We'll be starting in just a few minutes....

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### Valuing Energy Efficiency: Considering Energy Performance in Real Estate Appraisals and Valuation

#### March 1, 2016 3:00-4:00 PM ET



### Overview and Agenda

- Welcome & Introductions
- Presentations
  - Colliers International and Inspyrod
  - Sustainable Values
- Additional Resources
- Question & Answer Session





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### Today's Presenters

Name	Organization
John K. Scott	Colliers International
Devesh Nirmul	Inspyrod
Theddi Wright Chappell	Sustainable Values





## John K. Scott, Colliers International and Devesh Nirmul, Inspyrod



#### High Performance Building Value Creation March 1<sup>st</sup> 2016

#### Reconciling High-Performance Benefits with Valuation Impacts in the Marketplace



#### **Present Value**

Traditionally, **present value (PV)** is the value of a future asset expressed in present dollars. This is done by discounting future income or revenue. There are a variety of formulas for PV, including the most common formula for lump sums, in which *n* is the number of periods and *i* is the interest or discount rate:

#### **Net Present Value**

NPV is the net investment costs from the after-tax present value of project savings. This can be represented with the following formula:

Net Present Value = Present Value – Investment Cost NPV = PV – I

#### **Net Operating Income**

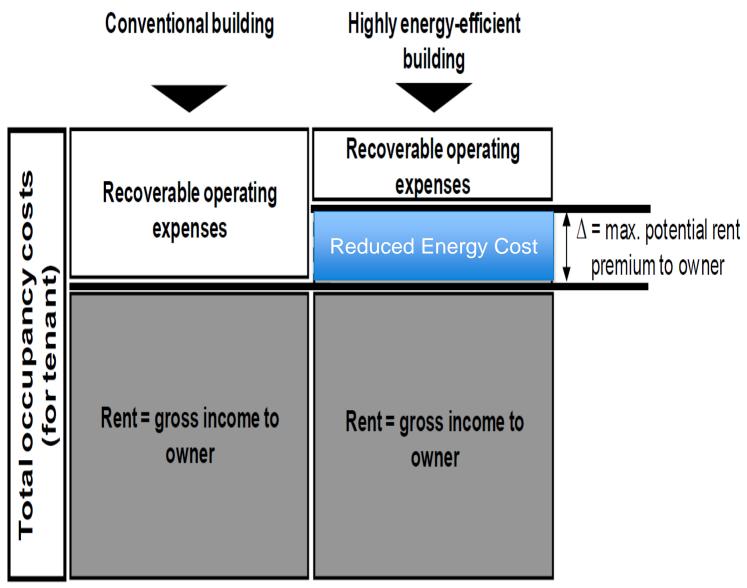
Net Operating Income =

- **Potential Leasing Income**
- Anticipated Vacancy and Credit Losses
- + Any Other Income
- Operating Expenses

#### **Return on Investment**

When ROI is greater than the capitalization rate, the project is considered worthwhile. In its most simple form:

 $ROI = \frac{Gains - Cost}{Cost}$ 



Source: Integration of Energy Performance and Life-Cycle Costing into Property Valuation Practice, www.immovalue.org

Country Variable	USA (Mc Graw, Hill Construction 2005)	USA (Mc Graw, Hill Construction 2008)	USA (Miller et al. 2008, using CoStar Database)	USA (Fürst, McAllister. 2008, using CoStar	USA (Eichholtz et al. 2009, using CoStar Database)	Australia (Bowmon, Wills 2008)
Rental Growth for non-Green	-	-	-	-	-	-1.50%
Rent Premium for Green	3.00%	6.10%	-	-	3.00%	$\setminus$ /
Energy Star	-	-	2.80%	-	-	
LEED	-	-	0.30%	-	-	
Energy Star/LEED	-	-	-	11.80%	-	/
Effective Rent	-	-	-	-	6.00%	-
Decrease Operating Expenses	8.00-9.00%	13.60%	-	-	-	-
Reduction cap rate	-	-	-	-	-	25-50 BP
Improved ROI	6.60%	9.90%	-	-	-	-
Increase occupancy ratio	3.50%	6.40%	-	-	-	-
Market value	7.50%	10.90%	-	-	-	-
Selling price	-	-	-	-	16.00%	$\setminus$ /
Energy Star	-	-	5.76%	10.00%	-	
LEED	-	-	9.94%	31.00%	-	
Energy Star/LEED	-	-	-	11.40%	-	/

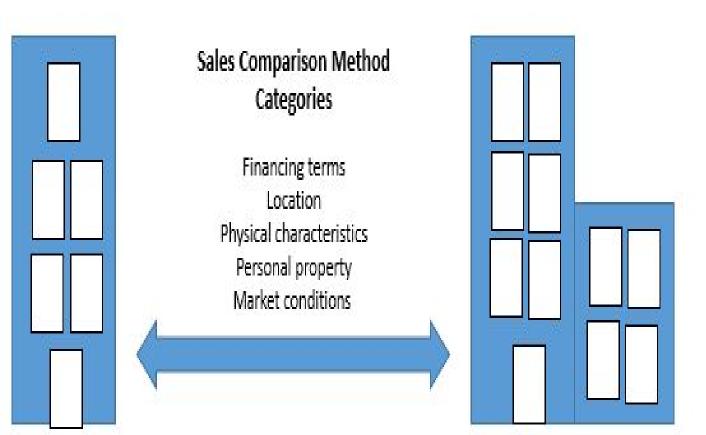
Source: Integration of Energy Performance and Life-Cycle Costing into Property Valuation Practice, www.immovalue.org

#### **Capitalization Rate**

Find the capitalization rate by dividing a building's net operating income by its appraisal value or sales price. Capitalization rates commonly fall between 6% and 10%.

 $Capitalization Rate = \frac{net operating income}{appraisal or sales value}$ 

#### **Sales Comparison**



#### **Income Approach**

HIGH-PERFORMANCE INVESTMENTS THAT DEMONSTRATE VALUE IN AN INCOME ANALYSIS WILL EITHER REDUCE OPERATING COSTS OR INCREASE REVENUE

#### **Capitalization Rate**

If a \$100,000 chiller replacement is proposed, the cost would be the initial price of the new equipment, \$100,000. Gains would be anticipated savings. These might include a rebate of \$10,000, a \$1,000 annual reduction of maintenance costs over the 25-year lifetime, and a smaller utility bill due to energy savings of \$5,000 annually. ROI could then be projected over the lifetime of the product as shown:

Investment Cost\$100,000Gains\$10,000 (rebate)\$1,000 x 25 years (reduced maintenance)\$5,000 x 25 years (reduced energy costs)

 $ROI = \frac{\$10,000 + \$25,000 + \$125,000}{\$100,000} = 1.6, or \ 160\%$ 

ROI can also be calculated for the first year of ownership.

 $ROI = \frac{\$10,000 + \$1,000 + \$5,000}{\$100,000} = 0.16 (or \ 16\%)$ 

#### **Case Example**

#### **Building A**

Potential Leasing Income (Fu	\$200,000				
Average vacancy and credit losses – 10%					
Additional Parking Revenue + \$5,000					
Operating Expenses – \$100,000					

Net Operating Income = \$85,000

If the NOI equals \$85,000 with an appraisal value of \$950,000:

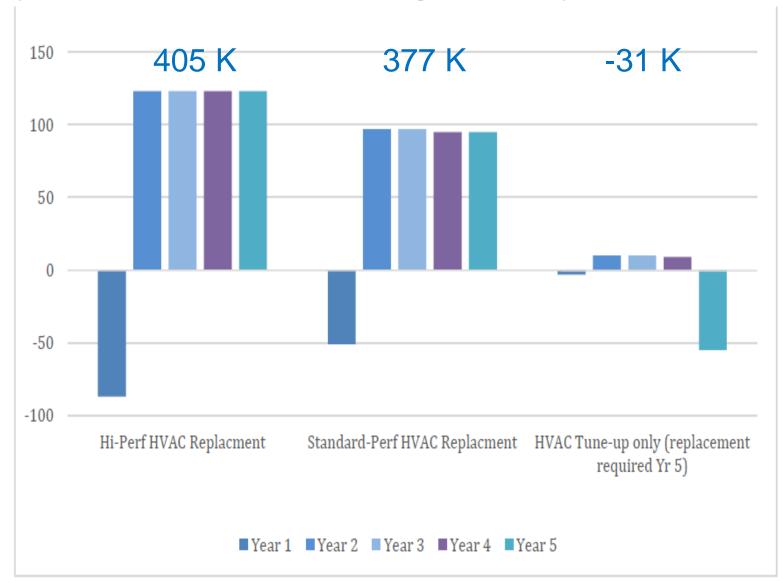
Capitalization Rate =  $\frac{Net \ Operating \ Income}{Market \ Value} = \frac{85,000}{950,000} = .0895$ , or 8.95%

Income Approach	Pre-Upgrade Value (10% cap rate)	High Performance Value (10% cap rate)	Improvement in Value
Energy Efficiency Only Scenario (Energy efficiency improvements that result in a 30% reduction in overall operating expenses)	Gross income: 150K Adjusted gross income (assuming 5% vacancy/losses): 142.5K Operating expenses: 70.0K Value: 725K	Gross income: 150K Adjusted gross income (assuming 5% vacancy/losses): 142.5K ↓ Operating expenses: 49K ↑ Value: 935K	210К
Energy Efficiency + Increased Occupancy (Increased Occupancy Rate Impacts based on tenant demand for green certified spaces)	Same as above	Gross income: 150K <ul> <li>↑ Adjusted gross income (assuming 3% vacancy/losses): 145.5K</li> <li>↑ Operating expenses: 51K</li> <li>Value: 945K</li> </ul>	220K

#### Life Cycle Analysis

Life cycle analysis (LCA) enables a full and fair measurement of high-performance investments. It does so by balancing the upfront costs against savings and benefits that accrue over the lifetime of the investment. The life cycle approach of analysis ensures that investments are adequately valued for their impact over the useful life of the investment.

#### Status Quo vs High-Performance investments: Life-Cycle Impacts on Net Savings over 5 year period



Upgrade / Value Impact Considerations	Revenue	Expenses (Energy, Water + Labor)	Gross Lease Rates	Capital Funds Required	Asset Hold Period (< 5yrs)	Asset Hold Period (> 10 yrs)	NOI Impact
Major HVAC Equipment: 20 – 25 yr life-cycle		¥	<ul> <li></li></ul>	High	No	Yes	<b>^</b>
HVAC Equipment Recommission- ing: 5 – 10 yr life-cycle		$\downarrow$	$\checkmark$	Low/Mediu m	Maybe	Yes	<b>^</b>
Lighting Upgrade 5 – 10 yr life-cycle		¥	$\checkmark$	Low / Medium	Yes	Yes	<b>^</b>
Thermal Mass Storage Modeling + Economic Demand Response: perpetuity	<b>个</b>	_	$\checkmark$	Medium (market dependent)	Maybe	Yes	<b>^</b>
LEED Certification					No	Yes (future demo-graphics or tenants)	<b>^</b>

Other factors to consider in a life cycle analysis include the end-of-useful-life costs such as decommissioning and disposal. The BOMI International course Real Estate Investment and Finance provides an LCA worksheet and guidelines.

#### Sequenced Steps for Assessing, Calculating and Valuating High-Performance Investments Part 1

#### **Collect Baseline Cost and Consumption Data**

Work effectively with the facility team, engineering vendors, and others, in order to generate relevant and quality data for use in a valuation analysis



ex. Utility energy audit data that provides current annual energy consumption (kWh and kW) and cost (\$) of running old chiller (business as usual)

#### Review and Adopt the Investor's Performance Criteria

How does the investor calculate financial performance: ROI, NPV, IRR; what discount are the preferred discount rates, etc. Insist that engineers and vendors comply with ROI type parameters (ex. Property hold period, payback criteria) of the investment decision maker and utilized industry standard engineering calculations ex. ASHRAE/AHRI guidelines / templates for Energy Audits

#### Collect High-Performance Scenario Cost and Consumption Data

Working with the facility team, engineering, product vendors and others determine costs, savings and benefits of high-performance investments



ex. Vendor equipment cost quotes and energy savings estimates (kWh, kW and \$) for a chiller upgrade (high-performance scenario)

Utilize available tools to generate cost and savings outputs to be plugged into the valuation analysis

Take the raw baseline and high-performance data along with investor's financial metric preferences and plug the data and parameters into existing government (*ex.* <u>EERE Energy and Cost Savings Calculator</u>, Energy Star's <u>CFOC</u>, <u>FVC</u> and <u>BUVC</u>, etc.) and 3<sup>rd</sup> Party calculators to determine energy cost and savings estimates for high-performance vs business as usual scenarios for both single and bundled groups of investments and the inclusion of life-cycle impacts

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#### Sequenced Steps for Assessing, Calculating and Valuating High-Performance Investments Part 2

Calculate the quantitative impacts of tangible high-performance investment benefits

You may try several calculators, play around with discount rates or various **bundled** and **life-cycle scenarios** so as to have several options available for matching specific calculation scenarios with specific market-based conditions that either justify a higher or lower premium on high performance Consider the Impact of **Split-Incentives** whereby an investment creates benefits for other stakeholders and may dis-incentivize an investor unless benefits are revenue-recoverable

Estimate, indirectly derive or identify the quantitative impacts of intangible high-performance investment benefits

Utilize proxy indicators for value ex. correlation of high-performance with tenant satisfaction or reduced # of comfort calls, sustainability brand recognition within city

Translate how high-performance financial outputs impact the standard industry valuation approaches

Articulate the breadth of Public, Intangible and Tangible benefits and address owner-tenant split-incentives Integrate calculation outputs into relevant building valuation approaches: Cost Depreciation, Income and Sales

Value Alignment: Qualify, Weight and Adjust values to reflect market and investor perspectives

Ensure and communicate measurement and verification procedures in advance of implementation of highperformance features / investments to ensure maximum performance potential

### **Theddi Wright Chappell**

**Sustainable Values** 



"We know the price of everything and the value of nothing....." - Oscar Wilde, Picture of Dorian Gray (1890)

### What the Market Values = Market Value (MV)



### **Excellent Valuation "Primer"**

- Covered the technical aspects of a valuation well
- Touched on many of the salient points
  - Issue of feasibility on various systems that could impact H&B Use/MV
  - Challenges with Sales Comparison
  - Reduction in expenses could increase NOI and value
  - Need for life cycle cost analysis



## Challenges Facing Appraisers

- Heavy reliance on market and empirical data
  - Issue of confidentiality
  - Investors looking for "financial validation" have found data insufficient to date
- Changing perceptions of "value" and "performance"
- Vernacular and principles previously not considered in the in the U.S., neither "broader" concepts nor externalities



## Market & Concepts Changing

- "Performance" is increasingly being assessed at multiple levels
  - Building level
    - Growth of Benchmarking
  - Management level
    - Continual assessment and upgrade
  - Tenant level
    - Impact on occupancy costs and work environment



## Risk a Critical Factor

- Implications for Market Value are significant
- Performance perspective
- Probability perspective
- Characterization of risk
  - Market/economic
  - Environmental
  - Social
- Issue of 'future-proofing' investments



### How Can Market Participants be More Proactive?

Owners and investors

- Scope of Work
- Provide valuation professionals with the information they need

Architects, engineers and designers

- Provide third party reports and details about property's special features
- Tenants
  - Understand lease options available
  - Be an "informed shopper"



### Know Where You Fit in the Process

- Remember what you are trying to accomplish
  - What positive role can you play in the appraisal process?
- Know your strengths and your limitations
  - Valuation is a field that requires experience
- Inform not influence
  - "The Market" is the final determinant of value



### What's Already Out There to Help

#### • The Appraisal Foundation's Guidelines

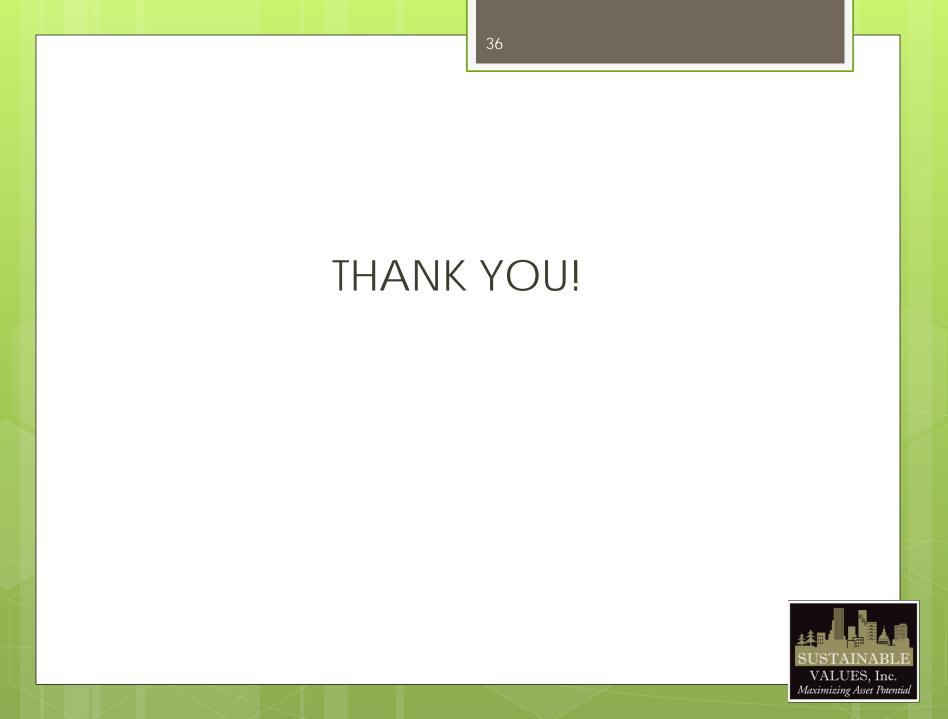
- One finalized; one under review; one coming
- Appraisal Institute's Green Addendums
  - Residential and commercial
- IMT's various publications
  - Provide guidance and case studies
- <u>DOE</u>tools



"We know the price of everything and the value of nothing....." - Oscar Wilde, Picture of Dorian Gray (1890)

> What the Market Values = Market Value





### **Additional Resources**



### For More Information

• <u>High Performance Green Building – What's It Worth?</u>

 The Appraisal Foundation APB Advisory #6: <u>Valuation of</u> <u>Green and High Performance Property Background and</u> <u>Core Competency</u>





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#### Strategies for Controlling Energy and Water Use in Leased Spaces

April 5, 3:00 – 4:00 PM ET

Presenters: Cushman & Wakefield U.S. Department of Energy Sprint

Register <u>here</u>.





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### Additional Questions? Please Contact Us

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