

Sustainability: A Look at the Eco-Friendly Practices in Sports

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Environmentalism and sustainability are terms that the public has become increasingly familiar with in recent years, both in the United States and around the globe. I first heard of the importance of conserving the environment when Al Gore made it a huge topic during his campaign for president in 2000. When I was younger, I did not pay much attention to it, believing that it was not a topic of much importance. I had heard about there being holes in the ozone layer and how it was important for the world to start becoming “eco-friendly.” I had no idea what terms like “going green” and “eco-friendly” meant. About a year ago, I started hearing this terminology even more. Being a sport management major, these terms are topics of relevance in sport stadium operations. Today, after doing much research, I wish I would have known how important issue this was and that I could have become a part of the sustainability movement earlier.

For people who have never really paid attention to this issue, the first question they will ask is: What is environmental sustainability? According to the Environmental Protection Agency, environmental sustainability is “everything that we need for our survival and well-being depends, either directly or indirectly on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have the water, materials, and resources to protect human health and our environment” (Environmental Protection Agency, 2014). Eco-

friendly, environmentally safe, and going green are other terms used in sustainability discussions.

Pittsburgh is an area that has seen much environmental improvement since its days of being home to many steel mills and being shrouded with smog. Today, many areas that were once the sites of former mills are now thriving, redeveloped areas that are helping better the environment. For example, South Side Works was once the location of J&L Mill. In 2005, the former buildings that once made up the iron plant were disassembled and replaced by entertainment structures such as the cinema, numerous restaurants and bars, and retail stores. The Rails and Trails Conservancy has been another indicator of the improved environment in the Pittsburgh area. The bike paths run through various parts of Southwestern PA and have helped convert former active railroad tracks into active bike trails to help build healthier lifestyles (Rails-to-Trails Conservancy, 2014).

Although “Going Green” has been an important issue over the last decade, it has actually been around for much longer. To understand the genesis of this movement, an understanding of its past should be outlined.

History of Going Green

The following is a brief summary of the history of the environmental conservation movement. In Ancient Greece, the people used passive solar energy and designed their cities so that the homes and businesses faced the sun. Communities in Peru, China, and India have been using terracing, natural fertilizers, and crop rotation since the Middle Ages to help protect against soil erosion and to optimize space and growth (Michael,

2010). Many people attached origins of the green movement to Rachel Carson's famous book *Silent Spring* written in 1962 ("A Brief History of .., 2008). Others find "environmentalism's" roots in the intellectual thought of the 1830s and 1840s that was a significant thread in the fabric of American philosophy developed by the Transcendentalists, most famously by the author Henry David Thoreau. It expanded during the American pragmatism era in the second half of the 19th century.

A major environmental step occurred during the early 1860s when the United States government decided to set aside land to create parks and wild lands for the good of the public. Yosemite Park was the first national park in 1872. When President Theodore Roosevelt visited this park in 1903, it was given a lot of national attention and by 1916, the National Park Service had been established ("A Brief History of .., 2008). The former president was a huge supporter of national parks and wildlife conservation and helped to bring the green movement to the attention of the nation (Michael, 2010). Around this same time, the Sierra Club was founded and in 1952, David Brower became the Executive Director of what has become one of the oldest environmental organizations in the country ("A Brief History of .., 2008).

When the Great Depression hit the United States in the 1930s and with the start of World War II, many environmental concerns were pushed to the back of American minds. At the time, they were more concerned with being able to put food on the table in their households and a raging war going on overseas. Once the war was over, the 1948 Donora disaster better known as the "death fog" triggered renewed awareness of environmental issues. The technological and industrial developments of the Cold War era and a series of surprising events prompted a new environmental concern that went

beyond saving forests and establishing parks. Carson's bestselling book published in 1962 set off a furor with its expose of toxins in consumer products and the philosophical claim that controlling nature is both arrogant and morally bankrupt. The Sierra Club prevented the damming of the Grand Canyon, and an oil spill at Santa Barbara caused public outrage. It was during the 1960s that the Environmental Protection Agency (EPA) was established and that the rise of the modern green movement began. During this decade, activism became more common around the country. Civil rights were being fought for by African Americans and the Vietnam War was being protested by hippies. This was a time when people began to speak up and defend their beliefs and by the end of the 1960s, concerns for the environment were emerging as a leading issue ("A Brief History of .., 2008).

The 1970s and latter part of the 20th century were a time when several steps were taken to start cleaning up the environment. Some of the environmental actions taken included the creation of the National Environmental Policy Act, the Clean Air Act, the founding of Earth Day, the banning of DDT (a pesticide), the Water Pollution Control Act, and the Endangered Species Act. When the disasters occurred at Love Canal in 1978 and Three Mile Island in 1979, the public's concern about the consequences caused by contamination, pollution, and toxic waste was raised substantially. The 1980s saw the Exxon Valdez oil spill and in the 1990s, the term "treehuggers" came about to describe people who took seriously efforts to preserve and clean up the environment. In the 2000s, Al Gore's film, *An Inconvenient Truth*, put the fear of a climate crisis into the minds of the general public ("A Brief History of .., 2008) and stressed the importance of reducing the carbon footprint (the total amount of greenhouse gases produced to directly

and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide) (Time for Change, 2014).

Today, as landfills are continually filled with trash, tragedies such as the flooding in New Orleans after Hurricane Katrina, the BP oil spill in the Gulf of Mexico, and food being chemically treated and genetically modified, people have started to become aware that “going green” might be a necessary adjustment in living their lives. As natural resources are depleted and gas prices soar, citizens have become inspired to “go green”.

Common Sustainable Practices

A variety of sustainable practices have been employed as a part of efforts to live a more eco-friendly life. Many initiatives have been developed to help reduce the carbon footprint. Local governments are switching over to environmentally sustainable practices for both social and economic reasons. A focus on making communities more livable can attract more businesses and create jobs. Use of local clean and energy efficient projects create a healthier environment. The government realizes saving resources is necessary when municipal budgets are tight. Developing local energy sources helps offset high energy costs and promotes national energy independence. By switching over to more eco-friendly practices, local governments are more prepared for the impact of climate change. It is the responsibility of local government to address issues affecting local health and safety, cost of living, and quality of life in both the near and long term (“Sustainability and Local Governments, 2014). The table below summarizes some common “green” practices.

Recycling

Listed below are items most frequently found in homes or businesses that are recyclable either at the curb or taken to a recycling center. (This list was retrieved from earth911's main webpage.)

Table 1

<i>Items that can be Recycled</i>			
<u>Plastic</u>	<u>Construction</u>	<u>Electronics</u>	<u>Household Items</u>
Bags	Carpets	CDs & Tapes	Clothing & Accessories
Film	Wood	certain Cell Phone parts	Cooking Oil
Jugs & Bottles	Brick	Computers	Corks
	Asphalt shingles	Inkjet Cartridges	Furniture
<u>Automotive</u>		Washing Machine	Mattresses
Car Batteries	<u>Glass</u>	Dryer	Cleaners
Transmission Fluid	Bottles & Jars	Microwaves	
Power Steering Fluid		Stoves	<u>Household Hazardous Waste</u>
Motor Oil	<u>Paper</u>	Refrigerators	Carbon Fluorescent Bulbs (CFLs)
Gear Oil	Books & Magazines	Televisions	Latex Paint
Antifreeze	Cartons	Printers	Pesticide Containers
Oil Filter	Newspapers	Fax Machines	Unwanted/Expired Medication
Tires	Phone Books	Copiers & Scanners	Pill Containers

Source: Recycling. (2014). Retrieved January 9, 2014 from earth911.com/recycling/

Solar Panels

If homeowners are looking to cut back on their electricity bill, they may want to consider adding solar panels to their homes as sunshine is plentiful year round. A solar panel is a device that converts light into electricity (“What are solar panels?”, 2013). They are called solar panels because the most powerful source of light available is the sun. Some scientists refer to solar panels as *photovoltaics* (PV) which means “light-electricity.” A solar panel is made up of a collection of solar cells. Many small solar cells spread over a sizable area can work together to provide useful energy. The more light that hits one of these cells, the more energy it stores. Photovoltaics (PV) have been used in places, mainly in outer space and satellites, since 1958. Photovoltaic cells are made of special materials such as silicon. Basically, when light strikes the cell of a solar panel, a certain portion of light is absorbed within the semiconductor material. This creates a flow of electrons that create current which can be drawn off for external use (Toothman & Aldous, 2011).

According to the Solar Energy Industries Association, Americans added more solar power generating capacity during the third quarter of 2013 than in any other quarter before, totaling 186 megawatts and up about 50 percent year after year (Ezell, 2014). Installing solar panels in a house can be rather costly, but the price is but one issue. An example of the potential savings with the use of solar panels is provided by *CNNMoney*’s Editor-at-Large David Whitford. He recently installed a 15 panel (3.75 kilowatt) system on the roof of his home. His solar panel system replaced about 80 percent of his family’s grid draw. Since the system he purchased and had installed has a 25 year life-span, it will cut his home’s carbon footprint by 62 tons of CO₂ and save \$25,000 on his utility bill

while only paying \$13,000 for the whole system (Toothman & Aldous, 2011). The up-front price might be high, averaging from \$10,000 to \$20,000, but in the long run, there are financial benefits and it can help increase the value of a home. A study done in 2011 by the National Renewable Energy Lab found that homes with solar panels sold more quickly and got a higher selling price. For most solar homeowners, payback occurs within three to ten years, depending on how expensive electricity is where they live and what incentives are available in their state. A homeowner paying \$200 or more per month prior to going solar will have a much shorter payback period than someone whose average electric bill was \$75 (Solar Economics, 2014).

Switching to ENERGY STAR Certified Products

Large corporations and small suburban homeowners alike can make a big environmental difference with small lifestyle adjustments. Switching to ENERGY STAR certified products is one such change. Earning the ENERGY STAR means products meet strict energy efficiency guidelines set by the US Environmental Protection Agency (EPA). ENERGY STAR certified products provide all the functionality of standard products but use less energy, reducing their impact on the environment. ENERGY STAR qualified consumer electronic products are more efficient in all usage modes: sleep, idle, and on (ENERGY STAR, 2014). Below is a list of items available for purchase from ENERGY STAR that can be installed in any home or business that will lead to long-term savings and a cleaner environment.

Table 2

<i>ENERGY STAR appliances</i>		
Doors	Answering Machines	Room Air Conditioners
Windows	Computers	Ductless Heating/Cooling Systems
Skylights	High Efficiency Electric Storage Water Heaters	Air Purifiers
Roof Products	High Efficiency Gas Storage Water Heaters	Washers
Televisions	Whole Home Gas Tankless Water Heaters	Dishwashers
DVD/Blu-ray Players	Solar Water Heater	Refrigerators
Cordless Phones	Central Air Conditioners	Ceiling Fans
	LED lightbulbs	Lightbulbs

Source: All Certified Products. (2014). Retrieved March 10, 2014 from www.energystar.gov/certified-products/certified-products?c=products.pr_find_es_products

Obtaining a LEED Certification

LEED (Leadership in Energy and Environmental Design) is a green building certification program that recognizes best-in-class building strategies and practices. This award is given by the United States Green Building Council (USGBC). To receive LEED certification, structures must meet certain prerequisites and earn points to achieve different levels of certification (USGBC, 2014). There are five ratings under the LEED certification standards. The five rating systems are Building Design and Construction, Interior Design and Construction, Building Operations and Maintenance, Neighborhood Development, and Homes. Building Design and Construction applies to buildings newly constructed or going through major renovations. These include hospitality, core and shell, data centers, schools, warehouses and distribution centers, retail, and healthcare. Interior

Design and Construction applies to projects for a complete interior fit-out and refers to commercial interiors, retail, and hospitality. Building Operations and Maintenance applies to existing buildings undergoing improvement work or little to no construction including data centers, schools, warehouse and distribution centers, retail and hospitality. Neighborhood Development applies to new land development projects or development projects containing residential uses and nonresidential uses. These projects can be at any stage of the development process from conceptual planning to construction and includes the plans and the built project. Homes applies to single family homes, low-rise multi-family structures that are one to three stories tall, or mid-rise multi family structures that are four to six stories tall (USGBC, 2014)..

Within each of these rating systems, certain prerequisites must be satisfied and the number of points any project or structure earns will determine its overall level of LEED certification. The categories in which structures or projects earn points are integrative process, location and transportation, materials and resource, water efficiency, energy and atmosphere, sustainable sites, indoor environmental quality, innovation, regional priority credits. If a project is trying to earn an LEED certification in Neighborhood Development, there are additional categories in which points must be earned including smart location and linkage, neighborhood pattern and design, and green infrastructure and buildings.

Along with the five rating systems, there are also four different levels of LEED certification available for projects and structures. The four different levels are certified, silver, gold, and platinum. In order to obtain any of these levels, your project or structure must come within certain point ranges. In order to be certified, the project or structure

must earn from 40 to 49 points, silver is 50 to 59 points, gold is 60 to 79 points, and platinum is 80 points or higher.

The costs and benefits should certainly be weighed if a business is considering obtaining a LEED certification. LEED buildings are cheaper to operate, decrease energy and water bills by up to 40 percent, have faster lease-up dates, may qualify for many incentives such as tax rebates and zoning allowances, and retain higher property values. The pricing for this certification varies for each rating system and level. To see the exact prices, visit <http://www.usgbc.org/cert-guide/fees> for more specific information (USGBC, 2014).

There are costs associated with obtaining a LEED certification as well. In order to apply for certification, applicants are required to pay a registration fee and a certification fee. In addition, there are other added costs involved in this process including premiums for construction, administration costs, and commission costs. According to a 2003 report by Greg Kats to California's Sustainable Building Task Force, the price premium for green construction can vary from 0.66 percent for LEED certified buildings to as much as 6.5 percent for LEED Platinum certified buildings. This premium, however, has been declining in the last few years. Furthermore, Kats concluded that benefits associated with green building outweigh the costs incurred. On average, the cost premium for LEED buildings came to \$4 per square foot. The total financial benefits came out to \$48.87 per square foot for LEED certified & Silver buildings and an impressive \$67.31 per square foot for Gold & Platinum buildings. Over a 20 year lifecycle of the buildings, the benefits of LEED certification outweigh the costs from 12.2 to 16.8 times (Auerbach, 2011).

Sustainability in Sports

As “Going Green” has become a more global mindset, many different organizations have started to adopt environmentally friendly operations. Professional sports franchises have joined this movement which has produced a cleaner, more environmentally friendly image for teams in the United States and abroad. Surveys indicate, however, that sports leaders are at least somewhat skeptical about the “Green” movement.

A study done by the Sports Business Journal in November 2008 surveyed 1,100 executives in both professional and college sports to gauge attitudes about environmental sustainability in sports. According to their survey, 44 percent viewed environmental concern to be an important issue while 43 percent believed it was just a marketing gimmick. The survey showed that 37 percent of these executives believed having a direct positive effect on the environment is the top reason behind a sports company’s decision to launch green initiatives, and 39 percent believed that instituting recycling programs can help sports properties make the biggest green impact. A little over a quarter of those questioned, approximately 29 percent, believed that sports organizations should leverage their brand to raise awareness of environmental initiatives, and 41 percent believed that sports businesses are slightly behind the curve or trailing other industries in their environmentally friendly initiatives (King, 2008).

A more recent survey conducted by the Sports Business Journal in October 2013 surveyed 2000 senior sports executives on their opinions on sustainable practices in sports. According to the results, 77 percent feel that “green” efforts are more PR

driven than by genuine concern for the environment. Three quarters of these executives, feel that the organizations are not willing to forgo revenues to support installing “green efforts into their daily operations (Muret, 2013).

Despite the skepticism of some sports leaders, the rationale for sports organizations to embrace sustainable practices can be clearly demonstrated. Sporting events are one of the world’s most popular forms of entertainment. The industry utilizes large facilities to host their games and events and often attracts large crowds. This industry also requires a frequent high volume of travel. Many people prefer to drive and park rather than take mass transit. The facilities must constantly be lit and either heated or air-conditioned, leading to the consumption of large amounts of energy. Sporting events usually lead to the production of large amounts of waste. Much of this waste adds to the excess garbage sent to local landfills. Some facilities also utilize large amounts of water as well as fertilizer, insecticides, and pesticides. The scope of this activity shows how the sport industry plays a large part in the environmental footprint of our planet. It is important that teams begin to pick up on eco-friendly practices to help reduce their carbon footprint.

The following section will discuss the sustainability efforts of the three professional leagues in which Pittsburgh has teams: Major League Baseball, National Football League, and the National Hockey League.

Major League Baseball (MLB)

In 2005, Major League Baseball became the first professional sports league to partner with the National Resources Defense Council (NRDC), the nation’s most

effective environmental action group consisting of about 1.4 million members. Major League Baseball officials and NRDC experts met to discuss a league greening initiative and formed the “Commissioner’s Initiative on Sustainable Stadium Operations and Team Practices.” The NRDC Greening Advisor for MLB was established to help each team along with its stadium operator to recognize and pursue environmentally safe operations and supply chain choices within their ballparks and name cities. The organization helps out with office operations, team and fan transportation, stadium operations and maintenance, energy use, concession operation, events planning, energy use, recycling, and waste management. In 2008, this Greening Advisor position earned the U.S. EPA’s Environmental Merit Award. Almost all of the 30 MLB teams operate within a range of eco-friendly practices (Major League Baseball, 2014).

An example of a team that proves to be a leader in environmental sustainability is the Seattle Mariners. Their home, Safeco Park, is considered one of the most eco-friendly facilities in Major League Baseball. During the 2013 season, the Mariners diverted 1,547 tons from landfills and recycled or composted 90 percent of the stadium’s waste. Since the 2006 season, the facility has reduced its natural gas usage by 40 percent, electricity by 25 percent, water by 40 percent, and energy use by 50 percent. They also have a program in place known as “Sustainable Saturdays” in which during every Saturday home game, the Mariners have a contest where fans must find facts around the ballpark pertaining to recycling and other eco-friendly practices. The Mariners also created two mascots to help promote their sustainable operations. The mascots’ names are Captain Plastic and Compost and they walk around the ballpark during the baseball games and raise awareness about preserving the environment.

Below is a list of MLB teams who have formal sustainability programs in within their ballparks. See Appendix A-1 to A-4 for more specific details on individual teams eco-friendly practices.

Table 3

Team	Sustainability Program
Boston Red Sox	"Red Sox Go Green"
Chicago Cubs	"Real Fans Recycle"
Cleveland Indians	"Our Tribe is Green...Are you in the Tribe?"
LA Dodgers	"Next 50"
Philadelphia Phillies	"Red Goes Green"
Pittsburgh Pirates	"Let's Go Bucs. Let's Go Green"
St. Louis Cardinals	"4 A Greener Game"
San Diego Padres	"San DieGO Padres GREEN "
Tampa Bay Rays	"Teaming Up for the Environment"

National League Football (NFL)

The NFL is probably the most popular professional sports league in America today. Attracting thousands of fans to its games each season, the NFL teams want to leave a favorable impression image and create memories at their football games. By initiating and operating in sustainable ways, each team, as well as the NFL itself, can influence the fans attitudes towards environmental awareness.

According to the NFL website, the league “looks to be a responsible steward of the environment in all areas of business, using resources efficiently and minimizing waste” (National Football League, 2012). The league’s original focus was to implement environmental efforts on greening NFL stadiums and operations to help the teams in the

league operate in eco-friendly ways. The NFL focuses on bringing sustainable practices into all of its events from the Super Bowl to all of the regular season games or other events occurring throughout the year. For example, the NFL has had a comprehensive, award winning Super Bowl environmental program for over 15 years that has worked with the Super Bowl's host community and local partners to develop and implement many sustainable projects. This program has five main initiatives: solid waste management, material reuse, food recovery, sports equipment and book donations, and greenhouse gas reduction (National Football League, 2012).

One NFL team that has been a leader in environmental sustainability is the Philadelphia Eagles and Lincoln Financial Field. The Eagles' facility uses an 11,000 solar panel array located on the roof to create enough energy to power the entire stadium. The Eagles have also helped divert three million pounds (1,566 tons) of waste from landfills and their recycled paper purchase programs have saved over 6,000 trees. With the numerous green practices in place, the facility has been able to reduce their carbon footprint to zero. Because of this, Lincoln Financial Field is considered one of the most eco-friendly structures in the world (Go Green, 2014).

Below is a table of NFL teams having formal sustainability programs in place in their stadiums. See Appendix B-1 to B-4 for further details on what NFL teams do specifically to implement environmental practices into their operations.

Table 4

Team	Sustainability Program
Atlanta Falcons	"Rise Up and Recycle"
Arizona Cardinals	"Our Green Mission"
Denver Broncos	"Game Plan Green"
Green Bay Packers	"Packers Green Team"
Kansas City Chiefs	"Extra Yard for the Environment"
Philadelphia Eagles	"Go Green"
St. Louis Rams	"St. Louis Green"

National Hockey League (NHL)

The NHL is one of the latest professional sports leagues to jump on the “Go Green” bandwagon. In 2010, the NHL launched new green initiatives in cooperation with the National Resources Defense Council (NRDC). Hockey is a sport that has many reasons to join the fight against global warming since all of their games are played on ice and the energy required to keep the ice in good condition and the fans comfortable at the same time is a big challenge.

League Commissioner Gary Bettman said “Our game originated on frozen ponds. Most of our players learned to skate on outdoor rinks. For that magnificent tradition to continue through future generations, we need winter weather and, as a league, we are uniquely positioned to promote that message. We are thrilled to be able to work with the Natural Resources Defense Council and to draw upon its cast experience and expertise in greening League events and League and Club operations”.

The NRDC has provided a guiding hand for the program they started called *NHL Green*. Early efforts included making NHL events more sustainable starting with the June 2010 league draft at the Los Angeles STAPLES Center. One NHL innovation involved the arenas providing 30,000 reusable, commemorative bags at the 2010 Stanley Cup Finals to replace the use of plastic bags (Davies, 2010). Hockey fans interested in helping fight climate change and promoting sustainability can visit the NHL Green website for more information on what the league and its teams are currently doing and for personal tips to help them go green.

An NHL team that has been a leader in environmental sustainability is the Minnesota Wild and Xcel Energy Center. There are two programs in place at the arena that have helped with their sustainable operations. The first program is called “50-50 in 2” and is a program that focuses on reducing trash generation by 50 percent and increasing recycling by 50 percent in two years. Since the programs start up a few years ago, the team has recycled 56 percent of its waste, already surpassing its goal. The second program is called “80-20 in 3” and is a program that reduces their operational carbon footprint by 80 percent and increases the arena’s efficiency by 20 percent better than average (minimum required by EPA is 19 percent). Xcel Energy Center has been successful in terms of water conservation by installing automatic sinks and flushers on toilets and urinals. There are also two electric charging stations for electric cars in a local parking garage and bike racks for those who decide to ride their bicycles to games (Leadership in Sustainability, 2014).

Below is a table summarizing some of the NHL teams' formal sustainability programs at their arenas. See Appendix C-1 to C-4 for further details on what teams have done to help try to reduce their carbon foot print.

Table 5

Team	Sustainability Program
Boston Bruins	"NHL Street"
Colorado Avalanches	"Play Clean"
Los Angeles Kings	"AEG 1EARTH"
Minnesota Wild	"The Goal is Green!"
Phoenix Coyotes	"Going Green"
Tampa Bay Lightning	"Keep Tampa Bay Beautiful"
Winnipeg Jets	"Strong & Green"

Pittsburgh

When talking about being environmentally friendly and practicing environmental sustainability, many would not think of Pittsburgh. A town known as the *Steel City* was once heavily polluted by the smoke pouring out of many steel mills in the area and waste being dumped into the city's three rivers. Because of this, Pittsburgh received the nickname "The Dirty City." Soot was known to fill the air, making it hazardous to breathe. For this reason, many individuals suffered emphysema and other lung problems. Women could not even hang their laundry outside due to the fact that their clothes would soon be covered by the soot and ash being produced from the steel furnaces. To understand the huge change that this city has undertaken, a look at the past will help provide a better perspective.

Pittsburgh and Its Past

Pittsburgh was founded in 1788 and originally served as a center for fur trade and was the location of an important military fort during the French and Indian War. As the city industrialized, coal consumption became a sizable source of smoke pollution and helped Pittsburgh receive the nickname the “City of Smoke” (Popular Pittsburgh, 2014). Pittsburgh was also important in the shipping industry because of its prime location along three of the major rivers in Southwestern Pennsylvania. The rivers quickly became contaminated from being part of a popular transportation route and a repository for the disposal of sewage. In 1880, hundreds of boats struggled to travel down the three rivers due to being constantly overwhelmed by trade boats. From 1872 to 1908, Pittsburgh had the highest typhoid fever mortality rate of other city in the nation (Popular Pittsburgh, 2014). The iron and steel industry exploded in Pittsburgh in the late 19th century and became the city’s leading industry in the 1950s. The growing addition of these industries added to the air pollution already being produced by the coal, glass, chemical, and manufacturing industries (People & Events, 2000).

Pittsburgh Renaissance

Due to World War II and the high demand for steel and other finished goods necessary for the military in the 1940s, it became difficult to tell the difference between the night and day because of the smog. In 1945, Mayor David L. Lawrence and the Allegheny Conference on Community Development knew it was time for a much needed change and started a program called the *Pittsburgh Renaissance* (People & Events, 2000).

The goals of the program were to reduce smoke and water pollution and rebuild downtown Pittsburgh.

Lawrence felt passionate about cleaning up the city. After becoming mayor, he began what has been referred to as "Renaissance I" to clean up the city. The twenty year redevelopment plan included sandblasting the smoky grime off the city's skyscrapers, making many much needed public transportation improvements, and enforcing smoke ordinances. The end of World War II reduced the industrial output that was the source of the pollution problem. The city began to improve dramatically as it found new sources of energy and other ways to provide jobs, diversifying its manufacturing economy. By 1954, smoke pollution had decreased by 90 percent and a new sewage plant and the city's first two expressways and airport were built. Because of the new improvements being made in Pittsburgh, downtown began expanding and found a new way to attract locals to the Golden Triangle (Pittsburgh's Dark History, 2014).

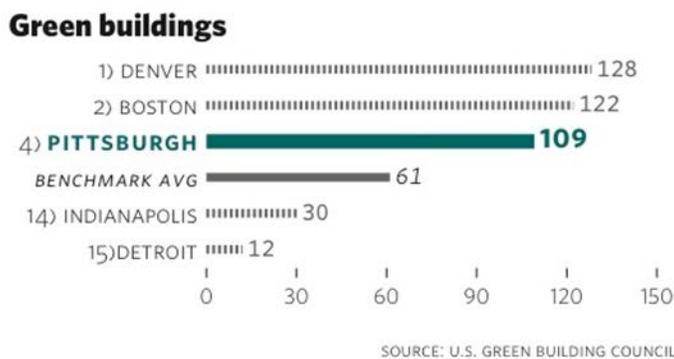
In the late 1970s, the beginning of Renaissance II started to take place. Pittsburgh's tallest building, the U.S. Steel Building (now owned by UPMC) was built and completed in 1970 to be the headquarters for U.S. Steel Corporation. At 64 floors, it is the fourth tallest building in Pennsylvania and the 37th tallest in the nation.

In 1982, Oxford Center was opened on Grant Street. The collapse of the iron and steel industry during the 1980's had a large impact on the air quality in Pittsburgh. Around this time, the service industries were seeing significant growth. The city began to redevelop land previously used as industrial sites and saw a rise in commercial, retail, and residential districts along with helping clear the skies to reveal the city's beautiful skyline (Pittsburgh's Dark History, 2014).

Pittsburgh Today (2014)

Since those dark and gruesome days, the city has done a complete 180 degree transformation. Gone are the days where dirt and grime filled the air to where Pittsburgh has one of the most beautiful skylines in the entire country. In 2010, Forbes named Pittsburgh “the most livable city in America” (Levy, 2010). From the early years of David Lawrence’s first steps at environmental improvements and through today, Pittsburgh has continued to clean up its city and make it safer and healthier place in which to live. Below is a bar graph comparing the number of “Green” buildings found in Pittsburgh compared to other major cities in the country showing that Pittsburgh is ranked fourth overall in the nation (Fraser, 2013).

Table 6



Source: Fraser, Julie. (2013 December 12). The Path to Sustainability. Pittsburgh Today.

Retrieved from <http://www.pittsburghtoday.org/ThePathtoSustainability.html>

Table 7

<u>Firsts</u>	<u>Name of Building</u>
First Green Convention Center	David L. Lawrence Convention Center
First Green Financial Institution	PNC Firstside Center
First Green Children's Museum	Children's Museum of Pittsburgh
First Green University Dance Studio	Point Park University Dance Complex
Frist Green Welcome Center in a Public Garden	Phipps Conservatory Welcome Center
First Green Smithsonian Property	Senator John Heinz History Center
Frist Green Radio Station	WYEP Radio Station
First Green Food Bank	Greater Pittsburgh Food Bank
First Green University Dormitory	Carnegie Mellon University Stever House
First Green Public Arts Facility	Pittsburgh Glass Center

Source: Office of Sustainability and Energy Efficiency. (2014). Retrieved April 1, 2014 from

<http://www.pittsburghpa.gov/green/renewable.htm>

Above is a table identifying the first types of “Green” certified buildings in the nation located in the Pittsburgh area. Currently, the city is ranked eighth in the nation in number of LEED certified buildings and ranked tenth in terms of square feet. There are currently 39 total LEED certified buildings in the city and more than 59 in Western Pennsylvania, along with 60 new projects in Pittsburgh currently pursuing LEED certification (Office of Sustainability and Energy Efficiency, 2014).

Under Mayor Luke Ravenstahl the Sustainability Commission was established to “reduce the environmental impact of city operations and oversee the implementation of and update the *Pittsburgh Climate Action Plan*”. The Sustainability Commission currently consists of eleven members that are all city employees appointed by the mayor.

There are four standing positions for staff members whose main roles are related to environmental sustainability alone (Boards, Authorities, and Commissions, 2014).

Over the last decade, the city of Pittsburgh has undertaken many different types of renewable energy initiatives to make the area more “green.” First, the Western PA Energy Consortium became a member of the EPA’s Green Power Partnership for its purchase of renewable energy. The Consortium won a “Green Power Leadership Award” in September 2009 from the EPA for purchasing ten percent of its electricity from renewable sources, and increased that to 15 percent in December 2009. Pittsburgh has emphasized using biodiesel whenever possible and currently uses B20 biodiesel, made up of 20 percent biodiesel and 80 percent traditional diesel in all of its diesel equipment (Office of Sustainability and Energy Efficiency, 2014).

Pittsburgh is one of the only 25 cities in the United States to be named a Solar America City from the Department of Energy. This may seem hard to believe in a city that receives less yearly sunshine than the city of Seattle.

With the city partnering with the Carnegie Science Center, a wind study is currently being conducted along the Allegheny River to determine the feasibility of possibly installing a wind turbine on the North Shore. Even though this turbine would be smaller than most turbines found in other cities, this project would help determine what an urban turbine would look like and provide electricity for outdoor lighting (Office of Sustainability and Energy Efficiency, 2014).

David L. Lawrence Convention Center

If the city of Pittsburgh has one “green” achievement to be particularly proud of, it might be the large white structure sitting on the Allegheny River located next to the Strip District. This building is better known as the David L. Lawrence Convention Center. Its construction was completed in 2003 and named for the former mayor of Pittsburgh. Upon its completion, the center received a LEED Gold certification and became the first ever LEED certified convention center (evolveEA, 2010). In 2012, the Convention Center achieved another first, becoming LEED Platinum in Existing Buildings, and was the first type of structure like it to earn such an honor (Belko, 2012). A study was conducted to perform a post-occupancy analysis of the Convention Center’s many green features along with their performance, marketing pursuits, and past, present, and future operations. The study also included assessments of energy systems, natural ventilation, water, site, transportation, waste, purchasing, and occupant comfort (evolveEA, 2010).

This structure is unique in its own special way and many people love how it operates. A ray of sunshine sitting on the Allegheny River, the impressive building has earned much recognition and praise. Where else in the world could you find a convention center that uses an on-site wastewater treatment plant to recycle water and draws from an underground water source to meet its needs? Or a 20,000 square foot space filled with flowers, plants, and grasses, and is designed to retain 80 percent of rainfall from storms and reduce roof temperature by 50 degrees on even the hottest days of the year? These are some of the features found at the David Lawrence Convention Center and helps make it a one-of-a-kind, unique structure. It is a gem found in the city of Pittsburgh and does its part to help better environment on a daily basis.

Pittsburgh Sports

The three professional teams, the Pirates, Penguins, and Steelers, play a vital role in lives of Pittsburghers. They affect daily lives from deciding to wear to what to watch to what to attend. For years, generations of fans have grown up cheering for their beloved teams through both the good times and the bad. This city takes pride in their teams and younger fans look up to the players as inspirational leaders. This is why these three teams should serve as role models in terms of their eco-friendly efforts and demonstrate to the city and their fans just how important saving the environment is. Below are descriptions of what Pittsburgh's three major professional sports teams and their facilities do in terms of eco-friendly practices and their success from such practices.

Pittsburgh Pirates

PNC Park, home of the Pittsburgh Pirates since 2001, is a great example of how environmental sustainability is integrated into daily operations. Sissy Burkhart, the Manager of Cleaning Operations at PNC Park outlined some of the ballpark's successful eco-friendly practices. In 2008, the Pirates launched their environmental sustainability program, calling it "Let's Go Bucs. Let's Go Green." The goal of the program was to focus on three specific areas: recycling, conservation, and education. Before this program, there were no set recycling practices with all the trash going into landfills, millions of bottles were thrown away each year, fryer oils were collected and disposed of, and cardboard and wooden pallets were the only items recycled in the park (Burkhart, 2012).

In 2008, the recycling program was started at PNC Park. Today, large, black plastic Coca-Cola bottles are can be found around the park in order to help with the recycling program. At the end of each game, the bottles placed into these holders are collected and recycled. Cardboard continues to be recycled as well. A “Green Team” was put into place to help collect and separate all recyclable items. Below is a chart summarizing the items recycled by category (Burkhart, 2012). The Pirates have recycled more than six million pounds of materials and have successfully diverted 65 percent of waste from the waste stream at PNC Park (“Let’s Go Bucs. Let’s Go Green”, 2014). These numbers show the growth of the recycling efforts since their initiation six years ago.

Table 8

Item Recycled	2008	2011
Aluminum	5,913 lbs	17.7 tons
Cardboard	193 tons	151.1 tons
Plastic	33,547 lbs	23.2 tons
Glass	870 lbs	74.5 tons
Mixed Paper	3.61 tons	10.4 tons
Fryer Oils	20,100 gallons	23.6 tons
Wood	39.7 tons	96.8 tons

Source: Let’s Go Bucs. Let’s Go Green. (2014). Retrieved January 7, 2014

from http://pittsburgh.pirates.mlb.com/pit/community/go_green.jsp

In 2009, the Pirates started composting at PNC Park. At this time, they were one of only four major league teams to do so. This program allowed for the collection of

organic material which helps in slowing down the production of methane, a hazardous greenhouse gas. During the 2009 season, the Pirates composted 130.7 tons of food waste and 41.7 tons of yard waste. During the 2011 season, the Pirates had quadrupled the number of tons of food waste composted, up to 572.8 tons, and composted 58.9 tons of yard waste (Burkhart, 2012).

All paper used around the stadium is more environmentally friendly. For example, the toilet paper in all of the bathrooms is made from 100 percent recycled materials and hand towels are made from 45 percent recycled materials. All of the office paper in the team's offices such as copy paper, stationary, and business cards, are made from 30 percent post-consumer paper. The Pirates also print the club's numerous publications using soy based ink on FSC certified paper such as Game Day Programs, annual Pirates Yearbook, annual community report, Pirates Media Guide, and PNC Park's A to Z Guide.

The numerous concession stands located around the ballpark are doing their part to be eco-friendly. ARAMARK and Levy Restaurants, the food contractors that service PNC Park, use compostable materials with their napkins, cups, plates, and utensils. The cups found around all the concession stands, now sponsored by Coca-Cola, are recyclable. The food contractors and the Pirates participate in the "*Rock and Wrap It Up!*" program. Rather than being thrown away, prepared untouched food is donated to the Greater Pittsburgh Community Food Bank. During the 2011 season, the Pirates donated 3,260 meals (Burkhart, 2012).

PNC Park has upgraded its energy and water conservation operations. There are low flow toilets and urinals, push button faucets, low flow aerators, and fan and cooling

units on variable frequency drives found in the restrooms around the ballpark. The use of MicroLight lighting control systems have assisted in maximizing energy efficiency. The Pirates replaced over 700 fixtures with energy efficient bulbs to reduce the average from 100 watts to 25 watts. The organization installed occupancy sensors in electrical consumption in most walk-in coolers. With the water conservation measures, the Pirates installed a Hydration system to reduce on plastic and water waste. This device helped save 40,071 bottles in 2011, equivalent to a stretch of seven miles. It reduced pressure washing operations by one gallon per minute and installed credit meters. With the promotion of alternative transportation opportunities such as taking the T and Port Authority buses, fewer cars travel to games with more fans and game day employees utilizing these forms of alternative transportation (Burkhart, 2012).

PNC Park is maintained and cleaned with the greenest of products. Green Works naturally derived cleaners are made with biodegradable cleaning ingredients such as coconuts, essential oils, and corn. Pro Team vacuums have HEPA filters to reduce airborne filters. The team also has a Kalvac Machine, is a green sealed program that is a no touch cleaning system. Other green sealed cleaning items found in the ballpark include tenant machine carpet extractors and tenant machine scrubbers. The flat mop heads used are microfiber mop heads that help reduce airborne fibers and are overall better for the health and safety of the user (Burkhart, 2012).

The Pirates promote the importance of becoming eco-friendly. The organization created several educational outreach programs to help promote the importance of “going green”. First, they started their “Let’s Go Bucs. Let’s Go Green.” program. Secondly, they created a media launch to obtain coverage stressing their messages, positioning

themselves as a sustainability leader in the MLB and professional sports. They have in-park signage and pre-game videos promoting their sustainable practices.

With their community outreach program, they helped to renovate Sanguigni Field and have an annual Earth Day Program consisting of Front Office activities, a fair located on Federal Street, and “green” promotional giveaways. The Pirates have partnered with several different companies in the past to help sponsor an item to help promote environmental sustainability. These partners are First Energy with renewable energy credit on Earth Day, Waste Management with the sponsorship of an Earth Day promotional item, such as a T-shirt, and Breathe Project with the sponsorship of the reusable tote bag (Burkhart, 2012).

The Pirates organization is an excellent example of how to operate daily in the eco-friendliest of ways. In fact, the Pirates were recognized in 2012 by the White House for their leadership and success of their sustainability practices (“Pirates participate in White House”, 2012). Burkhart’s passion for her work has been instrumental to the Pirate’s sustainability success. The ballpark is not LEED certified, but can be looked to as a role model on how to succeed in professional sports by operating on environmentally friendly practices.

Pittsburgh Penguins

CONSOL Energy Center, home of the Pittsburgh Penguins, is the newest of the three professional sport venues in Pittsburgh. When the construction of the arena was completed in 2010, CONSOL achieved something no other NHL team had done before by becoming LEED Gold certified by the USGBC. The Penguins earned 42 points

receiving nine points for sustainable sites, nine for indoor environmental quality, eight for energy and atmosphere, seven for materials and resources, five for innovation in design, and four for water efficiency (CONSOL Energy Center, 2010). The Penguins goal at the start of the project was to construct a LEED certified arena. With their LEED ranking, the Penguins received high marks for water use reduction, recycled materials, regional materials, demolition and construction waste diversion, certified wood, and energy efficiency.

CONSOL was built on a redevelopment site. Across the street from this arena was the Penguins former home, Mellon Arena which was torn down and transformed into available parking for visitors at CONSOL. Alternative transportation is available to many fans through the Port Authority bus system and the T stations located throughout the city. The arena currently has a reflective roofing system and uses the parking structure instead of surface parking to mitigate heat absorption and reduce the heat island effect. The arena provides bicycle storage racks for cyclists and has a comprehensive storm water treatment system filtering the run off water before entering the municipal system and rivers (Green Building Alliance, 2013).

The plumbing fixtures around CONSOL use 40 percent less water than average ones, saving approximately 1.2 million gallons of water annually. Energy efficient lighting and HVAC, along with the exterior building materials, have contributed to the reduction of energy the arena uses annually. It is estimated the savings may be up to \$260,000 per year. Equipment in the CONSOL Energy Center does not have CFC refrigerant, therefore minimizing potential global warming contribution and ozone depletion (Green Building Alliance, 2013).

During the demolition of the arena, the debris was collected, sorted, and transported to recycling facilities to the greatest extent possible. The Pittsburgh Penguins teamed up with Alcoa Recycling to place black metal recycling bins all around CONSOL Energy Center (CONSOL Energy Center Recycling, 2014). The recycling program was put in place so that visitors and employees could dispose of recycled materials, such as cans, bottles and paper, in designated areas to help reduce the amount of waste entering landfills. Construction materials were chosen to promote the reuse of materials, reducing the demand for new materials. The indoor quality of the arena has been seen as eco-friendly. The paints, adhesives, coatings, sealants, and carpet were selected that either emitted no volatile organic compounds (VOC's) or low-VOCs. A cleaning process was put into place that utilizes environmentally friendly cleaners. HVAC and lighting levels are adjustable, which allows for more flexibility in the occupants' comfort in temperature and light (Green Building Alliance, 2013). The Penguins also participate in the *Rock and Wrap It Up!* program and donate unused concession food on game nights to local food banks. Donating 20,057 pounds of food in 2011, the Penguins ranked first among the 24 U.S.-based NHL teams participating in the program that year (NRDC Greening Advisor, 2014).

Tyler Schmitt, Environmental Services Manager, and Mike Stuever, Operations Manager, at CONSOL provided additional insight as to their environmental practices at the arena. The Arena has a “green” ice management system and uses certified ice melt instead of rock salt. LEED landscaping practices are also used such as watering outside plants only if there is a drought, and environmental education signage is used throughout the building (Schmitt & Stuever, 2014).

Pittsburgh Steelers

Heinz Field, home of the Pittsburgh Steelers since 2001, is a landmark in the city of Pittsburgh. Located down the street from PNC Park on the North Shore, this arena can be seen from various parts of the city. Thousands of fans pour into this stadium each year to watch the Steelers or Pitt Panthers play in the brutal winter months or attend large concert there in the hot summer months.

There are currently two eco-friendly practices going on at Heinz Field. The first is single stream recycling. This occurs when recyclable items are not separated into their individual categories, but shipped off instead as one bulk load. The second practice going on is the energy conservation plan designed by Constellation Energy. Heinz Field replaced several items in their stadium with more energy efficient products. Some highlights of this plan included inserting 2,250 tons of air-conditioned chilled water and 30,140 MegaBtus per hour of heating and hot water. In the CHW plant at the stadium, there are three 750-ton chillers, three 750-ton cooling towers, four vertical-turbine condenser water pumps, and a variable primary CHW pumping system. In the HHW plant at the stadium, there are three 8,000 MegaBtus per hour of dual fuel water tube packaged boilers, variable primary HHW pumping system, and four gas-fired DHW boilers. This produced energy cost savings of \$1.25 million over the first five years and the Steelers saved \$4.6 million from their capital budget. (Constellation Energy, 2011).

The Pittsburgh Steelers have been a large part of this city since their creation in 1933. When many people think of Pittsburgh, the Steelers often come to mind. This is why I believe they have the potential to be an even more influential part of sustainability

efforts in Pittsburgh and implement more environmentally friendly practices and make a commitment to the environment similar to those of their sister stadiums, PNC Park and CONSOL Energy Center

How can Pittsburgh's professional sports teams help better the environment?

Given Pittsburgh's environmental history and seeing how the city and its professional sports facilities operate, the question remains: How can Pittsburgh's professional sports teams continue to help improve the environment?

Here are a few suggestions that could help make the Pittsburgh sports teams' contributions to sustainability even more substantial.

- *Installation of Solar Panels*

As mentioned earlier, Pittsburgh has been ranked as only one of 25 cities in America to be named a Solar America City. What if solar panels could be installed on the tops of all three stadiums in Pittsburgh?

PNC Park would probably be the best option to try such a sustainable practice. Since baseball season occurs from April until October normally, this is the prime time for solar panels to be in use. While solar panel arrays are not the cheapest thing to install and teams are not always fans of spending big money, I believe that the Pirates could start out small by placing a few solar panels somewhere around the stadium, such as the Riverwalk, to test out if they could operate a concession stand or something in and around that area during game days.

- *Install ENERGY STAR efficient products*

These items were not just made for households. Heinz Field would be the perfect location for the use of these products. Some ENERGY STAR units might not be cheap to purchase but, in the long run, the organization would save more money than if they continued to operate using current systems. Such appliances and energy saving products the Steelers should consider include: new windows, energy efficient electronics such as televisions, computers, and phones, heating and cooling systems, and eco-friendly hot water heaters. Replacing such simple everyday items within the offices and stadium would be just a small step that Heinz Field could take and hopefully lead them to becoming more environmentally sustainable.

- *Host more promotional nights*

Promotional items always bring large crowds to any sporting event. In the past, the Pirates have done a Free T-Shirt Friday promotion where Waste Management was a sponsor. I think this is great for Waste Management to promote their organization, but it might not necessarily be enough. Perhaps the Pirates, Penguins, or Steelers could host an educational night or “Go Green” night at a home game to help bring awareness to environmental sustainability. It has been successful for teams in the past, specifically the Seattle Mariners, where they host Sustainable Saturdays at least once a month to help promote and encourage green awareness.

- *Have more events occur outside rather than indoors*

This might be an option from the early days of spring to the later days of fall. Many sports facilities are used for events other than just games. Many companies rent out rooms in the stadiums for larger and important meetings and many couples decide to have their wedding receptions in these same locations. These venues always provide the best service to these clients, especially since they pay a lot of money to rent out these rooms. What if these venues made it a possibility to have these events outside rather than limiting them to indoor spaces? It is easy to picture a wedding reception either on the Riverwalk or one of the great overlooks at PNC Park. Having an event in the bright, beautiful sunshine would prevent the use of excess electricity and hiring waiters and waitresses to work the event could keep the outdoor event clean the entire time and make sure the proper materials are recycled at the end of the event.

- *Encourage use of Mass Transit*

This can be an easy way to support the eco-friendly lifestyle. Located near all three Pittsburgh professional sports facilities are numerous Transit stations that make it quick and easy to get these destinations. Some of the stop locations are free, therefore saving commuters a little money they don't have to spend for parking. Another use of public transportation that both fans and workers can use is the bus system. Taking a bus to and from any location costs a little bit of money, but the stress and cost of parking a car is eliminated.

Conclusion

As the United States and the world have started to become more concerned with environmental issues such as global warming, people have recognized that changes are going to be necessary in order to protect the environment. Starting recycling programs, installing solar panels, purchasing ENERGY STAR equipment, and getting LEED certification are indications of a social readiness for much needed change.

Sports play a vital role in the lives of many Americans whether we watch sports, play them, or attend the games. That is why I believe that professional sports should make efforts in moving towards more environmentally friendly practices. They can make a difference and help lead to positive results both for the organizations and leagues themselves as well as influence their fans.

Pittsburgh was once a dirty and grimy city known primarily for its smoke-spewing steel mills, polluted rivers, and soot filled air. Contrast that with the city it is today. The vision of David L. Lawrence helped clean up the city so today there is a generation that would have a hard time believing that it was ever dirty. By continually incorporating new practices and focusing on the revitalization of the area, I believe Pittsburgh will become an even more vital and beautiful city. The three professional sports franchises in the city are certainly well positioned to play an important role in shaping the image of the city as a great place to live and Pittsburgh's hard earned reputation as a beautiful city can continue to grow. The progressive environmental actions of the Pirates and Penguins and the potential environmental influence of the Steelers can make these three teams models not only for sports franchises but for businesses generally as environmental leaders. Sports franchises have the ability to wield

significant influence in our culture. There is no reason why some of that influence can't be as role models for responsible environmental operation.

Appendix A-1

MLB Team	Facility Name	Formal Program	LEED Cert.	Recycling
Atlanta Braves	Turner Field			X
Arizona Diamondbacks	Chase Field			X
Baltimore Orioles	Oriole Park at Camden Yards			X
Boston Red Sox	Fenway Park	"Red Sox Go Green"		X
Chicago Cubs	Wrigley Field	"Real Fans Recycle"		X
Chicago White Sox	U.S. Cellular Field			
Cincinnati Reds	Great American Ballpark			X
Cleveland Indians	Progressive Field	"Our Tribe is Green...Are you in the Tribe?"		X
Colorado Rockies	Coors Field			
Kansas City Royals	Kauffman Stadium			X
Los Angeles Angels	Angels Stadium			
Los Angeles Dodgers	Dodger Stadium	"Next 50"		X
Miami Marlins	Marlins Park		Gold	X
Milwaukee Brewers	Miller Park		Silver	X
Minnesota Twins	Target Field		Silver	
New York Mets	Citi Field			X
New York Yankees	Yankee Stadium			X
Oakland Athletics	O.co Coliseum			
Philadelphia Phillies	Citizens Bank Park	"Red Goes Green"		
Pittsburgh Pirates	PNC Park	"Let's Go Bucs. Let's Go Green"		X
St. Louis Cardinals	Busch Stadium	"4 A Greener Game"		X
San Diego Padres	Petco Park	"San DieGO Padres GREEN "		X
San Francisco Giants	AT&T Park		Silver	
Seattle Mariners	Safeco Field			X
Tampa Bay Rays	Tropicana Field	"Teaming Up for the Environment"		X
Texas Rangers	Rangers Ballpark			X
Washington Nationals	Nationals Park		Certified	X

Appendix A-2

MLB Team	Composting	Solar Panels	Water Conservation	Eco-Friendly Products	"Green" Cleaning Products
Atlanta Braves			X		
Arizona Diamondbacks		X			
Baltimore Orioles	X				X
Boston Red Sox		X		X	
Chicago Cubs			X	X	
Chicago White Sox					
Cincinnati Reds					
Cleveland Indians		X		X	
Colorado Rockies					
Kansas City Royals		X			
Los Angeles Angels					
Los Angeles Dodgers			X		
Miami Marlins			X		
Milwaukee Brewers			X		X
Minnesota Twins			X		X
New York Mets	X			X	
New York Yankees			X	X	
Oakland Athletics					
Philadelphia Phillies					
Pittsburgh Pirates	X			X	X
St. Louis Cardinals					
San Diego Padres			X		
San Francisco Giants		X	X		
Seattle Mariners	X		X	X	
Tampa Bay Rays				X	X
Texas Rangers			X		
Washington Nationals			X		

Appendix A-3

MLB Team	Energy Conservation	LED lighting	Food Donation	Alt.Transportation
Atlanta Braves				X
Arizona Diamondbacks	X			
Baltimore Orioles				
Boston Red Sox				
Chicago Cubs	X			
Chicago White Sox				
Cincinnati Reds	X	X		
Cleveland Indians		X	X	
Colorado Rockies				
Kansas City Royals				
Los Angeles Angels				
Los Angeles Dodgers	X			X
Miami Marlins	X			
Milwaukee Brewers	X		X	
Minnesota Twins	X		X	
New York Mets				
New York Yankees	X			X
Oakland Athletics				
Philadelphia Phillies	X			
Pittsburgh Pirates	X			X
St. Louis Cardinals			X	
San Diego Padres	X			
San Francisco Giants	X			X
Seattle Mariners	X		X	
Tampa Bay Rays	X			
Texas Rangers				
Washington Nationals	X			X

Appendix A-4

MLB Team	Other	If other, explain
Atlanta Braves		
Arizona Diamondbacks	X	electric car charging station
Baltimore Orioles	X	revitalize Inner Harbor
Boston Red Sox	X	Green Team, use biodiesel fuel, locally grown foods
Chicago Cubs	X	Permeable Interlocking Concrete Pavement (PICP)
Chicago White Sox		
Cincinnati Reds	X	EPA'S Portfolio Manager, biodiesel fuel, <i>Green Nights</i>
Cleveland Indians	X	<i>The Indian's Green Team</i> , wind turbines
Colorado Rockies	X	<i>The GaRden</i>
Kansas City Royals	X	paperless ticketing
Los Angeles Angels	X	infill development, keep soil & water clean
Los Angeles Dodgers	X	beautify the Chavez Ravine, hired a full-time arborist, centralized chilled water system
Miami Marlins	X	planting native plants
Milwaukee Brewers	X	"Green Week" eCycling, plants tree for every 20,000 tickets sold
Minnesota Twins		
New York Mets	X	construction vehicles use ultra-low sulfur diesel, white PVC roof tops
New York Yankees	X	purchased 33 million kilowatt hours, C-Neutral, natural cooling
Oakland Athletics	x	paperless ticketing
Philadelphia Phillies	X	EPA's <i>Green Power Partnership</i>
Pittsburgh Pirates		
St. Louis Cardinals		
San Diego Padres	X	Go Green Fan Guide
San Francisco Giants	X	"Green" concession stands, ENERGY STAR flat panel monitors
Seattle Mariners	X	Sustainable Saturdays, Captain Plastic and Kid Compost, electric vehicle charging stations
Tampa Bay Rays	X	free parking with vehicles with 4 or more guests, bike racks
Texas Rangers	X	Green Team, use biodiesel fuel, locally grown foods
Washington Nationals		Green Roof

Appendix B-1

NFL Team	Facility Name	Formal Program	LEED Cert.	Recycling
Atlanta Falcons	Georgia Dome	"Rise Up and Recycle"		X
Arizona Cardinals	University Of Phoenix Stadium`	"Our Green Mission"		X
Baltimore Ravens	M&T Stadium		Gold	X
Buffalo Bills	Ralph Wilson Stadium			
Chicago Bears	Soldier Field		Certified	X
Cleveland Browns	First Energy Stadium			
Dallas Cowboys	AT&T Stadium			X
Denver Broncos	Sports Authority Field at Mile High	"Game Plan Green"		X
Detroit Lions	Ford Field			X
Green Bay Packers	Lambeau Field	"Packers Green Team"		X
Indianapolis Colts	Luca Oil Stadium			X
Kansas City Chiefs	Arrowhead Stadium	"Extra Yard for the Environment"		X
New England Patriots	Gillette Stadium			
New Orleans Saints	Mercedes-Benz Superdome			
New York Giants/ New York Jets	MetLife Stadium			X
Oakland Raiders	Oakland-Alameda County Coliseum			X
Philadelphia Eagles	Lincoln Financial Field	"Go Green"		X
Pittsburgh Steelers	Heinz Field			X
St. Louis Rams	Edward Jones Dome	"St. Louis Green"		X
San Diego Chargers	Qualcomm Stadium			X
San Francisco 49ers	Levi's Stadium			
Seattle Seahawks	CenturyLink Field			X

Appendix B-2

NFL Team	Composting	Solar Panels	Water Conservation	Eco-Friendly Products	"Green" Cleaning Products
Atlanta Falcons			X	X	X
Arizona Cardinals					X
Baltimore Ravens			X	X	
Buffalo Bills					
Chicago Bears					X
Cleveland Browns					
Dallas Cowboys			X		
Denver Broncos					
Detroit Lions					
Green Bay Packers				X	
Indianapolis Colts					
Kansas City Chiefs	X		X		
New England Patriots	X	X	X		
New Orleans Saints					
New York Giants/ New York Jets	X	X	X		
Oakland Raiders				X	
Philadelphia Eagles	X	X		X	
Pittsburgh Steelers					
St. Louis Rams					
San Diego Chargers					
San Francisco 49ers		X	X		
Seattle Seahawks	X		X		

Appendix B-3

NFL Team	Energy Conservation	LED lighting	Food Donation	Alt. Transportation
Atlanta Falcons	X			
Arizona Cardinals				
Baltimore Ravens	X			X
Buffalo Bills				
Chicago Bears	X			
Cleveland Browns				
Dallas Cowboys	X			
Denver Broncos	X			
Detroit Lions	X			
Green Bay Packers	X			
Indianapolis Colts				
Kansas City Chiefs		X	X	
New England Patriots				
New Orleans Saints		X		
New York Giants/ New York Jets	X			X
Oakland Raiders				
Philadelphia Eagles	X			
Pittsburgh Steelers	X			
St. Louis Rams				
San Diego Chargers				
San Francisco 49ers		X		X
Seattle Seahawks				

Appendix B-4

NFL Team	Other	If other, explain
Atlanta Falcons		
Arizona Cardinals	X	Hydro-Scrubbing, motion sensor lighting controls, purchased bikes to ride, automatic door closers
Baltimore Ravens	X	irrigation system and adaptive vegetation
Buffalo Bills	X	micro wind turbines
Chicago Bears	X	Electric vehicle charging station
Cleveland Browns	X	<i>Grind2Energy</i> system
Dallas Cowboys		
Denver Broncos	X	purchased renewable energy, Green Team, member of the <i>Rocky Mountain Region Greener Venue Partnership</i>
Detroit Lions		floors and elevator foyers use bamboo flooring, old store warehouse southern part of stadium
Green Bay Packers	X	purchased kilowatt hours
Indianapolis Colts	X	serve farm-fresh organic foods
Kansas City Chiefs		
New England Patriots	X	low-emitting construction materials, white roofs
New Orleans Saints		
New York Giants/ New York Jets	X	seating made of partially recycled plastic, use cleaner diesel in construction vehicles,
Oakland Raiders	X	e-waste collection days
Philadelphia Eagles		micro wind turbines, plant trees with kids, carbon neutral game
Pittsburgh Steelers		
St. Louis Rams	X	Rams Green Team, holiday light recycling drive, mattress recycling program, furniture/metal to food, weekly education programs
San Diego Chargers		
San Francisco 49ers	X	garden on roof
Seattle Seahawks		

Appendix C-1

NHL Team	Facility Name	Formal Program	LEED Certification	Recycling
Anaheim Ducks	Honda Center			
Boston Bruins	TD Bank Garden	"NHL Street"		X
Calgary Flames	Scotiabank Saddledome			
Carolina Hurricanes	PNC Arena			X
Colorado Avalanches	Pepsi Center	"Play Clean"		X
Los Angeles Kings	Staples Center	"AEG 1EARTH"		X
Minnesota Wild	Xcel Energy Center	"The Goal is Green!"		X
Montreal Canadiens	Bell Centre		Certified	X
Nashville Predators	Bridgestone Arena			X
New Jersey Devils	Prudential Center			
Philadelphia Flyers	Wells Fargo Center			
Phoenix Coyotes	Jobing.com Arena	"Going Green"		
Pittsburgh Penguins	CONSOL Energy Center		Gold	X
St. Louis Blues	Scottrade Center			
San Jose Sharks	SAP Center			
Tampa Bay Lightning	Tampa Bay Times Forum	"Keep Tampa Bay Beautiful"		X
Toronto Maple Leafs	Air Canada Centre			X
Vancouver Canucks	Rogers Arena			X
Washington Capitals	Verizon Center			
Winnipeg Jets	MTS Centre	"Strong & Green"		X

Appendix C-2

NHL Team	Composting	Solar Panels	Water Conservation	Eco-Friendly Products	"Green" Cleaning Products
Anaheim Ducks					
Boston Bruins	X				
Calgary Flames					
Carolina Hurricanes					
Colorado Avalanches		X			
Los Angeles Kings	X	X	X		X
Minnesota Wild	X		X	X	X
Montreal Canadiens			X		
Nashville Predators			X		
New Jersey Devils					
Philadelphia Flyers	X				
Phoenix Coyotes				X	
Pittsburgh Penguins			X		X
St. Louis Blues					
San Jose Sharks					
Tampa Bay Lightning			X		
Toronto Maple Leafs					
Vancouver Canucks	X				
Washington Capitals					
Winnipeg Jets	X		X		X

Appendix C-3

NHL Team	Energy Conservation	LED lighting	Food Donation	Alt. Transportation
Anaheim Ducks				
Boston Bruins	X		X	X
Calgary Flames				
Carolina Hurricanes				
Colorado Avalanche	X			
Los Angeles Kings		X		
Minnesota Wild	X			X
Montreal Canadiens			X	
Nashville Predators	X			
New Jersey Devils	X			X
Philadelphia Flyers				
Phoenix Coyotes	X			
Pittsburgh Penguins	X		X	X
St. Louis Blues				
San Jose Sharks	X			
Tampa Bay Lightning	X			
Toronto Maple Leafs	X			X
Vancouver Canucks		X	X	
Washington Capitals	X			
Winnipeg Jets	X	X		X

Appendix C-4

NHL Team	Other	If other, explain
Anaheim Ducks	X	member of Green Sports Alliance, fuel cells
Boston Bruins	X	citywide bike sharing program, installed ENERGY STAR equipment
Calgary Flames	X	chloride-free EcoTraction for ice melting, one of the founder members of the Green Sports Alliance
Carolina Hurricanes	X	hosted a "Go Green" night to encourage recycling
Colorado Avalanche	X	purchased enough renewable energy to offset all electricity used in the area, member of "Climate Leaders" program
Los Angeles Kings	X	
Minnesota Wild		
Montreal Canadiens	X	three parking spots for hybrid vehicles, electric and hybrid car charging stations, tree planting program
Nashville Predators		Energy Automation Systems, Inc (EASI) installed
New Jersey Devils		
Philadelphia Flyers		
Phoenix Coyotes		
Pittsburgh Penguins	X	construction waste diversion, sustainably harvested and processed wood, materials that reflect sunlight to reduce heat absorption
St. Louis Blues	X	Green Game, Green Team, World Wildlife Fund's Earth Hour
San Jose Sharks	X	Bloom Energy Servers
Tampa Bay Lightning		
Toronto Maple Leafs		Green Game
Vancouver Canucks	X	meters installed to monitor water, electrical, & gas consumption, biodiesel fuel, broken hockey sticks go to BC Children's Hospital
Washington Capitals	X	Energy Automation Systems, Inc (EASI) installed
Winnipeg Jets	X	paperless payroll system

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