THE ROAD TO PLATINUM
Using the USGBC's LEED-EB® Green Building Rating System to Retrofit the U.S. Environmental Protection Agency's Region 10 Park Place Office Building

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INTRODUCTION

According to the U.S. Green Building Council (USGBC), buildings account for a significant amount of environmental degradation. The building sector is the number one producer of global CO_2 emissions in the U.S., followed by the transportation and industrial sectors.[1] (See Figure 1 for the environmental impact of all U.S. buildings.) The concept of green buildings represents a major paradigm shift in the architectural, construction, and engineering fields. As society increasingly switches its appreciation of buildings from merely size and aesthetics toward environmental stewardship and efficiency, the USGBC's LEED Green Building Rating System has become increasingly popular to follow.

Since its inception in 2000, the LEED system has been promoting and monitoring green building practices throughout the United States. With a four-tiered rating scheme including LEED Certified, LEED Silver, LEED Gold, and LEED Platinum, the system currently has 35,000 projects already on their way toward certification.[2] In particular, the LEED for Existing Buildings (LEED-EB) system looks to retrofit existing buildings into those that are more sustainable, efficient, and environmentally friendly. Doing so significantly reduces the demand for new resources, as construction managers can recycle and reuse building materials and incorporate them into new designs. This truly is the definition of green building and is the way of the future.

By implementing green building practices, many of the adverse environmental impacts of buildings can be dramatically reduced, often for only a one to two percent initial cost premium over the price of conventional construction practice.[3] Several environmental benefits of green buildings include improving air and water quality, conserving natural resources, and becoming more energy efficient. Sudies have shown that green buildings, compared to normal buildings, can reduce energy use by 24–50 percent, CO_2 emissions by 33–39 percent, water use by 40 percent, and solid waste by 70 percent.[4] (See Figure 2 for the impact of green commercial buildings compared to the average commercial building.) In fact, if half of all new construction within the U.S. were built to match these percentages, it would be the equivalent of taking more than one million cars off of the road every year.[5] Economic benefits include reducing operating costs, improving employee productivity and satisfaction, and optimizing economic performance over the life cycle of the structure.[6] Additionally, health and community

FIGURE 1. Source: www.usgbc.org/.

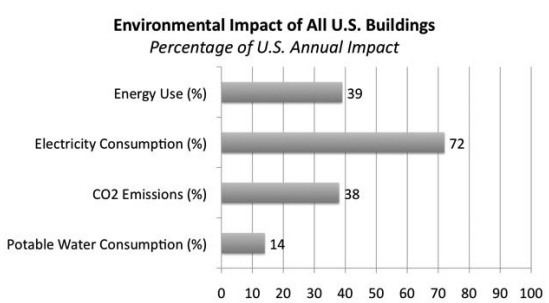
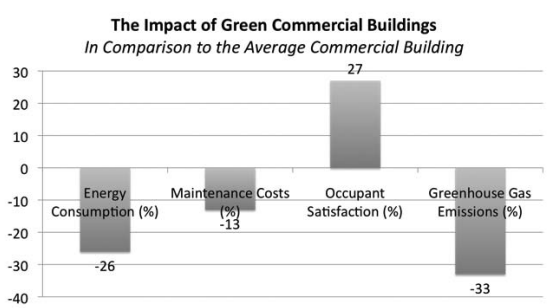


FIGURE 2. Source: www.usgbc.org/.



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benefits include enhancing occupant comfort and health, and contributing to an overall positive environmentally-conscious reputation.[7] *Furthermore, Taryn Holowka states, "people in green buildings have 40-60 percent fewer incidents of colds, flu, and asthma; patients in green hospitals are discharged as much as two and a half days earlier; and kids in green schools increase their test scores by as much as 18 percent."*[8]

The U.S. EPA's Region 10 Park Place office building in Seattle was built in 1970. Its owner, Washington Holdings, and building manager, Wright Runstad & Company, have been encouraged by the EPA to use innovative energy conservation design, water conservation, waste reduction, stormwater management, and other strategies to make the structure more sustainable. Following the EPA's Green Building Strategy, which states that the EPA aims to strengthen the foundations of green building and raise public awareness of building-related impacts and opportunities, the Park Place building has become only the fifteenth LEED-EB Platinum building in the world, and one of the most impressive nearly-forty-year-old buildings in the entire United States. By using the LEED-EB Platinum green building rating system, the Park Place building management team has been able to successfully lower the building's energy consumption rate, improve its water efficiency, and make many other beneficial changes—all of which demonstrate just how effective the LEED system is at producing higher performance buildings.

KEYWORDS

LEED-EB, EPA Environmentally Preferable Purchasing, green building, embodied energy, concrete, supplementary cementitious materials

EPA REGION 10 PARK PLACE OFFICE BUILDING LEED-EB CREDIT IMPLEMENTATION

The LEED-EB Green Building Rating System uses six different categories to measure the essential elements of green buildings. For each of these categories, I will document one or two outstanding Park Place building accomplishments. (See Appendix A for a complete chart of LEED-EB credit implementation strategies, as well as Appendix B for the LEED-EB credit checklist.)

Sustainable Sites

Containing fourteen out of the total eighty-five points available, Sustainable Sites looks to reduce the building's impact on the surrounding natural habitat. This category discourages building expansion toward previously undeveloped land, aims to increase transportation options, manages stormwater runoff, supports native landscaping, and reduces heat island effect and light pollution. With the implementation of a stormwater management plan designed to mitigate run-off from the building, the Park Place building will mitigate 53 percent of the annual stormwater falling on the site.[9] In addition, the Park Place building has installed and maintained a vegetated green roof area that constitutes over 62 percent of the total roof area.[10]

Water Efficiency

Making up five out of the total eighty-five points, the goal of the Water Efficiency category advocates for a more efficient use of water.[11] To satisfy Credit 1.1–1.2, the Park Place building will capture stormwater runoff from its green roof and use it to provide flush water for the building's toilets.[12]

Energy & Atmosphere

With twenty-three possible points, Energy & Atmosphere is the largest category. It looks to make buildings more energy efficient using the following energy strategies: commissioning, energy use monitoring, efficient design and construction, efficient appliances, systems and lighting; use of renewable and clean sources of energy; and other innovative strategies. For Credit 3.3, the Park Place building has been supplied with systems for continuous tracking and optimization of systems that regulate indoor comfort and the conditions delivered in occupied spaces[13]

Materials & Resources

The Materials & Resources category is worth sixteen points and encourages the selection of sustainably grown, harvested, produced, and transported products and materials. It promotes material reuse and recycling, minimizing the amount of construction-

based waste. The Park Place building management team has implemented a sustainable purchasing program to reduce the environmental impacts of cleaning products, disposable janitorial paper products, and trash bags. The total sum of sustainable cleaning products and materials constitutes 96 percent of the total amount purchased.[14] In addition, the EPA has introduced a building occupant waste reduction and recycling program.[15]

Indoor Environmental Quality

The Indoor Environmental Quality section uses its twenty-two possible points to promote strategies that improve the quality of indoor air, and provide natural daylight and views. The Park Place building management team has implemented a low-impact environmental cleaning policy which focuses on the use of sustainable cleaning products.[16]

Innovation & Design

Innovation & Design, the sixth and final section, contains five points. The Innovation in Design credit category provides these points for building projects that use advanced technologies and strategies to improve a building's performance. For example, the Park Place building was scanned with infrared to locate problem areas of heat loss in the building envelope.[17]

These credit strategies mentioned above, which significantly improve indoor air quality, increase energy efficiency, and illustrate the importance of using green building products and materials, will produce a superior LEED-EB Platinum building. (See Figure 3 for the Park Place building attempted distribution of LEED-EB credit points.)

GREEN BUILDING PRODUCTS AND MATERIALS

As a part of the Park Place building LEED-EB Platinum project, a considerable amount of research on evaluating and determining green building materials and products that would be appropriate for the Park Place building project was conducted. For such a project, it is important to determine what exactly constitutes a "green" building material. This definition is difficult for all professionals to agree upon, but, put simply, green building materials possess

FIGURE 3. Source: www.usgbc.org/.

FIGURE 4. Essential Elements of Green Building Materials. Source: Keenan and Georges, 29.

many of the following characteristics (See Figure 4 for a diagram of green building material essentials.):

- *Are healthy for the interior environment*—do not cause indoor air quality problems, contain few or no harmful volatile organic compounds (VOCs), nor do they cause health problems to those who manufacture the material.

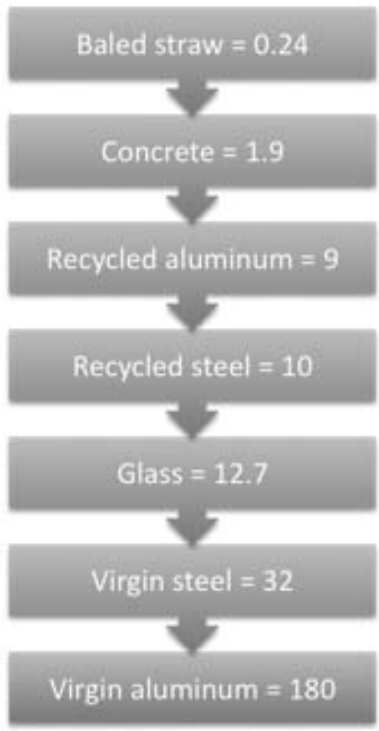
- *Are healthy for the outdoor environment*—do not cause harm to the environment or produce dangerous by-products, and do not cause health problems to those who extract it.
- *Help minimize building energy use*—prevent heat gain or loss and reduce electricity consumption.
- *Have low-embodied energy*—do not require a high amount of energy to acquire or manufacture.
- *Are durable, reusable, recyclable, and/or biodegradable*—will not need replacement or become waste soon after use.
- *Are locally obtained*—do not require excessive transportation to and from collection, manufacturing, and installation sites."[18]

Aside from the general green building material guidelines listed above, there are specific ways to determine how environmentally conscious particular building materials are. One of these ways is calculating the embodied energy of a material. The embodied energy of a material is a measure (MJ/kg) of the total amount of energy needed to produce the product, including raw material collection, processing, and manufacturing, as well as transportation energy costs. A specific building material that has a lower embodied energy value is considered to be less energy-extensive than a building material with a higher embodied energy value. (See Figure 5 for examples of building materials and their associated embodied energy values.)

A much more comprehensive evaluation of the environmental impacts of a building material can be found by conducting a life cycle assessment (LCA). A life cycle assessment is a holistic evaluation of the relationship between a material or product and the environment throughout its cradle-to-grave life cycle. Looking at the associated environmental impacts of resource extraction, manufacturing, transportation, on-site construction, operations and maintenance, demolition and disposal (or recycling/reuse), an LCA also examines environmental impacts such as water use, resource depletion, toxic emissions, global warming potential, and waste generation.[19]

Looking at the environmental benefits of green building materials and products, it is important to distinguish between the two. While both have low environmental impacts compared to industry alternatives, green building materials refer to materials that may be individual elements of building products, whereas green building products refer to complete building components. However, in some cases green building products may not be comprised of green building materials. For example, a Heating, Ventilation, and Air Conditioning (HVAC) unit may claim to be an environmentally friendly final product, but could be made of virgin aluminum, a material with an extremely high embodied energy value. This example demonstrates the importance of life cycle analyses and embodied energy models—being able to see the whole story behind a material or product.

FIGURE 5. Building Materials and their Associated Embodied Energy Values. Source: Keenan and Georges, 29.



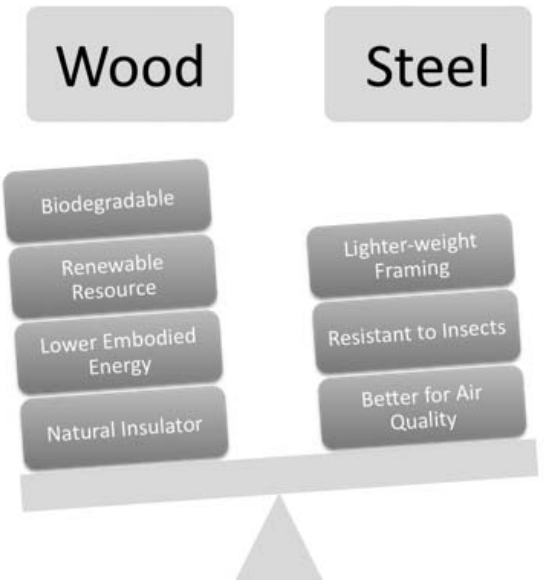
Determining which green products to purchase for the EPA's soon-to-be renovated Park Place office building is very straightforward. Through the collaboration with the EPA's Environmentally Preferable Purchasing (EPP) Program, it allows the Park

Place building management team to decide which products to use. According to the EPA's Environmentally Preferable Purchasing website (http://www.epa.gov/epp/), "The Program is helping agencies across the federal government comply with green purchasing requirements, and, in doing so is using the federal government's enormous buying power to stimulate market demand for green products and services."[20] Available to the public, this website is a database meant to help consumers find and evaluate green products such as carpeting, office supplies, landscaping, etc. While evaluating products for the Park Place building's design proposal, the EPP gives the management team the proper resources to make good judgment.

One discussion regarding the selection of green building framing materials involves the use of steel or wood. Steel is highly recyclable and its raw materials are plentiful; it weighs less than wood, and is more regular and dimensionally stable. Steel also has a resistance to insects and does not require treating the soil with termiticides; therefore, it is better for air quality. Although steel has many advantages, it acts as a conductor of heat and electricity. It also requires a strip-mining method for the iron and limestone used in its manufacturing process, which has caused severe erosion and ecosystem destruction.[21] Wood, on the other hand, is a natural insulator, is biodegradable, has much lower embodied energy, and is also recyclable. However, clear-cutting forests has caused habitat destruction and siltation of streams.[22] Overall, in situations where there is an opportunity to use both materials, wood from a certified and well-managed forest is generally the more environmentally conscious choice (See Figure 6 for a side-by-side comparison). Having a manufacturing process that uses much less energy, while creating less pollution and environmental degradation, using certified wood slightly outweighs steel as a framing material option.[23]

While discussing green building materials and products and how to evaluate them, it is useful to analyze a building material that is not green. Concrete, a strong building material with high heat storage capacity, and in particular its binding agent, cement, was a main focus of study. Accounting for 10–15% of concrete's mass and 92% of its embodied energy, cement and its associated manufacturing process is extremely ineffective and has a large impact on our environment.[24] In 2001, the U.S. EPA estimated that 90 million metric tons of cement was produced, releasing 77 million metric tons of CO_2 into our atmosphere.[25] Of these 77 million tons of CO_2, "about 46 percent of these emissions are attributed to combusting fuel, predominantly coal . . . to fire cement kilns; . . . the remaining 54 percent of the emissions result from the chemical process of making cement, which involves converting limestone to calcium oxide and CO_6."[26] Overall, cement production accounts for 1.5 percent of all U.S. CO_2 emissions and over 8 percent of the total anthropogenic CO_2 emissions worldwide.[27] Clearly, concrete, and more specifically cement, is solely responsible for an incredible amount of environmental degradation. Although cement's embodied energy value is fairly low compared to other building materials (refer to Figure 5), its extensive use in construction projects has created an intolerable amount of air pollution and has increased our nation's dependence on coal-fired power plants. Fortunately, there are steps that our society can take in order to dramatically reduce the impact that concrete and cement have on our environment. Nearly 60 percent of the cement used

FIGURE 6. Wood vs. Steel as a Framing Material. Source: Keenan and Georges, 37.



in concrete production can be substituted with supplementary cementitious materials (SCMs), which all share the same strength, performance, and durability as cement.[28] Salvaged from industrial waste, SCMs include fly ash, a by-product of coal-fired power plants, blast furnace slag, a result from the production of steel, and silica fume, a waste product from the silicon metal industry.[29] By implementing the use of SCMs, a large percentage of CO_2 emissions and energy consumption attributed to cement production could be negated.

CONCLUSION

By retrofitting the nearly-forty-year-old Park Place building to match the LEED-EB credit requirements, Washington Holdings and Wright Runstad & Company, with encouragement from EPA management teams, have accomplished an astounding feat, becoming only the fifteenth LEED-EB Platinum building in the world. By reducing the Park Place building's impact on its surrounding environment, reducing potable water consumption, making it more energy efficient, using true green building products and materials, improving air quality, and other innovative measures, the building has transformed into one that works with its environment, not against it. Not only have the building management teams made their particular building more sustainable, they have also given hope and encouragement to similar building management teams to follow in their footsteps.

NOTES

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22. Keenan and Georges, 37.
23. Keenan and Georges, 38.
24. Keenan and Georges, 31.
25. Keenan and Georges, 31.
26. Keenan and Georges, 31.
27. Keenan and Georges, 31.
28. Keenan and Georges, 33.
29. Keenan and Georges, 33.

APPENDIX A

Park Place Building: LEED-EB 2.0 Credit Implementation Strategies

(All information taken from the LEED-Online credit scorecard and the Sustainability Award Factor Document)

Sustainable Sites			
Credit	**Classification**	**Implementation Overview**	**Points [14]**
Prerequisite 1	Erosion & Sedimentation Control	The restoration of existing eroded soil areas and eliminating conditions that result in erosion or sedimentation in all current and future maintenance and construction work. Soil will be watered after new plantings are in place, the existing topsoil and mulch will be reused, and new mulch will be added as needed. The Park Place Building will follow the City of Seattle's code requirements for stormwater detention, and generally will involve a building roof drainage system. Topsoil will be stockpiled and covered for reuse to prevent stormwater runoff and/or wind erosion during the construction period. Topsoil will also be watered down and covered if wind conditions are severe.	**Required**
Prerequisite 2	Age of Building	The Park Place Building was designed by Van Slyck, Callison, and Nelson Architects, and was built in 1970.	**Required**
Credit 1.1–1.2	Plan for Green Site & Building Exterior Management	Plant material and landscape designs will reflect environmental concerns specific to Seattle's climate. Plant species will be native to the Pacific Northwest and will not require excessive amounts of water. Maintenance will be environmentally friendly and will conserve resources. An integrated Pest Management program will be implemented, excluding the use of toxic chemical pesticides or insecticides. Landscaping waste will be recycled back into the ground or composted. Manual irrigation processes will be employed for an irrigation management plan. Sustainable alternatives to chemical fertilizers will be used if deemed necessary. The building exterior will be cleaned with the utmost sustainable cleaning agents, preferably those that are Green Seal Certified. Paints and sealants used on the building exterior will comply with the CTA Low VOC Policy. Snow and ice will be removed from all entrances, sidewalks, steps, landings, handicapped accessibility areas, approaches, and within the property lines or as needed. Snow will not be piled on or near trees, shrubbery, ground cover, grass areas, or flowerbeds. Chemicals will be used to mitigate ice and snow hazards only as necessary. Whenever possible, the use of salt and calcium chloride will be avoided, and calcium magnesium acetate will be preferred for deicing. All chemicals used will comply with federal specifications and local codes.	**2**

Credit 2	High Development Density Building and Area	The Park Place project increases localized density to conform to existing or desired density goals by utilizing a site that is located within an existing minimum development density of 60,000 square feet per acre. **Park Place Building:** Density Radius [ft] = 460.11 Property Area [acres] = 0.54 Building Gross Square Footage [ft^2] = 456,304 456,304 [ft^2] ÷ 0.54 [acres] = 845,007.41 Density [ft^2 / acre] **Density Boundary Survey [20 Buildings]:** Total Building Gross Square Footage [ft^2] = 9,451,970 Total Property Area [acres] = 16.65 9,451,970 [ft^2] ÷ 16.65 [acres] = 567,685.89 Average Density [ft^2 / acre]	**1**
Credit 3.1	Alternative Transportation: Public Transportation	The Park Place Building is located within 1/4 mile of two or more public or campus bus lines usable by building occupants. (Option B)	**1**
Credit 3.2	Alternative Transportation: Bicycle Storage & Changing Rooms	The Park Place Building is planning to install showers and changing facilities that will be available to the entire building. Bicycle storage is already in place.	**1**
Credit 3.3	Alternative Transportation: Alternative Fuel Vehicles	The Park Place Building has a parking garage with 177 vehicle parking spots. The building has designated 6 of these stalls as reserved for alternative fuel vehicles, which is over 3% of the parking available. These spaces for alternative fuel vehicles are located on the P-1 level, which is the preferred floor with the closest access to the elevator, entrances, and exits. They are not reserved on an individual basis and are available as first come, first serve for daily and monthly parkers. **Park Place Building:** Total Reserved Alternative Fuel Parking Spots = 6 Total Parking Spots = 177 6 Reserved Alternative Fuel Parking Spots ÷ 177 Total Parking Spots = 3.39% of Total Available Parking	**1**
Credit 3.4	Alternative Transportation: Car Pooling & Telecommuting	The Park Place Building has implemented an occupant telecommuting program that reduces commuting frequency by over 20%. In fact, 38% of Park Place occupants use some form of alternative transportation. This reduces the amount of Park Place associated single-occupancy vehicles used to travel to and from work. (Option B)	**1**

Credit 4.1–4.2	Reduced Site Disturbance: Protect or Restore Open Space	The Park Place Building has restored the site area that does not fall within the building footprint (Garage Structure Footprint) by replacing impervious surfaces with a green roof on the upper level of the building consisting of 9,766 ft^2 of 4" planted roof. This satisfies 78.50% of the Garage Structure Footprint. **Park Place Building:** Total Site Area [ft^2] = 29,577 Total Building Foot Print [ft^2] = 17,136 29,577 [ft^2] – 17,136 [ft^2] = 12,441 [ft^2] Garage Structure Footprint Total Open Space Restored Via Green Roof [ft^2] = 9,766 9,766 [ft^2] ÷ 12,441 [ft^2] = 78.50%	**2**
Credit 5.1–5.2	Stormwater Management: Rate and Quantity Reduction	The Park Place Building has implemented a stormwater management plan that is designed to mitigate run-off from the building through a variety of measures including: perviousness of the building (green roof), stormwater management practices (structural and non structural), capture of rainwater for reuse, or other measures over the performance period that result in a mitigation of 53% of the annual stormwater falling on the site. **Park Place Building:** Total Mitigation [gal] = 332,290.44 Total On-Site Annual Precipitation [gal] = 626963.1 332,290.44 [gal] ÷ 626,963.1 [gal] = 53% Total Stormwater Mitigation	**2**
Credit 6.1	Heat Island Reduction: Non-Roof Surfaces	The Park Place Building has 100% of its parking spaces placed and maintained underground.	**1**
Credit 6.2	Heat Island Reduction: Roof Surfaces	The Park Place building has installed and maintained ENERGY STAR®–compliant, high-reflectance, and high emissivity roofing material in place that constitutes at least 75% of the total roof area. The roofing materials also comply with the ENERGY STAR® label requirements and have emissivity of at least 0.9 when tested in accordance with ASTM 408. **Park Place Building:** Total Roof Area [ft^2] = 26,466.62 High Albedo Roof Area [ft^2] = 1,944 1,944 [ft^2] ÷ 26,466.62 [ft^2] = 7.35% High Albedo Material Coverage The building has installed and maintained a vegetated green roof area period that constitutes at least 50% of the total roof area. **Park Place Building:** Green Roof Area [ft^2] = 16,470 Total Roof Area [ft^2] = 26,466.62 16,470 [ft^2] ÷ 26,466.62 [ft^2] = 62.23% of Roof Vegetated	**1**

Credit 7	Light Pollution Reduction	The Park Place Project's exterior lighting has been designed to reduce and/or eliminate light trespass from the building and site, improve night sky access, and reduce development impact on nocturnal environments. The Park Place Building has shielded all outdoor luminaries 50 watts and over so that they do not directly emit light to the night sky.	**1**
			TOTAL = 14/14
Water Efficiency			
Credit	**Classification**	**Implementation Overview**	**Points [5]**
Prerequisite 1	Minimum Water Efficiency	The Park Place Project uses at least or less water than a baseline calculated as 120% of 100% implementation of the performance requirements of the Energy Policy Act of 1992.	**Required**
Prerequisite 2	Discharge Water Compliance	The Park Place Facility is not regulated by the EPA NPDES Clean Water Act requirements.	**Required**
Credit 1.1–1.2	Water Efficient Landscaping	The Park Place Building plans to install native and adaptive vegetation along with an advanced control system and drip irrigation. The plan also includes restoration of public right of way (off-site) landscaping to native vegetation with a drip irrigation system.	**2**
Credit 2	Innovative Wastewater Technologies	Wright Runstad & Company is working with the City of Seattle on potential strategies to collect rainwater from both the grade level site hardscape and non-green roofing for irrigation use and cooling tower make-up water.	**1**
Credit 3.1–3.2	Water Use Reduction	The Park Place Project uses 40.94% less water than baseline fixture performance requirements of the Energy Policy Act of 1992. **Park Place Building:** Calculated Fixture Water Use Total Annual Volume [gal] = 1,164.8 LEED-EB Baseline Annual Volume (120% of EPAct Baseline) [gal] = 1,972.32 1,164.8 [gal] ÷ 1,972.32 [gal] = 59.06% of Previous Usage Difference in Water Use [Reduction] = 40.94%	**2**
			TOTAL = 5/5

Energy & Atmosphere			
Credit	**Classification**	**Implementation Overview**	**Points [23]**
Prerequisite 1	Existing Building Commissioning	A comprehensive building operation plan has been developed that meets the requirements of the Park Place Building, and addresses the heating system, cooling system, humidity control system, lighting system, safety systems, and the building automation controls. **Park Place Building:** Water Cooled Air Conditioning Units (WCACs) Make-Up Air Terminal Units Heating System (VAVs, Thermostat) Cooling Towers Condenser Water Pumps Drycoolers Water Heaters Lighting System (277 Volt System, Energy/Low Mercury Saving) Exhaust Fans Electric Boilers All of the control systems will be monitored, controlled, and analyzed via Energy Management Systems.	**Required**
Prerequisite 2	Minimum Energy Performance	The Park Place Building has an EPA-Energy Performance Rating (ENERGY STAR® Rating) of 86.	**Required**
Prerequisite 3	Ozone Protection	The Park Place Building does not use CFC-based refrigerants in the HVAC&R base building systems, fire suppression systems, or insulation. A refrigerant management plan is currently in place in compliance with EPA Clean Air Act, Title IV, Rule 608 procedures governing refrigerant management.	**Required**
Credit 1.1–1.10	Optimize Energy Performance	The Park Place Building has received a categorized EPA–Energy Performance Rating (ENERGYSTAR® Rating) of 87 via the Portfolio Manager tool on the ENERGY STAR website.	**7**
Credit 2.1–2.4	On-site and Off-site Renewable Energy	The Park Place Building will be supplied with 60% renewable energy certificates (RECs) under contract with Constellation New Energy for a term of 24 months (extended as required to maintain certification).	**4**
Credit 3.1	Building Operation & Maintenance: Staff Education	All Park Place Building operation and maintenance staff have been provided (annually) with at least 24 hours of high quality and relevant building operation and maintenance education. This education is related to building and building systems operation, maintenance, and achieving sustainable building performance.	**1**

Credit 3.2	Building Operation & Maintenance: Building Systems Maintenance	The Park Place Building has implemented a Preventative Maintenance Plan in order to prolong the life of its building systems and components and to reduce overall maintenance costs.	**1**
Credit 3.3	Building Operation & Maintenance: Building Systems Monitoring	The Park Place Building has systems in place for continuous tracking and optimization of systems that regulate indoor comfort and the conditions (temperature, humidity, and CO_2) delivered in occupied spaces. The building has 461 alarm points monitored and reported through the Staefa Niagara Building Automation System. These reports include continuous monitoring of system equipment performance and of the indoor environmental conditions delivered in the building, alarms for performance or conditions that require repair, and a system that delivers prompt repairs to problems identified. **Park Place Building:** Outside Air Delivery and Return (4 inputs, 2 alarms) Building Pressure (4 points monitored, 4 alarm points) Building Relative Humidity (1 point monitored, 1 alarm) Wet Floor Alarms (21 points monitored, 21 alarm points) Garage Carbon Monoxide Sensors (9 points monitored, 9 alarm points) Average Floor Temperature (22 points monitored, 22 alarm points) VAV Zone Temperature (381 points monitored, 381 alarm points) Duct Static Pressure (20 points monitored, 20 alarm points) Condenser Water Temperature (1 point monitored, 1 alarm)	**1**
Credit 4	Additional Ozone Protection	The Park Place Building's emissions of refrigerants from base building HVAC and refrigeration systems have been reduced to less than 3% of charge per year over the performance period using EPA Clean Air Act. Title VI, Rule 608 procedures governing refrigerant management and reporting and leakage has been reduced over the remainder of unit life to below 25%.	**1**
Credit 5.1–5.3	Performance Measurement: Enhanced Metering	Not Attempted	**0**
Credit 5.4	Performance Measurement: Emission Reduction Reporting	The Park Place Building has reduced building emissions by 10% and has requested all building suppliers, vendors, and contractors to participate in a voluntary emissions tracking and reduction program.	**1**

<table>
<tr><td>Credit 6</td><td>Documenting Sustainable Building Cost Impacts</td><td>The Park Place Building cost impacts have been documented for the building project.

Park Place Building:
(2004) Total Operating Costs = $1,222,004
(2005) Total Operating Costs = $1,993,397
(2006) Total Operating Costs = $1,343,328
(2007) Total Operating Costs = $1,065,055
(2008) Total Operating Costs = $1,178,317

(2004 – 2008) Average Operating Costs = $1,597,175</td><td>1</td></tr>
<tr><td></td><td></td><td></td><td>TOTAL = 17/23</td></tr>
<tr><td colspan="4">Materials & Resources</td></tr>
<tr><td>Credit</td><td>Classification</td><td>Implementation Overview</td><td>Points [16]</td></tr>
<tr><td>Prerequisite 1.1</td><td>Source Reduction and Waste Management: Waste Stream Audit</td><td>The Park Place Building has implemented a Recycling and Materials Reduction Program in order to reflect a unified approach to waste management. The building gives all tenants access to recycling bins for the recycling of paper, glass, plastics, cardboard/OCC, metals, and batteries, bins to collect materials for composting, and help with the decommissioning of fluorescent lamps. Through educational outreach, Wright Runstad & Company has worked with all tenants to encourage and improve recycling rates. In addition, Wright Runstad & Company encourages its tenants to use two-sided copying and printing, reusable cups for coffee, and purchasing of paper products containing high amounts of recycled material.

Park Place Building:
<table>
<tr><th>Waste Material By Type</th><th>Quantity Currently Recycled [tons/ year]</th><th>Total Waste Quantity [tons/ year]</th><th>Total Annual Waste [%]</th><th>Current Recycling Rate [%]</th></tr>
<tr><td>Glass</td><td>10.5298</td><td>10.53</td><td>1.2</td><td>100</td></tr>
<tr><td>Aluminum</td><td>0.5168</td><td>1.02</td><td>0.12</td><td>50.67</td></tr>
<tr><td>Tin/Bi-metal</td><td>0.5168</td><td>0.52</td><td>0.06</td><td>99.38</td></tr>
<tr><td>High Grade Paper</td><td>179.9756</td><td>179.98</td><td>20.54</td><td>100</td></tr>
<tr><td>Mixed Paper</td><td>257.4956</td><td>260.99</td><td>29.79</td><td>98.66</td></tr>
<tr><td>Corrugated Cardboard</td><td>50.9694</td><td>54.97</td><td>6.27</td><td>92.72</td></tr>
<tr><td>Plastics</td><td>6.0078</td><td>6.51</td><td>0.74</td><td>92.29</td></tr>
<tr><td>Food Waste</td><td>120.0268</td><td>133.53</td><td>15.24</td><td>89.89</td></tr>
<tr><td>Other Waste</td><td>20.026</td><td>228.01</td><td>26.03</td><td>8.78</td></tr>
<tr><td>TOTAL</td><td>646.0646</td><td>876.06</td><td>99.99</td><td>73.75</td></tr>
</table></td><td>Required</td></tr>
</table>

Prerequisite 1.2	Source Reduction and Waste Management: Storage & Collection of Recyclables	The Park Place Building has an easily accessible area that has been dedicated to serve the recycling needs of the entire building. The separation, collection, and storage area for recycling will accommodate paper, corrugated cardboard, glass, plastics, and metals.	**Required**
Prerequisite 2	Toxic Material Source Reduction: Reduced Mercury in Light Bulbs	The Park Place Building has established and maintained a toxic material source reduction program to reduce the amount of mercury brought into the building through purchases of mercury-containing light bulbs. Wright Runstad & Company is committed to keeping the mercury contained in light bulbs to an average of less than 80 picograms of mercury per lumen hour of light output.	**Required**
Credit 1.1–1.2	Construction, Demolition, and Renovation Waste Management	Previously used or recycled materials are used in the Park Place Building's renovation and operation. Construction and operational waste are also recycled.	**2**
Credit 2.1–2.5	Optimize Use of Alternative Materials	Not Attempted	**0**
Credit 3.1–3.2	Optimize Use of IAQ Compliant Products	The Park Place Building is reducing the indoor air quality (IAQ) impacts of the materials acquired for use in its operation, maintenance, and future upgrades. Materials that are chosen will be rapidly renewable, non-toxic, and regionally harvested/extracted and processed. Wood products will be made from certified wood.	**2**
Credit 4.1–4.3	Sustainable Cleaning Products and Materials	The Park Place Building has implemented a sustainable purchasing program to reduce the environmental impacts of cleaning products, disposable janitorial paper products, and trash bags. The Program's goal is to maximize the use of Green Seal Certified and EPA compliant cleaning products. **Park Place Building:** Total Sustainable Materials & Resources Purchases = $10,071.95 Total Materials & Resources Purchases = $10,492.06 $10,071.95 ÷ $19,492.06 = 96% Total Sustainable Materials & Resource Purchases	**3**
Credit 5.1–5.3	Occupant Recycling	The Park Place Building has implemented a building occupant waste reduction and recycling program that addresses the separation, collection and storage of paper, glass, plastics, cardboard/OCC, metals, batteries, and fluorescent light bulbs for recycling and diversion from landfill disposal or incineration. The program also collects and recycles at least 95% of the batteries used and collects and recycles at least 95% of the fluorescent light bulbs used.	**3**

Credit 6	Additional Toxic Material Source Reduction: Reduced Mercury in Light Bulbs	The Park Place Building has established and maintained a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of light bulbs. The program maintains mercury content of all mercury-containing light bulbs below 80 picograms per lumen hour of light output (picogram/lumen hour). **Park Place Building:** Mercury Content [picograms/lumen hour] = 24.45	**1**
			TOTAL = 11/16
Indoor Environmental Quality			
Credit	**Classification**	**Implementation Overview**	**Points [22]**
Prerequisite 1	Outside Air and Exhaust	The Park Place Building's main outdoor air supply and return/exhaust fans are located in the 23rd floor penthouse mechanical room located on the roof of the office tower. The supply and return fans have air flow measuring stations that monitor the amount of intake and exhaust. The building is balanced and commissioned to ASHRAE 62.1-2004.	**Required**
Prerequisite 2	Environmental Tobacco Smoke (ETS) Control	The Park Place Building prevents and minimizes exposure of building occupants, indoor surfaces, and systems to Environmental Tobacco Smoke (ETS) through the prohibition of smoking in the building and by locating any exterior designated smoking areas at least 25 feet away from building entries, outdoor air intakes, and operable windows.	**Required**
Prerequisite 3	Asbestos Removal or Encapsulation	The Park Place Building project has reduced the potential exposure of building occupants to asbestos and prevented any associated harmful effects of asbestos in existing buildings. **Park Place Building:** 22 ACM Doors	**Required**
Prerequisite 4	PCB Removal	The Park Place Building does not currently use nor will it ever use materials or products that contain PCB.	**Required**
Credit 1	Outdoor Air Delivery Monitoring	The Park Place Building has provided capacity for ventilation system monitoring to help sustain long-term occupant comfort and well-being. In addition, a permanent monitoring system has been put in place that provides feedback on ventilation system performance to ensure that ventilation systems maintain minimum ventilation rates.	**1**
Credit 2	Increased Ventilation	The Park Place Building has provided additional outdoor air ventilation to improve indoor air quality for improved occupant comfort, well being, and productivity.	**1**

Credit 3	Construction IAQ Management Plan	All Park Place Building construction and renovation activities will meet the LEED Construction IAQ Management Plan requirements.	**1**
Credit 4.1	Documenting Productivity Impacts, Absenteeism, and Healthcare Cost Impacts	Not Attempted	**0**
Credit 4.2	Documenting Productivity Impacts, Other Impacts	Not Attempted	**0**
Credit 5.1	Indoor Chemical and Pollutant Source Control: Reduce Particulates in Air Distribution	The Park Place Building has replaced old filters for those with particle removal effectiveness MERV 13 for all outside air intakes and for the returns of the re-circulation of inside air. The Building has also implemented a regular schedule for maintenance and replacement of these filters.	**1**
Credit 5.2	Indoor Chemical and Pollutant Source Control: High Volume Copying	Not Attempted	**0**
Credit 6.1	Controllability of Systems: Lighting	Not Attempted	**0**
Credit 6.2	Controllability of Systems: Temperature and Ventilation	Not Attempted	**0**
Credit 7.1	Thermal Comfort: Compliance	The Park Place Building has been designed to maintain interior comfort within the ranges established by ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy. **Park Place Building:** 80.09% of Occupants = Comfortable [slightly cold–slightly warm]	**1**
Credit 7.2	Thermal Comfort: Permanent Monitoring System	The Park Place Building is equipped with a Siemens Talon building automation system that controls all aspects of the heating, ventilation, air conditioning, exhaust, airflow measuring, temperature monitoring, CO_2, electrical monitoring, and common area lighting systems.	**1**
Credit 8.1–8.2	Daylighting & Views: Daylighting	Not Attempted	**0**
Credit 8.3–8.4	Daylighting & Views: Views	Not Attempted	**0**

Credit 9	Contemporary IAQ Practice	An IAQ management program has been developed and implemented on an ongoing basis for the Park Place Building based on the U.S. EPA document "Building Air Quality: A Guide for Building Owners and Facility Managers." **Park Place Building:** Communication Diagnosing IAQ Problems Mitigating IAQ Problems Hiring Professional Assistance to Solve an IAQ Problem Follow-up	**1**
Credit 10.1	Green Cleaning: Entryway Systems	The Park Place Building has utilized entryway mats to reduce the amount of dirt, dust, pollen, and other particles entering the building at all entryways and developed the associated cleaning strategies to maintain those entryway systems, as well as the exterior walkways.	**1**
Credit 10.2	Green Cleaning: Isolation of Janitorial Closets	The Park Place Building has put in place structural deck-to-deck partitions with separate outside exhausting, no air re-circulation, and negative pressure in all janitorial closets. The Building has also provided hot and cold water and drains plumbed for appropriate disposal of liquid waste in areas where janitorial equipment and chemicals are stored and/or water and cleaning chemical concentrate mixing occurs.	**1**
Credit 10.3	Green Cleaning: Low Environmental Impact Cleaning Policy	The Park Place Building has implemented a low-impact environmental cleaning policy. **Park Place Building Low-Impact Environmental Cleaning Policy Addresses:** • Use of sustainable cleaning products. • Use of chemical concentrates and appropriate dilution systems. • Proper training of maintenance personnel in the hazards, use, maintenance, and disposal of cleaning chemicals, dispensing equipment, and packaging. • Use of hand soaps that do not contain antimicrobial agents (other than as a preservative system), except where required by health codes and other regulations (i.e., food service and health care requirements). • Use of cleaning equipment that reduces impacts on IAQ.	**1**

Credit 10.4–10.5	Green Cleaning: Low Environmental Impact Pest Management Policy	The Park Place Building has developed, implemented, and will maintain a low-environmental impact integrated indoor pest management policy. **Park Place Building Low-Environmental Impact Integrated Indoor Pest Management Policy:** • Specifies that all cleaning products included in the integrated pest management policy meet the requirements identified in the building's sustainable purchasing program. • Promotes safer alternatives to chemical pesticides while preventing economic and health damage caused by pests. • Implements the use of integrated pest management techniques to reduce the need for reliance on chemical pesticides. • Ensures that clear and accurate notification concerning the use of pesticides, when necessary, be made available so that measures may be taken to prevent and address pest problems effectively without endangering occupants, janitorial workers, or visitors. • Addresses integrated methods, site or pest inspections, pest population monitoring, an evaluation of the need for pest control, and one or more pest control methods, including sanitation, structural repairs, mechanical and living biological controls, other non-chemical methods, and, if non-toxic options are unreasonable and have been exhausted, a least toxic pesticide. • Includes a communication strategy to provide notification of the integrated pest management system.	**2**
Credit 10.6	Green Cleaning: Low Environmental Impact Cleaning Equipment Policy	The Park Place Building has developed, adopted, and will maintain a cleaning equipment policy for the use of janitorial equipment that maximizes effective reduction of building contaminants with minimum environmental impact.	**1**
			TOTAL = 13/22
Innovation & Design Process			
Credit	**Classification**	**Implementation Overview**	**Points [5]**
Credit 1.1	Innovation in Upgrades: Operations & Maintenance	The Park Place Building has extensive recycling, composting, and educational programs. These have drastically reduced the amount of waste accumulated, have helped the building rise to over a 70% recycling rate, and have minimized the amount of virgin materials needed. This exemplary performance is monitored by the building management team.	**1**

Credit 1.2	Innovation in Upgrades: Operations & Maintenance	The Park Place Building was scanned with infrared to locate problem areas of heat loss in the building envelope. The building envelope components are evaluated and areas of leakage are found and corrected. The glass of the building will also show how much, if any, heat loss is occurring through the glass itself. By fixing heat loss problems, the energy usage in the building will decline.	**1**
Credit 1.3	Innovation in Upgrades: Operations & Maintenance	The Park Place Building has established a comprehensive purchasing plan. This plan specified the lowest mercury option for each type of lamp in the building. The lamps with the highest efficiency, lowest mercury content, and longest life were sought after and included in the purchasing plan. The reduction of mercury is essential for the health of the environment by not entering the atmosphere and other environmental mediums. Each lamp is properly recycled, to further the benefits.	**1**
Credit 1.4	Innovation in Upgrades: Operations & Maintenance	The entire Park Place Building has had a water fixture audit. This audit evaluated tenant sinks and every bathroom fixture. The proper fixtures were then chosen to replace the fixtures with the greatest water waste. This helped achieve a water use reduction of over 40% reduction from the baseline. The reduction of water use allows for conservation of potable water and protects aquatic ecosystems. By installing high efficiency, water saving fixtures in tenant suites, and bathrooms, the strain on heating hot water coming into the building is lessened.	**1**
Credit 2	LEED™ Accredited Professional	The Park Place project enlisted Allan Edward Skodowski as the principal participant of the project team. He has been a LEED Accredited Professional since January 2, 2007.	**1**
			TOTAL = 5/5

Overall

Points Attempted	Credit Category	Possible Points	Total Score
14	Sustainable Sites	14	14/14 100%
5	Water Efficiency	5	5/5 100%
17	Energy & Atmosphere	23	17/23 74%
11	Materials & Resources	16	11/16 69%
13	Indoor Environmental	22	13/22 59%
5	Quality Innovation & Design Process	5	5/5 100%
TOTAL = 65		**TOTAL = 85**	**65/85 76%**
Certified: 32–39 points, **Silver:** 40–47 points, **Gold:** 48–63 points, **Platinum:** 64–85 points			

APPENDIX B

LEED for Existing Buildings v2.0
Registered Building Checklist

Project Name: Park Place Building
Project Address:

Yes	?	No			
14			**Sustainable Sites**		**14** Points
Y			Prereq 1	**Erosion & Sedimentation Control**	Required
Y			Prereq 2	**Age of Building**	Required
1			Credit 1.1	**Plan for Green Site & Building Exterior Management -** 4 specific actions	1
1			Credit 1.2	**Plan for Green Site & Building Exterior Management -** 8 specific actions	1
1			Credit 2	**High Development Density Building & Area**	1
1			Credit 3.1	**Alternative Transportation -** Public Transportation Access	1
1			Credit 3.2	**Alternative Transportation -** Bicycle Storage & Changing Rooms	1
1			Credit 3.3	**Alternative Transportation -** Alternative Fuel Vehicles	1
1			Credit 3.4	**Alternative Transportation -** Car Pooling & Telecommuting	1
1			Credit 4.1	**Reduced Site Disturbance -** Protect or Restore Open Space (50% of site area)	1
1			Credit 4.2	**Reduced Site Disturbance -** Protect or Restore Open Space (75% of site area)	1
1			Credit 5.1	**Stormwater Management -** 25% Rate and Quantity Reduction	1
1			Credit 5.2	**Stormwater Management -** 50% Rate and Quantity Reduction	1
1			Credit 6.1	**Heat Island Reduction -** Non-Roof	1
1			Credit 6.2	**Heat Island Reduction -** Roof	1
1			Credit 7	**Light Pollution Reduction**	1

Yes	?	No			
5			**Water Efficiency**		**5** Points
Y			Prereq 1	**Minimum Water Efficiency**	Required
Y			Prereq 2	**Discharge Water Compliance**	Required
1			Credit 1.1	**Water Efficient Landscaping -** Reduce Potable Water Use by 50%	1
1			Credit 1.2	**Water Efficient Landscaping** - Reduce Potable Water Use by 95%	1
1			Credit 2	**Innovative Wastewater Technologies**	1
1			Credit 3.1	**Water Use Reduction -** 10% Reduction	1
1			Credit 3.2	**Water Use Reduction -** 20% Reduction	1

Yes	?	No			
17		3	**Energy & Atmosphere**		**23** Points
Y			Prereq 1	**Existing Building Commissioning**	Required
Y			Prereq 2	**Minimum Energy Performance** - Energy Star 60	Required
Y			Prereq 3	**Ozone Protection**	Required
			***Note for EAc1:** All LEED for Existing Buildings projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.		
7			Credit 1	**Optimize Energy Performance**	1 to 10
				Energy Star Rating - 63	1
				Energy Star Rating - 67	2
				Energy Star Rating - 71	3
				Energy Star Rating - 75	4
				Energy Star Rating - 79	5
				Energy Star Rating - 83	6
			7	Energy Star Rating - 87	7
				Energy Star Rating - 91	8
				Energy Star Rating - 95	9
				Energy Star Rating - 99	10
1			Credit 2.1	**Renewable Energy -** On-site 3% / Off-site 15%	1
1			Credit 2.2	**Renewable Energy** - On-site 6% / Off-site 30%	1
1			Credit 2.3	**Renewable Energy** - On-site 9% / Off-site 45%	1
1			Credit 2.4	**Renewable Energy** - On-site 12% / Off-site 60%	1
1			Credit 3.1	**Building Operation & Maintenance -** Staff Education	1
1			Credit 3.2	**Building Operation & Maintenance -** Building Systems Maintenance	1
1			Credit 3.3	**Building Operation & Maintenance -** Building Systems Monitoring	1
1			Credit 4	**Additional Ozone Protection**	1
		1	Credit 5.1	**Performance Measurement -** Enhanced Metering (4 specific actions)	1
		1	Credit 5.2	**Performance Measurement -** Enhanced Metering (8 specific actions)	1
		1	Credit 5.3	**Performance Measurement -** Enhanced Metering (12 specific actions)	1
1			Credit 5.4	**Performance Measurement** - Emission Reduction Reporting	1
1			Credit 6	**Documenting Sustainable Building Cost Impacts**	1

Yes	?	No			
11		5	**Materials & Resources**		**16** Points
Y			Prereq 1.1	**Source Reduction & Waste Management** - Waste Stream Audit	Required
Y			Prereq 1.2	**Source Reduction & Waste Management -** Storage & Collection	Required
Y			Prereq 2	**Toxic Material Source Reduction -** Reduced Mercury in Light Bulbs	Required
1			Credit 1.1	**Construction, Demolition & Renovation Waste Management -** Divert 50%	1
1			Credit 1.2	**Construction, Demolition & Renovation Waste Management -** Divert 75%	1
		1	Credit 2.1	**Optimize Use of Alternative Materials** - 10% of Total Purchases	1
		1	Credit 2.2	**Optimize Use of Alternative Materials** - 20% of Total Purchases	1
		1	Credit 2.3	**Optimize Use of Alternative Materials** - 30% of Total Purchases	1
		1	Credit 2.4	**Optimize Use of Alternative Materials** - 40% of Total Purchases	1
		1	Credit 2.5	**Optimize Use of Alternative Materials** - 50% of Total Purchases	1
1			Credit 3.1	**Optimize Use of IAQ Compliant Products** - 45% of Annual Purchases	1
1			Credit 3.2	**Optimize Use of IAQ Compliant Products** - 90% of Annual Purchases	1
1			Credit 4.1	**Sustainable Cleaning Products & Materials** - 30% of Annual Purchases	1
1			Credit 4.2	**Sustainable Cleaning Products & Materials** - 60% of Annual Purchases	1
1			Credit 4.3	**Sustainable Cleaning Products & Materials** - 90% of Annual Purchases	1
1			Credit 5.1	**Occupant Recycling** - Recycle 30% of the Total Waste Stream	1
1			Credit 5.2	**Occupant Recycling** - Recycle 40% of the Total Waste Stream	1
1			Credit 5.3	**Occupant Recycling** - Recycle 50% of the Total Waste Stream	1
1			Credit 6	**Additional Toxic Material Source Reduction** - Reduced Mercury in Light Bulbs	1

Yes	?	No			
13		9	**Indoor Environmental Quality**		**22** Points
Y			Prereq 1	**Outside Air Introduction & Exhaust Systems**	Required
Y			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
Y			Prereq 3	**Asbestos Removal or Encapsulation**	Required
Y			Prereq 4	**PCB Removal**	Required
1			Credit 1	**Outside Air Delivery Monitoring**	1
1			Credit 2	**Increased Ventilation**	1
1			Credit 3	**Construction IAQ Management Plan**	1
		1	Credit 4.1	**Documenting Productivity Impacts** - Absenteeism & Healthcare Cost Impacts	1
		1	Credit 4.2	**Documenting Productivity Impacts** - Other Productivity Impacts	1
1			Credit 5.1	**Indoor Chemical & Pollutant Source Control** - Reduce Particulates in Air System	1
		1	Credit 5.2	**Indoor Chemical & Pollutant Source Control** - Isolation of High Volume Copy/Print/Fax Roon	1
		1	Credit 6.1	**Controllability of Systems** - Lighting	1
		1	Credit 6.2	**Controllability of Systems** - Temperature & Ventilation	1
1			Credit 7.1	**Thermal Comfort** - Compliance	1
1			Credit 7.2	**Thermal Comfort** - Permanent Monitoring System	1
		1	Credit 8.1	**Daylight & Views** - Daylight for 50% of Spaces	1
		1	Credit 8.2	**Daylight & Views** - Daylight for 75% of Spaces	1
		1	Credit 8.3	**Daylight & Views** - Views for 45% of Spaces	1
		1	Credit 8.4	**Daylight & Views** - Views for 90% of Spaces	1
1			Credit 9	**Contemporary IAQ Practice**	1
1			Credit 10.1	**Green Cleaning** - Entryway Systems	1
1			Credit 10.2	**Green Cleaning** - Isolation of Janitorial Closets	1
1			Credit 10.3	**Green Cleaning** - Low Environmental Impact Cleaning Policy	1
1			Credit 10.4	**Green Cleaning** - Low Environmental Impact Pest Management Policy	1
1			Credit 10.5	**Green Cleaning** - Low Environmental Impact Pest Management Policy	1
1			Credit 10.6	**Green Cleaning** - Low Environmental Impact Cleaning Equipment Policy	1

Yes	?	No			
5			**Innovation & Design Process**		**5** Points
1			Credit 1.1	**Innovation in Upgrades, Operation & Maintenance**	1
1			Credit 1.2	**Innovation in Upgrades, Operation & Maintenance**	1
1			Credit 1.3	**Innovation in Upgrades, Operation & Maintenance**	1
1			Credit 1.4	**Innovation in Upgrades, Operation & Maintenance**	1
1			Credit 2	**LEED™ Accredited Professional**	1

Yes	?	No		
65		17	**Project Totals (pre-certification estimates)**	85 Points

Certified: 32-39 points, **Silver:** 40-7 points, **Gold:** 48-63 points, **Platinum:** 64-85