



Gerding Edlen

SUSTAINABLE SOLUTIONS

Gerding Edlen Development

REACH Code Committee

July 21, 2010



## Today's Discussion:

- Where is Gerding Edlen today?
- Key highlights and takeaways based on our experience
- Examples of specific challenges we've encountered

# GERDING EDLEN DEVELOPMENT



- Total of nearly \$5 billion in completed projects over past 15 years
  - Represents over 60 projects for clients as well as for our own account
- Began pursuing LEED certification across our portfolio in 2000; only 2 build-to-suit projects since have not pursued LEED
  - We believe in the value of a third-party certification process
- Portfolio Stats
  - In 2008 we had 13 buildings completed and certified by the US Green Building Council; 2.5 years later, we have a total of 34 completed and certified.
  - Today, we have 43 registered and certified projects - 8 Platinum, 29 Gold and 6 Silver
- Our challenge: Build buildings that produce more energy than they use and treat more waste than they generate
  - Net Zero energy, water and waste - Living Building Challenge



- The development community has become increasingly aware that:
  - Green buildings can cost no more than non-green buildings to build
    - We are seeing negligible – 1% premiums for our LEED Gold buildings that achieve an average 25% - 30% energy savings over baseline (after incentives)
  - Green design results in healthier living and working environments
    - Many studies show the positive impacts on worker productivity and student learning
  - Green buildings are better long-term assets
    - Lower operating costs and greater market demand
  - Building performance standards are ratcheting upwards to account for the impacts of our buildings on the carbon footprint of our communities
    - Alignment with State and federal goals of transitioning to a clean energy economy

# GERDING EDLEN DEVELOPMENT



We believe green building is the right thing to do, but we are also convinced that it is good business:

- We have seen increased buyer trust and tenant retention
  - low utility bills; impressed with quality of construction, finishes & amenities
- Despite the down economy, we are experiencing faster lease-up/sales than our competitors and less turnover in our leased properties
  - Indigo: high-rise apartment building that achieved LEED Platinum, is 95% leased after 9 months on the market
  - The 20: a 50-unit low-rise apartment building that achieved LEED Gold, is fully leased and over 60% of tenants are renewing leases
- We have benefited from positive press relative to our green efforts - recognized nationally for our contributions in sustainable development
  - In a down market, we were able to capitalize a green fund - the only new real estate equity fund nationwide to be capitalized in 2009



## What defines our methodology?

- We work with teams who are experienced in integrated design and in building to higher sustainability standards
  - Abundance of talent in the design, engineering and construction community in our State; learning curve is behind us
  - Cutting-edge technologies do require some additional A&E effort
- We start from a higher baseline than a code-compliant building
  - Our typical buildings perform 25% - 35% better than code and achieve a 35% - 50% reduction in potable water use
- Focus on finding first-cost trade-offs between systems – financial analysis does not always adequately address this
  - Reduction in cooling loads due to high performance glazing
  - Elimination of ductwork and fans with passive heating and cooling
  - Solar panels mounted in exterior sunshades



## What defines our methodology? (cont.)

- Financing remains a challenge
  - Cannot GET financing today and green is only beginning to be recognized in the financial valuation and lending community
- Look for and help develop creative financing solutions
  - Third-party (off-balance sheet or tax equity) financing for distributed infrastructure components
  - On-bill financing models
  - New energy efficiency PPA models
  - R&D projects
    - Funding thru ODOE & ETO for wind turbines at Twelve West
    - Funding thru COP Green Investment Fund for water reclamation and ecoroof projects



## What defines our methodology? (cont.)

- Maximize incentives
  - Utility incentives: wide range; average around \$60k
  - BETC: average around \$300k for sustainable building track
  - Additional incentives for renewables
  - COP Clean River Rewards – ongoing “reward”
    - Very effective in negating cost premiums
    - Downside is they typically come in at or post project completion
- SDC fee reductions – rewards tied to a project’s direct environmental impact/benefit
  - Sanitary sewer SDC savings at OHSU CHH helped offset first cost of membrane bioreactor
  - Waiver at Twelve West took rainwater reclamation system from ~80 yr. payback to 5 year payback
    - Extremely effective because they come in at onset of project
    - Would like to see this become more commonplace

# GERDING EDLEN DEVELOPMENT



Some of the Technologies Implemented in Our Projects:

## Energy Generation

## Projects

Solar PV	11
Building-Integrated Solar	2
Solar Hot Water	1
Passive Solar	1
Building-Integrated Wind	1
Co-generation	1

## Energy Efficiency

## Projects

Displacement Ventilation	4
Chilled Beams (passive cooling)	3
Centralized Chilled Water	1
Geothermal	2
Waste Heat Recovery	2

## Water Technologies

## Projects

Green Roofs	9
Rainwater Harvesting & Reuse	7
Wastewater Treatment & Reuse	2

## Other Green Technologies

## Projects

Mechanized Parking	1
Ventless Dryers	1



## Comparison of Some Design Parameters:

- High-rise, mixed-use residential/office building – larger units (average 935 sf)
  - High window to wall ratio (48% total, with some areas as high as 70%)
  - SHGC of .27 - .33 ; overall window assembly U-values .45; roof U-value .038 (5” rigid insulation); highly efficient lighting design (LDPs between .5 - .7 watt/sf)
  - 4-pipe FCUs in residential; chilled beams and radiant systems in office floors; 94% efficient DHW plus solar hot water for pre-heating
    - Significant building energy demand means higher performance systems have meaningful environmental and cost benefits
- Low-rise, wood frame mixed-use residential building – smaller units (average 600 sf)
  - Low window to wall ratio (28%)
  - SHGC of .27; overall window assembly U-values modeled .41 (Solarban 70 XL glazing); roof U-value of .063 (3” of rigid insulation); highly efficient lighting design
  - Electric resistance (Cadet) heaters, no A/C; 89% efficient DHW
    - FCU system would have cost an additional \$8 - \$10 /sf
    - Much lower overall building energy demand makes this sizable investment a challenge



## Several Noteworthy Experiences:

- Parking stacker:
  - Site red-tagged for several days while inspectors sorted thru whose jurisdiction it fell under
  - Ended up requiring a third-party inspection that cost \$30k
- Electrical capacity:
  - We were not allowed to consider diversity of use factor
  - Resulted in spending an extra \$1m (or 30% more than budgeted) in additional transformer, feeder and wiring costs
- Pursuing Platinum:
  - ERVs in high-rise residential were very efficient but noisy in operation
  - Unforeseen budget impact during project completion
- Rainwater reclamation:
  - Different jurisdictions have different requirements on how these systems interface with the utility's system
  - Would like code to allow rainwater reclamation and reuse and wastewater treatment and reuse in residential buildings



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