Financial Support for Sustainability and WELL Building Standard™ Decisions

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This document was created by Scott Muldavin, President of The Muldavin Company, based on research conducted over the past 10 years. Citations and references represent a select sample of research related to understanding and supporting the financial case for sustainability and WELL Building Standard projects. This document is intended to help investors access data and underlying document support so they conduct their own due diligence as to the quality and potential applicability to sustainability or WELL projects they are investigating, or as to the applicability of sustainability and the WELL Building Standard to their portfolio more broadly. The research cited herein is not intended to be comprehensive of all research or analysis available or that may need to be considered for sustainability or WELL Building Standard investment decisions.

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Occupant Financial Performance[1]

1. Cost Effective Way to Improve Employee Health and Wellness

- Perhaps the most compelling way to think about the financial benefits of the WELL Building Standard for office occupants is to compare growing company investments in health and wellness incentive programs, averaging around $700 per person per year[2], against a one-time investment of approximately $100 to $400 per person to implement the WELL Building Standard.[3]

- With wellness program participation below 50% at most companies, interventions in the WELL Building Standard that passively benefit all occupants and visitors provide a strong cost effective foundation for other company health and wellness initiatives.[4]

2. The WELL Building Standard Can Generate Outstanding Financial Returns that Can be Estimated and Defended

[1] This section presents select references/citations supporting the financial case for investment in the WELL Building Standard for offices by occupants. Occupants is defined to include owner occupants of buildings (corporations, governments, etc.), tenants, and other part-time space users.

[2] Fidelity Investments 5th Annual Wellness Survey, National Business Group on Health, March 26th, 2015.

[3] This is a cost estimate range provided by Delos (April 2017) that includes registration, certification, verification, consulting and hard costs for buildings that certify both their core and shell and interiors. Costs will vary and could potentially be outside the identified range depending on a project's specific situation, the level of WELL Certification, and other factors.

[4] Report to Congress on Workplace Wellness, Rand Corporation, May 1, 2013.

"How to Calculate and Present Deep Retrofit Value for Owner Occupants"

The critical contribution of health and productivity in the context of an overall sustainability investment is detailed in "How to Calculate and Present Deep Retrofit Value for Owner Occupants" a Rocky Mountain Institute publication I authored in 2014.[5] This publication details the methods, provides key data support for model assumptions, and presents a 25-page illustrative implementation of the model on a 370,000 sq. ft. office property that clearly shows how calculations are completed and assumptions supported.

- This analysis demonstrates how including all the benefits of a Deep Office Retrofit (50% energy savings) moves the Net Present Value from a negative $2.25 million, when only energy cost savings are evaluated, to a positive $3.4 to $16.8 million. Simple rate of return moves from 7.5% to a range of 25% to 50%, well exceeding most corporate equity hurdle rates. (The wide range is based on a sensitivity analysis using productivity increases of 0% to 3%)

"Property Health and Wellness ROI Model: WELL New & Existing Office Buildings"

The Property Health and Wellness ROI Model for WELL New and Existing Office Buildings was developed by The Muldavin Company in May 2017 to enable occupants considering WELL investment to estimate potential financial results of such investment.

The ROI model is presented in two separate documents. The "Model Documentation" document is a 20-page description and explanation of the key assumptions and operation of the model. The second document is an Excel Spreadsheet, which presents an analysis of a hypothetical investment by a financial institution in a New and Existing Building WELL certification on a 200,000-square foot office building with 1000 occupants.

Given the critical role of productivity increases to return on investment, the financial

[5] "How to Calculate and Present Deep Retrofit Value by Owner Occupants", Scott Muldavin, et al., Rocky Mountain Institute, 2014. Publication can be downloaded for free at http://www.muldavin.com/publications/.

results were tested for their sensitivity to changes in the assumed percentage productivity increase. The results, as transparently documented and presented in the Excel spreadsheet, demonstrate the extremely strong returns and value enhancement for companies that invest in the WELL Building Standard:

- 0.5% Productivity Increase: IRR=298%; NPV= $5.6 million
- 1.5% Productivity Increase: IRR=527%; NPV= $ 9.6 million
- 2.5% Productivity Increase: IRR=758%; NPV= $13.7 million

3. Key Value Elements and Research

The key "Value Elements" for calculating occupant financial performance for sustainability overall, and WELL Building Standard investment are:

- Worker Productivity
- Health Insurance Costs
- Absenteeism
- Recruiting and Retention
- Enterprise Risk Reduction
- WELL Implementation Costs

The rest of this section provides a summary of key research supporting assessment of each of the key value elements.

Worker Productivity Increase

Consistent with traditional real estate analysis, I recommend the use of ranges and sensitivity analyses when evaluating the financial effects of potential productivity increases, to enable a better understanding of the financial dynamics of WELL Certification.

The range of productivity increase of 0 to 3% applied in prior research seems inherently plausible for the WELL Building Standard since scores of studies looking at single feature building interventions report productivity increases from 1% to 10%, or more, while the WELL Building Standard incorporates all the interventions studied, and more. Research by Gallup also shows that approximately 70% of US workers, and 87% of global workers are not engaged at work and companies in top quartile are **22%**

more productive—indicating substantial room for most companies to improve their productivity.[6]

A select summary of productivity related research studies organized by the seven categories of WELL building related intervention is presented below:

Indoor Air Quality

- "Work performance may be improved from **a few percent to possibly as much as 10 percent** by providing superior indoor environmental quality (IEQ). The economic benefits of the work performance improvements will often far outweigh the costs of providing better IEQ."[7]

- Fifteen studies linked improved ventilation with **up to 11% gains** in productivity resulting from increased outside air rates, dedicated delivery of fresh air to the workstation, and reduced levels of pollutants.[8]

- A meta-analysis of 24 studies – including 6 office studies – found that poor air quality (and elevated temperatures) consistently lowered performance **by up to 10%,** on measures such as typing speed and units output.[9]

- Cognitive performance was demonstrated to improve **61% to 101%** in a Harvard-Syracuse study of people in spaces with improved ventilation, carbon dioxide levels, and volatile organic compounds compared to traditional "control"

[6] US Employee Engagement Unmoved at 31.9%, Employee Engagement, Gallup Website, July 9th, 2015.

[7] Lawrence Berkeley National Laboratory's Indoor Air Quality Group: Scientific Findings Resource Bank website (sourced April 2017). (https://iaqscience.lbl.gov/performance-summary)

[8] (Loftness V. Hartkopf V. and Gurtekin B. (2003) "Linking Energy to Health and Productivity in the Built Environment: Evaluating the Cost-Benefits of High Performance Building and Community Design for Sustainability, Health and Productivity," USGBC Green Build Conference, 2003.

[9] (Wargorcki P. (ed.) Seppänen O. (ed.) Andersson J. Boerstra A. Clements-Croome D. Fitzner K. Hanssen SO. (2006) REHVA Guidebook: Indoor Climate and Productivity In Offices)

office as measured by performance on standard white collar office functions.[10] This study confirmed similar results from a 2012 study by the Lawrence Berkeley National Laboratories.[11]

Lighting

- Five daylighting studies cited by Carnegie Mellon showed average **gains of 5.5%.**[12]

- Lack of natural light is the number one workplace hazard by **36%** of psychologists and psychiatrists.[13]

- Measurements of the physical environment and occupant satisfaction for 779 workstations in 9 different buildings suggested that lack of access to a window was the **biggest risk factor for dissatisfaction** with lighting.[14]

- Office workers with windows **slept an average of 46 minutes more per night**, while workers without windows reported poorer scores than their counterparts on quality of life measures related to physical problems and vitality, as well as poorer outcomes on measures of overall sleep quality, sleep efficiency, sleep disturbances and daytime dysfunction.[15]

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[10] Associations of Cognitive Functions Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers, A Controlled Exposure Study of Green and Conventional Office Environments, Allen et al., Environmental Health Perspectives, June 2016.
[11] Is C02 an Indoor Air Pollutant? Direct Effects of Low-to Moderate Concentrations on Human Decision-making Performance, Satish, Mendall, et. al., Environmental Health Perspective, December 2012. (http://www.yaleclimateconnections.org/2016/07/indoor-co2-dumb-and-dumber/)
[12] Guidelines for High Performance Buildings, Carnegie Mellon University, 2004
[13] Drive Towards Healthier Buildings, McGraw Hill Construction, 2014.
[14] Newsham GR. Aries M. Mancini S. and Faye G. (2008) Individual Control of Electric Lighting in a Daylit Space. Lighting Research and Technology 40, pp 25-41.
[15] Chueng I. (2013) Impact of workplace daylight exposure on sleep, physical activity, and quality of life. American Academy of Sleep Medicine 36.

- Across 17 studies from 1934-1997, experts agreed that **good daylighting "improves tests scores,** reduces off-task behavior, and plays a significant role in the achievement of students".[16]

Comfort

- Office workers in a 2011 study experienced **a 4% drop** in performance at cooler temperatures, **6%** at warmer.[17]

- An analysis in 2006 of 24 studies on the relationship between temperature and performance indicated **a 10% reduction in performance** at both 30C and 15C compared with a baseline between 21C and 23C.[18]

- A study in 1998 found that there was up to a **66% drop** in performance for a 'memory for prose' task when participants were exposed to different types of background noise.[19]

Fitness

- Rare exercise is linked with **a 50% increased risk of low productivity**.[20]

- Texas AM's 2016 study shows call-center workers with adjustable desks were **46% more productive** (based on number of calls made).[21]

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[16] Kats, Gregory. "Greening America's Schools – Cost and Benefits". Capital E Report. The US Green Building Council. 2006.

[17] Effects of Thermal Discomfort in an Office on Perceived Air Quality, Indoor Air 21:5, pp376-390, Lan Wargocki and P. Wyon, 20

[18] (Wargorcki P. (ed.) Seppänen O. (ed.) Andersson J. Boerstra A. Clements-Croome D. Fitzner K. Hanssen SO. (2006) REHVA Guidebook: Indoor Climate and Productivity in Offices

[19] Banbury SP. and Berry DC. (1998) Disruption of office-related tasks by speech and office noise. British Journal of Psychology 89:3, pp 499–517

[20] Journal of Population Management, 2014; Health Eating, Exercise Linked with Workplace Productivity, Healthy Living, August 12, 2012. (http://www.huffingtonpost.com/2012/08/12/health-workplace-productivity-eating-nutrition-exercise_n_1752749.html)

[21] Call Center Productivity Following a Standing Desk Intervention, Occupational Ergonomics & Human Factors, Texas A&M School of Public Health, May 25, 2016. (http://today.tamu.edu/2016/05/25/boosting-productivity-at-work-may-be-simple-stand-up/)

- Sitting for 11 or more hours per day **increased the risk of death by 40%** regardless of other activity levels.[22]

Water

- "Being **dehydrated by just 2% impairs performance** in tasks that require attention, psychomotor, and immediate memory skills, as well as assessment of the subjective state."[23]

Nutrition

- Well-targeted and efficiently implemented diet-related worksite health promotion interventions may **improve labor productivity by 1%–2%.** (These conclusions are subject to some uncertainty due to the relatively limited amount of literature in the field.)[24]

- Knowledge was significantly associated with healthy eating, and the effect persisted after controlling for demographic variables. **Respondents in the highest quintile for knowledge were almost 25 times more likely** to meet current recommendations for fruit, vegetable and fat intake than those in the lowest quintile.[25]

Mind

- A 2014 study on biophilic design in the workplace reported levels of well-being and productivity that were 13% and 8%, higher, respectively, for those Europe, Middle East and Africa (EMEA) office workers in environments containing natural

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[22] Van Der Ploeg, Dr. Hidde, 'The Health Risk of Too Much Sitting Down', The University of Sydney, 27 March 2012 (http://sydney.edu.au/news/84.html?newsstoryid=8913)
'Sitting for More Than Three Hours a Day Cuts Life Expectancy', Wall Street Journal, 10 July 2012 (http://www.wsj.com/articles/SB10001424052702303343404577516853567934264

[23] Cognitive Performance and Dehydration, Ana Adan, Journal of the American College of Nutrition, Vol 31, No. 2, 71-78, 2012 (https://www.researchgate.net/publication/230600141_Cognitive_Performance_and_Dehydration)

[24] Can Worksite nutritional interventions improve productivity and firm profitability, A Literature Review, Jorgen Dejgard Jensen, *Perspectives in Public Health*, August 3, 2011. (http://journals.sagepub.com/doi/abs/10.1177/1757913911408263)

[25] Nutrition Knowledge and Food Intake, Wardle J, Parmenter K, Waller J., *Appetite*, June 2000,

elements.[26] Interestingly, other studies have found such natural elements do not have to be real.[27]

- The new research from the 2014 cited above confirms findings from an earlier study which found employees with natural elements saw a 15% rise in output after three months.[28]

- After a 40 second micro-break, subjects who viewed a rooftop garden image **increased concentration levels 6%,** while those who viewed an image of a plain concrete roof saw concentration levels decline 8%.[29]

- A study on biological sleep clocks by researchers at Boston's Brigham and Women's Hospital, found that the longer someone is awake while they are sleep-deprived, the **slower their work production becomes**.[30]

Absenteeism

There is a growing body of evidence supporting the relationship between healthier indoor environments and reduced absenteeism. Reductions of 10 to 40 percent are suggested based on a review of key research identified below:

- A Canadian study revealed that approximately one-third of employees' sick leave can be attributed to symptoms caused by poor indoor air quality. [31]

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[26] Human Spaces Report: Biophilic Design in the Workplace, Cary Cooper, 2014. (http://humanspaces.com/global-report/biophilic-design-at-work/).

[27] Kjellgren, A., & Buhrkall, H. (2010). A comparison of the restorative effect of a natural environment with that of a simulated natural environment. Journal of Environmental Psychology, 30 (4), 464-472.

[28] Nieuwenhuis, M., Knight, C., Postmes, T., & Haslam, S.A. (2014). The relative benefits of green versus lean office space: Three filed experiments. Journal of Experimental Psychology: Applied, 20(3), 199.

[29] Gazing at Nature Makes You More Productive: An Interview with Kate Lee, September 15th, 2015, Harvard Business Review.

[30] Journal of Vision, Jeanne Duffy, July 26th, 2012 (http://www.brighamandwomens.org/about_bwh/publicaffairs/news/pressreleases/PressRelease.aspx?PageId=1231).

[31] K.E. Charles, et al., "Workstation Design for Organizational Productivity," 2004.

- A survey of three case studies by Rocky Mountain Institute suggested that better lighting and HVAC systems could reduce absenteeism from 15 to 25 percent.[32]

- "William Pape, co-founder of VeriFone, reported that eighteen months after the company occupied a green building retrofit, absenteeism decreased by 40 percent and productivity increased 5 percent."[33]

- Another study, sponsored in part by commercial real estate firm Cushman & Wakefield, reported 30 percent fewer sick days among one company's employees, while another company revealed a 10 percent increase in net revenue per employee, after each office moved to LEED certified office buildings.[34]

- In a 2007, an Australian law firm documented the amount of sick days before and after a move to a five Green Star-rated building, a high rating in Australia, and found sick days reduced by 39 percent overall to 0.28 days per month.[35]
- Gallup research shows that an individual with a chronic disease has between 12 and 42 more unhealthy days per year than someone who is healthy.[36] Nearly one-third of those days (4 to 14 days a year) result in missing a full day of work.[37]

- The Society for Human Resource Management (SHRM) estimates the cost of unplanned absences to be nearly 10 percent of payroll or $6,800 per person, per year, based on the average U.S. wage of $33.87 per hour.[38][39]

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[32] J.D. Romm and W.D. Browning, 1995.
[33] City of Seattle. (February 2005). Sustainable Building Cluster Study. Retrieved from http://www.seattle.gov/economicdevelopment/files/sustainable_building_cluster_study_030105.pdf
[34] 8 Benefits of Green Building, About.com Guide, Marc Lallanilla, Unclear Date.
[35] Dunckley, M. Green Works Wonders. The Australian Financial Review, Oct. 18, 2007, 59.
[36] "Unhealthy US worker's absenteeism costs $153 billion," Gallup, 2011
[37] "Unhealthy US worker's absenteeism costs $153 billion," Gallup, 2011 (1 unhealthy day equals .31 missed work days)
[38] Executive Summary: Total Financial Impact of Employee Absences in the U.S., SHRM, 2014 (Direct costs include payroll, overtime for 47% of absences, replacement workers for 20% of absences; together these estimated at 3.2% of payroll. Indirect costs include reduced productivity of coworkers, managers, replacements; together these are estimated at 6.7% of payroll.)
[39] Based December 2013 BLS average compensation of $33.87 per hour.

Recruiting and Retention

- Property and company level sustainability reputation and leadership has been shown to be important to occupants. According to Kellert (2008), the top five criteria for occupant function in an office that, if unaddressed, can lead to dissatisfaction are:
    - Need for change (light levels, temperature, etc.);
    - Ability to act on the workplace environment, and notice effects;
    - Meaningful stimuli to avoid stagnation;
    - One's own territory to indicate safety and identity; and,
    - View to the outside world[40].

- A 2016 survey of corporate occupiers by CBRE found that attraction and retention of employees was the top focus of corporate real estate executives, with 57 percent saying it was a key area of focus driving their business. Indoor air quality was in the top five.[41]

- In a 2014 study conducted by Global Workplace Solutions (GWS) and CoreNet Global, **75 percent of those surveyed said that when seeking a new position, it's important that a potential employer support health and wellbeing**. Once in the job, more than half (57 percent) said they would be likely to stay longer if their employer valued health and wellbeing.[42]

- According to a study led by Knoll and DYG Inc., employees that are planning to leave a company routinely list their physical workplace as a desired characteristic.[43]

- Based on a 2010 survey of 1,065 tenants in 156 buildings managed by CBRE, tenants seeking office space, a healthy indoor environment was cited as the most

[40] The Economics of Biophilia, Why Designing with Nature in Mind Makes Financial Sense, Bill Browning, Terrapin Bright Green, LLC, 2012.

[41] Americas Occupier Survey, The CBRE Institute, 2015/2016, published early 2016.

[42] Survey Research, Global Workplace Solutions, CBRE and CoreNet Global, 2014.

[43] Employees planning to leave an organization were 25% less satisfied with their physical workplace than those who planned to stay - Knoll & DYG, Inc., "The Second Bottom Line: Competing for talent Using Innovative Workplace Design"

important factor with a total score of 4.51 on a scale of 1-5 with 5 being the highest. Daylight and views in the office ranked second at 4.19.[44]

- More recent research shows that of 18 Green attribute choices, indoor air quality (93%) and access to natural light (89%) were by far the top two attributes desired by 3000 tenants from 329 buildings across 17 geographic area. Comfortable temperatures (73%) ranked 7th.[45]

- According to a 2014 survey, 83% of graduate students are willing to take a 15% salary cut for a job that makes a social or environmental difference in the world.[46]

Enterprise Risk Reduction

The purpose of evaluating enterprise risk is to document how the WELL Building Standard helps manage and mitigate enterprise risk. The WELL Building Standard can significantly contribute to mitigating some of the most pressing business risks facing companies today, including retention of key staff, higher quality working environment, and higher building and company profile. A full discussion of Enterprise Risk is presented in "How to Calculate and present Deep Retrofit Value for Owner Occupants", page 69.[47]

WELL Building Standard Implementation Costs

The cost of implementation of the WELL Building Standard™ can vary significantly based on the size of the space being certified, as well as numerous other factors including the age of the building, the level and type of existing or planned improvements, prior green building certification, current occupant health and wellness policies and practices, and other factors.

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[44] "Do Green Buildings Make Dollars and Sense 2.0", CBRE, CoStar, McGraw Hill, May 2011 Presentation at CoreNet Global Summit. 1,065 occupants responded, with one-third in buildings either certified or seeking LEED-EB certification.

[45] Demand for Green Buildings: Office Tenants' Stated Willingness-to-Pay for Green Features, Robinson, Simons, Lee and Kern, Journal of Real Estate Research, Volume 38, No. 3-2016.

[46] 2014 Business as Unusual Report, Net Impact, 2014. (https://netimpact.org/sites/default/files/documents/2014BAU_expanded.pdf)

[47] "How to Calculate and Present Deep Retrofit Value for Owner Occupants, Scott Muldavin, et. al, Rocky Mountain Institute, 2014. Available for free download at http://www.muldavin.com/publications/.

Pricing for WELL Certification (registration, performance verification, and certification) and Recertification is can be found on the International WELL Building Institute's website (http://www.wellcertified.com/well-pricing). The pricing is tightly tied to property/space size and type of certification. A pricing calculator is available to assist investors and their service providers.

WELL Building Certification costs include WELL Certification Fees, WELL Consulting & Other Professional Fees, and initial one-time hard costs. There are also minimal costs for operations, policy changes, and recertification.

A general range of total WELL Building Standard implementation costs for a 200,000-square foot silver New & Existing Office Building certification would be in the range from $1.50 to 2.20 per square foot. Certification fees paid to IWBI would be approximately $0.51 per square foot. (Calculator available at IWBI website). Hard costs in many cases are very minimal. Costs will vary outside of ranges for some projects.[48] Costs for implementing the WELL Building Standard for New and Existing Interiors would be lower in the range of $1.00 to $1.50 per square foot.

It is important to understand when thinking about costs, that cost estimates can vary if estimators cost out all potential interventions, rather just those interventions required for certification. In some cases, some of the "optimizations" required to achieve gold or platinum certification may be costly. It is also important to not compare LEED and WELL certification fees directly because the WELL certification fees paid to the IWBI include substantial performance verification, which is typically paid as a "commissioning" consulting fee when implementing LEED. Additionally, in many cases implementation may include "Alternative Adherence Paths" which can often overcome potentially costly interventions.

[48] Rough cost estimate provided by professionals experienced in WELL execution in March 2017 for a 200,000-square foot silver WELL New & Existing Building certification. Costs will vary based on many factors including property size, certification level, age, existing green certification level, and numerous property/project specific variables. Consultation with WELL cost professional regarding your specific project is advised prior to any decision-making.

Investor Financial Performance[49]

1. Strong Occupant Financial Case is the Foundation of the Investor Financial Case

- The prior section supports the case that occupant financial performance can be substantially improved by investment in the WELL Building Standard.

- Investors can invest in a WELL Building Core & Shell Certification and partner with tenants in improving their employees and customer's health and wellbeing—branding their property and their company as a supporter of healthy buildings and people, while also reducing tenant WELL Building Standard implementation costs.

- The WELL Building Standard has attracted substantial occupant interest:

    - The article below provides an example of a major global corporation—McKesson-- implementing the WELL Building Standard and some of their rationale for doing so. http://fortune.com/2016/07/13/mckesson-headquarters-well-building-certification-wellness/

    - This article highlights some of the positive momentum around health in built environment including a discussion of Genentech's WELL Building activities and research by the World GBC: http://www.environmentalleader.com/2016/11/why-it-pays-to-invest-in-green-offices/#.WCc_JoF0zNk.email

    - Deloitte's search for substantial new space listed the WELL Building Standard Core & Shell certification as a fundamental requirement.

[49] This section presents select references/citations supporting the financial case for investment in the WELL Building Standard for offices by investors. Investors would include any owner/developer of buildings where the owner/developer's employees are not the primary occupant of the space. Investors who invest in the WELL Building Standard for their own employees would generate "Occupant" benefits covered in the prior section.

www2.deloitte.com/au/en/pages/media-releases/articles/deloitte-anchor-tenant-for-477-collins-street-040516.html

- The largest insurance company in China has also invested in the WELL Building Standard: http://www.businesswire.com/news/home/20160908006718/en/International-Building-Institute%E2%84%A2-China-Life-Sino-Ocean-Group

- Rapid growth in the WELL Building Standard with both occupants and investors also argues for investment consideration as a defensive strategy.

    - Over 386 projects registered or certified in 27 countries[50];
    - Premier tenants from major financial institutions, technology companies, and service providers are leading the movement;
    - Global Corporate Alliances: CBRE, Lend Lease, HOK, ARUP, Sino-Ocean Group, HKS, Glumac, and Structure Tone are also driving demand;
    - Industry partnerships: GRESB, CoreNet Global, Urban Land Institute, American Institute of Architects, American Society of Interior Designers, and other professional groups leverage market demand; and,
    - Over 730 WELL AP's engaged in helping their clients and companies understand and implement the WELL Building Standard.[51]

2. The WELL Building Standard Can Generate Outstanding Financial Returns that Can be Estimated and Defended

Financial Assessment Methodology

The critical contribution of health and productivity in the context of an overall sustainability investment is detailed in "How to Calculate and Present Deep Retrofit

[50] Based on information available on the International WELL Building Institute's Project and WELL AP Directory found on IWBI web page as of April 19, 2017.
[51] Ibid

Value for Investors" a Rocky Mountain Institute publication I authored in 2015.[52] This publication details the methods, provides key data support for model assumptions, and presents a 25-page illustrative implementation of the model on a 370,000 sq. ft. multi-tenant office property that clearly shows how calculations are completed and assumptions supported.

- This analysis demonstrates how including all the benefits of a Deep Office Retrofit (50% energy savings) moves the Net Present Value from a negative $10.3 million, when only energy cost savings are evaluated, to a positive $16 million. Internal rate of return moves from negative 16% to positive 20%, well exceeding most investor equity hurdle rates.[53]

- The key "Value Elements" for calculating investor financial performance for sustainability overall, and WELL Building Standard investment are:
    - Attract Premier Tenants
    - Tenant Demand
        - Rents
        - Occupancies
        - Absorption
        - Tenant Retention
    - Investor Demand
    - Risk Analysis & Mitigation

Attract Premier Tenants

One of the financial benefits for investors is that the WELL Building Standard has been attracting many premier quality tenants—including technology firms, finance companies, accounting firms, Fortune 500 companies, and leaders of the real estate

[52] "How to Calculate and Present Deep Retrofit Value by Owner Investors, Scott Muldavin, et al., Rocky Mountain Institute, 2015. Publication can be downloaded for free at http://www.muldavin.com/publications/.

[53] This illustrative analysis evaluates tenant demand for sustainability, which includes benefits other health and wellness. While that might suggest the numbers would not be as strong if just looking at health and wellness, that may not be the case as the WELL Building Standard incorporates substantial health and productivity interventions not covered by sustainable certificates like LEED or BREAAM and provides performance verification of approximately 70% of its interventions.

services business. A sample of firms publically acknowledged as seeking WELL certified buildings for their employees include[54]:

○ W□□□□ F□□□□ ○ M□K□□□□□ ○ E□□□□ & Y□□□□ ○ D□□□□□□□ ○ M□□□□□□□□ ○ G□□□□□□□□ ○ S□□□□□□□ ○ L□□□□□ ○ F□□□□□□□ ○ S□C□□ G□□ ○ TD B□□□ ○ M□□□□□□□□ B□□□	○ T□□□□□□ ○ AECOM ○ A□□□□□□□□ H□□□□□ ○ CBRE ○ JLL ○ C□□□□□□ & W□□□□□□□□ ○ G□□□□□□ ○ HOK ○ H□□□□□□□ ○ W□□□□□ ○ P□□□□□□ & W□□□ ○ T□□□□□

Tenant Demand for Health and Wellness

The WELL Building Standard can significantly improve cash flows and value from enhanced property revenues that result from the growing tenant demand for healthy properties. Revenue premiums can be created when building owners monetize enhanced demand resulting from tenant demand for healthy buildings by increasing rents, occupancies, absorption, and tenant retention.

Evidence of the Influence of Sustainability on Property Performance

Evidence of the influence of sustainability on property performance provides an indicator of the potential implications of the WELL Building Standard on property performance because health and productivity benefits are a significant part of what tenant's value about sustainability.

There have been numerous academic studies evaluating how sustainability certifications/ratings have influenced office property values as shown in Exhibit A. On average, these studies have found rental price premiums for LEED of 3 to 6%, occupancy premiums of 4-15% and sales price premiums of 10 to 13 percent.

[54] Companies from IWBI Projects website April 20th, 2017 or publically available media.

The 2015 Bentall Kennedy study by Kok and Devine, which found rental premiums of 3.7% to 10.2%, occupancy premiums of 4% and sales price premiums of 8 to 10%, is particularly noteworthy because it was based on a 10-year data pool of nearly 300 office properties (58 million square feet across North America) managed by Bentall Kennedy, enabling access to more detailed data than is typically available for such studies.

Exhibit A: Evidence of Sustainable Office Value

Study	**Rental Premium**	**Occupancy Premium**	**Sale Price Premium**
Robinson, et. al. (2016)[55]	9.3%	NA	NA
Kok & Devine; Bentall Kennedy, Oct. 2015 [56]	LEED: 3.7% (US) to 10.2%(CDN))	4% (US)	8 to 10% (Modeled)
Eicholtz, Kok, and Quigley (2013)[57]	LEED: 3%	Effective rents: 8%[58]	13%
Chegut, Eicholtz & Kok, (Jan 2013)[59]	BREEAM London: 19.7%	NA	14.7%

[55] Demand for Green Buildings: Office Tenants' Stated Willingness-to-Pay for Green Features, Robinson, Simons, Lee and Kern, Journal of Real Estate Research, Volume 38, No. 3-2016.
[56] Green Certification and Building Performance: Implications for Tangibles and Intangibles, Avis Devine and Nils Kok, The Journal of Portfolio Management, Special Issues 2015.
[57] The Economics of Green Building, Eicholtz, Kok, and Quigley, "The Review of Statistics and Economics, March 2013, 95(1): 50-63
[58] Effective rents account for occupancy differences.
[59] "Supply, Demand, and the Value of Green Buildings", with A. Chegut and N. Kok, *Urban Studies*, January 22, 2013.

Kok, Miller, and Morris (2012)[60]	LEED EBOM: 7%	Effective rents: 9%[61]	
Bernstein, Russo, McGraw Hill/Siemens (2012)[62] (Survey)	13%	16%	10%
Newell, Kok, et al.; Australian Study (Sept.2011)[63]	Green Star: 5%	NA	12%
Pogue et al. (Fall 2011)[64]	LEED 4.11%	3.14%	NA
Fuerst & McCallister (Mar 2011)[65]	LEED: 5%	NA	25%
Wiley et al. (2010)[66]	LEED: 15-17%	LEED: 16-18%	NA

Tenant/Occupant Surveys

There is substantial survey evidence that tenants/occupants have a strong interest in healthy and productive buildings. In fact, as the numerous studies cited in the prior section on "Reputation and Recruiting" show, tenants/occupants have a strong

[60] "The Economics of Green Retrofits", Kok, Miller and Morris, Journal of Sustainable Real Estate, 2012.
[61] Ibid
[62] "A Path to Achieving Higher Building Performance", Siemens and McGraw Hill Construction, 2012.
[63] [63] Building Better Returns, A Study of the Performance of Green Office Buildings in Australia, Newell, MacFarlane, & Kok, September 2011. (Survey versus statistical research)
[64] Do Green Buildings Make Dollars & Sense, Green Building Study 3.0, Fall 2011 Presentation of Results.
[65] Green Noise or Green Value? Measuring the Effects of Environmental Certification on Office Values, Fuerst and McAllister, Real Estate Economics, March 2011.
[66] Wiley, J., J. Benefield and K. Johnson. 2010. Green Design and the Market for Commercial Office Space. *The Journal of Real Estate Finance and Economics* 41(2): 228–243.

preference for many of the key health and wellness interventions included in the WELL Building Standard.

Investor Demand

Increased investor demand can add to financial performance by increasing the demand for a property at the time of sale, increasing sales prices and/or reducing the time to sell a project.

One important indicator of growing investor interest is recent (2015) inclusion of health and wellness in The Global Real Estate Sustainability Benchmark (GRESB). GRESB is a prominent sustainability benchmark for institutional investors, covering 759 real estate companies and funds with nearly $3 trillion invested in 2016. (https://www.gresb.com/about-gresb)

Some of the investors that are pursuing WELL certification include[67]:

- Hines
- Kilroy Realty
- Lend Lease
- Oxford
- S&L Green Realty
- Grosvenor
- Skanska
- British Land
- AXA Investment Management
- The Ratkovich Company
- S&L Green Realty
- Gale International
- Sino Land
- DEXUS Property Group
- Sterling Bay/American Realty Advisors

Surveys as early as 2011 have shown the strong interest by owners and investors in occupant health as shown in a study ranking the importance of key green building features to building managers. Healthy indoor air quality was cited 97 percent of the

[67] Companies from IWBI website Projects list or publically available media reports.

time, comfortable indoor air temperatures 96 percent, daylight and views 86 percent and energy conservation 73 percent.[68]

Another survey in 2012, real estate owners and managers cited occupant health and well-being as most important (83.3 percent), improved indoor air quality/environmental quality second (82.7 percent) and lowering operating costs third (77.3 percent).[69]

Risk Analysis & Mitigation

Fully identifying investment risks is critical to the successful funding of a healthy building investment. Real estate investors profit when they fully understand risks and properly price and allocate capital based upon their understanding of risk and potential opportunity.

All investment, including investment in the WELL Building Standard, is subject to significant risk. Fortunately, there are positive and negative risks. Negative risks would include execution and performance risk, while positive risk includes the potential for very substantial upside if tenant demand exceeds projections, or simply reducing the risk of functional obsolescence if tenant demand for healthy buildings increases in the future.

A full assessment of sustainability risks, which can be modified for WELL Building Standard investment, are presented in "How to Calculate and Present Deep Retrofit Value for Investors". The Preliminary Analysis section on page 18, which addresses portfolio strategy and prioritization, provides some insights on risk mitigation. The 12- page section: Deep Retrofit Risks, starting on page 35 and Appendix D on page 110 provide substantial additional detail on identification and mitigation of risk.

[68] CBRE/McGraw Hill Construction/USD, Survey of Building Managers of CBRE LEED and Energy Star Certified Buildings Managed Properties, 2011

[69] ("A Path to Achieving Higher Building Performance Through Retrofits and Ongoing Operational improvements", Bernstein and Russo, Siemens and McGraw Hill, 2012. Detailed interviews with 150 building owners and managers knowledgeable about renovations and operations.

WELL Building Standard Implementation Costs

WELL Building Certification costs include WELL Certification Fees, WELL Consultation Fees, Other Professional Fees, and one-time hard costs. There are also minimal costs for operations and recertification.

Implementation costs for the WELL Building Standard will vary by typology—Core & Shell, Interiors, or Whole Building; certification level—Platinum, Gold, Silver; and many building specific factors.

A general range of total implementation cost for a 200,000-square foot silver Core & Shell WELL Building certification would be .30 to 1.00 per square foot. Certification fees paid to IWBI would be approximately .21 per square foot. (Calculator available at IWBI website). Hard costs in many cases are very minimal. Costs could vary outside of ranges for some projects. Investors should consult WELL consulting professionals to get more detail on specific projects.

It is important to understand when thinking about costs, that cost estimates can vary if estimators cost out all potential interventions, rather just those interventions required for certification. In some cases, some of the "optimizations" required to achieve gold or platinum certification may be costly. It is also important to not compare LEED and WELL certification fees directly because the WELL certification fees paid to the IWBI include substantial performance verification, which is typically paid as a "commissioning" consulting fee when implementing LEED. Additionally, in many cases implementation may include "Alternative Adherence Paths" which can often overcome potentially costly interventions.

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