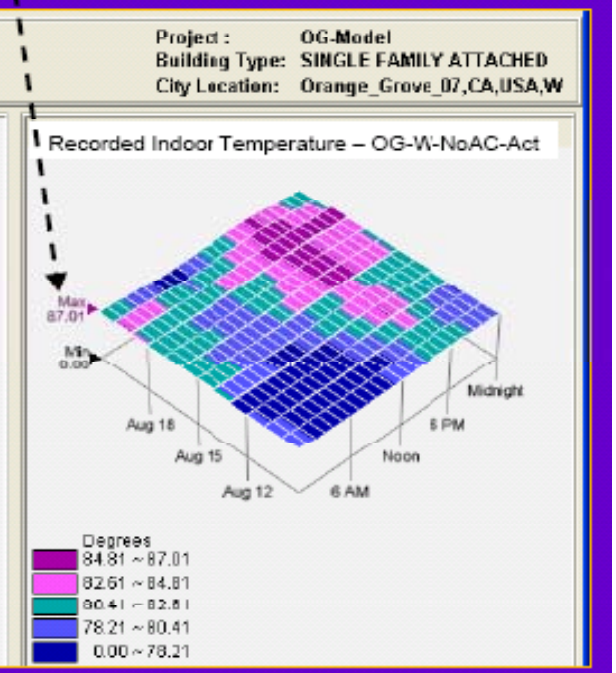
HOW ACCURATE ARE THE DESIGN MODELS?

Predicted Max. – 86.06°F

Recorded Max. – 87.01°F







Recorded Outdoor Temp.
High: 98.01°F, Low: 74.01°F

HEED Predicted Indoor Temp.
For Actual Outdoor Temp.
High: 86.03°F, Low: 79.77°F

Recorded Indoor Temp.
High: 87.01°F, Low: 78.21°F

Lessons Learned

- Energy modeling software highly predictive
- Empirical data gathering possible/practical
- If day/night temperature gradient sufficient, no A/C needed (saves investment + maintenance)
- Tenant training on window control necessary
- Night economizer flushing, but passive can work
- Add thermal mass (tile, double drywall ceiling)
- Ceiling fan reduces “effective” temperature per AHSRAE Standard 55

What does all this mean to appraisal, project underwriting?

- Be prepared to make your case convincing
- Measure and show best proof of benefits
- Show due diligence, management plan
- Performance model is on-going, not a snapshot
- "Financial 5" always the same –

  Income, Vacancy, Expenses, Risk, Identity/Info
- BUT - Proposed construction is always riskier

Multifamily problems, opportunities are special

- Cost/benefit parsing complicated
- Short tenancy, but maybe that is a good thing

- Many design similarities between projects
- Pre-1980 retro-fit opportunity
- In-fill, transit oriented community planning

- Public policy incentives, financing needed
- AB 811 “on-bill” financing, feed-in tariffs, carbon

Construction, Operations Standards

Build It GREEN
Smart Solutions from the Ground Up

MULTIFAMILY
GREEN BUILDING GUIDELINES

Build It Green - 66 recommendations in 6 sections, 2008 update

Public/Private partnership
Landlord/tenant partnership

- Payback periods over several tenancies
- De-coupled utility company partnerships
- Net zero and net positive buildings need on-site power generation plus Energy Efficiency (EE)
- New, re-discovered tech – combined Heat & Power, geothermal heat pumps, fuel cells, PV, micro/local-grids, smart meters, wind

Optimize the Appraisal Process

- Hire a local appraiser ; LEED experience is rare
- Define scope of work, supply expertise, documents, interview the “champion” w/ appr.
- Discuss issues with appraiser, not direct value
- Maybe my own DCF per energy, rebates, taxes
- Write review, add supplemental information (risk, non-realty, depreciation)
- Works well, but often value below First Cost

The Three Approaches to Appraisal Value

- **Cost Approach** – First Costs may include investments (PV, mechanicals); EE hard to parse
- **Sales Comparison Approach** – Challenged with lack of "comps" but adjustments are common
- **Income Approach** – Most important for investment property; on-site power, EE atypical
- ***Plus*** – Depreciation, incentives, property tax, fee reductions, etc

Income Approach is Primary

- Most important for banks and tenants
- Real time commissioning prove benefits :

  BIM (Bldg Info Modeling): frequency + accuracy + manage = accurate value conclusion
- Occupant feedback = behavior modification

  Lucid Design Group, Precourt Inst., Stanford
- Argus DCF software inputs provide detailed LEED / high performance financial model

Discounted Cashflow = Lifecycle Analysis

- Standard 10 yr hold, yield, cash on cash
- Allows for “First Cost or Investment?” issue
- Cashflow can weigh many influences over time
  - Construction costs
  - Initial lease-up
  - Rent, rent growth
  - Vacancy, rollover %, lag vacancy
  - Expenses: common area, unrecovered, maintenance
  - Re-tenanting
  - Risk – Discount rate, terminal cap rate

Conclusions – Banks and Appraisals

- Realize YOU need to make the value case
  - documents, data + analysis, strong team + a champion
- Appraisers/banks need help to deal with depreciation, short-lived incentives and tax breaks
- Work with financing partner who “gets it”
- High performance First Cost premium should be low (0%-2%), plus $ on-site power

What else I am seeing & watching

- Rather than green premium, brown discount
- *All* new construction is more sustainable
- 3rd party and on-going verification best
- Productivity - we know it is *not* zero
- Utility areas with carbon risk (coal power)
- Smart metering and new utilities
- Feedback loop = behavior change
- Distributed power, not distant generation

Be ready – Change is Now

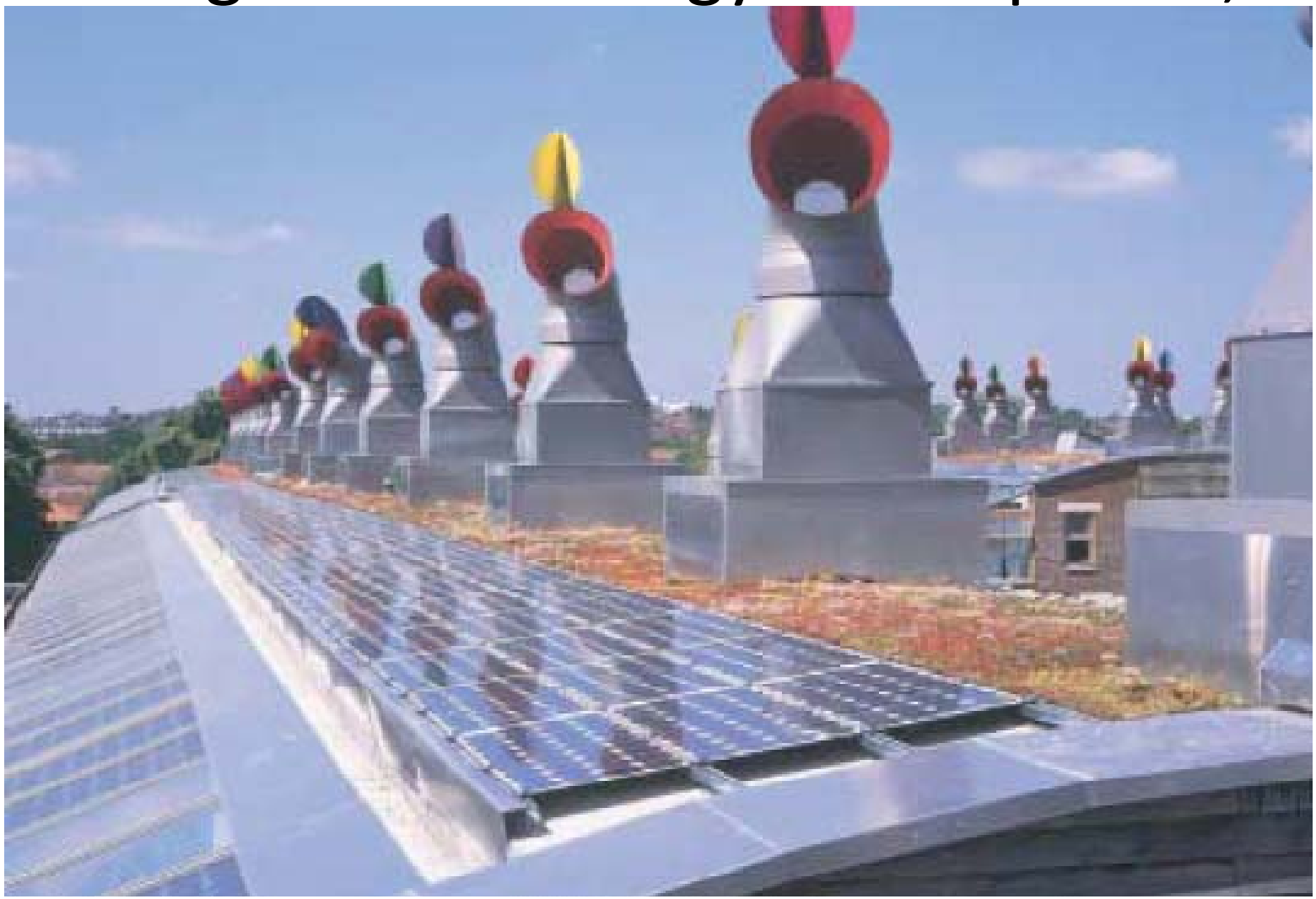
- Lobby for, track policy – local, state, utility (on-bill financing, feed-in tariffs, micro-grids)
- Watch, learn from net-zero, beyond LEED building design (Living Bldg Challenge, PassivHaus)
- Developments in the UK (2-3 year lead)
- Keep the faith, it's still very early

Extras

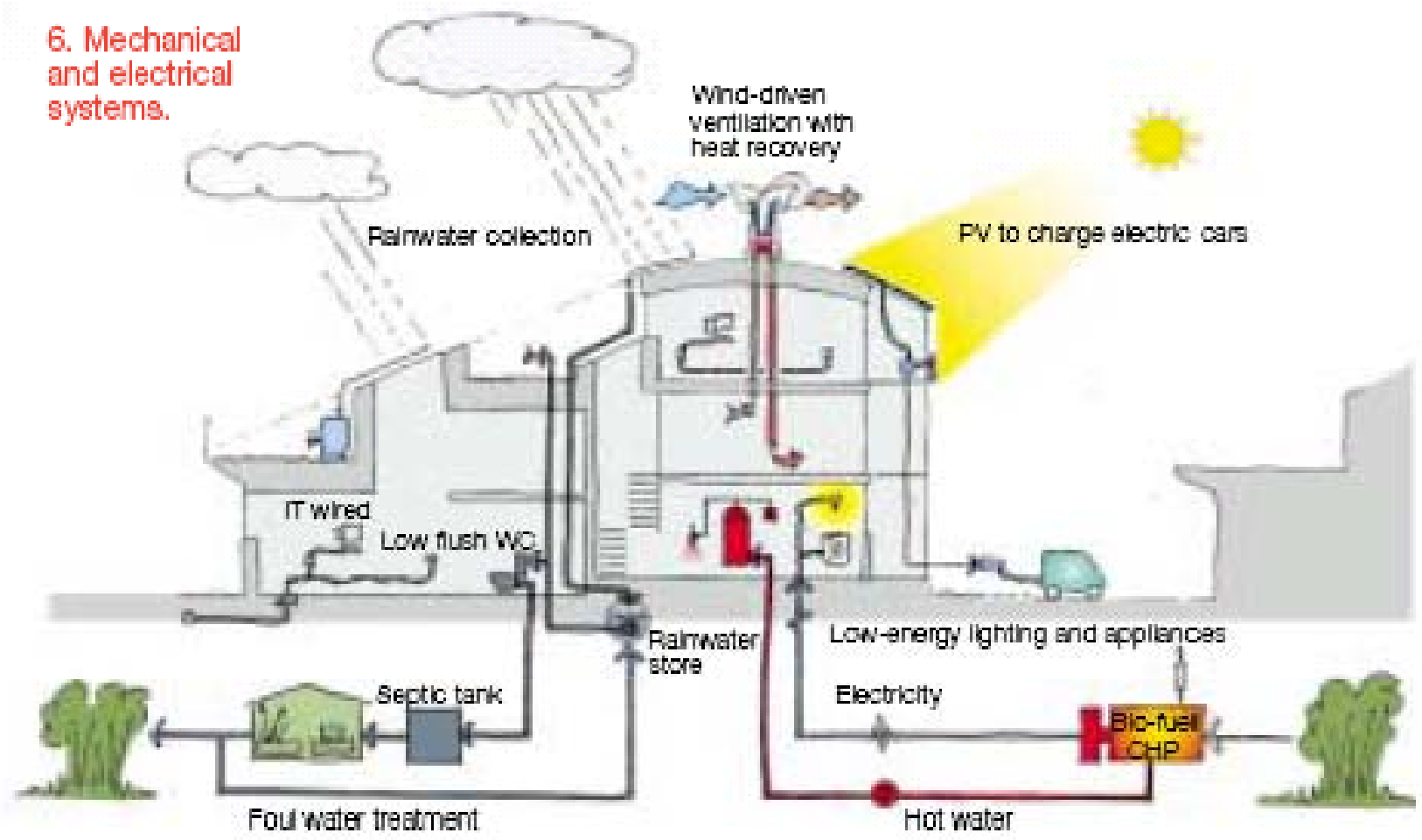
- Net Zero Buildings
- Favorite links
- Two appraisal case studies

BedZED

Beddington Zero Energy Development, UK



BedZED



Triple glazing, gray water, rainwater collection, daylight modeling, combined heat/power grid, car charging, wind heat exchange

31 Tannery Rd, Branchburg, NJ

First net zero electric commercial bldg in US

31 Tannery Road

- Efficiency + Energy + real time monitoring
- http://www7.nationalacademies.org/ffc/John_Grabowski.pdf
- Built 2006, 41,508 SF, light industrial, 37% office, owner occupied & operated
- 11/2008 Energy Star 100, net electric (101%)
- Net energy - 223 kW + solar thermal

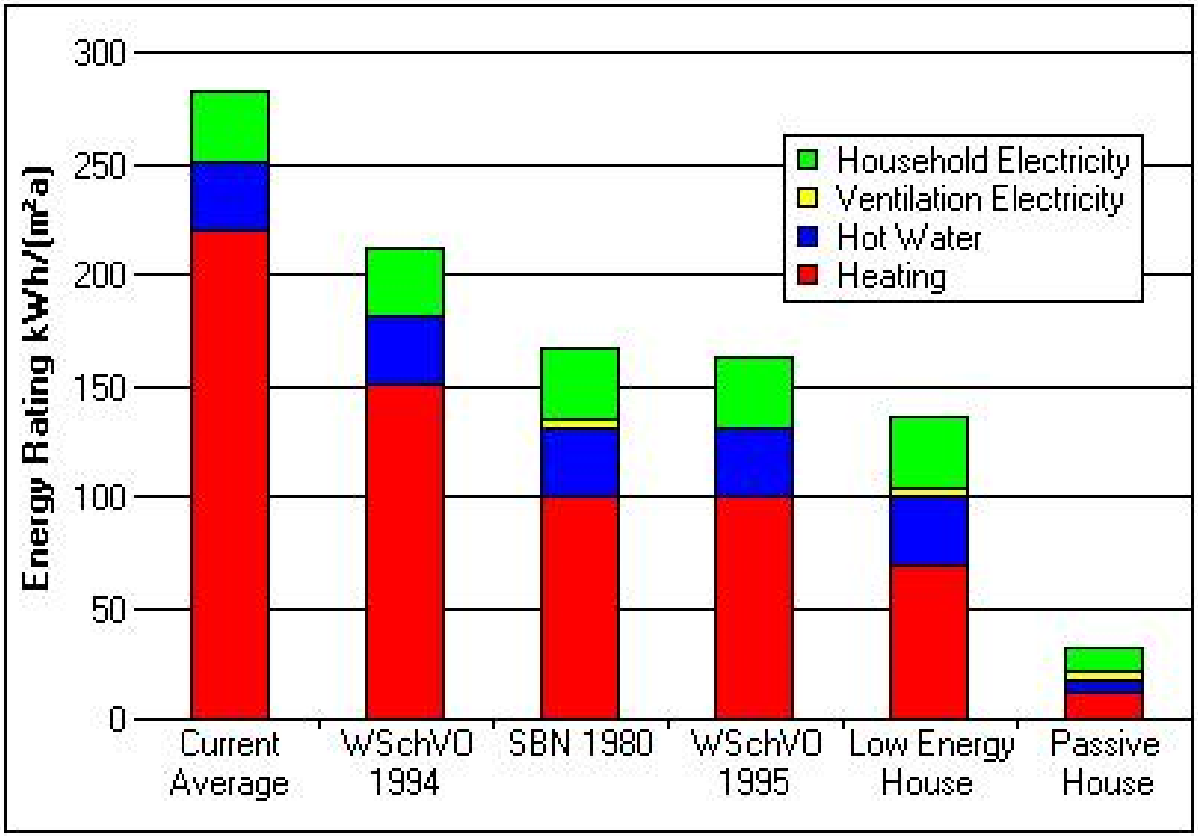
  BTU/SF = KWH +gas therms) = 83% on-site
- $/SF indust avg $2.49; Actual $0.49/SF
- With SRECs = + $1.11/SF positive income

Precourt Energy Efficiency Center, Stanford University

- Buildings, Energy Modeling, Behavior Transportation, Systems, Energy Policy
- Behavioral economics focus unusual
- Annual conference
- January 2009 + $100MM initiative

Passivhaus Institute

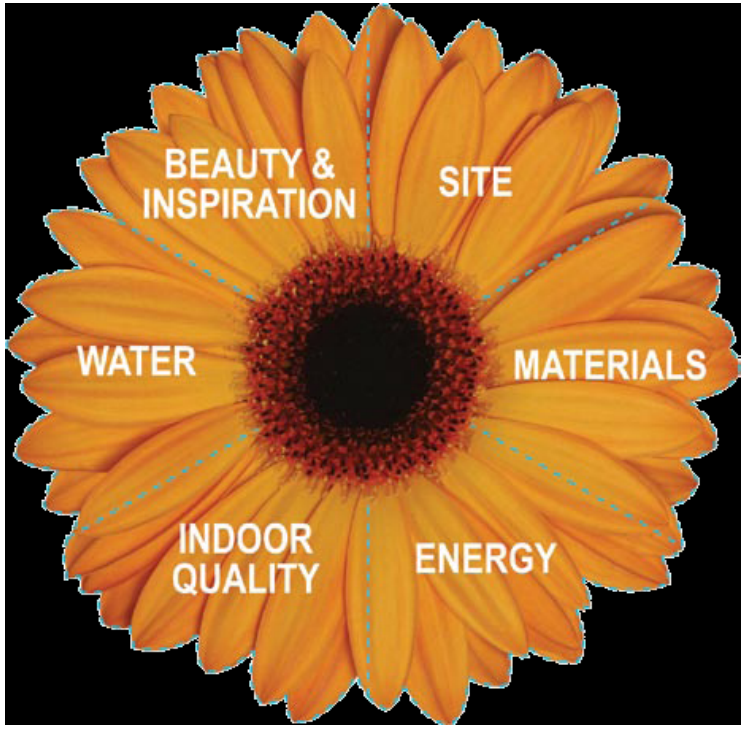
- No active heating/cooling.
- The Not So Big House, reduced size



Living Building Challenge,

Cascadia Regional Green Building Council

- Giant step (not baby step) sustainable
- Net zero power, water, waste, IEQ, beauty



Energy value analysis sample

- *Solar Case #1, appraiser "A" –*

  System Cost - $1.3MM; 100kW PV, other items

  Net cost after rebates & credits: $571K

  Year One est. energy savings: $117K/yr

  Simple payback 4.88 years x 1st year savings

  Appraisal value: $470K or 4.0 x 1st yr saving

  applied in cashflow as a $0.025/SF NNN adjustment

  BUT, my calcs show 20 yr NPV energy saved = $1.46MM

  @ +5%/yr (-0.5%/yr) energy escalation, 9% discount

  No accelerated depreciation, un-leveraged, no RECs, no forgiven property taxes (on $1.3MM)

Energy value analysis sample

- *Solar Case #2 , appraiser "B" –*

Solar System Cost - $3.4MM; 503 kW PV, other items

Less NPV 5 yr CA Solar Initiative rebates: $2.2MM

Yr One energy projected savings: $134K/yr

Simple payback 16.4 years (yr 1 savings)

Solar system appraised value: $580K or 4.3 x 1st yr savings

applied as $0.025/SF reduced NNN line item

BUT my calcs show 30 yr NPV energy saved = $2.45MM

+6%/yr (-0.5%) energy escalation, 8% discount rate

Appraisal excluded $950K Fed Solar Inv. Tax Credit, accelerated 5-yr depreciation, no RECs, no forgiven property taxes (on $3.4MM)

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