Better Buildings Webinar Series

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

Tell us…please send your response to the webinar organizers via the question box:

What topics are you interested in for future webinars?

Better Buildings
U.S. DEPARTMENT OF ENERGY

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

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

U.S. DEPARTMENT OF ENERGY

Overview and Agenda

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

Today's Presenters

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

John K. Scott, Colliers International and

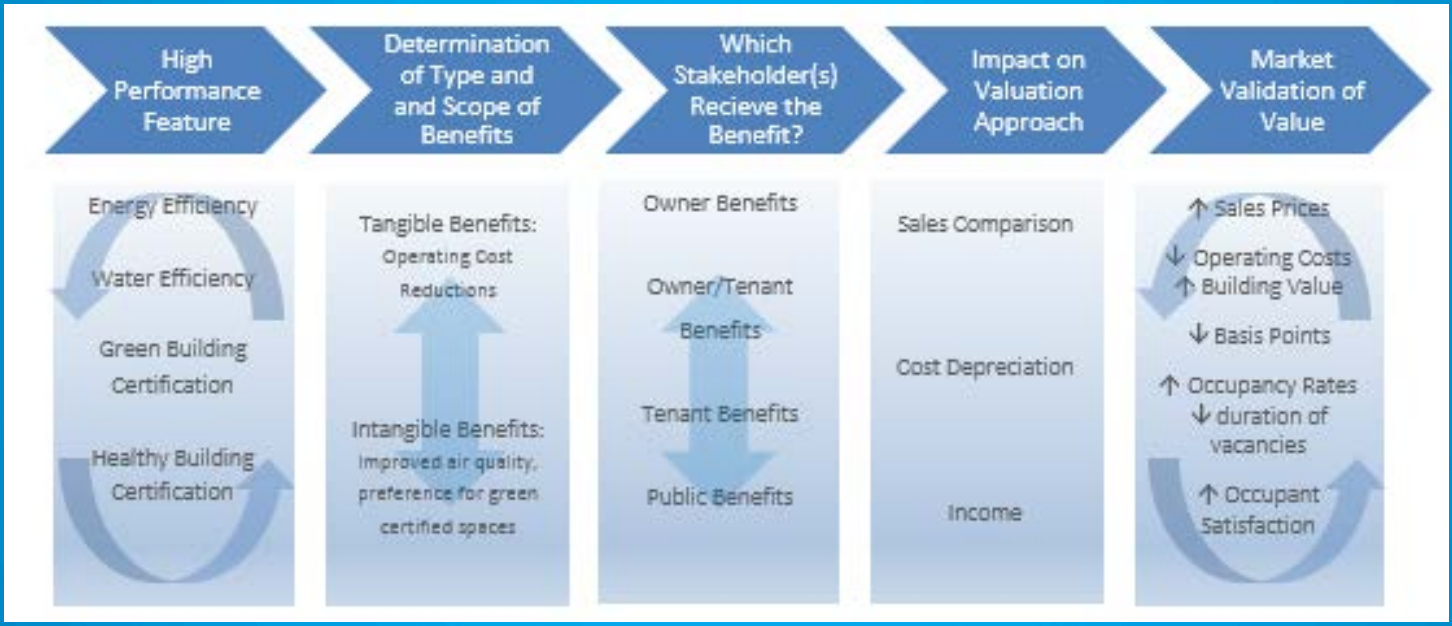
Devesh Nirmul, Inspyrod

U.S. DEPARTMENT OF ENERGY

High Performance Building Value Creation

March 1st 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

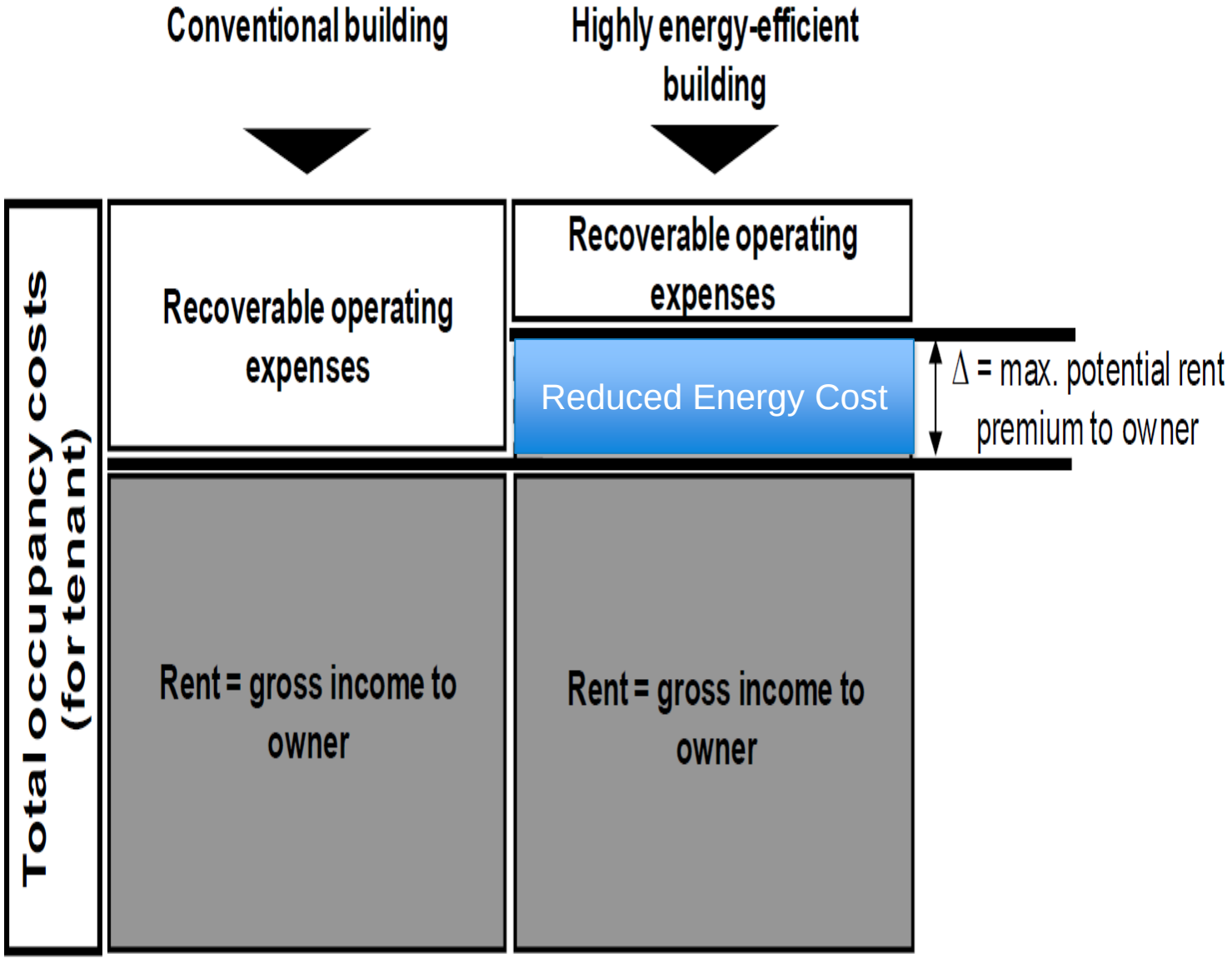
+ Any Other Income

– 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**

Variable \ Country	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 (Bowman, Wills 2008)
Rental Growth for non-Green	-	-	-	-	-	-1.50%
Rent Premium for Green	3.00%	6.10%	-	-	3.00%	
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%	
Energy Star	-	-	5.76%	10.00%	-	
LEED	-	-	9.94%	31.00%	-	
Energy Star/LEED	-	-	-	11.40%	-	

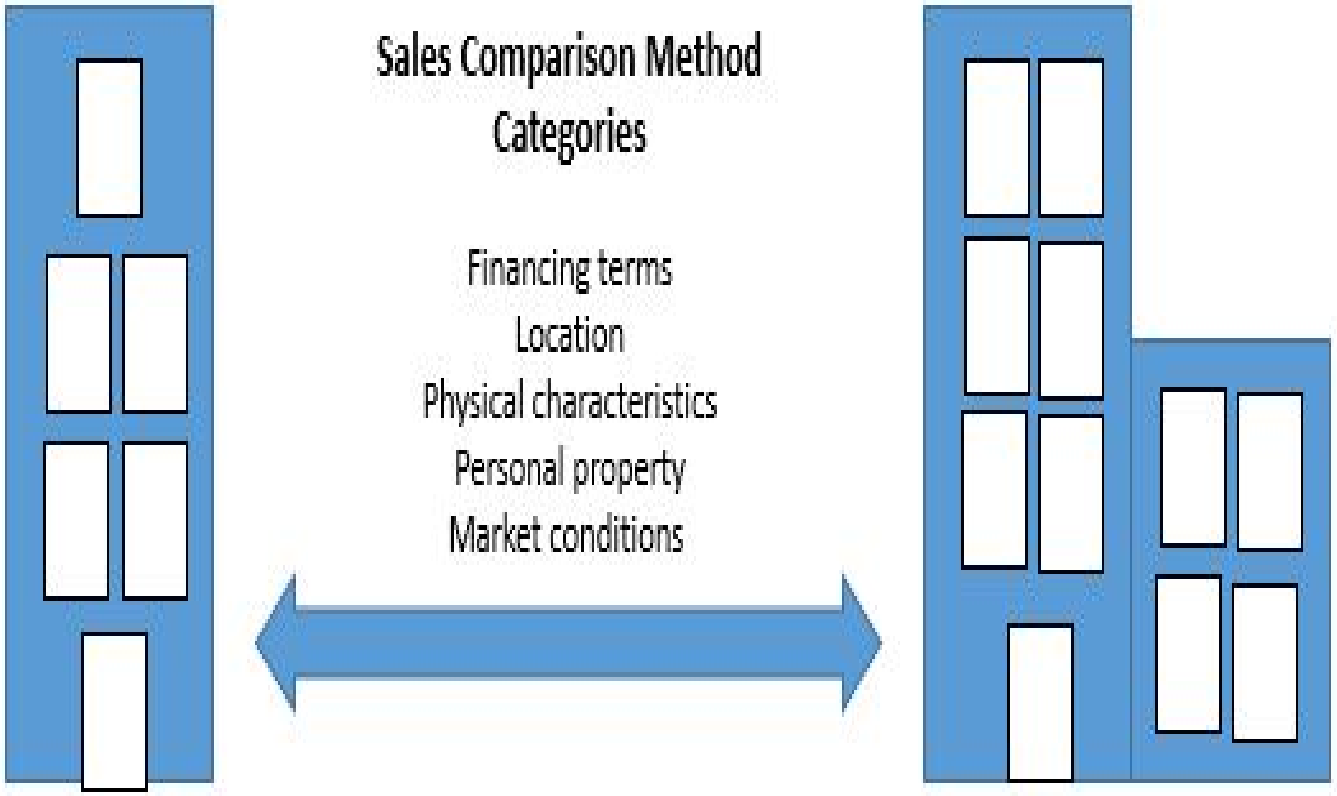
Source: **Integration of Energy Performance and Life-Cycle Costing into Property Valuation Practice, www.immovalue.org**

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

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

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 (Full Occupancy)		$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:

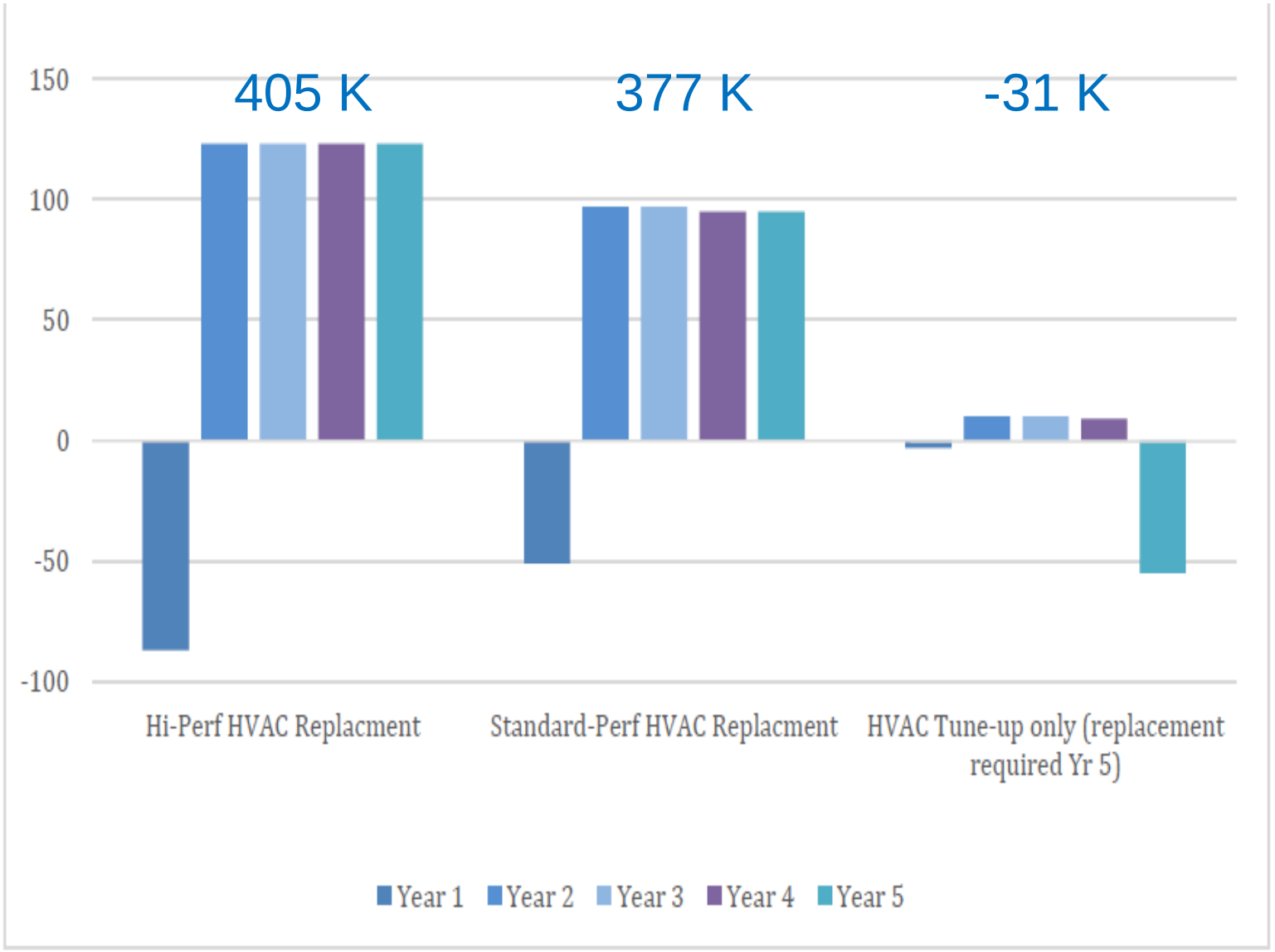
$$Capitalization\ Rate = \frac{Net\ Operating\ Income}{Market\ Value} = \frac{85{,}000}{950{,}000} = .0895, \text{ or } 8.95\%$$

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	210K
Energy Efficiency + Increased Occupancy (Increased Occupancy Rate Impacts based on tenant demand for green certified spaces)	Same as above	Gross income: 150K ↑ Adjusted gross income (assuming 3% vacancy/losses): 145.5K ↑ Operating expenses: 51K Value: 945K	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

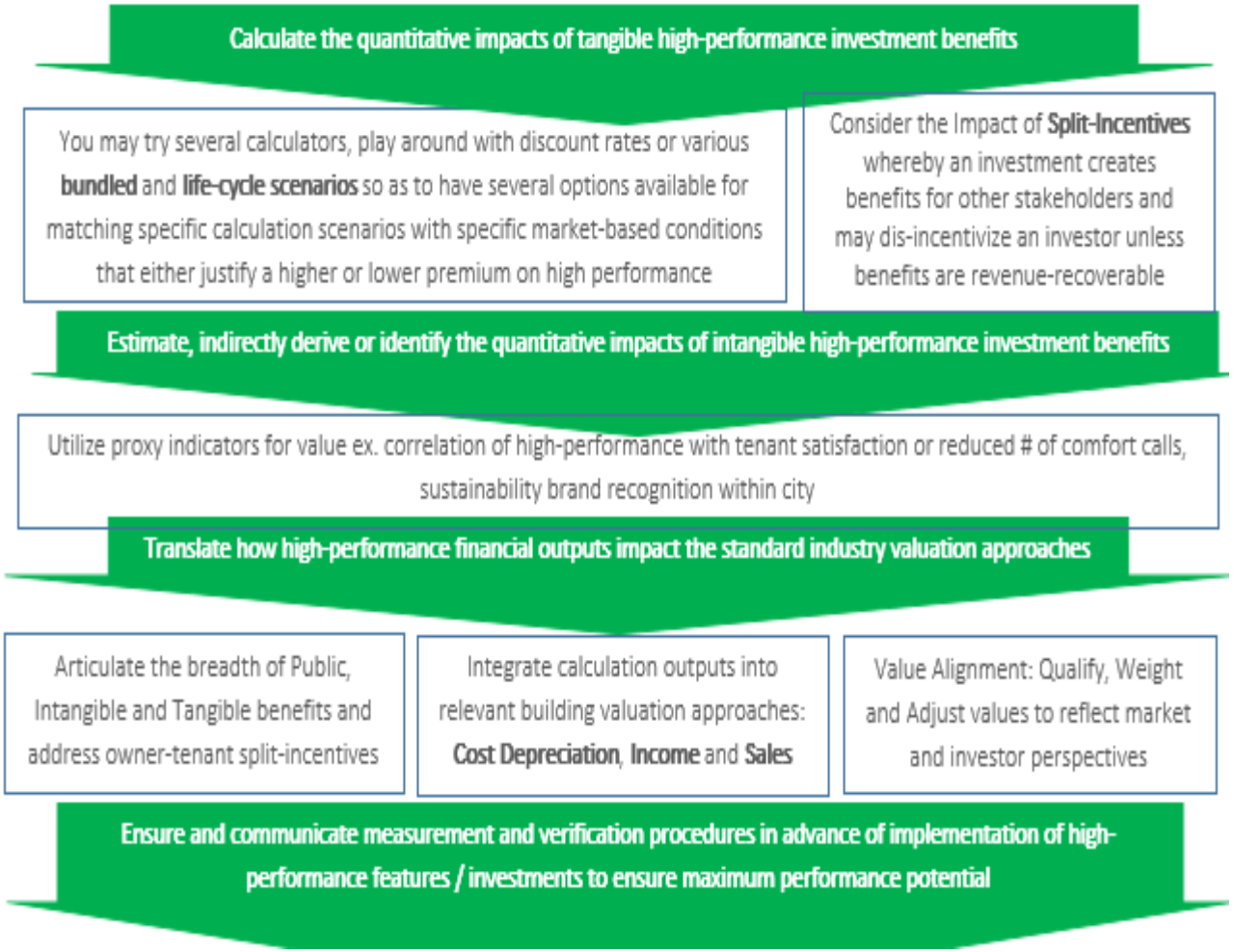


Upgrade / Value Impact Considerations	Revenue	Expenses (Energy, Water + Labor)	Gross Lease Rates	Capital Funds Required	Asset Hold Period (< 5yrs)	Asset Hold Period (> 10 yrs)	NOI Impact
Major HVAC Equipment: 20 – 25 yr life-cycle		↓	↓ (More competitive by minimizing operating costs)	High	No	Yes	↑
HVAC Equipment Recommission-ing: 5 – 10 yr life-cycle		↓	↓	Low/Mediu m	Maybe	Yes	↑
Lighting Upgrade 5 – 10 yr life-cycle		↓	↓	Low / Medium	Yes	Yes	↑
Thermal Mass Storage Modeling + Economic Demand Response: perpetuity	↑	-	↓	Medium (market dependent)	Maybe	Yes	↑
LEED Certification					No	Yes (future demo-graphics or tenants)	↑

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

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



Theddi Wright Chappell

Sustainable Values

U.S. DEPARTMENT OF ENERGY

"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)

SUSTAINABLE VALUES, Inc.
Maximizing Asset Potential

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

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Maximizing Asset Potential

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

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Maximizing Asset Potential

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

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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

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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"

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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

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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
- DOE tools

SUSTAINABLE VALUES, Inc.
Maximizing Asset Potential

"We know the price of everything and the value of nothing……"

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What the Market Values =

Market Value

SUSTAINABLE VALUES, Inc.
Maximizing Asset Potential

THANK YOU!

SUSTAINABLE
VALUES, Inc.
Maximizing Asset Potential

Additional Resources

U.S. DEPARTMENT OF ENERGY

For More Information

- High Performance Green Building – What's It Worth?

- The Appraisal Foundation APB Advisory #6: Valuation of Green and High Performance Property Background and Core Competency

Q & A

U.S. DEPARTMENT OF ENERGY

Join us for the next Better Buildings Webinar

Registration is now open!

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 here.

Join Us at the Better Buildings Summit

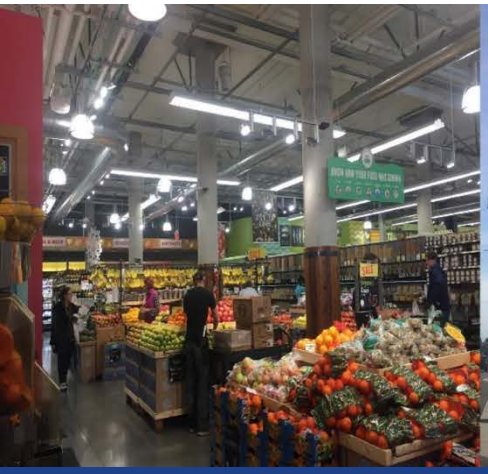
WHOLE FOODS & HILTON WORLDWIDE

Better Buildings CHALLENGE
U.S. DEPARTMENT OF ENERGY | SWAP

One energy team from Whole Foods Market.

One energy team from Hilton Worldwide.

Swap buildings, in San Francisco, CA.



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Additional Questions? Please Contact Us

betterbuildingswebinars@ee.doe.gov

Today's Presenters	John Scott Colliers International John.Scott@colliers.com Devesh Nirmul Inspyrod Devesh@inspyrod.com	Theddi Wright Chappell Sustainable Values theddi@sustainablevalues.com
DOE Program Leads	Cindy Zhu DOE, Better Buildings Challenge cindy.zhu@EE.Doe.Gov	
Program Support	Kendall Sanderson JDM Associates ksanderson@jdmgmt.com	Holt Mountcastle JDM Associates hmountcastle@jdmgmt.com

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