Sustainable Approach to Existing Buildings

Andrea Hanson, Dekker/Perich/Sabatini
Markets for Greening Existing Buildings

• For commercial building owners, key economic factors for justifying green building investment:
  – **Average Rents**
  – **Average Occupancy Rates**
  – **Resale Value**
  Along with tenant retention, lower insurance rates, financing (when it becomes available…..)*

* Jerry Yudelson, 2009, “Greening Existing Buildings”
Markets for Greening Existing Buildings

- **Responsible Property Investing Study (RPI)** *
  - Energy Star buildings command 5.9% higher income/sf
  - 13.5% greater market value

Derived from:
- 10% lower utility costs
- 4.8% higher rents
- 1% higher occupancy rates
- Sold at 0.5% lower cap rates

Markets for Greening Existing Buildings

- **RREEEF Study*** – unit of Deutsche Back
  - Developers and managers adopting greener business practices
  - Corporate tenants seeking greener facilities to attract and retain employees
  - Proscriptive government regulations
    - Mandatory disclosure of energy efficiency in Australia, considered in CA, NY

Markets for Greening Existing Buildings

• Market Trends
  – Greening existing buildings a “defensive strategy”
  – Less efficient buildings risk “market decay”
    • Lower rents
    • Higher vacancies
Regulators, Tenants and Investors

• **Calling the shots…..**

  “The key issues – and this is really an appraisal term – *the cost to cure*. You don’t want to buy a building today that the cost to cure the obsolescence, which would be lack of energy efficiency or sustainability, is so high that it doesn’t make any sense.”

  Scott Muldavin, Director Green Building Finance Consortium
Lease/Sales/Occupancy

- **CoStar Study**: Does Green Pay Off?
  - Analyzed over 1,300 LEED and Energy Star buildings
  - Over 350 million square feet
  - Assessed buildings against non-green properties with similar size, location, class, tenancy and age characteristics

http://www.costar.com/josre

- Supply has not kept pace, hence the premiums
- Not yet evident in our market
Lease/Sales/Occupancy

• ENERGY STAR & Occupancy Rates

![Graph showing ENERGY STAR & Non-Energy STAR occupancy rates from 2005 to 2008]
Lease/Sales/Occupancy

- ENERGY STAR & Rental Rates
Lease/Sales/Occupancy

- ENERGY STAR & Sales Price

Advantage = $61 per sq.ft.
Lease/Sales/Occupancy

- LEED & Occupancy Rate

![Graph showing LEED and Occupancy Rate from 2006 to 2008 quarters, with a steady increase in LEED rates and a decrease in Non-LEED rates.](image)
Lease/Sales/Occupancy

- LEED & Rental Rate
Lease/Sales/Occupancy

- LEED & Sales Price

Difference = $171 per sq.ft.
What are you trying to achieve?

• **Owner Driven Cost Savings** = $$$
  – Cost savings through Energy and Water use reduction – Energy Star
  – Incentives – LEED EB vs NC

• **Incremental Improvements** = $
  – Tenant satisfaction: recruitment / retention
  – Better quality space, maintenance, operations
  – Alternative power
Owner Driven Cost Savings $$$

**Benchmarking:**
- Compare performance to national or local averages, or the rest of your portfolio
- Identify opportunities for improvement and ongoing cost savings

**Incentives:**
- Discover whether the building may qualify for any incentives or recognition

**Key:** Decide what team members and level of analysis is needed upfront
Benchmarking

• **What’s needed?**
  – 1 year of typical utility bill data
  – Average to compare against

• Compare to building history or your portfolio

• **CBECS Database**
  – Commercial Building Energy Consumption Survey
  – Calculate building EUI and compare to table
Benchmarking

- ENERGY STAR
EPA Target Finder

CBECs

Large dataset
Statistically significant

ENERGY STAR ANALYSIS
- Size, building type
- Location (HDD/CDD)
- Occupancy density, schedules
- Plug loads

Target / Benchmark
Benchmarking CBECS (excerpt)

<table>
<thead>
<tr>
<th>Building Use Description</th>
<th>Average Source EUI (Kbtu/Sqft)</th>
<th>Average Percent Electric</th>
<th>Average Site EUI (Kbtu/Sqft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K-12 School</td>
<td>170</td>
<td>63%</td>
<td>76</td>
</tr>
<tr>
<td>College/University (Campus-level)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grocery Store/Food Market</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience store (with or without Gas Station)</td>
<td>753</td>
<td>90%</td>
<td>241</td>
</tr>
<tr>
<td>Food Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurant/Cafeteria</td>
<td>612</td>
<td>53%</td>
<td>302</td>
</tr>
<tr>
<td>Fast Food</td>
<td>1306</td>
<td>64%</td>
<td>534</td>
</tr>
<tr>
<td>Health Care: Inpatient (Specialty Hospitals, Excluding Children’s)</td>
<td>468</td>
<td>47%</td>
<td>227</td>
</tr>
<tr>
<td>Hospital (Acute Care, Childrens')</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care: Long Term Care (Nursing Home, Assisted Living)</td>
<td>255</td>
<td>54%</td>
<td>124</td>
</tr>
<tr>
<td>Health Care: Outpatient</td>
<td>183</td>
<td>72%</td>
<td>73</td>
</tr>
<tr>
<td>Clinic/Other Outpatient Health</td>
<td>219</td>
<td>76%</td>
<td>84</td>
</tr>
<tr>
<td>Medical Office</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See Target Finder / Portfolio Manager*
Benchmarking

- **ENERGY STAR’s** Portfolio Manager tool
  - Requires additional usage data to normalize
  - Enter and track information online
  - Can only benchmark certain building types:

  - Offices
  - K-12 Schools
  - Hospitals
  - Hotels
  - Supermarkets
  - Residence Halls/Dormitories
  - Warehouses
  - Medical Offices
  - Retail Space
### Benchmarking Portfolio Manager: Multiple Buildings

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Current Rating (1-100)</th>
<th>Change from Baseline: Adjusted Energy Use (%)</th>
<th>Total Floor Space (Sq. Ft.)</th>
<th>Energy Use Alerts</th>
<th>Current Energy Period Ending Date</th>
<th>Eligibility for the ENERGY STAR</th>
<th>Last Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson Green</td>
<td>79</td>
<td>1.2</td>
<td>85,000</td>
<td></td>
<td>05/31/2009</td>
<td>Apply for the ENERGY STAR</td>
<td>05/11/2009</td>
</tr>
<tr>
<td>Sample Facility</td>
<td>56</td>
<td>NA</td>
<td>15,000</td>
<td>Data &gt; 120 days</td>
<td>10/31/2007</td>
<td>Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)</td>
<td>01/31/2008</td>
</tr>
</tbody>
</table>

Download in Excel
Results 1 - 3 of 3
## Benchmarking

### Portfolio Manager: Additional Inputs

![Image of a portfolio manager with a table]

**Space Name:** office

<table>
<thead>
<tr>
<th>Space Attribute</th>
<th>Current Value</th>
<th>What is this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Floor Area (required for benchmarking)</td>
<td>85000</td>
<td></td>
</tr>
<tr>
<td>Weekly operating hours</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Workers on Main Shift (required for benchmarking)</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>Number of PCs (required for benchmarking)</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>What percent of this space is air-conditioned?</td>
<td>50% or more</td>
<td></td>
</tr>
<tr>
<td>What percent of this space is heated?</td>
<td>50% or more</td>
<td></td>
</tr>
</tbody>
</table>
Benchmarking
Portfolio Manager: **Meter data**

### Energy Meters

<table>
<thead>
<tr>
<th>Meter Name</th>
<th>Energy Type</th>
<th>Space(s)</th>
<th>Last Meter Entry (End Date)</th>
<th>Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td>electric</td>
<td>Electricity (kWh)</td>
<td>Entire Facility</td>
<td>05/02/2009</td>
<td>Delete Meter</td>
</tr>
<tr>
<td>gas</td>
<td>Natural Gas (therms)</td>
<td>Entire Facility</td>
<td>05/04/2009</td>
<td>Delete Meter</td>
</tr>
</tbody>
</table>

### Water Meters

<table>
<thead>
<tr>
<th>Meter Name</th>
<th>Units</th>
<th>Use</th>
<th>Last Meter Entry (End Date)</th>
<th>Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Meter Defined</td>
</tr>
</tbody>
</table>
Facility Summary: Jefferson Green
Building ID: 1431000
Level of Access: Facility/Profile Editor
Access Provided by: Caryn Grosse

Electric Distribution Utility: PNM, Public Service Co of NM
Regional Power Grid: WECC Southwest
Select my Power Generation Plant to calculate my electric emissions rate
Electric Emissions Rate (kgCO₂e/MMBtu): 175.1
(what is this?)

Generate a Statement of Energy Performance for use or other than applying for the ENERGY STAR.

## Facility Performance

### Select View:
- **Summary:** Energy Use

<table>
<thead>
<tr>
<th>12 Months Ending</th>
<th>Current Rating (1-100)</th>
<th>Current Site Energy Intensity (kBtu/Sq. Ft.)</th>
<th>Current Source Energy Intensity (kBtu/Sq. Ft.)</th>
<th>Change from Baseline: Energy Use Intensity (kBtu/Sq. Ft.)</th>
<th>Change from Baseline: Adjusted Energy Use Intensity (kBtu/Sq. Ft.)</th>
<th>Energy Use Alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2008</td>
<td>555</td>
<td>34.6</td>
<td>82.7</td>
<td>-1.3</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

[REFRESH VIEW]
Benchmarking

- **Preliminary analysis:**
  - Online Q&A tools - Owner initiated
  - Energy modeling - Consultant required
- **What can benchmarking and preliminary analysis tell you?**
  - Already performing well
  - Performing poorly in areas that might be difficult to address
  - Clear areas of potential improvement and operating savings
Incentives

• Many tied to LEED EB or NC
  – EB: procurement, operation and maintenance based
    • 69 Energy Star rating or
    • Make improvements - 1 year of data
  – NC: renovation projects - 2-5% increase in cost with good payback
Incentives

• LEED EB
  – Transamerica Pyramid
  – Empire State Building
Incentives

• Beyond operating savings:
  – State tax credits
  – Local utility programs
  – Solar incentives
  – Higher occupancy rates
  – Higher rental rates
  – Higher sales price
Incentives

- **NM Sustainable Building Tax Credit**
  - LEED-EB Silver or Higher
  - Less than half the average energy use
  - from $1.40/SF for LEED CI Silver to $6.25/SF for LEED NC Platinum

<table>
<thead>
<tr>
<th></th>
<th>First 10,000 ft²</th>
<th>Next 40,000 ft²</th>
<th>Next 450,000 ft²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEED-NC New construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>$3.50/ft²</td>
<td>$1.75/ft²</td>
<td>$0.70/ft²</td>
</tr>
<tr>
<td>Gold</td>
<td>$4.75/ft²</td>
<td>$2.00/ft²</td>
<td>$1.00/ft²</td>
</tr>
<tr>
<td>Platinum</td>
<td>$6.25/ft²</td>
<td>$3.25/ft²</td>
<td>$2.00/ft²</td>
</tr>
<tr>
<td><strong>LEED-EB/CS Existing building/Core and shell</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>$2.50/ft²</td>
<td>$1.25/ft²</td>
<td>$0.50/ft²</td>
</tr>
<tr>
<td>Gold</td>
<td>$3.35/ft²</td>
<td>$1.40/ft²</td>
<td>$0.70/ft²</td>
</tr>
<tr>
<td>Platinum</td>
<td>$4.40/ft²</td>
<td>$2.30/ft²</td>
<td>$1.40/ft²</td>
</tr>
<tr>
<td><strong>LEED-CI Commercial interiors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>$1.40/ft²</td>
<td>$0.70/ft²</td>
<td>$0.30/ft²</td>
</tr>
<tr>
<td>Gold</td>
<td>$1.90/ft²</td>
<td>$0.80/ft²</td>
<td>$0.40/ft²</td>
</tr>
<tr>
<td>Platinum</td>
<td>$2.50/ft²</td>
<td>$1.30/ft²</td>
<td>$0.80/ft²</td>
</tr>
</tbody>
</table>
Incentives

• **PNM Commercial Rebate Programs**
  – Lighting retrofits, up to $75/fixture
  – Advanced evaporative cooling, up to $500/unit
  – Peak Saver program, quarterly incentives
Incentives

• Solar Incentives
  – Federal tax credit: 30% system cost, no cap
  – NM tax credit: additional 10% of system cost
  – [http://www.emnrd.state.nm.us/ecmd/index.htm](http://www.emnrd.state.nm.us/ecmd/index.htm)
  – PNM Large PV program: 15 cents/kWh
Ideal Case for Upgrading

• Performance is in average to low range
• Systems nearing time for replacement
  – Able to upgrade lighting and HVAC
  – Able to consider insulation, roof, glazing improvements
• Load mostly base building, not processes
• Possibility of integrating renewable energy
Incremental Improvements - $

- Arrangement of space to provide daylight, views
- Selection of sustainable finishes
  - Low VOC
  - Recycled content
  - Rapidly renewable products
- Recycling programs
- Alternative power sources – PV
- Green Housekeeping
Incremental Improvements - $

- Green Housekeeping
  - Products
  - Procedures
  - Training
Case Study

Scope: Blended Approach
Benchmarking – Energy Star
Upgrade Common Areas with sustainable materials, lighting, etc

A surprisingly good performer
Case Study

- 3 story commercial office building
- Steel frame, Stucco
- 51,000 gross square feet
- Building management completed Portfolio Manager benchmarking of utility bills
- Energy Star rating of 75
- Green housekeeping products
- Improved leasing and retention of existing tenants
Case Study

• Lobby and Common Area Finish Upgrades
  – Low VOC paint
  – Walk off mats in vestibules
  – Natural Stone flooring
  – Eco Resin Panels
  – Recycled Carpet
  – Corridor Ceilings with high reflectance value
Case Study

• Lobby and Common Area Upgrades
  – Upgraded light fixtures
    • Direct/indirect lighting
    • T5 Fluorescent lamp
  – Added seating areas
  – Warm and inviting colors
  – Repaired skylights
  – Improved directional signage
Case Study
Case Study
Case Study
Case Study
Case Study
Case Study
In Summary

• Greening existing buildings a “defensive strategy” (a good investment strategy)
• Long term viability for existing buildings – assuming that they meet minimum standards
• Case study shows that it’s possible to create a blended option

Do what you can this year and plan to improve each following year
Sustainable Approach to Existing Buildings

For additional information:
USGBC meeting May 5, 2010
Panel of commercial building owners discuss the pros and cons of upgrading existing properties