

# **Annotated Index**

## **GBFC Research Library**

The purpose of this annotated index is to help users understand the logic/thinking behind the coding of documents with the index. In many cases, users seeking complete information on a topic will have to search more than one topic so general guidance on similar codes are provided within each code description below.

It is also helpful to remember when searching the library that you can search by title and author, and once search results are provided you can instantly reorganize search results by alphabetical order by title or author and also by date of publication, which is particularly useful.

Remember also that the Research Library Index is used for the Industry Links section of the website. The Industry Links sometimes identify documents, but more often take you to specialized sections within other organization websites devoted to the coded topic. Typically we only link a site once under a category, but if multiple categories are warranted we will repeat the website link.

### **General Underwriting/Valuation Topics**

#### **1.0 Sustainable Property Financial Analysis Alternatives**

This section of the research library covers the many types of financial analysis tools, techniques, and analytic methodologies used to make and/or support sustainable property investment decisions. This section supplements Chapter V, “Sustainable Property Financial Analysis” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

##### **1.1 Miscellaneous**

Miscellaneous documents that do not specifically fit under any of the four other sub-codes in index section 1.0.

##### **1.2 Traditional Sustainability Financial Analyses**

Models and analyses that have traditionally been used in the real estate industry to make energy efficiency/sustainability investment decisions for buildings, features, and equipment.

##### **1.3 Traditional Real Estate Financial Analyses**

Traditional real estate financial analyses are integrative models that endeavor to incorporate comprehensive cost, benefit, and risk information to generate returns/value results based on specification of financial model input such as energy costs, rents, occupancy, tenant retention, discount rates, etc.

##### **1.4 Sustainability Sub-Financial Analyses**

Sustainability sub-financial analyses are those analyses and models that provide quantitative insight/data that is typically combined with other information and analyses to aid the valuer/financial analyst in their specification of key financial

assumptions in a discounted cash flow analysis or related model. The analyses covered in this section of the library are a selection of some of the specialized analyses that have been developed in recent years to aid in the financial analysis of sustainable property investment.

### **1.5 Public Sustainability Benefits**

Financial analyses used to quantify potential public sector benefits. These analyses contribute to private value through the potential ability to negotiate payment for public value. Such “monetization” of public value is created through enhanced entitlement, permitting benefits, public grants, financing, and other incentives.

## **2.0 Underwriting: Risk and Compliance Analysis**

This section of the research library includes the parts of the sustainable property underwriting process that are not specifically related to the pro forma or valuation. Due diligence on the borrower or sponsor of the project, legal due diligence, risk mitigation, and the types of methods, practices, and underwriting frameworks used to make decisions are covered. The term “underwriting” is used broadly to cover the due diligence and related analytic efforts undertaken by lenders, equity investors, corporations, and other property investors. This section of the research library supplements Chapter VI, “Underwriting Guidelines for Sustainable Property Investment” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties as well as the Costs/Benefits Analysis covered in Chapter V, Section E*.

### **2.1 Miscellaneous**

Miscellaneous documents not captured by other codes in index 2.0.

### **2.2 Special Reports/Studies**

Special reports or studies that address issues or topics that go beyond a single type of investor or decision maker, or have broad applicability.

### **2.3 Space Users**

Due diligence documents for space users.” “Space user” is a term used to describe the occupants or users of real estate. It is a term that includes corporate and non-corporate owner-occupants, tenants, retail customers, homeowners, or other non-owner or tenant users of space.

### **2.4 Investors/Developers**

Due diligence documents for investors/developers. Investors/developers include REITs, public real estate companies, private investors, private real estate investment managers (pension investors), private equity funds, socially responsible investors, and venture capital.

### **2.5 Lenders**

Due diligence documents for lenders. Lenders include banks (construction, permanent, bridge, or energy loans), life companies, other private lenders, energy lenders, government lenders, and commercial mortgage brokers.

**2.6 CMBS/Securities Issues**

Due diligence documents/publications for CMBS issues. Commercial mortgage conduit lenders and other lenders participating in the CMBS process, and other issues related to debt securitization, whether they are commercial mortgages or not.

**2.7 Financing/Underwriting Packages**

Examples of the output (reports/analyses, etc.) of the underwriting/due diligence process for equity and/or debt financing requests or analogous corporate capital requests. Financing packages submitted to capital sources could also be included here, but in many cases are confidential.

**2.8 Service Provider Underwriting**

Special reports and documentation of the process for underwriting service providers. Assessment or certification systems or approaches would be coded here and/or under index code 23.10—Service Provider Assessments/Certifications.

**2.9 Products/Systems Underwriting**

Special reports and documentation of the process for underwriting sustainable products, systems, and materials. See also index codes 4.0—Sustainable Property Definitions/Certifications and 5.0—Sustainable Property Products/Materials Ratings/Certifications.

**2.10 Third-Party Reports/Analyses**

Reports/analyses and examples of third-party reports.

**2.11 Closing & Servicing**

Documents and special reports related to the closing and servicing of mortgages, equity, and other investments.

**2.12 Sustainable Options Analysis/Modeling**

Documents and special reports related to Sustainable Options Analysis modeling, which broadly refers to any process/analysis used to generate a list of sustainable/energy efficiency investment options for consideration by capital providers. Includes energy modeling, but refers to the broader set of analytics and tools and outputs incorporating cost/energy savings, return on investment, value and carbon emissions reduction. This section would contain information on SOA methods, as well as any specific information on the underwriting of such models/methodologies. (See also 1.4—Sustainability Sub-Financial Analysis and 9.10—Energy Options Assessment/Modeling)

**2.13 Risk Analysis and Mitigation**

Documents and special reports related to risk analysis and mitigation for the underwriting/due diligence process for equity and/or debt financing. This section covers assessment of Execution and Operations risk, construction risk mitigation through surety and other mechanisms, and more methodologically based risk

analysis techniques including Monte Carlo simulation, sensitivity analysis, etc. (See also 7.10—Risk Analysis and Presentation, 24.8---Insurance/Surety, 24.11—Construction/Development Risks, 24.13---Other Costs/Risks of Sustainable Development and 24.14—Contracts/Legal Issues)

### **3.0 Cost-Benefit Analyses/Studies**

This section of the research library contains documents that are specifically identified as cost-benefit analyses or studies, as well as many other documents that contribute knowledge and insight into a particular cost or benefit. More detailed evidence of building, market, and financial performance are covered in section 15 of the research library. This section of the research library supplements Chapter V, Sections E: “Assess Costs/Benefits of Sustainability” and F: “Evaluate Financial Implications of Sustainability” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **4.0 Sustainable Property Definitions/Certifications**

This section of the research library contains documents that look at issues related to sustainable property definitions or certification. Environmental assessments, occupier focused assessments, government regulations, other building performance assessments, and service provider certifications and assessments are all covered in this section. This section of the research library supplements Chapter III: “Evaluating Property Sustainability,” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **5.0 Sustainable Products/Materials Ratings/Misc.**

This section of the research library contains documents related to sustainable products or materials, and product/materials rating and/or certifications. This section of the research library supplements Chapter III: “Evaluating Property Sustainability,” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **6.0 Sustainable Property Features**

This section of the research library contains documents that cover specific sustainable features, systems, or attributes. Energy, water, IEQ, materials, and other feature documents are covered here. This section assists in understanding the nature of sustainable options available, as well as studies or research that have looked at these options. Other related sections of the research library include 9.3—Energy/Carbon Features/Systems, 15.5—Features / System Performance and/or 28—Sustainable Property Guides/Best Practices. To locate feature performance studies, check both sections 6.0, 9.4 and 15.5; although 15.5 are where such documents will typically be found. The most important and comprehensive best practices guides are in section 28.0. This section of the research library supplements Chapter III: “Evaluating Property Sustainability,” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book. Additional detail on the performance of features can be found in Expanded Chapter IV, Section D: Feature Performance of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

## 7.0 Sustainable Property Valuation

This section of the research library covers documents that directly address property valuation. Because of the integrative nature of property valuation, information in many of the other research library sections has some bearing on valuation and financial performance. This section of the research library supplements Chapter IV: “Sustainable Property Performance, Section F: Market Performance, and Chapter V, Section I: Valuing Sustainable Properties of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### 7.1 Miscellaneous

Miscellaneous documents not specifically covered in other sub-codes in index section 7.0.

### 7.2 Research Papers/Studies

This section contains the most important papers and studies looking at the relationship between sustainable property features, performance, and value. Academic and related theoretical studies are typically coded in this section, as well as industry and/or valuation organization studies that specifically address valuation topics. In many cases, documents coded in this section may also be coded in the Building and Market Performance sections 15.61,15.71,15.72,15.73,15.75,15.76 and 15.8, 15.9, and/or 15.10, depending on the specific nature of the document. This section of the research library supplements Chapter IV, Section F: “Market Performance, Foundation Background and Theory” of the book *Value Beyond Cost Savings: How to Underwrite Sustainable Properties*.

### 7.3 Business Value and Sustainability

This section of the research library contains documents that address sustainability and its relationship to business value. This section addresses both the business component of real estate value and also issues related to sustainability and business value generally. To identify additional documents addressing the issues of business value and sustainability, check more specifically sections 8—Space User Demand for Sustainable Properties, 15.73—Space User Surveys/Demand, 15.74—Corporate/Investor Sustainability, and 20.20—Non Real Estate Capital, and in some cases section 25.0—Organizational Change/Strategies and section 27.0—Sustainable Property Industry Studies/Trends. This section also supplements the discussion of Enterprise Value covered in Chapter VI, Section F: “Underwriting Space User Demand” and in Chapter V, Section C: Select Financial Model of the book *Value Beyond Cost Savings: How to Underwrite Sustainable Properties*.

### 7.4 Valuation Management and Review

Valuation/appraisal management and review topics related to sustainability. This has not been an area of significant research and writing to date. See also section 2.10—Third-Party Reports/Analysis, but should be more so in the future.

## **7.5 Valuation Standards and Regulation**

Valuation standards and regulation issues are covered generally, and more specifically as they relate to sustainability. Relevant documents from the Vancouver Valuation Accord, the Royal Institute of Chartered Surveyors, the Appraisal Institute, the International Valuation Standards Board, and other related organizations, are referenced here.

## **7.6 The Income Approach**

Documents that specifically address the income approach to value and sustainability are contained in this section of the library. The income approach to value, which is based upon the discounted cash flow methodology, is influenced by many of the topics in the research library index. This section is for those documents that specifically address the implementation of the income approach to value in the context of sustainability. Additional information on the discounted cash flow approach and methodology can be found in section 1.3—Traditional Real Estate Financial Analyses, 15.10—Financial Performance, and 7.10—Risk Analysis and Presentations (RAP). This section of the research library supplements Chapter V: “Sustainable Property Financial Analysis” of the book *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

## **7.7 The Cost Approach**

Documents that specifically discuss the cost approach to value in relationship to sustainability are contained in this section of the library. This is a topic that has not been significantly researched, nor written on to date. See also 15.64—Flexibility/Durability, 15.61—Development Costs and 24.1—First Cost Analysis.

## **7.8 The Sales Comparison/Market Approach**

Documents that specifically address the sales comparison/market approach to value are contained in this section of the library. This is a topic that has not been significantly researched or written on, but should be covered better in the future. See also 15.2—Case Studies, 15.3—Data Collection and Analysis, and 15.71—Expert Based Financial Analysis for more information..

## **7.9 Public Value: Triple Bottom Line, etc.**

Documents that address public value or “triple bottom line” valuation methodologies are contained in this section of the library.

## **7.10 Risk Analysis and Presentation (RAP)**

This section of the research library contains documents that address the integration of risk in the financial analysis and valuation process. The particular emphasis of this section is on the methods and examples of best case “presentation” of risk in sustainable property, and other investment, decision-making. Other sections that address issues of risk--but that are less focused on analysis and presentation--include sections 2.13 Risk Analysis and Mitigation, 3.0—Cost-Benefit Analyses/Studies, 15.10—Financial Performance, 24.2—Integrated Design, 24.8—Insurance/Surety, 24.11—Construction/Development

Risks, 24.13—Other Costs/Risks of Sustainable Development, and 24.14—Contracts/Legal Issues. This section of the research library supplements Section H: “Risk Analysis and Presentation” of Chapter V: “Sustainable Property Financial Analysis” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

## **8.0 Space User Demand for Sustainable Properties**

This section of the research library contains documents that address the potential for sustainable properties to affect the demand for property by space users. “Space user” is a term used to describe the occupants or users of real estate. It is a term that includes corporate and non-corporate owner-occupants, tenants, retail customers or other non-owner or tenant users of space. The overall real estate decision methodologies that space users use are contained in this section.

The best section to find documents that address the actual market and/or financial performance related to space user demand is in sections 15.71---Expert Based Financial Analysis, 15.73—Space User Surveys/Demand, 15.74---Corporate/Investor Surveys/Demand. Additionally, key articles and research reports related to space user health and productivity are separately identified in section 10.0—Space User Productivity and Health, 10.1—Space User Productivity, and 10.2—Space User Health and under index code 15.63—Occupant Performance. Specific issues related to commercial interiors and tenant improvements are in section 16.0—Commercial Interiors/ Tenant Improvements. This section of the research library supplements Section F, “Underwriting Space User Demand” in Chapter VI of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

## **9.0 Energy/Carbon Efficiency**

This section of the research library includes documents specifically addressing energy/carbon efficiency and related energy issues. Most documents that have some relationship to the energy issue are coded in this section, as well as other more specific sub-codes as necessary. This section of the research library supplements Chapter VI, Section E: “Underwriting Energy/Carbon Investment” and Chapter IV, Section E-3 and Building Energy Use of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **9.1 Special Reports/Research**

Special reports and analyses related to energy/carbon reduction and efficiency.

### **9.2 Renewable Energy**

Special reports and analyses related to renewable energy.

### **9.3 Features/Systems**

Special reports and analyses related to energy features and systems. See also index codes 6.0, 28.0, and 15.5.

**9.4 Measurement**

Special reports and analyses related to energy/carbon measurement and monitoring. See also index codes 4.0—Sustainable Property Definitions/Certifications, 15.1---Methods/Misc, 15.4—Process Performance, 15/5—Feature Performance, 15.62—Building Performance, and 15.7—Market Performance and Chapter III: Evaluating Property Sustainability and Chapter IV: Sustainable Property Performance.

**9.5 Performance**

Special reports and analyses related to energy/carbon performance. See also index codes 15.62 and Chapter IV: Section E-4: Building Energy Use in *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**9.6 Regulations/Subsidies**

Special reports and analyses related to energy regulations and subsidies. See also index codes 9.6—Energy Regulations/Subsidies, 11.0—Government Regulations and Incentives, 12.0—Sustainable Sites/Land Use and Transportation, 15.77—Regulator Demand Research, 20.5—Public Finance and 20.9—Subsidies/Incentives.

**9.7 Labeling and Disclosure**

Special reports and analyses related to energy/carbon labeling and disclosure. See also index codes 9.6—Energy Regulations/Subsidies, 11.0—Government Regulations and Incentives and 20.5—Public Finance and 20.9—Subsidies/Incentives.

**9.8 Carbon-Related Programs/Measurement/Perf.**

Special reports and analyses related to energy/carbon related programs, measurement and performance. See also index codes 15.74—Corporate/Investor Sustainability, 11.0—Government Regulations and Incentives and 20.15—Carbon Related Programs/Finance.

**9.9 Management and Operations**

Special reports and analysis related to tactics, best practices, and performance of operations/management related energy/carbon efficiency strategies. See also 14.0—Existing Buildings: Operations and Maintenance and 15.62—Resources Use/Operations.

**9.10 Options Assessment/Modeling**

Special reports and analysis related to energy/carbon options assessment and modeling. See also 2.12—Sustainable Options Analysis and Modeling and Section 1.0—Sustainable Property Financial Analysis Alternatives.

**9.11 Market Size/Segments/Potential**

Special reports and analysis related to energy/carbon market size, segments and potential. See also index codes 15.7—Market Performance and 15.9—Market

Performance: Special Reports/Studies, 20.11—Finance Market Research, and 20.14—Utility Programs/Related Strategies.

## 10.0 Space User Productivity and Health

This section of the research library is for those documents that address the relationship between sustainable features or attributes and space user health and/or productivity. Studies that address both these issues are coded in this section, while studies that address either productivity or health independently are coded in sections 10.1—Space User Productivity or 10.2—Space User Health. Documents in this section are further categorized and can be searched by inputting the two-character reference (H1 to P7) in the title search box. The category references are:

- H1** Health Gains -IEQ
- H2** Health Gains - Temp Control
- H3** Health Gains - Lighting
- H4** Health Gains – Privacy and Interaction
- H5** Health Gains – Ergonomics
- H6** Health Gains – Natural Environment
- H7** Health Gains – Whole Building
- HP1** IEQ Occupant Satisfaction
- HP2** Other References
- P1** Productivity Gains - IEQ
- P2** Productivity Gains – Temp Control
- P3** Productivity Gains – Lighting
- P4** Productivity Gains – Privacy and Interaction
- P5** Productivity Gains – Ergonomics
- P6** Productivity Gains – Natural Environment
- P7** Productivity Gains – Whole Building

This section of the research library supplements Section E-4, “Occupant Performance” of Chapter IV and Chapter VI, Section F: “Underwriting Space User Demand” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### 10.1 Space User Productivity

Documents or reports that specifically address the relationship between sustainable features or attributes and space user productivity. See also 15.63—Occupant Performance and 15.73—Space User Demand/Surveys. This section of the research library supplements Section E-4, “Occupant Performance” of Chapter IV and Section F: “Underwriting Space User Demand” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book

### 10.2 Space User Health

Documents or reports that specifically address the relationship between sustainable features or attributes and space user health. See also 15.63—Occupant Performance and 15.73—Space User Demand/Surveys. This section of the research library supplements Section E-4, “Occupant Performance” of Chapter IV and Chapter VI, Section F: “Underwriting Space User Demand” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book

## **11.0 Government Regulations and Incentives**

This section of the research library contains documents that address sustainable and/or energy related government regulations and incentives. Related topics include sections 9.6—Energy Regulations/Subsidies, 15.77—Regulator Demand Research, 20.5—Public Finance, 20.9—Subsides/Incentives, 20.15—Carbon Related Programs/Finance.

## **Performance Assessment/Misc. Topics**

### **12.0 Sustainable Sites/Land Use and Transportation**

This section of the research library contains documents, which address issues related to land use, transportation, and the sustainable sites portion of LEED. Green roofs, integrated resource management, landfills, recycling, and waste reduction, and related issues are also coded in this section.

#### **12.1 Special Reports/Misc.**

Special reports and analyses related to sustainable sites, land use and transportation.

#### **12.2 Eco-Cities/Large Projects**

Documents and analyses related to a city/metropolis/companies that are performing large-scale green projects. See also 18.5—Large Scale Development, 18.9—Land, and 20.18—Sustainable Development/Eco-City Finance.

#### **12.3 City Sustainability Perf. Meas./Strategy**

Documents and analyses related to the sustainability performance measurement and other sustainability practices of a city or region.

#### **12.4 State & Federal Sustainability Perf. Meas./Strategy**

Documents and analyses related to sustainability performance measurement and other strategies/practices of state and federal organizations/governments.

#### **12.5 Smart Growth/Sustainable Land-Use Strategies**

Documents and analyses related to smart growth land-use strategies that are used to mitigate carbon/GHG production, energy inefficiency, and deter climate change in general.

#### **12.6 Sustainable Infrastructure**

Documents and analyses related to sustainable infrastructure. Documents may be related to technological and government policy. See also sections 11.0—Government Regulations and Incentives, 18.7—Large Scale Development, 13.0—Water Efficiency, and 20.5—Public Finance.

#### **12.7 Land Conservation/Reclamation-etc.**

Documents and analyses related to land conservation reclamation projects and policies.

## **12.8 Brownfield/Reuse**

Documents and analyses related to Brownfield reuse projects, programs, and other related research. See also 18.9. and 15.65—Location/Access.

## **13.0 Water Efficiency**

Documents related to the issue of water and water efficiency is coded in this section. Sections 6.0—Sustainable Property Features, 15.5—Features/System Performance, and 28.0—Sustainable Property Guides/Best Practices are other sections of the research library where water-related documents may also be found.

## **14.0 Existing Buildings: Operations and Maintenance**

This section covers documents and Reports specifically addressing the evaluation and analysis of sustainable existing buildings. Additionally, many of the other sections of the research library also address issues critical to existing buildings. See also sections 2.12—sustainable Options Analysis/Modeling, 6.0—Sustainable property features, 9.3—Energy Features/Systems, 9.9—Energy Management & Operations, 9.10—Energy Options Assessments/Modeling, and 15.4 through 15.7. Substantial information also available under each of the property specific headings in section 18. Existing building issues are covered throughout the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties*” book.

## **15.0 Sustainable Property Performance Assessment**

This section of the research library is where most facts and information related to the specific performance of sustainable properties is maintained. As detailed in the GBFC Sustainable Property Performance Framework (Chapter IV: “Sustainable Property Performance”), performance reports and documents are separated by process performance, feature performance, building performance, market performance, and financial performance. This section of the research library supplements Chapter IV: “Sustainable Property Performance,” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **15.1 Methods-Miscellaneous**

Documents that address methodological issues related to sustainable property performance assessment. Additionally, documents that do not fit in other sub-codes are contained here.

### **15.2 Case Studies**

This section of the research library contains documents that present case studies. Case studies in this section of the research library usually address more than a single feature or attribute, although some of those types of case studies may also be coded here.

**15.3 Data Collection and Analysis**

Documents that address the issues of data collection and analysis in sustainable property performance assessment. Specific research and data sources and/or reports on issues related to data collection and analysis are referenced here.

**15.4 Process Performance**

Documents that address sustainable property process performance. Processes include integrated design, contracts, energy modeling, commissioning, occupant and staff training, etc. See also 2.8—Service Provider Underwriting, 2.9—Products/Systems Underwriting, 2.12—sustainable Options analysis/Modeling, 24.1, First Cost Analysis, 24.2—Integrated Design, 24.3—Commissioning, 24.5—Green Lease Analysis, 24.13—Other Costs/Risks of Sustainable Development, and 24.14—Contracts/Legal Risks. This section of the research library supplements Section C, “Process Performance” of Chapter IV: “Sustainable Property Performance” and Sections VI-D—Underwriting Service Providers and VI-E—Underwriting Energy-Carbon Reduction Investment, in Chapter VI of *Value Beyond Cost Savings: How to Underwrite Sustainable Properties*.

**15.5 Feature/System Performance**

Documents that address performance of sustainable features or systems. For example, specific performance of a green roof, an HVAC system, under floor ventilation, daylighting, or similar features or systems are presented here. See also sections 6.0—Sustainable Property Features and 9.3—Energy Features/Systems as well as 28.0—Sustainable Property Best Practices/Guidelines. This section of the research library supplements Section D, “Feature Performance” of Chapter IV: “Sustainable Property Performance” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.6 Building Performance**

Documents that report on building performance. Building performance issues include the cost of development, resource use, occupant performance, ability to achieve sustainable certification, and related issues at a building level. This section of the research library supplements Section E, “Building Performance” of Chapter IV: “Sustainable Property Performance” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.61 Development Costs**

Research related to sustainable development costs including differences between sustainable and traditional building. See also Chapter IV, Section E-1: Development (“First”) Costs of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.62 Resource Use/Operations**

Research related to the performance of buildings related to resource use including energy, water, materials, landfill, etc. See also sections 9.5—Energy Performance, 9.9—Energy Management/Operations, and 13.0—

Water Efficiency. See also Chapter IV, Section E-3: Building Energy Use of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **15.63 Occupant Performance**

Research related to building occupant performance including tenant satisfaction, health, and productivity. See also index code 10.0—Space User Productivity and Health and sections 15.73—Space User Demand/Surveys and 15.74—Corporate/Investor Sustainability. See also Chapter IV, Section E-4: Occupant Performance of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **15.64 Flexibility/Durability**

Research related to building flexibility/durability.

### **15.65 Location/Access**

Research related to performance of buildings from the perspective of their location and access. Transportation, land-use, and related issues covered here. See also 12.0—Sustainable Sites/Land Use and Transportation.

### **15.66 Sustainability Compliance**

Research related to the performance of buildings in achieving and maintaining sustainability ratings.

### **15.67 Public Benefits**

Research related to the public benefits generated by sustainable buildings. See also index code 7.9—Public Value: Triple Bottom Line, 1.5—Public Sustainability Benefits, 11.0—Government Regulations and Incentives, 12.3—City Sustainability Perf. Measurement/Strategy and 12.4--Federal/State Sustainability Performance Measurement/Strategy, and 15.77—Regulator Demand Research.

## **15.7 Market Performance**

### **15.71 Expert-Based Financial Analyses**

Real estate valuers or market analysts typically conduct Expert-Based Financial Analyses. The basis for conclusions in these studies is typically drawn from specific analyses of buildings, following a process that is similar to a traditional market analysis process, although typically more cursory. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

### **15.72 Statistics/Modeling Based Research**

Statistics/Modeling-Based studies typically will involve a large number of sustainable and non-sustainable properties, with statistical modeling focused on determining the incremental contribution of a sustainable

certification or rating on rent levels, sales prices, occupancies, or other specific financial variables. These studies are typically completed by academics with real estate and/or finance backgrounds. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.73 Space User Surveys/Demand**

This category includes a broad array of research including tenant/occupant surveys and other documents providing information, methodologies, and related data on Space User demand.. See also sections 8.0—Space User Demand for Sustainable Properties and 15.63—Occupant Performance. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.74 Corporate/Investor Sustainability**

This section includes a broad spectrum of research related to corporate and investor interest in sustainability and the role of real estate in assessing the value of sustainability to an enterprise. Surveys of corporate interest in sustainability is included here. See also index code 15.73 and 15.76. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.75 Demographic/Market Research**

This category includes a broad array of research including sustainably related market or demographic research, tenant segmentation analysis, and other research that would contribute to an understanding of space user/investor demand and its implications on their willingness to pay more for sustainable real estate. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.76 Investor Surveys/Demand**

Documents and investor surveys that address the market performance of investor demand for sustainable properties. This section supplements Chapter IV, Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.77 Regulator Demand Research**

Documents that address the performance and/or reporting of the demand by regulators for sustainable properties. See also 9.3—Energy Regulations/Subsidies, 11.0—Government Regulations/subsidies, 20.9—Capital Subsidies/Incentives, 12.3—City Sustainability Perf. Measures/Strategies, and 12.4—Federal and State Sustainability Performance Measures/Strategies, This section supplements Chapter IV,

Section F-3: Market Performance Evidence of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**15.8 Broker/Appraiser/Lender Market Acceptance**

Research and documents addressing the issue of whether brokers, appraisers, and lenders accept market or value evidence substantiated by regulator, space user and investor demand. See also section 23—Sustainable Service Sector.

**15.9 Market Performance: Special Reports/Studies**

Documents that address the market performance of sustainable properties including documents addressing multiple of the issues segmented in the index for this section.

**15.10 Financial Performance**

Documents that show a direct relationship between sustainable/energy efficiency and financial performance. Financial performance is typically defined by value, rates of return, and risk, so articles and publications that deals with these issues directly as they relate to sustainable properties are presented here. See also sections 15.71—Expert Based Financial Analysis and 15.72—Statistics/Modeling Based Financial Analysis. This section of the research library supplements Section G, “Financial Performance” of Chapter IV: “Sustainable Property Performance” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**16.0 Commercial Interiors/Tenant Improvements**

This section of the research library contains documents that address specific issues related to commercial interiors/tenant improvements.

**17.0 General Sustainability**

This section of the research library contains documents that address the general issues of sustainability that go beyond property-specific issues.

**Property Specific Topics**

**18.0 Property Specific Analysis—Commercial**

This section of the research library contains documents that specifically address and identify a particular property type.

**18.1 Office**

Documents specifically related to offices.

**18.2 Industrial**

Documents specifically related to industrial.

**18.3 Retail**

Documents specifically related to retail.

**18.4 Hospitality**

Documents specifically related to hospitality.

**18.5 Large Scale Development**

Documents specifically related to large-scale development.

**18.6 Schools**

Documents specifically related to schools.

**18.7 Government**

Documents specifically related to government.

**18.8 Healthcare**

Documents specifically related to healthcare.

**18.9 Land**

Documents specifically related to land.

**18.10 Miscellaneous**

This section of the research library contains documents on other property types not identified in sub-codes 18.1-18.9, and other miscellaneous documents that address property type issues.

**19.0 Property Specific Analysis—Residential**

This section of the research library identifies those documents that specifically address residential properties.

**19.1 Multi-Family**

Publications addressing multi-family properties.

**19.2 Single-Family**

Publications addressing single-family properties.

**Finance and Service Sectors****20.0 Capital Sources**

This section of the research library is for those documents specifically related to capital sources and key issues and trends related to such capital sources for sustainable and energy related property investment.

**20.1 Special Reports/Misc.**

Special reports and miscellaneous documents addressing capital sources that may not fit in the categories below.

**20.2 Mortgage/Unsecured Debt**

Documents specifically addressing the sources, financing vehicles, key underwriting issues, and related information for sustainability related mortgage

or business loans. Construction loans, permanent loans, bridge loans, and other more specialized debt financing are covered in this section. Banks, life companies, Wall Street lenders, and other private lenders and mortgage brokerage companies are also covered in this section.

### **20.3 Equity**

Documents specifically addressing the sources and key issues related to equity for sustainable property investment. Pension investors, REITs, private equity funds, private investors, responsible property investment, venture capital, and other sources of equity for sustainable property investment are covered in this section. See also 2.4—Investor/Developer Underwriting. Renewable energy equity sources potentially covered here, in 9.6—Energy Finance and 20.20—Renewable Energy Capital as well as 9.2—Renewable Energy.

### **20.4 CMBS/RMBS-Securities**

Documents that specifically address Commercial Mortgage Backed Securities, Residential Mortgage Backed Securities and/or other energy or sustainable securities issues are addressed in this section.

### **20.5 Public Finance**

Documents that identify specific sources, vehicles, and strategies for the public finance of sustainable energy efficient properties. Public finance is also covered in 20.9—Subsidies/Incentives, 20.15—Carbon Related Programs/Finance as well as in section 11.0—Government Regulations and Incentives.

### **20.6 Energy Finance**

This section of the research library contains documents covering financing, vehicles, sources, and strategies for energy related sustainable investments. Energy finance is also covered in other sub codes of section 20. This section focuses on those sources more specifically targeted to energy.

### **20.7 ESCO's/Related Options**

Documents related to energy service companies, particularly in relationship to their role as a source of capital. Power Purchase Agreements, Managed Service Agreements, Shared Service Agreements and related sources/techniques covered here. Energy service companies are also covered in sections 24.7—Energy/Performance Service Contracting.

### **20.8 Equipment/Product/Vendor Finance**

Documents addressing the financing for sustainable equipment, products and vending related goods. Purchasing alliances and related topics also covered here.

### **20.9 Subsidies/Incentives**

Documents related to sustainable or energy efficient subsidies and incentives, and their role in the capital required for sustainable/energy efficient properties. Subsidies and incentives are also covered in section 9.6—Energy Subsidies/Incentives and 20.5—Public Finance as well as in section 11.0—Government Regulations and Incentives.

**20.10 Single-Family Sustainable Finance**

Documents addressing single-family capital sources and sustainable financing issues.

**20.11 Finance Market Research**

Research into the size, segmentation, growth, demographics and related market trends for real estate capital providers. This section also covers contracts, sustainable options analysis, modeling, service provider and product/system selection and due diligence, lender and investor underwriting, risk analysis and mitigation and other finance market subjects.

**20.12 Corporate Finance**

Documents and research related to equity, unsecured debt, lease financing, and other corporate finance subjects. Corporate Finance is also covered in other sub codes of section 20, including 20.2—Mortgage/Unsecured Debt.

**20.13 Commercial Int./Tenant Improvements Financing**

Documents related to financing of commercial interiors and tenant improvements. Debt, equity and other sources used and covered elsewhere. This section for specialized Commercial Interiors/TI sustainability financing, subsidy programs, etc. See also 20.12—Corporate Finance and 20.8—Equipment/Product/Vendor Finance.

**20.14 Utility Finance Programs/Strategies**

Documents related to demand response and smart grid programs, on bill financing, subsidies and incentives, market segmentation strategies and other commercial and residential programs and strategies. Also included here would be policy efforts and related documents addressing the role of Utilities in sustainability/energy finance.

**20.15 Carbon Related Programs/Finance**

Documents and special reports related to carbon exchanges/trading and other carbon based financing ideas. See also 9.8--Carbon-Related Programs/Measurement/Performance and 24.11—Carbon Trading/Taxes.

**20.16 Renewable Energy Capital**

Documents and special reports related to renewable Energy Capital. See also 9.2—Renewable Energy and 20.5—Public Finance.

**20.17 Non-Real Estate Capital/Clean Tech.**

Documents and special reports related to non-real estate and Clean Tech assets.

**20.18 Sus. Development-Eco City Finance**

Documents and special reports related to sustainable development and eco-city finance. Other documents related to eco-city finance can be found in Section 12.2—Eco-Cities/Large Projects.

**20.19 District Financing**

Documents and special reports related to energy districts, eco districts, climate districts, and other district-related finance sources and research.

## **21.0 Responsible Property Investing**

This section of the research library presents documents related to the responsible property-investing sector. Reports on the overall responsible property investing sector as well as reports on specific types of responsible property investing are presented here.

## **22.0 Socially Responsible Investment**

This section includes documents and reports related to socially responsible investment, with a particular focus on real estate investment.

## **23.0 Sustainable Service Sector**

This section of the research library contains documents about sources and key issues for sustainable service sector participants.

### **23.1 Appraisers**

Documents related to commercial real estate appraisers and their relationship to the sustainable service sector.

### **23.2 Commercial/Residential Brokers**

Documents related to commercial brokers and their relationship to the sustainable service sector.

### **23.3 Consulting**

Documents related to consulting and its relationship to the sustainable service sector.

### **23.4 Design/Engineering**

Documents related to design/engineering and its relationship to the sustainable service sector.

### **23.5 Energy Modeling/Consulting**

Documents related to energy modeling/consulting and its relationship to the sustainable service sector.

### **23.6 Contractors-Builders**

Documents related to contractors-builders and their relationship to the sustainable service sector.

### **23.7 Asset/Property Management**

Documents related to asst./property management and its relationship to the sustainable service sector.

### **23.8 Other Services**

Documents related to other services and their relationship to the sustainable service sector.

**23.9 Miscellaneous Research/Contacts**

Documents that identify specific service providers and/or provide other miscellaneous research and/or contact information.

**23.10 Service Provider Certifications/Assessments**

Certifications or assessments of service providers and related reports/analyses will be included here or under index code 2.8: Underwriting Service Providers.

**23.11 Services Market Research**

Research into the size, segmentation, growth, demographics and related market trends for real estate/sustainable service providers.

## **Special Underwriting Topics**

### **24.0 Special Underwriting Topics**

This section covers a broad range of underwriting topics related to sustainable property investing. The term “underwriting” is broadly used to mean the due diligence and related analytic tasks undertaken by lenders, equity investors, or corporations in their real estate decision-making. The documents in this section supplement Sections E, F and H of Chapter V: “Sustainable Property Financial Analysis” and Chapter VI: “Sustainable Property Underwriting Guidelines” of the *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* book.

**24.1 First Cost Analysis**

Documents that address first cost analysis, sometimes called initial cost analysis. In addition to specific topics that address the issue of first cost, other cost-related documents and publications can also be found in this section. See also section 15.61—Development Cost Performance and 3.0—Costs and Benefits Studies

**24.2 Integrated Design**

Documents related to integrated design. See also 15.4—Process Performance.

**24.3 Commissioning**

Documents related to commissioning. See also 15.4—Process Performance.

**24.4 Tax and Accounting Issues**

Documents related to tax and accounting issues.

**24.5 Green Leases and Lease Analysis**

Documents related to green leases and lease analysis.

**24.6 Education/Communication**

Documents related to education/communication.

- 24.7 Energy/Performance Service Contracting**  
Documents related to energy/performance service contracting. See also 20.7—ESCO's/Related.
- 24.8 Insurance/Surety**  
Documents related to insurance/surety. See also 2.10—Third Party Reports/Analysis, 2.11Closing and Servicing, and 2.13—Risk Analysis and Mitigation.
- 24.9 Product Durability/Flexibility (Churn, Cap Ex.)**  
Documents related to product durability/flexibility. See also 15.64—Flexibility/Durability.
- 24.10 Carbon Trading/Taxes**  
Publications and documents related to carbon trading/taxes. See also 9.8—Carbon Related Programs/Measurement/Performance and 20.15—Carbon Related Programs/Finance.
- 24.11 Construction/Development Risks**  
Publications and documents related to construction/development risks. See also 2.13—Risk Analysis and Mitigation
- 24.12 New Technologies/Creative Solutions**  
Publications and documents related to new technologies/creative solutions. See also 6.0—Sustainable Property Features, 5.0—sustainable Property Materials Ratings/Certifications, and 9.3—Energy Features/Systems15.64—Building Performance Flexibility/Durability and 24.9—Product Durability/Flexibility.
- 24.13 Other Costs/Risks of Sustainable Development**  
Documents related to other costs/risks of sustainable development. See also sections 2.13—Risk Analysis and Mitigation.
- 24.14 Contracts/Legal Issues**  
Documents related to contracts/legal issues. See also Green Leases & Lease Analysis2.11—Closing and Servicing, 9.7—Labeling and Disclosure and 15.4—Process Performance.
- 24.15 Mold/IEQ Risk Issues**  
Documents related to mold/IEQ risk issues.
- 25.0 Organizational Change/Strategies**  
Documents in this section specifically address issues related to the organizational and/or societal changes and strategies that are necessary to move sustainability/energy efficiency forward, and related barriers. Documents in this section cover broader issues beyond properties, but also include property-specific organizational change.
- 25.1 Special Reports/Misc.**

Special reports and documents addressing the organizational changes required to integrate sustainability within companies/organizations.

**25.2 Change Mgmt./Transformation**

Documents that address the methods, theories, and practices to change/motivate organizations and individuals towards specific goals.

**25.3 Corp. Sus. Strategy/Leadership**

Documents that address corporate level sustainability decisions—typically involving the decision to commit to sustainability, the allocation of resources, maximizing synergies between business units, and managing compliance and control functions.

**25.4 Bus. Unit/Fund Strategies**

Documents that address the integration of sustainability into the business unit—typically including marketing, production, management, and control.

**25.5 Investment/Acq. Strategies**

Documents addressing the influence of sustainability trends on property specific investment/acquisition strategies.

**25.6 Portfolio/Property Management**

Documents addressing the integration of sustainability trends on property portfolio and property management strategies and actions.

**25.7 Business Processes/IT**

Documents addressing the changes required in business processes/IT to implement strategic and organizational changes required to integrate sustainability into the organization.

**25.8 Measurement and Reporting**

Documents that address the changes in measurement, management and reporting required as a result of changes in sustainability policies. Also address measurement and reporting changes required for continuous improvement and improved decision-making.

**25.9 Stakeholder Communications**

Documents addressing changes required in stakeholder communications as a result of sustainability strategies and actions.

**25.10 Tenant-Employee Engagement**

Documents addressing strategies and changes required in tenant/employee engagement to effectuate change.

**25.11 Appraisals and Lease Management**

Documents addressing the specific changes in appraisal and lease management to enable proper measurement and reporting of the financial implications of planned or implemented sustainability strategies.

## **26.0 Miscellaneous Documents**

This section includes documents that have not found a home elsewhere in the research library.

## **27.0 Sustainable Property Industry Studies/Trends**

Documents that address broader sustainable property trends are presented in this section. Many of the important and higher quality industry trend studies are identified and coded in this section of the research library.

## **28.0 Sustainable Property Guides/Best Practices**

This section presents documents that identify guides and/or best practices for sustainable property investments.

## **29.0 Sustainability Adoption/Obstacles**

This section presents documents that address the organizational, financial, social, technological, and other issues related to the adoption of energy efficiency/sustainability practices by consumers, property owners, managers, lenders, corporations, governments, etc. Documents identifying obstacles and mechanism to address such obstacles would be covered in this index code.

## **Additional Industry Links Link Index**

The links indentified here do not constitute an endorsement of any individual or group and are not meant to be an exhaustive list of relevant links.

### **50.1 Assorted Glossaries**

### **50.2 Green Building and Related Organizations**

### **50.3 Research Organizations/Institutions**

### **50.4 Trade Groups: Green/Other**

### **50.5 Trade Groups: Real Estate**

### **50.6 Uncategorized**