BuildingIQ

Energy Efficiency Ratings— Benchmarks that Drive Excellence in Building Design and Operations

WHITE PAPER

Abstract

Various rating systems for green buildings—LEED, Energy Star, NABERS, and Green Star—are expanding in scope, depth, and precision, and have been established in more than 100 countries. The rating systems bring meaning and professional integrity to energy-efficient design and operation for buildings, as well as products and appliances. The rating systems afford easy comparison among cohorts ("like" buildings), and serves as a competitive stimulus to drive progress in building operation and design. Energy Star has been around since 1992, LEED since 1998, and NABERS and Green Star in Australia also since 1998. All four rating systems continue to evolve to take on a larger role in supporting and promoting sustainability, in terms of greenhouse gas emissions, water use, and natural resources. LEED, arguably the most influential international rating system, released LEED version 4 in November 2013, putting new emphasis on monitoring, measurement and performance areas where BuildingIQ is particularly strong, including demand-response (DR) and measurement and verification (M&V). BuildingIQ can significantly contribute to the attainment of as many as 18 LEED points, found in four categories. It can also provide a gain of 1-5 Energy Star points. The details of BuildingIQ's potential to improve a building's LEED and Energy Star points is spelled out in this paper. The future of green building technology lies in intelligence—intelligence to monitor and fine-tune operations in real time, and intelligence to network with the power grid, other buildings and intelligent infrastructure.

1.0 Introduction

Rating systems for the design and performance of energy efficient buildings have evolved rapidly over the last twenty-five years. They have become broader, deeper, and more precise as advances in technology-based, building intelligence have converged with the societal imperatives of saving energy, reducing environmental impact, and improving the quality of life.

The modern era of establishing benchmarks and comparative ratings began in 1992 with the launch of the Energy Star program by the U.S. Environmental Protection Agency (EPA). EPA formalized the protocols for measurement and created a rating system that compared cohorts of similar products, appliances, and buildings. Since then, Energy Star has grown, and other rating systems have emerged and spread throughout the world. The most notable example is Leadership in Energy and Environmental Design (LEED), developed by the US Green Building Council (USGBC) which has evolved through four major iterations in the last 15 years. The latest, version 4, was released in November, 2013.

These rating systems have accomplished two major objectives. First, they have provided an easily understood means of comparison of complex

products/systems in terms of their day-to-day use of a highly elusive product, energy. Second, and arguably more importantly, they have created a competitive framework driving technological innovation in energy efficiency. Nowhere is this more evident than in the advances in energy efficient building design and operations. Bringing intelligence to the task of managing energy in buildings has become a promising new frontier.

Great things have been accomplished in the last decade. A 2013 EEI (Edison Electric Institute) survey found 46% of U.S. organizations (the U.S. respondents) intend to achieve near-zero, net-zero or energy positive status in at least one facility in the future. Another new survey by EEI showed two-thirds of respondents have made improvements in HVAC and lighting in the past year.

In addition to individual buildings, there are great synergies to be had from networking intelligence. These synergies range from linking intelligent buildings to the power grid for load management and support grid stability, to interconnecting the power grid via widely dispersed renewable energy enabling management of power generation variability, to interconnecting the use of energy to other dimensions of sustainability—water, natural resources, biodiversity, the green economy, and climate. Rating systems are both following and encouraging these trends.

BuildingIQ stands at the forefront of this promising new era with a software platform that can predict and optimize energy usage in buildings, as well as provide the capability for demand-response and formal M&V. As shown in this paper, BuildingIQ has the potential to improve the Energy Star and LEED rating of virtually any commercial building, even those of advanced building design.

This paper describes the major rating systems in use today for energy efficient buildings, as well as the specific levels of improvement building operators might expect from implementing BuildingIQ's platform.

- **Section 1—**Introduction to the rating systems.
- **Section 2—**The Energy Star rating system. 1-5 point improvement possible.
- **Section 3—**The LEED rating system. Contribution towards 18 points possible.
- **Section 4—**The NABERS and Green Star rating systems in Australia.
- **Section 5—**The bright future of building intelligence.

1.1 Advantages of BuildingIQ

Predictive modeling and system control software developed by The Australian Government's Research Organization (CSIRO) and commercialized by BuildingIQ has been shown to reduce ongoing HVAC energy consumption by 10-25%, and peak loads up to 20% during DR events, with no noticeable effect on comfort levels. BuildingIQ installations include office buildings, retail malls, utility programs and U.S. Dept. of Energy facilities.

The inability of most building management systems (BMS) to accurately quantify and anticipate the effect of weather, occupancy, building design, and market prices hinders the building's dynamic response. This exposes a building to highly volatile real-time prices and increased costs; limiting the building's ability to participate strategically in electricity markets.

Limited building knowledge and the lack of predictive abilities also increase the supply requirements of the serving utility. As a result, utilities see sporadic and inconsistent participation in demand-response (DR) when and where they need it. Utilities typically have inaccurate data as to what demand reductions a given building can deliver.

BuildingIQ's capabilities address all of these shortcomings and offer building owners positive cash flow from energy savings within months of BuildingIQ implementation.

2.0 Energy Star Ratings

Energy Star is a market-based partnership, launched by the EPA in 1992, to reduce greenhouse gas emission through energy efficiency. Today, the Energy Star label can be found in more than 20,000 commercial buildings, 1.4 million new homes, and 65 different product categories. In 2012, more than 20,000 Energy Star-certified homes saved customers more than $2.7 billion in lower utility bills.

Commercial buildings that earn EPA's Energy Star must perform in the top 25% of similar buildings nationwide, as certified by an accredited energy analyst or other approved professional. Currently within Energy Star's program there are 15 building types—ranging from office buildings, to retail to K-12 schools—that can earn the Energy Star rating. These certified buildings use an average of 35% less energy than the average building in their class.

EPA continues to see an increase in buildings applying for and earning an Energy Star. The pace seems to be accelerating. In 2012, the cumulative number of Energy Star certified buildings increased by more than 24% over 2011.

2.1 BuildingIQ Can Improve the Energy Star Rating of a Building

Energy Star rating is based on a building's energy intensity. It measures a building's energy per square foot (kWh/sq ft), and normalizes the measure according to functional use of the building, construction type, size, operating characteristics, and climate, as well as other factors. This allows cohorts, or "like" buildings, to be compared. Buildings are ranked by percentile within a given category, or cohort group. For example, an Energy Star rating of 80 means that the building is in the 80th percentile of energy performance among its peers; that is, it performs at a level as good as or better than 80% of all the buildings in its cohort group.

BuildingIQ generally provides a gain of 1 to 5 Energy Star points, as shown in Table 1. In the analysis underlying this table, HVAC energy was assumed to represent 45% of the total building usage, and BuildingIQ's system was assumed to enable a 15% performance improvement in HVAC energy use. This level of performance improvement is in the mid-range of BuildingIQ's record of achievement.

Table 1 illustrates the point that if the building is already highly performing (above the 90th percentile), the improvement is closer to the margin, in the range of 1-2 Energy Star points. If however, the building is relatively inefficient—performing at the 60% level or lower—the gain from implementing BuildingIQ's platform will be considerably greater, closer to 5 Energy Star points.

Before BuildingIQ		After BuildingIQ		Gain in Energy Star rating points
kWh/sq ft per yr	Energy Star rating	kWh/sq ft per yr	Energy Star rating	
25.3	95	23.6	96	1
30.1	90	28.1	92	2
37.2	80	31.5	84	4
43.1	70	40.2	75	5

Table 1—*Energy intensity and Energy Star rating for a given building before and after implementing BuildingIQ. The lower the energy efficiency performance before BuildingIQ, the greater the gain.*

3.0 LEED Ratings

Leadership in Energy and Environmental Design (LEED) is a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes, and neighborhoods. Established in 1998 by the U.S. Green Building Council (USGBC), it is regarded by many in the industry as the world's premier benchmark for green buildings.

The USGBC works towards a mission of market transformation. To this end, more than 56,000 commercial and institutional projects are currently

participating in LEED, comprising 10.4 billion square feet of construction space in 147 countries and territories. Every day, more than 1.5 million square feet of space is certified using LEED.

LEED has undergone four major updates/iterations since 1998, each expanding the scope and depth of the ratings, as well as refinement in processes of measurement and classification. The latest iteration, version 4, was released in 2013. Among other extensions, LEED v4 puts new emphasis on monitoring, measurement and performance with demand response moving from a pilot credit to a full application credit, and measurement and verification (M&V), all key capabilities inherent in BuildingIQ's software platform. Version 4 is described in greater detail in Section 3.2 below.

For the most part, LEED version 3, adopted in 2009, has been the primary rating system under which most green buildings today have been ranked. Version 3 encompasses nine rating systems under five overarching categories, listed below, which correspond to the specialties available for the LEED Accredited Professional program:

- Green building design and construction
- Green interior design and construction
- Green building operations and maintenance
- Green neighborhood development
- Green home design and construction

As an analytical tool, LEED is a system of points based on several factors that evaluate the energy efficiency of a building as well as its sustainability characteristics. The latter include levels of greenhouse gas emissions (GHG), and a provision for indoor environmental quality. The LEED rating system provides buildings with four levels of potential certification based on the attainment of all of the required prerequisites, in addition to the total quantity of points that the project earns during the certification review process relative to their applicable rating system. The four levels of certification in ascending order and difficulty include Certified, Silver, Gold, and Platinum. BuildingIQ's Predictive Energy Optimization™ is able to increase a building's LEED points significantly, as described below.

3.1 BuildingIQ Can Improve the LEED Rating of a Building

Implementing BuildingIQ's platform can contribute significantly to the ability of a project to earn up to 18 LEED points for a given LEED EB O+M building—as shown in the aggregation at the bottom of Table 2—as well as contributing significantly to compliance with required prerequisite criteria.

An increase in 10 LEED points represents a formidable improvement in the energy management of a building, sufficient for an upgrade in LEED Certification. It can:

- Upgrade a non-qualifying building (most typically a building struggling to attain the minimum Energy Star score of 69 in EApr1 to register the project and 71 required in EAc1 to begin to earn points) to the Certified level (40-49 points).
- Upgrade a Certified level building (40-49 points) to the Silver level (50-59 points), or conceivably to the Gold level (60-79 points).
- Upgrade a Silver level building (50-59 points) to the Gold level (60-79 points).
- Upgrade a Gold level building (60-79 points) to the Platinum level (80-110 points).

The potential gain from BuildingIQ's software is broken down into 15 categories of measurement, as detailed in Table 2. The gains are based upon the 2009 LEED version 3, and are focused exclusively on building operations and maintenance (EBOM).

Energy Efficiency Ratings—Benchmarks that Drive Excellence in Building Design and Operations

LEED 2009 for Existing Buildings Operations & Maintenance		Upper range of BIQ aided credits	Comments
Energy And Atmosphere			
Prereq 1	Energy Efficiency Best Management Practices	Compliance	Compliance is required. BuildingIQ aids compliance by providing a system of record for many of the operating schedules and HVAC set point required for compliance.
Credit 1	Optimize Energy Efficiency Performance	5	BuildingIQ increases Energy Star rating by up to 5 basis points, resulting in up to 5 LEED points.
Credit 2.1	Existing Building Commissioning—Investigation and Analysis	2	Assists through enhanced data collection and reporting.
Credit 2.2	Existing Building Commissioning—Implementation	2	Assists through enhanced data collection and reporting.
Credit 2.3	Existing Building Commissioning—Ongoing Commissioning	2	Assists through enhanced data collection and reporting.
Credit 3.1	Performance Measurement—Building Automation System	1	Assists through enhanced data collection and reporting, as well as monthly ongoing M&V.
Credit 6	Emissions Reduction Reporting	1	BuildingIQ M&V module quantifies energy savings, which in conjunction with e-Grid translates to GHG emissions calculations.
Indoor Environmental Quality			
Credit 1.2	Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring	1	BuildingIQ aids in monitoring and documenting required levels of outdoor air, given the proper airflow monitoring hardware.
Credit 2.3	Occupant Comfort—Thermal Comfort Monitoring	1	BuildingIQ provides tracking and optimization of systems that regulate indoor comfort.
Innovation in Operations			
Credit 1.1	Innovation in Operations: energy consumption optimization automation	1	BuildingIQ can qualify for up to 1 point for Innovation in Operations using the Pilot DR program credit.
Credit 1.2	Innovation in Operations: demand response optimization automation		
Regional Priority Credits			
Credit 1.1	Regional Priority: Optimize Energy Efficiency Performance	1	Many of the urban areas provide regional credits for some of the above named credits. These are essentially bonuses and are credits, and typically incent Energy Optimization and Thermal Comfort Monitoring.
Credit 1.2	Regional Priority: Thermal Comfort Monitoring	1	
Total (Possible Points in the LEED system: 110)		18	

LEED Rating Scores by Achievement Level: Certified 40-49 points, Silver 50-59 points, Gold: 60-79 points, Platinum 80-110 points

Table 2—*Range and distribution of BuildingIQ-enabled gain in LEED points through various improvements in building O&M performance.* ***Please Note:*** *(1) The above is based on LEED 2009. LEED version 4.0, which is due late 2013/ early 2014, will probably provide for additional points for Demand Response, which can be enabled by BuildingIQ's DRIQ. (2) To gain any LEED points for Credit 1 (Optimize Energy Performance) the building must have a pre-BuildingIQ EnergyStar Rating of 69 or better to qualify for registration.*

The greatest potential contributions —of more than 5 points — can be found in the area of Energy and Atmosphere, most notably the area designated as "Optimize Energy Efficiency Performance." This goes to the heart of BuildingIQ's Predictive Energy Optimization platform, and represents a potential composite gain of 5 LEED points. (It also can increase the Energy Star rating by up to 5 basis points). Utilizing the previous exemplar with HVAC, system energy assumes to represent 45% of the total building usage, and BuildingIQ's system assumes to enable a 15% performance improvement in HVAC energy use. This level of performance improvement is in the mid-range of BuildingIQ's record of achievement and representative of an overall 7% energy use reduction. BuildingIQ projects have exceeded 20% performance improvements in HVAC energy use reductions so the analysis presented herein is very attainable.

BuildingIQ also assists in the Commissioning of Existing Buildings Investigation and Analysis EAc2.1 – 2 Points; Implementation EAc2.2 – 2 Points; Ongoing Commissioning EAc2.3 – 2 Points. These Commissioning related Credits are greatly assisted with BuildingIQ's inherent measurement and recording functions with the obvious pursuit of EAc2.3 for Ongoing Commissioning greatly facilitated by the presence of BuildingIQ. If all of these 3 Commissioning Credits are pursued there is a potential for 6 LEED points to a given building. BuildingIQ can also contribute towards the 1 point available in EAc 3.1 through enhanced data collection and reporting capabilities. Continuing on, M&V is built into BuildingIQ's software, allowing confirmed measurement of energy savings, and the ability to easily translate such savings into greenhouse gas emission reductions, valued at 1 LEED point (EAc 6). Further, meeting the requirements for "best management practices in indoor air quality and occupancy comfort" (IEQc 1.2, 2.3) are straightforward with BuildingIQ's optimization capabilities; and these, in turn, can add 2 LEED points. Finally, demonstrating "innovation in intelligent operations," can yield an additional 1 LEED point using the established Pilot Credit for Demand Response, and finally will contribute in many locales to the attainment of 1 LEED point for the Regionalization Credit related to Optimizing Energy Performance. The automation of optimization protocols for energy consumption and demand response are central to BuildingIQ's software platform.

3.2 LEED v4—New Version of the Green Building Program

The U.S. Green Building Council (USGBC) announced its newest version of LEED, version 4, at the Annual Greenbuild International Conference and Expo in Philadelphia, on November 20, 2013. USGBC characterizes LEED v4 as a "quantum leap for LEED," helping to accelerate global adoption of sustainable green building standards and practices. At the time of the announcement, 122 LEED v4 beta projects were underway around the world. The first LEED v4 certifications were awarded at the Conference—a Gold for Haworth Beijing Organic Showroom, and a Silver for the building at 1800 K Street in Washington, D.C.

Some of the key expansions incorporated into LEED v4 include:

- Enhanced performance management capabilities to meet the full performance potential of buildings. These include automated demand response (DR) for at least 10% of peak demand, and electric grid responsiveness and support.
- New market sectors, including data centers, distribution centers, existing schools and retail, and mid-rise residential projects.
- Simplified LEED credit submittal requirements
- New impact categories, including climate change, human health, water resources, biodiversity, community and natural resources.

USGBC states that participation in an existing demand response program, coupled with completion of the specific activities listed below, is worth 3 LEED points.

- Have in place a system with the capability for real-time, fully automated DR based on external initiation by a DR program provider. Semi-automated DR may be utilized in practice.
- Enroll in a minimum one-year DR participation contractual commitment with a qualified program provider, with the intention of multiyear renewal, for at least 10% of the annual peak electricity demand. Peak demand is based on electric utility bills.
- Develop a comprehensive plan for meeting the contractual commitment during a DR event.
- Include the DR processes in the current facilities requirements and operations and maintenance plan.
- Initiate at least one full test of the DR plan.

3.3 BuildingIQ's Capabilities Align with LEED v4

BuildingIQ's award-winning software platform optimizes energy use in commercial buildings, using a set of capabilities that align with the objectives of LEED v4. It uses advanced algorithms that automatically fine tune and control HVAC systems. The result: building owners reduce energy consumption 15-40%, and peak loads up to 30% during DR events. Operators can monitor savings in real-time, visually, and map trends. M&V is built in to guarantee savings. As a result, BuildingIQ's customer base—ranging from NV Energy to Argonne National Laboratories, to the Mount Pleasant Shopping Centre in Australia—earn significant improvements in their LEED, NABER and other sustainability measures.

By connecting directly into the control system, BuildingIQ can identify and isolate other problems hindering the building's ability to run efficiently. This diagnostic capability provides additional opportunities for energy and financial savings. The sophisticated M&V capability built into BuildingIQ's platform ensures proven and trusted energy savings necessary for investors, auditors, and energy efficiency administrators.

BuildingIQ's automated and optimized DR technology can establish meaningful and accurate relationships between DR lead-time, incentives, DR duration, external environmental conditions and building occupancy. The key is understanding the HVAC capacity and thermal characteristics of a building.

BuildingIQ's software platform allows full integration with utilities, giving them better insight into potential and available customer DR resources. These new technologies automatically inform utilities of the future load profiles of buildings enrolled in DR programs—allowing utilities to better plan grid operations before a critical peak event occurs.

4.0 BuildingIQ Can Improve the NABERS and Green Star Ratings in Australia

4.1 NABERS

The National Australian Built Environmental Rating System (NABERS) is a performance-based environmental impact rating system for existing buildings, established by the government of Australia through the Office of Environment and Heritage. It was launched in 1998 with a much narrower focus than today—an energy efficiency rating tool for office buildings only, titled the Australian Building Greenhouse Rating (ABGR) system. More recently, NABERS ratings have expanded to include ratings for energy and other environmental factors for:

- Offices
- Hotels
- Residential housing

- Retail establishments.
- Ratings are now being developed for schools, hospitals and transport in New South Wales (NSW).

NABERS currently measures the energy efficiency, water usage, waste management and indoor environment quality of a building or tenancy, along with its impact on the environment. It does this by using measured and verified performance information, such as utility bills, and converting them into an easy to understand Star Rating scale from 1 to 6. For example, a 6-Star rating demonstrates market-leading performance, while a 1-Star rating means the building or tenancy has considerable scope for improvement. The system can be used for a complete building, or for only the tenant spaces, or for the base building alone (common area). The system can also be restricted to energy matters exclusively.

NABERS provides a Star Rating to buildings according to their actual performance, using 12 months of energy data. The Rating is derived from the actual amount of energy the building or tenancy consumes in a year, as well as operational factors. The Rating reflects the way energy is managed over and above the efficiency of design. The benchmark allows comparison with the greenhouse performance of other buildings.

NABERS Energy Star is used to help building owners and tenants across Australia benchmark the greenhouse performance of their office premises. It takes into account the consumption of electricity, gas and other energy sources, such as fuels, related to greenhouse gas emissions (GHG). Improvements in NABERS ratings directly correlate with decreases in GHG. On average, an improvement of 1 (one) NABERS Energy Star is equal to a decrease of 15% in GHG. NABERS Energy ratings may be inclusive of GreenPower (e.g. renewables) in situations where GreenPower is purchased and used for a particular building.

The NSW Department of Environment, Climate Change and Water has developed and continues to manage NABERS, in conjunction with industry representatives on behalf of the Australian, state and territory governments.

BuildingIQ is continuously evaluating the improvement its platform can make in NABERS Star Ratings.

4.2 Green Star

Green Star is Australia's mark of quality for the design and construction of sustainable buildings, fit-outs and communities, and was established by the Green Building Council of Australia (GBCA). Green Star is very similar to the LEED system, and has grown into a comprehensive rating system for all types of projects— apartment buildings, schools, university buildings, hospitals, offices, shopping centers and industrial facilities, etc. Certified buildings range from 4-Star to 6-Star ratings.

Green Star rating tools award points for achievement of specific credits in each rating category, as defined in the applicable Green Star Technical Manual.

The single (overall) score of a project is determined by:

- Calculating each category score,
- Applying an environmental weighting to each category,
- Adding all weighted category scores together, and
- Adding any innovation points that may have been achieved.

A project's score is determined for each category based on the percentage of points achieved as follows: Category Score = Number of points achieved divided by the number of points available x 100%. For example, if 8 energy points were achieved out of a total available of 13 then the category score would be 61.5%.

BuildingIQ is evaluating the improvement its platform can make in Green Star Ratings.

5.0 Future of Intelligent Buildings

The future of green buildings lies in intelligence—intelligent buildings capable of learning, making decisions, fine-tuning, optimizing, interacting. And these intelligent buildings, in turn, will be increasingly linked for multiple purposes with other smart buildings, embedded in smart cities with intelligent infrastructure, ranging from the smart power grid, to municipal systems for water, waste, traffic, and emergency services. With the kind of software implemented and envisioned by BuildingIQ, the intelligent building of the future will be able to achieve unprecedented levels of energy efficiency as a standalone structure, while at the same time contributing to higher efficiencies in the larger web of societal activity.

A recent EEI survey of diverse organizations indicated that smart building technology was rated the second most likely technology to increase in market adoption in the next 10 years. A smart building allows the operators to measure and monitor building conditions in real time, automate building controls, and enhance building performance. With smart building technology at its core, networked asset management across a campus, business park, or distributed enterprise can become a reality.

5.1 Grid Responsiveness and Resiliency

The horizon is particularly bright because the building science industry is moving in the same direction as the smart power industry, not just at the regional transmission level but on the widely dispersed utility distribution level where the consumers—and their buildings—reside. Future building control systems are developing in parallel with smart substations and the hierarchical control systems of power flow management. The real payoff will come in the not too distant future when these systems begin to harmonize.

Grid responsiveness and grid resiliency represent major opportunities. Early interaction with the grid is already well on its way in terms of demand response capability. Automation and optimization of DR are the next steps, so that building operators are comfortable with sharing operational control of their buildings with utilities during DR events, and so that utilities can plan ahead and count on their customers for firm, demand-side based, "supply resources" when needed.

This interactive partnership can contribute to grid stability by providing the demand-side equivalent of spinning reserve, frequency control, and related grid regulation services. As regional balancing authorities seek to integrate greater levels of renewable resources into the generation mix, intelligent buildings and distributed generation become increasingly valuable.

The intelligence needed for the grid to break apart and reconfigure automatically during and after emergencies is a critical step for the smart grid, one that can add true resilience to the nation's power supply. Intelligent buildings that can operate in isolation, in mini grids, or in full power mode will be essential components to enhance resilience. Following Hurricane Sandy, the ability to reconnect and take advantage of solar installations during emergencies became apparent, and is now a stated objective of many utilities. One of the surprises coming out of Hurricane Sandy was that the rooftop solar cells did not take off like propellers in the high winds; if the roof remained, the solar cells stayed intact. These solar installations are vital to keeping the communication network running during crises.

5.2 Growing Interest in Near-Zero Energy Buildings

The high expectations for intelligent buildings can be seen in the growing interest in near zero, net-zero, and energy positive buildings. The bell weather state of California has included net-zero energy as a 2030 goal for commercial buildings in its strategic plan.

The U.S. Army, in an effort to stimulate interest and to drive design and technological development, recently established a Net-Zero Initiative for energy, water and waste at a number of installations around the world.

Rating systems are responding to these developments. LEED v4 is designed to stimulate green building development around the world, to advance energy management technologies, extend DR capability, ensure advanced metering technology and networked operation with electric utilities, improve indoor air quality, and encourage the development and use of automated M&V. These are all consistent with BuildingIQ's direction and mission.

5.3 Intelligent Buildings are the Stock in Trade for BuildingIQ

With HVAC systems accounting for 40-45% of a building's energy consumption, space conditioning is the area of greatest opportunity for energy efficiency improvements, both short term and long term. BuildingIQ's prediction and optimization algorithms are targeted at improving the energy efficiency of HVAC performance in line with LEED and Energy Star benchmarks. BuildingIQ's software is compatible with nearly all building management systems. It is a subscription service that affords fast and easy installation and the generation of positive cash flow within months. It has built-in DR capability, along with a module for M&V to ensure energy savings are true and verifiable. All together, these capabilities can contribute significantly to the attainment of LEED Credit attainment in many categories as described in this whitepaper brief relative to many of the LEED v4 rating systems and subsequently to the attainment of project certifications.

The growing concerns about the "persistence" of energy efficiency measures (resulting from hardware installations where performance can degrade over time) are not an issue with BuildingIQ. Its software platform affords continuous, real-time monitoring capability, integrated diagnostics, and programmable upgrades. Energy efficiency improvements are today in the 15-40% range, and peak demand savings are up to 30% during DR events.

Third Party Review Conducted By:

Daniel A. Huard, *LEED AP BD+C, AP EB O+M, PMP, LFA*
USGBC Nevada 2014 President
USGBC EP Chair - W. (South) Region 2012-14
USGBC LEED 2012-v4 Regionalization Chair NV
GBCI IERT Member
ILFI Ambassador, Facilitator

About BuildingIQ

BuildingIQ provides advanced, cloud-based software to reduce HVAC costs in commercial buildings. Customers save 10-25% of HVAC energy and can add 20 points to their LEED score. BuildingIQ software continuously monitors inputs including weather forecast, occupancy, energy prices and demand response events. It makes small changes in HVAC settings that result in large financial gains without impacting occupant comfort.

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1065 East Hillsdale Blvd., Suite 310
Foster City, CA 94404 USA
www.buildingiq.com
biq-sales@buildingiq.com

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