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Influential factors in encouraging or dissuading Orlando businesses to seek LEED certification

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Abstract

Orlando, Florida, is home to 85 building projects that have received a Leadership in Energy and Environmental Design (LEED) certification and 74 projects that are in the process of seeking certification. Over 90 percent of these 159 buildings have been or are being rated by LEED commercial standards. This paper argues that while LEED has played a valuable role in encouraging environmentally sustainable design in the Orlando commercial sector and will continue to be a significant presence in sustainability discussions, local government legislation can assist the end-goals of LEED by promoting more localized initiatives. The benefits of LEED certification include reduced operating costs, higher productivity and health standards for occupants, efficient use of resources, and higher quality site care. This paper analyzes these benefits and suggests that they can be achieved with alternatives/supplements to LEED as well. Six case studies were conducted, three of Orlando businesses that had decided to seek LEED certification for their buildings and three that could have potentially been expected to but did not. The studies found that a lack of LEED certification did not mean a lack of environmental sustainability within the business and that the LEED seal of approval is often sought because it is an expected marketing feature.

Keywords: Orlando, LEED certification, sustainability, commercial buildings

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Orlando and Sustainability

Florida has gained a national reputation for timely innovation in environmental sustainability in the residential and commercial sectors. While such innovation is impressive to experts within the field, it is important to note that many of Florida's environmental efforts are not performed simply with a mindset of progression but out of necessity. As a state that flourishes largely because of tourists and residents who appreciate the amenities of a coastal climate, Floridian governments and planning committees need to consider how climate change is affecting the water and land resources that have lent themselves to the creation of a thriving economy in a historical swampland (The Floridian Oceans and Coastal Council, 2010). Rising sea levels are currently affecting and will continue to affect "Florida's geology, chemistry, biology, and human population" (The Floridian Oceans and Coastal Council, 2010, p. 3). While the central Florida city of Orlando is not located on the coastline of Florida, large cities contribute to greenhouse gas emissions that are directly linked to climate change. Therefore, Orlando needs to be concerned with the environmental impact of tourism and city life. Currently, half of the global population resides in cities, a percentage that will most likely reach 70 percent by the year 2050 ("Cities and Climate Change: An Urgent Agenda," 2010). As more people convert to urbanized lifestyles, the extreme energy consumption of cities will be "driven less by industrial activities and more by the energy services required for lighting, heating, and cooling" ("Cities and Climate Change: An Urgent Agenda", 2010, p. 15). This means that the 80 percent of global energy consumption for which cities are responsible will be increasingly linked to the built environment of Orlando city life.

While cities are a major contributor to climate change, they can also be efficient vehicles for combatting these negative effects. Enacting change at the local government level can be more effective than relying upon higher forms of national government to create solutions ("Cities and Climate Change: An Urgent Agenda," 2010). City governments are the "first-responders in a crisis" and the entities that are "first to experience trends" ("Cities and Climate Change: An Urgent Agenda", 2010, p. 14). Climate change, regardless of whether public officials are determined to deal with its effects, is a crisis whose future will be determined by the actions of society. To present a united front in tackling the consequences of climate change, city administrators need to work in partnership with their constituents, the residents and laborers who help to determine how society will interact with the natural world ("Cities and Climate Change: An Urgent Agenda", 2010). An important step in this process will be "to regularly supply the public with credible standardized information that encourages active debate but also outlines the need for scheduled concrete actions" ("Cities and Climate Change: An Urgent Agenda," 2010, p. 14). Standardized methods of measuring environmental sustainability efforts and actively distributing information pertaining to climate change are a uniform means of creating a preemptive solution to developing cities that will continue to usher in an era of sustainable design; this study focuses on Floridian regions.

Understanding the implications of ignoring environmentally sustainable efforts, the City of Orlando is committed to environmental sustainability that has strengthened in the past decade. Mayor Buddy Dyer began the Green Works Orlando initiative in 2007 in an effort to create "one of the most environmentally-friendly, economically and socially vibrant communities in the nation" ("Green Works Orlando," 2015). The initiative is broken down into several categories to create a holistic vision of environmental sustainability. The seven categories are: energy and

green buildings, local food systems, green economy, livability, solid waste, transportation, and water ("Green Works Orlando," 2015). This seven-prong approach has made the following improvements in sustainability throughout the city over the past eight years:

- Expanded the Downtown LYMMO bus circulator and completed SunRail
- Launched car-sharing with bike-sharing
- Performed energy efficiency retrofits to 1,200 houses
- Completed ten LEED-certified municipal buildings, plus two more currently under construction
- Completed or approved $19 million in energy efficiency investments to municipal buildings
- Converted hundreds of fleet vehicles to electric, hybrid, or compressed natural gas
- Planted 10,000 trees and established five community gardens
- Increased recycling collection by 35%
- Adopted the 2012 Municipal Operations Sustainability Plan and the 2013 Green Works Orlando Community Action Plan. ("Green Works Orlando," 2015)

The concept behind Green Works is the creation of an "environmentally conscious" lifestyle for the average Orlando citizen and employee ("Green Works Orlando," 2015). While the aforementioned notable improvements detail progress made in all seven categories, this study will analyze the efforts of the city government in the energy and green buildings category. The City of Orlando website currently promotes a 2018 goal of transforming Orlando "into a national leader in energy efficiency for new and existing commercial buildings that reduce waste and pollution, while saving businesses and residents significant amounts of money" ("Energy and

Green Buildings," 2015). The following table details the metrics, baselines, targets, and goals for energy and renewable resources in Orlando up to 2040:

Table 1: Orlando Energy Sustainability Goals Up to 2040

Metrics	2010 (Baseline)	2018 (Targets)	2040 (Goals)
Renewable Energy	1.80%	8%	Obtaining 50% of electricity from clean, renewable sources
Energy Use (KwH per capita)	12,003	11,403 (5% reduction)	Reducing total electricity consumption by 20% from 2010 levels; ensuring 100% of new and existing buildings meet green building standards
Greenhouse Gases (GHG)	5,803,851 tons of CO2	4,352,888 tons of CO2 (25% reduction)	Reducing greenhouse gas emissions by 90% from 2007 levels

("Energy and Green Buildings," 2015)

Green Works Orlando translates these goals into what they mean for Orlando businesses. According to the action plan, "the design and construction of new green buildings and energy efficiency retrofits will create new professional and construction jobs, while the energy savings from the new greener buildings will translate to a lower cost of living and lower overhead for businesses" ("Energy and Green Buildings," 2015). The city government will relay how legislation relates to economic development, because environmental sustainability must be economically sustainable.

The Built Environment

The global built environment is expected to triple in size by the year 2030, dramatically increasing "energy requirements and costs of new infrastructure" ("Cities and Climate Change:

An Urgent Agenda," 2010, p. 15). If buildings are not managed with environmental sustainability in mind, demands for energy and investment in infrastructure will be exacerbated ("Cities and Climate Change: An Urgent Agenda," 2010). Globally, the built environment, both commercial and residential, accounts for between 20 percent and 40 percent of energy consumption in developed countries, including the United States (Pérez-Lombard, Ortiz, & Pout, 2008). These high percentages exceed the energy consumption of the industrial and transportation sectors (Pérez-Lombard, Ortiz, & Pout, 2008). Studying the energy consumption of non-residential buildings revealed that within the commercial sector, office and retail buildings comprise the largest consumption of carbon dioxide emissions (Pérez-Lombard, Ortiz, & Pout, 2008).

The United States' statistical breakdown of energy consumption by office buildings is as follows: 17 percent of total non-residential area, 18 percent of non-residential energy use, and 3.2 percent of total energy consumption (Pérez-Lombard, Ortiz, & Pout, 2008, p. 394). Focusing the commercial building energy use analysis on office buildings is justifiable for three major reasons:

1) The increase of total built area of office buildings
2) The amount of artificial lighting required by office buildings and the increase in IT equipment and air-conditioning
3) The uniformity of the typology across building stock (Pérez-Lombard, Ortiz, & Pout, 2008, p. 398).

Previous analysis suggests that office buildings offer a large enough contribution to greenhouse gas emissions that they require further study and development. Encouraging experts in the field to focus research efforts and design innovations within the commercial building

sector could be an efficient use of time because of the influence of the business community on environmental decision-making. The corporate world holds significant power over the use of natural resources; businesses are effective units, driven by deadlines and the desire to earn a profit. Thier efficiency could be a crucial component in achieving sustainability in Orlando's built environment. If a certain goal, such as environmental sustainability, is in the best interest of a company, the company "can and will change, probably far more rapidly than anyone else expects" (Senge, 2008, p. 354).

Financial incentive is typically the most influential change agent, and the money needed to design an environmentally sustainable building has dropped in recent years as the number of such buildings increases (Kats, 2003). The more environmentally sustainable buildings there are, whether they are brand-new or retrofitted, the less expensive the overall cost of each building. Green design is becoming an increasingly fiscally responsible choice, with financial benefits for companies in the form of "energy and water savings, reduced waste, improved indoor environmental quality, greater employee comfort/productivity, reduced employee health costs and lower operations and maintenance costs" (Kats, 2003, p. 3). Green Works Orlando addresses many of these effects in its goals and record of improvements. The fact that a company may see bottom-line increases over time from implementing green design implies that it would be financially detrimental for it to choose less sustainable architecture. Business owners and managers would choose cheaper, more effective practices for their company, understanding that "a higher priced, more efficient system would save the buyer money in the long haul" (Senge, 2008, p. 69).

An Overview of LEED Certification

LEED, or Leadership in Energy and Environmental Design, certification has been successful as a metrics system for sustainable design efforts in the United States largely because it is "flexible enough to apply to all project types" ("LEED", 2015). The United States Green Building Council (USGBC) began the LEED program in 1993 with the hope of improving environmental sustainability in the building and construction industry. LEED measures buildings based upon the following criteria: sustainable sites, water efficiency, energy and atmosphere, material and resources, indoor environmental quality, innovation, and regional priority. Each category is worth a specific number of points, and a perfectly LEED-sustainable building would earn 100 points.

Studies performed by LEED researchers found that in the United States, the built environment is responsible for 38 percent of carbon dioxide emissions, 13.6 percent of potable water usage, and 73 percent of electricity consumption ("This Is LEED," 2015). Based on these statistics, improving the environmental sustainability of the built environment will lead to major savings in water and energy for the United States. The value proposition of LEED as a sustainability rating scale in the built environment is that it "is the only global rating system that offers regional approaches to environmental and building issues and local resources to help projects on the ground, wherever they are" ("Certification Programs", 2015). Different building typologies are judged on how well they perform their unique functions, and LEED certification adapts to these differences. LEED recognizes buildings for "best-in-class" strategies and practices that comply with particular prerequisites and earn points based on varying levels of certification ("LEED," 2015).

The first step in applying to be a LEED-certified structure is to identify the rating system that a building falls within. The different categories of rating systems are Building Design and

Construction, Interior Design and Construction, Building Operations and Maintenance (Existing Buildings), Neighborhood Development, and Homes. Buildings that earn 40-49 points are certified, 50-59 are silver, 60-79 are gold, and 80 points or more qualifies a building as platinum ("This Is LEED," 2015).

LEED building design and construction rating tool

According to a LEED analysis of 7,100 certified buildings, 92.2 percent of the buildings improve energy performance by 10.5 percent of pre-LEED certification levels ("LEED," 2015). The Building Design and Construction rating is meant for new construction and major renovation, core and shell development, schools, retail, data centers, warehouses and distribution centers, hospitality, healthcare, homes and multifamily low-rise, and multifamily midrise ("LEED for Building Design and Construction," 2015"). The LEED Building Design and Construction (LEED BD + C) framework provides an opportunity for new buildings to provide a universal approach to sustainable design, acting as "healthy, resource-efficient, cost-effective" buildings that improve the lives of those who inhabit the building and the condition of the natural environments in which they exist ("LEED," 2015). Each rating scale within LEED certification is updated on a rolling basis as innovations are made in design and technology; the latest version of the LEED "benchmark for high-performance green buildings" is LEED v4 for Building Design and Construction ("LEED," 2015). The most innovative and in-depth analysis of green design, BD + C v4 improves the experience of those applying for certification and those who will later utilize the specified building. The improvements made in this newest version include:

- A focus on materials that goes beyond how much is used to get a better understanding of what's in the materials we spec for our buildings and the effect those components have on human health and the environment

- A more performance-based approach to indoor environmental quality to ensure improved occupant comfort
- Bringing the benefits of smart grid thinking to the forefront with a credit that rewards projects for participating in demand response programs
- Providing a clearer picture of water efficiency by evaluating total building water use. ("LEED," 2015)

Having analyzed and understood how the LEED rating system is utilized within the United States, and having recognized it as the most widely used green building rating tool in the world, I will discuss its significance in the city of Orlando.

LEED certification in Orlando

Appendix A contextualizes the current LEED certification presence in Orlando. The data in Table 2, which includes a complete list of LEED data points from 2009 through the fall of 2015, was compiled from the LEED projects directory. As of November 2015, there are 159 LEED project data points in Orlando. Of these 159 projects, 52 percent have received some level of certification. Two projects, both residential structures, in Orlando have received platinum status. Table 2 breaks down the complete list of projects according to whether they received certification, and then details the date of certification and the type and version by which the buildings that completed the certification process were rated. The majority of gold and silver projects qualify as new construction: they did not entail retrofitting an existing building but sought LEED certification from their conception. There has been a consistent number of gold projects every year since 2009, with a significant decrease only in 2014. However, in 2015, the numbers saw a positive trend once again, with six completed gold-level projects. The list is a compilation of homes, commercial interiors, new construction, and existing buildings.

Orlando had a single silver-level attempt in 2008, 2010, and 2011. In 2015, there were six silver-level certified buildings. The listed projects include new construction, commercial interiors, homes, existing buildings, and core and shell. Compared to other Floridian cities, Orlando does not have an impressive number of LEED projects. Miami's population is 417,650 people compared to Orlando's 255,483 people, but Miami's number of LEED projects that are either certified or pending certification is 341, or more than double Orlando's.

Green Works Orlando values the elements of LEED certification and the effects that it has within a city. Since the birth of Green Works in 2007, the city of Orlando has followed LEED principles and sought certification in the construction of city facilities ("Green Works 2012," 2012, p. 11). One of the points of pride that Mayor Dyer notes in his recaps of the success of Green Works is, as previously noted, the completion of "ten LEED-certified municipal buildings, plus two more currently under construction" ("Green Works Orlando," 2015). These efforts speak to the value that Orlando, ensuring that government buildings implement environmentally sustainable design, places on LEED certification.

The gap that exists in Orlando LEED certification is certification of commercial office buildings. As a center of tourism and as the seat of Orange County, Orlando has previously committed to projects that draw national attention and projects that place the government in a position to speak to environmental sustainability and how it will affect the future of Florida's people and natural resources.

A widely publicized Orlando LEED certified project is the Amway Center, the arena where the Orlando Magic play and where many top-tier performers hold their Orlando concerts. The Amway Center will serve as a valuable case study within this research, acting as arguably the most prominent example of LEED design in Orlando. The press release that describes Rick

Frizzy, the president, CEO, and founding chair of the U.S. Green Building Council, awarding the Amway Center with LEED Gold status emphasized how the new arena would serve as a catalyst in bringing a vibrant center of commerce to a previously sleepier area of Orlando ("Amway Center Achieves LEED Gold Certification," 2011). Representatives for Amway commented that "12 new businesses have opened just on Church Street in the months since the arena opened in October 2010" ("Amway Center Achieves LEED Gold Certification," 2011). However, there was no commentary on whether or not these new businesses would also be seeking LEED certification. The Amway Center has garnered much publicity for Orlando, but there could be room for a smaller-scale and potentially more influential LEED effort if local businesses are so inclined.

The Impacts of Implementing LEED. Orlando could be an example of how environmentally sustainable design "is driven by both performance-based benefits and marketing-based benefits" (Matisoff, Noonan, & Mazzolini, 2014, p. 2001). While performance benefits are based on the function of the building and potential higher energy efficiency and lower operating costs, the marketing benefits of LEED certification are seen in consumer response to accreditation (Matisoff, Noonan, & Mazzolini, 2014, p. 2001). Based on a study of financial gains through performance and marketing improvements resulting from LEED certification, stadiums like the Amway Center characteristically strive for gold level certification; this represents efforts by professional sports teams to garner enough attention for their environmental progress but to stop short of striving for platinum certification (Matisoff, Noonan, & Mazzolini, 2014, p. 2006). Commercial buildings typically strive for either silver or platinum certification, signifying marketing gains simply for implementing LEED certification and then "premium gains for platinum certification" (Matisoff, Noonan, & Mazzolini, 2014, p. 2006). If

each building typology is focusing its efforts on the specific performance and marketing of LEED buildings that result in a quantifiable financial improvement, then Orlando will be maximizing the effects of LEED certification. For this plan to be implemented, the city needs to focus its efforts on all building types and look more closely at smaller businesses and residences now that it has achieved large-scale publicity with highly visible projects.

Currently, Green Works Orlando is dictating how the mission of environmental and economic sustainability will be carried out in Orlando. The "Energy and Green Buildings" category of Green Works Orlando details the relationship between energy consumption and the built environment, lumping the two areas into a single sector as opposed to addressing them separately ("Green Works Orlando: 2013 Community Action Plan," 2013, p. 11). However, LEED certification is not mentioned in this section of the community plan. In most available pieces of literature distributed by the city detailing Orlando's future sustainability, Mayor Dyer lists the strides in LEED certification that have been made over the past 8 years, but the rest of the community or municipal action plans do not delineate how LEED will progress in the years to come. The benefits of LEED have been heavily researched and the rating system itself is currently the most prevalent not only in the United States but also worldwide, yet the Orlando plans do not specifically cite LEED as part of the sustainability strategies. Instead of creating Orlando-specific rating scales, it could be beneficial for Orlando to utilize a universally acclaimed tool that also has the ability to be regionally tailored.

An important question that researchers need to understand if LEED certification is going to be prevalent in the commercial building sector is what motivates business owners to want to have their buildings LEED certified. There are many reasons to strive to achieve a level of certification, but some benefits could be more relevant than others in the Orlando business

community. Business owners have to choose not only to be certified, but also whether they want to be certified by LEED or another green building rating tool. The motivations behind these decisions could alter the way in which the city of Orlando markets green building certification to business owners and the general public.

Literature Review

Economic Ramifications of Sustainable Development

As unbridled human innovation in technology and urban development has occurred over the past 50 years, the newest challenge has become one of sustainability in design. It is no longer sufficient to pursue development without exploring the environmental ramifications, because years of research have proven the harsh impacts that modern commercial ventures can have on the natural world. To understand the parameters of the term, the World Commission on Environment and Development cites that the Bruntland Commissions in 1987 defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Feige, Wallbaum, Janser, & Windlinger, 2013, p. 10). For purposes of this research, the adjective "green" in building design will encompass the definition given by the United States Green Building Council (USGBC):

> Green building is a holistic concept that starts with the understanding that the built environment can have profound effects, both positive and negative, on the natural environment, as well as the people who inhabit buildings every day. Green building is an effort to amplify the positive and mitigate the negative of these effects throughout the entire life cycle of a building. ("What is Green Building?," 2014)

Altering buildings to mirror green design is an effective place to start in restructuring urban areas. Major companies have influence in carbon emissions and water quality based on the buildings they choose to inhabit. Companies can use their power to lessen urban environmental impacts, creating a more sustainable world for their own families and the people who have invested in them. They can be persuaded to join the environmental campaign if they are spoken to in a language that emphasizes the importance of integrating business as a function of the natural world, as opposed to simply viewing the environment as a store of valuable resources. Emphasizing the bottom line, or how profits are affected, could be a useful tool in garnering support for green building design.

Understanding Greenwashing

Greenwashing is defined as "making misleading or inaccurate green claims" (Raiford, 2002, p. 52). Because committing to an environmentally focused business plan is trendy, many companies attach environmental buzzwords to their marketing schemes in order to encourage sales to customers concerned with their role in reducing society's environmental footprint. For example, topping competitive environmental design lists gives companies and their buildings acclaim. The Centre for Interactive Research on Sustainability was named among "The Top 5 Most Sustainable Buildings in the World" because researchers determined that its low greenhouse gas emissions and innovative use of renewable energy qualified it for such a title (Naaz, 2011). While a center of sustainability would warrant such study, a more commonplace sustainability-rating tool is needed for everyday buildings that may house companies with missions other than eco-consciousness. Such a tool would certify buildings as sustainable, instead of consumers needing to research for themselves whether or not a business is simply greenwashing their customers with clever marketing. For the United States, this need is fulfilled

by the (LEED) rating scale. With sustainable architecture prevalent in the media, verifying these claims about office buildings can be part of acting as a responsible consumer.

LEED serves as a holistic approach to quantifying an office building, and encourages building teams to "analyze all of a building's systems and the needs and characteristics of the surrounding community" when planning a site worthy of LEED certification (Raiford, 2002, p. 52). While financial savings and benefits due to decreases in energy expenses in LEED buildings are crucial in convincing companies to utilize sustainable office spaces, the reputation of a LEED-certified company gains customers. Individuals who value the sustainable behavior of a corporation are contributors to the success of companies who choose to partake in sustainable operating methods (Pellegrini-Masini & Leishman, 2011). In reaction, "many global organizations have invested significant resources to create sustainable environments during the last decade" (Juan, Gao, & Wang, 2010).

With the social, economic, and environmental aspects of sustainability in office building design, the concept of renovation has received attention "as a viable alternative to redevelopment or reconstruction" because of the reduced costs of working with existing infrastructure (Juan, Gao, & Wang, 2010, p. 290). Most office buildings are located in the downtowns in large urban cities, areas that are already densely developed and do not leave much room for building completely new offices. The intense concentration of the built environment in downtown areas "triggers the continuous competition for upgrades, amenities, and services among buildings striving to maintain their competitive edge in these concentrated markets" (Dermisi, 2013, p. 37). Therefore, the need for cost-effective and efficient retrofitting of existing structures is prevalent in urban areas of development.

Aspects of Urban Retrofitting

Newton and Bai said in 2008 that the "challenge of achieving sustainable development in the 21st century will be won or lost in the world's urban areas" (Wilkinson, 2012, p. 398). Current policymakers feel strongly that retrofitting, or altering existing structures, will be the solution to urban sustainability. Such retrofits "will result in lower greenhouse gas emissions, less resource use and consumption and healthier workplaces for building users" (Wilkinson, 2012, p. 398). In 2006, Douglas defined retrofit, concerning its similarity to adaptation, as "any work to a building over and above maintenance to change its capacity, function or performance in other words, any intervention to adjust, reuse, or upgrade a building to suit new conditions or requirements" (Wilkinson, 2012, p. 399). Retrofitting allows for a desirable overlapping of the triple bottom line components and increases the rental and capital value of the building as long as the location is appropriate (Wilkinson, 2012). Because the suitable location will vary based on the urban climate of each city, researching where a retrofit should occur is important in the art of retrofitting; in higher quality locations, building owners are more likely to want to keep up with the retrofit activity of the competition (Wilkinson, 2012). Competition can breed sustainability. Currently, the largest issue with retrofitting is the waste that it creates: the parts that are being replaced in office buildings typically end up in landfills. Recycling acceptable parts from retrofitted buildings and utilizing them in "low-grade properties" represent a great opportunity (Wilkinson, 2012, p. 408).

Various methods exist to measure the conditions of retrofitted buildings. It is necessary to have particular standards for retrofitting, ensuring that buildings are being satisfactorily upgraded for the modern era. The TOBUS methodology offers "a tool for selecting office building's upgrading solutions considering the assessment of the degree of physical degradation, extent of any degradation, extent of the necessary work to renovate the building and the costs"

(Juan, Gao, & Wang, 2010, pp. 290). Tools like TOBUS help researchers analyze how retrofitting affects two major components of sustainable design: energy efficiency and the productivity of an office building's inhabitants.

Benefits of LEED Certification

Through a thorough literature review of the different stakeholders of LEED-certified structures, the three parties most affected by the decision to implement sustainable architectural design are business investors, business owners, and business employees. This research helps us to understand how these three different stakeholders interact with the various benefits of LEED as a certification system. Before defining the effects of LEED certification and how it is perceived as a positive contribution to the commercial business community, Green Works identifies the "multitude of benefits" that the City of Orlando attributes to green building design ("Green Works 2012," 2012, p. 11). As of 2012, the local government's Green Works 2012 Municipal Operations Sustainability Plan delineates the following benefits of green building design:

- Reduced operating costs related to energy and water use
- Improved health and productivity for inhabitants
- Efficient use of materials such as recycled and locally produced materials
- Better care for the existing conditions of the site. (p. 11)

Because this is the language that the City of Orlando is using to gauge the green success of government buildings, any future legislation measuring the sustainability practices of commercial office buildings will include similar quantitative criteria. The main difference in benefits or drawbacks pertaining to LEED certification in commercial buildings as opposed to municipal centers is the source of funding; rather, individual business owners do not fund

through the government and its people, but through commercial buildings or real estate investment trusts (REITs). The following sections discuss current Orlando criteria and the added measures by which to assess LEED design on the commercial level.

Investing in LEED buildings. Analyzing the investments of REITs is effective in research studies because their stock performance is publicly available and meticulously detailed in portfolios that describe the individual buildings in which REITs invest (Eichholtz, Kok, and Yonder, 2012). However, specific data on investments in sustainably certified buildings is scarce because LEED certification is so new. REITs are controlled by their managers, and they can choose to invest in "greener" properties or to investigate retrofitting less sustainable properties that already exist in their portfolios (Ho, Rengarajan, & Lum, 2013, p. 545). When managers see financial data that supports more green properties, the fiscal decision shifts in favor of environmental consciousness and implementing a greater percentage of LEED certified properties. This study fills in the gaps in available data, studying Orlando LEED buildings owned by REITs and potentially how these REITs have thus performed operationally and financially.

A study by Ho, Rengarajan, and Lum in 2013 was designed to discover how green buildings, or buildings that complied with a sustainability certification process like LEED, impacted the performance of REITs both operationally and financially. The study found that the effects were different according to varying real estate sectors (namely, office, retail, and residential properties). As this research is focused on commercial offices, it is valuable to note how REITs involved in this sector responded to investing in "greener" buildings. Quantitative analysis suggested that, in Singapore, regression results showed a strong emphasis on the strength of the sustainable certification (Ho, Rengarajan, & Lum, 2013). In LEED terms,

investing in a smaller, gold-certified building would yield a greater return on investment than investing in a larger square footage of a silver property. From a financial perspective, managers of office REITs could deliver an increased productivity on the REITs' return by lowering the size of green building investment as long as the ratings were top tier (Ho, Rengarajan, and Lum, 2013, p. 562). The paper provides evidence that green buildings are wise investments for REIT managers when compared to their less sustainable counterparts.

A valuable measure of a REIT is its beta, or how its volatility compares to overall market volatility (Eichholtz, Kok, & Yonder, 2012). REITs that are composed of a higher percentage of green properties, or properties with buildings that have been built to conform to a sustainability certification like LEED, display lower betas. A lower beta means that a stock fluctuates less than the market does, and is a less risky investment (Eichholtz, Kok, & Yonder, 2012). However, one study by Eichholtz, Kok, and Yonder emphasizes that REIT investment in green properties does not result in abnormally high or low stock returns, presumably because higher stock prices already account for higher cash flows (2012). The real estate sector has emerged as important in environmental degradation because the built environment is "responsible for some 40 percent of global greenhouse gas emissions, for 55 percent of the global use of wood, and for about 75 percent of the US electricity consumption" (Eichholtz, Kok, & Yonder, 2012, pp. 1911-1912). This information is valuable for the real estate sector because of how expensive natural resources are; if energy consumption numbers can be reduced, there will be a lower demand for extravagantly priced natural resources. In 2007, Enkvist's research suggested that increased building sustainability could lead to better financial performance because of "lower operational costs as well as reduced portfolio risk." A McKinsey report suggested that investments in properties that reduce carbon emissions would see a profit (Eichholtz, Kok, & Yonder, 2012, p.

1912). Eichholtz, Kok, and Yonder's research shows that environmental performance and positive financial reflections are linked: if "a REIT increases the share of green properties within the portfolio by one percent, the return on equity (ROE) increases by around seven percent for LEED-certified properties" (2012, pp. 1912-1913).

Based on a recent article from Bloomberg, the average investor sees returns of only 3.7 percent per year, meaning that the majority of investors could benefit from including LEED-certified properties in their portfolios (Ritholtz, 2015). According to Eichholtz, Kok, and Yonder, REITs have an increased substantial ability to incorporate sustainability into their investments; they can do this either by exploring further opportunities to invest in sustainably certified buildings or commercial buildings that are being sustainably retrofitted (2012). Eichholtz, Kok, and Yonder explain this through their findings that green properties "may be less exposed to energy price fluctuations and may be less prone to occupancy risks" (2012, p. 1913). As of 2008, a Pivo survey showed that after questioning 200 CEOs of REITS, property development companies, and real estate operating companies, 40 percent were investing in sustainably certified buildings because of three main reasons: concern for risk and returns, opportunities to outperform other REITs or companies, and moral responsibility (Eichholtz, Kok, & Yonder, 2012) The City of Orlando's success measurements for LEED certification are echoed in studies by Eichoholtz in 2010 and Fuerst and McAllister in 2011, with both stating that energy efficiency ratings show a relationship with "higher rents, higher and more stable occupancy rates, and higher prices than otherwise comparable conventional buildings" (Eichholtz, Kok, & Yonder, 2012, p. 1912). Kok and Jennen found in 2012 that "lower levels of energy efficiency and sustainability have been associated with an increased risk of

obsolescence", the exact opposite goal of running a profitable REIT or business (Eichholtz, Kok, and Yonder, 2012, p. 1912).

Employee health and productivity in LEED buildings. Productivity, sometimes the most ambiguous factor in a business because of various definitions, is the largest potential source of cost savings within a company. Productivity is housed under labor costs; labor costs account for 85 percent of total costs, meaning that this would be a logical cost area to reduce (Feige et al., 2013). In fact, the maintenance and running costs of a building, including energy costs, account for only around 4 percent of total business costs, according to a study by the Commission for Architecture and the Built Environment (CABE) and the British Council for Offices (BCO) in 2005 (Pellegrini-Masini & Leishman, 2011). It will not be easy to incentivize businesses to sustainably transform their operations based on a claim that eliminating heavily carbon-emitting activities could reduce their costs by 4 percent; the costs of implementing greener technology would cancel out these savings , at least in the short term (Pellegrini-Masini & Leishman, 2011). Inversely, staff salaries often account for around 85 percent, meaning that increasing productivity and reducing employee turnover would be ideal. According to Clemens-Croome, economic stability can thus be attained with healthier employees who show reduced levels of absenteeism and increased levels of productivity, thereby resulting in more profitable companies (Wilkinson, 2012). It is still important to consider energy costs, particularly because they are increasing over the years, but the most compelling argument will come in the form of reducing costs related to employment (Wilkinson, 2012).

It is crucial to distinguish how productivity is defined in the workplace. Oseland and Bartlett maintain that, traditionally, productivity is a ratio of output to input, the output measure typically quantified as a product, service, or market share, and the input measured as a monetary

value, energy, or labor (Lo et al, 2014). Furthering output, reducing input, or doing a combination of both increases productivity. An internal approach to defining productivity for employees is measuring the ratio of company turnover to employees. This ratio takes into account that low employee turnover is desirable because a company does not want to invest time and energy into training more employees than necessary; it is cost effective to have employees who feel a contentedness and loyalty for a company.

The commercial sector recognizes that the environmental impact of office buildings is substantial. Commercial buildings are responsible for 17.5 percent of the United States' total carbon dioxide emissions and account for 18 percent of energy consumption ("Negotiating Green Leases," 2012). However, even if the environment may not be a business owner's first priority, the effects that an unsustainably designed building can have on employees has humanitarian and economic concerns. Historically, building owners have been hesitant to have their structures studied for fear that they would be fined for keeping employees in working conditions that could be detrimental to their health (Hepner & Boser, 2006). It may seem financially advantageous to remain unstudied, foregoing sustainable upgrades that LEED certification would require. However, providing more healthful employee work conditions could be a fiscally responsible move for a commercial business. These factors are linked closely with the indoor environmental quality (IEQ) section of the LEED rating system, and they play a large role in the economic health of a company. In 2002, Pearson's study suggested that if employees' health is worsened because of a less than desirable IEQ within their offices, "increased health related absences would cause productivity at work to decrease" (Hepner & Boser, 2006, p. 194).

The IEQ section of the LEED rating tool is divided into ten sections as follows: 1) Minimum Indoor Air Quality Performance, 2) Environmental Tobacco Smoke Control, 3)

Carbon Dioxide Monitoring, 4) Ventilation Effectiveness, 5) Construction Indoor Air Quality Management Plan, 6) Low-Emitting Materials, 7) Indoor Chemical and Pollutant Source Control, 8) Controllability of Systems, 9) Thermal Comfort, and 10) Daylight and Views. Hepner and Bosner's 2006 study investigated how each of these ten criteria translates into the greatest returns on investment and the greatest improvements in employee productivity. The study concluded that architects perceived the following three categories to be the most beneficial in improving employee productivity: Daylight and Views, Controllability of Systems, and Thermal Comfort (Hepner & Boser, 2006, p. 206). This is significant: in 2002, Lewis noted that one of the most effective ways to ensure that a building has been designed and constructed to meet certain green building standards is the LEED rating system (Hepner & Boser, 2006). If the LEED standards are met, a business will benefit from cost savings associated with increased employee health and productivity. While indoor air quality, which falls under the umbrella of IEQ, is the Environmental Protection Agency's top "urgent environmental issue," the commercial sector cannot deny economic studies that delineate the savings associated with implementing the IEQ standards of LEED. The rating tool cannot be quantified as belonging in a single sector, either environmental or commercial; the overlap between the two becomes transparent when studying LEED.

Company heads have attested that the biggest differences seen before and after inhabiting office spaces that are LEED certified are related to internal operations (Lockwood, 2006). When Toyota Motor Sales moved into their LEED-Gold South Campus, the company saw high employee retention rates, increases in productivity, and a 14 percent decrease in employee absenteeism, according to Sanford Smith, the corporate manager of real estate (Lockwood, 2006). Turnover and training rates for new employees are lower; from a human resources

standpoint, LEED solves common corporate issues that every company must handle. These higher retention rates and lower absenteeism could be explained by a 2002 study by the Indoor Environment Department at the Lawrence Berkeley National Laboratory in California, which found significant health improvements in employees after they inhabited LEED-certified offices (Lockwood, 2006). Sick building syndrome includes symptoms "such as dizziness, nausea, and acute eye, nose, and throat irritation," and 23 percent of American office workers annually suffer from at least two of these symptoms (Lockwood, 2006, p. 136). The Lawrence Berkeley National Laboratory found that buildings designed to be environmentally sustainable led to improved IEQ, which resulted in a decrease in employees suffering from sick building syndrome by 20-50 percent (Lockwood, 2006). As green-design and LEED-certified buildings become more prevalent, the cost of sustainable building materials become more affordable; nontoxic building materials are becoming more reasonably-priced, including "low- and zero-VOC paints, strawboard made from wheat (rather than formaldehyde-laced particle board), and linoleum flooring made from jute and linseed oil (rather than standard vinyl, which is packed with toxins)" (Lockwood, 2006, p. 137).

While increased employee health has been found to be an asset for the bottom line of a company, the benefits will be seen only if potential employees want to work for companies that have LEED certified buildings. This question was answered in a 2007 survey conducted by Colliers International, which found that 90 percent of commercial tenants want landlords and developers to pursue green design for their office buildings, and 91 percent of commercial tenants would prefer to work with a business that has implemented environmental sustainability in the office space (Tenants want more "green," 2007). Ninety-four percent of those surveyed believed that green design will be an important part of businesses in the future, with 63 percent

saying it will be very important (Tenants want more "green," 2007). Nancy Searchfield, a LEED specialist at Colliers International, believes this response proves that sustainability helps drive business and that "it will be very helpful for building owners to better understand tenant expectations and to learn that there is such a high level of tenant demand for environmentally-friendly options at their workplaces" ('Tenants want more "green," 2007).

New financial agreements are arising in accordance with the benefits provided by adhering to LEED standards. For example, green leases are becoming a popular method for landlords and tenants to save on energy and employee costs. The official definition of a green lease is one that "furthers the landlord's goal of constructing, maintaining, and operating a building in conformance with the sustainable principles, if not the actual elements, exhibited by the appropriate LEED Rating System" ("Negotiating Green Leases," 2012, p. 4). For companies who rent their office spaces, entering a contractual agreement to inhabit a sustainably designed and potentially LEED certified space could be advantageous. It is necessary to distinguish that not all sustainable office spaces are LEED certified, but seeking LEED certification does increase the chances of seeing maximum savings in energy and employee costs. Green leases are a written agreement between these two parties that ensures a leased office space will perform in an environmentally sound manner, the terms varying based upon the local climatic conditions surrounding the office ("Tenants and Landlords See Value," 2013).

If a building is sustainable and efficient, tenants will likely spend less in energy costs; these lower costs make an office space more appealing, so landlords will benefit from increased cash flow ("Tenants and Landlords See Value," 2013). Michael Jordan, the Executive Vice President of Sustainability Strategy for Jones Lang LaSalle, heralds green leases as combining "the productivity, comfort and sustainability features that tenants are looking for in office space

while supporting landlord priorities of improving the triple bottom line and occupancy rates" ("Tenants and Landlords See Value," 2013). While lending themselves towards improved office IEQ, green leases also create a relationship between landlords and tenants that promotes efficiency in the workplace and inspires other companies to consider this arrangement over traditional leases. Green leases are a welcome addition to a LEED-certified building because of a key shortcoming of LEED; it is focused on rating a building based on design and construction, but originally did not assess the actual performance and operation upon completion of a structure. Green leases encourage tenants and landlords to promote sustainable operations long after the building is inhabited to maintain low energy costs ("Negotiating Green Leases," 2012)

The biggest commercial problem with green leases is the "split incentive," which can make encouraging a healthy IEQ through LEED standards and green leases a more difficult choice for businesses. A split incentive occurs when a lease is termed as a "gross lease," meaning that a landlord will cover all operating and utility expenses ("Negotiating Green Leases," 2012, p. 4). In this scenario, a tenant has no incentive to use less energy because he or she is not responsible for cost. Also, the landlord will do whatever he or she can to reduce operating costs, sometimes leading to disagreements over insufficient lighting or inappropriate temperatures in common areas ("Negotiating Green Leases," 2012). If the situation is reversed and the landlord pays a fixed cost, the incentive to maintain an energy efficient building drops dramatically. A solution to this split incentive could be to divide the costs of a building. Tenants could install a submeter to measure and pay for their energy expenses while landlords could create a separate lease for non-energy related expenses ("Negotiating Green Leases," 2012, p. 6). Effective green leases are one more checkpoint to ensure that employees of businesses renting their office space enjoy a quality IEQ and are more likely to be productive.

Reduced operating costs. While many studies attest that a large percentage of company savings resulting from seeking LEED certification are in the form of internal operations, the most direct method of cutting expenses for a business is by reducing operating costs. Operating costs for a LEED-certified building were found to be less than most traditional, non-LEED certified buildings (Arny & McCabe, 2009). A 2006 study that compared the operating costs of cleaning, repair and maintenance, roads/grounds, security, administrative, and utility expenses of buildings rated by the LEED Existing Buildings (LEED-EB) tool found that 64 percent of these buildings had lower operating costs per square foot than the Building Owners and Managers and Association (BOMA) average for a specific region (Arny & McCabe, 2009). The average BOMA operating costs per square foot were $6.85, while the LEED-certified buildings averaged $6.68, a 17-cent disparity that makes a large financial difference when considering operating costs for an entire structure (Arny & McCabe, 2009). The LEED-EB tool is important for sustainability because it measures the ongoing activity of a building post-construction, ensuring that "the potential for sustainable operation is actually delivered" (Arny & McCabe, 2009, p. 15). Pairing a LEED-EB rating with a LEED New Construction (LEED-NC) rating shows continuity in environmental sustainability practices and proves that businesses that sought LEED certification in the beginning have a commitment to maintaining a low environmental footprint, or, at the very least, to reduced operating and employee costs.

The stereotype of green buildings not being worth their perceived higher construction costs is combatted by the *New York Times* article (2003), "Not Building Green is Called a Matter of Economics" (Kats, 2003, p. 3). Traditionally, the sustainability of an office building, retrofitted or brand-new, has been measured in terms of how efficiently it utilizes energy because the building sector accounts for over 40 percent of energy consumption globally.

According to the United Nations Environmental Program in 2009, this usage translates to one-third of global greenhouse gas (GHG) emissions in developed and developing nations (Lo, Hui, & Zhang, 2014). These large percentages mean that office buildings act as visible testing grounds for sustainable results; in 2010, Graham noted that sustainable buildings are apt "to deliver quick, deep and cost-effective GHG mitigation which significantly increases energy efficiency (as cited in Lo et al., 2014, p. 338). While exact calculations differ based on geography and climate, annual energy consumption in a typical office building is between 100 and 1,000 kWh per m^2 (Juan, Gao, & Wang, 2010). Year after year and based on past data and future projections, this average grows higher; "the trend of increasing energy consumption will continue during subsequent years thanks to both the expansion of built area and new energy uses" (Juan, Gao, & Wang, 2010, p. 292). Using sustainable techniques to promote energy efficiency in office buildings will significantly lessen the current environmental footprint. It would be near impossible to build every single office space as an example of energy efficiency ; it will, therefore, be necessary to research the most cost-effective means of improving existing buildings so that they utilize energy more efficiently. A systematic mechanism for implementing these changes needs to be designed, and future research efforts should focus on such retrofitting. "Energy-efficient renovations" will be the future of sustainable design (Juan, Gao, & Wang, 2010, p. 301).

LEED-certified buildings, on average, are between 25 percent and 30 percent more energy efficient than conventional buildings (Kats, 2003, p. 4). This energy efficiency translates into reduced energy costs in the long term, and brings significant financial benefits to the commercial sector. Kats found that, in Massachusetts, the average cost of energy for a building is $2 per square foot, because they are on average 30 percent more energy efficient, LEED

certified buildings result in a cost reduction "for a 1000,000 foot state office building, worth $60,000 per year, with a 20-year present value of expected energy savings at a 5 percent real discount rate worth about three quarters of a million dollars" (Kats, 2003, p. 4). With statistics such as these, LEED experts encourage business owners to look beyond initial construction costs of green buildings to the financial benefits over the lifetime of a building. The main energy-related cost savings of LEED-certified buildings come from decreased "peak energy demands" and less electricity purchased (Kats, 2003, p. 4). On average, LEED-certified buildings generate 2 percent of their own energy on-site through the use of photovoltaic (PV) panels, meaning that PV panels pay for themselves in reduced energy costs (Kats, 2003). Green buildings are more likely than conventional buildings to implement on-site renewable energy generation than conventional buildings; if the energy is not generated on-site, green buildings are more likely to buy renewable energy (Kats, 2003). These benefits link to the concept of employee health and productivity. The generation of renewable energy is associated with fewer health costs to employees than the use of non-renewable energy in the workplace. The breakdown of the financial benefits of 30 percent reduced energy consumption at electricity prices of $0.08 per kilowatt hour can be described as follows: "$0.30 per square foot per year, with a 20-year net present value of over $5 per square foot, equal to or more than the average additional cost associated with building green" (Kats, 2003, p. 4).

Efficient use of materials and care for existing conditions. As the City of Orlando recognizes in its declaration of benefits of LEED design for municipal buildings, LEED-approved sustainable technologies will only be maximized when the proper materials are selected during the construction phase in order to benefit the operational phase. Buildings in general account for, according to Yudelson, 40 percent of natural resources extracted in

industrialized countries and Pulselli, Simoncini, and Bastiononi found that they are responsible for 45 percent to 65 percent of waste in landfills (Castro-Lacouture, Sefair, Floréz, & Medaglia, 2009, pp. 1162). The various LEED rating systems use numerous credits to numerically critique a proposed project building based upon "characteristics of the materials, such as the contribution to the heat island effect, proportion of recycled content, distance from the supplier or producer to the project site, and emissions of indoor pollutants" (Castro-Lacouture, Sefair, Floréz, & Medaglia, 2009, p. 1162). The LEED rating system suggests that these materials should be as locally sourced as possible, not only to reduce environmental impacts caused by extensive transportation of goods but also to support regional economies (Castro-Lacouture, Sefair, Floréz, & Medaglia, 2009, pp. 1162).

Criticisms of LEED

The application of LEED has received international accolades because the USGBC created the ranking system with the ability to adapt to variations in local conditions, combining technological innovation and the practicality demanded by different topographies and climates (Gonchar, 2005). Even so, according to Gonchar, a major and all-encompassing criticism of LEED has historically been the absence of "scientific rigor" and "hard data" throughout the certification process (2005). However, statistical figures are not the mission of LEED, which is meant to be used as a uniform measure of quantifying green design across various climates and sectors. An essential aspect of LEED is avoiding greenwashing during a mass-market transition to more sustainable infrastructure (Gonchar, 2005). A seal of approval from the USGBC in the form of LEED certification ensures that businesses espousing their sustainability have undergone thorough measures to identify sustainable design in their local community.

While LEED certification lessens a building's environmental impacts, there are issues with the certification itself and the process of seeking it. Based on the low percentages of buildings, whether residential, municipal, or commercial, that are LEED certified in the greater Orlando area, LEED certification has certain drawbacks. A common complaint with the LEED process is its expense (Black, 2008, p.42). A study conducted in 2007 showed that out of 370 LEED-ND applications, 238 of the projects paid anywhere between $8,000 and $20,000 for the USGBC to register them for the certification process. What happened to the other 132 projects is not answered, but the study surmises that high application fees played a role in dissuading 100 percent of the projects that applied from completing the steps necessary to become certified (Black, 2008). LEED has a history of driving the costs of green building materials higher because the standard makes this particular market more competitive. While this may be good for the green market, giving it a valuable place in the economy, it also means that green building standards will be more difficult for projects to afford (Black, 2008, p. 43). As with any certification system, its significance weighs more heavily when there are more participants.

Worried that the cost of LEED makes it unattainable for various homeowners, business owners, and governments, critics claim that high registration fees mean that "lower-income inhabitants" will never receive the health benefits and reduced energy costs that LEED certification provides (Cidell, 2009, p. 629). However, research by Cidell shows that anecdotal evidence suggests that "builders who are interested in doing green buildings are also often interested in providing affordable housing " (2009, p. 629). While many criticisms of LEED are based on economic statistics and opportunity costs, researchers factor in human variables that demonstrate leaders' environmental consciences, not always associated with environmental awareness.

Another complaint with the LEED certification process is its tendency to be complex and tedious. As stated in an article by the National Association of Homebuilders in 2007, a typical applicant for LEED certification needs to complete over 200 steps (Black, 2008). The context of this claim must be examined; while a homeowner may not have the time or personnel to navigate the LEED process, a commercial business could be different. A business would need to allocate specific funds towards environmental concerns for a company and its infrastructure, which would present a new set of considerations before delving into a myriad of steps ending in LEED certification.

With these valid concerns about commercial endeavors, LEED certification can be complicated because of a commitment to increased expenses and time spent outside of daily routines for commercial business owners and employees. Critics of LEED certification argue that the funds spent on certification could be going instead towards building improvements that could lessen environmental footprints of companies. For example, as Schendler and Udall emphasized in a 2005 study, money could be used to "purchase a photovoltaic system, daylighting, or efficiency upgrades" instead of on a seal of approval from the USGBC (Black, 2008, p. 43).

Most studies show that the benefits of implementing LEED, particularly for businesses, outweigh the costs. These claims come from statistics that show how features of LEED-certified buildings align with, according to CoStar Group and Eichholtz, Kok, and Quigley in 2008, decreased energy costs, lower rates of employee absenteeism, increased productivity, and "higher building occupancy and sales rates and rental prices" (Cidell, 2009, p. 203). When running a business, these factors all play a role in lowering expenses and increasing profits. In this sense, environmental consciousness is synonymous with economic savvy. However,

LEED's status as a national rating system can be problematic. When covering buildings in such a vast array of geographical and climatic conditions, one rating system will have difficulty anticipating the myriad of ways that environmental features will be interpreted. While LEED has been praised for its affinity for localization, environmental experts suggest that not every kink has been ironed out. Beyond the economic advantages of green technologies, the actual use of different aspects within a LEED-certified building might differ from what developers intended. In 2000, Guy and Shove asserted that "technical strategies" mesh with "commercial tactics," which means that designers need to take the time to undergo the empathic process of understanding in what ways a business's employees will inhabit an office space (Cidell, 2009, p. 203). In 2002, Rohracher and Ornetzeder found that apartment buildings in Austria that were considered green did not anticipate that inhabitants would want to open the windows as frequently as they did (Cidell, 2009). The constant exposure to open air meant that the heating, ventilating, and air-conditioning (HVAC) systems within the apartment buildings did not function as they would have if the windows had remained closed, and the energy efficiency claims associated with the green status of the apartments was not accurate (Cidell, 2009). Developers and designers need to account for pressures that will affect actual usage of green buildings, including "real estate trends, government funding priorities, and consumer preferences" (Cidell, 2009, p. 203). The LEED certification process, therefore, needs to be in tune with local needs and desires to maximize both occupant satisfaction and energy efficiency. If this can occur, then LEED will be fulfilling the concept of local sustainability, instead of local buildings trying to attain national guidelines that may not truly improve environmental footprints of the built environment.

LEED may seem to be an economic extravagance. However, the main criticism of LEED could apply to nearly any building rating system that currently exists. While LEED is the most widely used system internationally, critics affirm that an environmentally sustainable project needs to entail more than "just counting the score points of the rating system" (Mak, Ge, & Dong, 2014, p. 2). A study of three different green building tools utilized in different parts of the world emphasizes that the ideal system will rate "not only engineering but planning, architecture, interior and construction management aspects and also take the life time operation and maintenance aspects into account in the early stages of the project" (Mak, Ge, & Dong, 2014, p. 2-3). In 2004, Stein and Reiss declared that buildings that earn more points on the LEED rating scale are not necessarily providing more environmental benefits. This lack may not be a concern for businesses simply looking for their ventures to be associated with the environmentally conscious reputation of LEED. However, it is a point of concern for environmental experts accusing commercial industries of greenwashing clients and consumers.

Methodology

Case Study Benefits

According to Christine Benedichte Meyer of the Norwegian School of Economics and Business Administration, case studies are preferable to quantitative research when a situation calls for a "detailed investigation of one or more organizations, or groups within organizations, with a view to providing an analysis of the context and processes involved in the phenomenon under study" (2001, p. 329). In 1994, Hartley emphasized the role that case studies play in analyzing "new processes or behaviors," meaning that lack of existing quantitative data would not be a barrier to making predictions for the future (Meyer, 2001, p. 330). The nature of this research was to investigate the gap that exists in incentivizing commercial Orlando businesses to

seek LEED certification, meaning that known and/or quantitative data on the subject was mostly nonexistent. For this reason, the case study method was preferable in order to, in Schramm's words, "illuminate a decision or set of decisions, why they were taken, how they were implemented, and with what result" (Meyer, 2001, p. 349). The decision to utilize the case study method requires the researcher to determine how many cases will be a part of the study, the sampling time, and the selection of data collection procedures (Meyer, 2001).

Selection of Multiple Cases

Multiple cases reveal a more holistic study, but it was also important to limit the number of cases to achieve "depth and a pluralist perspective" as well as being able to track "the cases over time" (Meyer, 2001, p. 333). Miles and Huberman affirm that multiple case studies also help researchers to be confident in their findings, comparing and contrasting similar and unique behaviors to better understand specific variables (Meyer, 2001).

Each case was selected for the role that it fulfills within the for-profit sector in the greater Orlando area. As detailed in the introduction, Orlando currently lacks established legislation or a form of incentive that encourages commercial businesses to either inhabit existing or build new LEED-certified offices. Three cases were chosen to represent businesses that have sought LEED certification for their buildings. They are First Green Bank Orlando Headquarters, Siemens Nacelle Training Center, and the Amway Center. Three cases were chosen that have not sought LEED certification for their buildings. They are the Alfond Inn, East End Market, and the Clean the World Orlando Recycling Operating Center. All six cases are businesses that operate as profit-earning entities or a variation of a for-profit venture. They differ based upon their business missions. The Alfond Inn and Clean the World exist as socially conscious businesses, while East End Market and First Green Bank cite environmentalism as

their central focus. The Amway Center and Siemens both have goals of environmental sustainability and giving back to the community, but these missions are not explicitly stated as the overarching goals of the businesses.

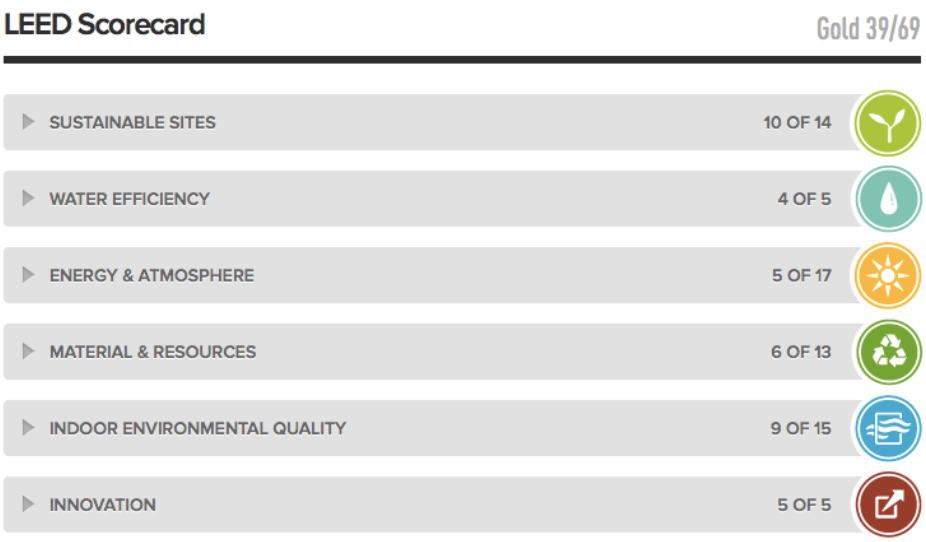
All data for the businesses was collected at one period of time, but the actual sampling time spans the journey of each business as it chose to implement or ignore LEED certification. The questions asked about the construction timelines of the buildings were uniform, but the construction process varied greatly between cases. For example, the reasoning behind either choosing or rejecting LEED was the main data point that the study analyzed for every business. The motivating factors are the crux of the study.

Data Collection Procedure

The main data collection procedure utilized for this research was in-depth interviews. The majority of interviews were conducted in person, recorded with a tape recorder. Some interviews were done via e-mail due to a lack of time on the interviewee's part. People interviewed were key in either making or rejecting the decision to seek LEED certification for the business's structure. The interviews had a low degree of structure in order to mirror Syke's concept that "the strength of qualitative research lies in the flexible and responsive interaction between the interviewer and the respondents" (Meyer, 2001, p. 345). A core set of questions relating to LEED design was asked of every interviewee, and then industry-specific questions were included to gain a deeper understanding of each business's individuality.

Case Studies: LEED Certified

Case Study 1: Amway Center



Opening

The Amway Center is the home of the Orlando Magic, the Orlando Predators, and the Orlando Solar Bears and hosts elite concert series and sporting events. Orlando Mayor Buddy Dyer proclaims the prominent Amway Center as "one of our most visible examples of how the City and our partners are embracing sustainable practices and will allow us to further engage the community in the effort to 'go green'" ("Amway Center Achieves LEED Gold Certification," 2011). Having successfully encouraged members of the community to embrace sustainability in commercial business practices, he counts the Center as a product of the Green Works Orlando program, ("Amway Center Achieves LEED Gold Certification," 2011). According to its official website, the Amway Center is not only a beacon of sustainability in Orlando but also the first National Basketball Association arena to become LEED certified under the new construction rating scale ("LEED Gold Certification").

Background

On July 6, 2007, the City of Orlando voted to begin construction on the Amway Center, which would replace Amway Arena as Orlando's major stadium (Barrett, 2010). The facility cost $380 million to complete, $100 million of which was paid for by Orlando businesses; a stadium built by the people of Orlando will be attended by these same people and assist in driving economic growth in the downtown area (Barrett, 2010). The Center was slated to earn the minimum LEED certification, but throughout the construction process it qualified for an impressive gold status (Schleub, 2011). The designers and architects knew that Orlando would not be thrilled with the excess of LEED-approved design features if the integrity of a performance experience were compromised, so they were careful to implement people-friendly features, including 227 point-of-sale areas and 20 bathrooms spanning the eight levels (Barrett, 2010).

Location

The Amway Center is located at 400 W Church St #200, Orlando, FL 32801. The Amway Arena had been located at 600 West Amelia Street, Orlando, FL, 32801.

Problem Definition

The new Amway Center was constructed because the older Amway Arena was no longer meeting the modern needs of an Orlando stadium in either its amenities or its capacity. According to Robert Rayborn, the Project Manager of the Amway Center and a LEED Accredited Professional (LEED AP), the Amway Center's opening night on October 10, 2010, brought forth an arena that filled the niche of the Orlando fan's experience in a more environmentally sustainable manner.

The Innovation/Change

The features of the Amway Center that would be considered eco-conscious or "green" are:

- Preferred parking for hybrids and other energy-efficient vehicles
- High-efficiency heating and cooling systems
- Ultra-low-flow toilets
- A reflective and insulated roof that reduces cooling costs
- High-tech monitoring systems that shut off the lights when a room is empty
- Bicycle racks, showers and changing rooms for workers who bike to work
- Systems to treat storm runoff before it can pollute nearby lakes
- Recycling bins for fans and concertgoers. ("LEED Gold Certification")

These attributes account for lowered energy and water usage throughout the Amway Center; compared to other similarly sized arenas, Amway utilizes 20 percent less energy and 40 percent less water ("LEED Gold Certification"). It also earned many of its LEED points during the actual construction phase, with 15 percent of building materials being recycled and 20 percent from local sources ("LEED Gold Certification").

The Value Proposition

The Center qualifies for LEED certification and functions in a manner that is both cost-effective and environmentally sustainable without compromising the overall experience that people seek from concerts and professional sports.

Implementation

Designing of the Amway began in August 2007 and was completed by December 2008. Construction began in August of 2008, with completion in early October of 2010. The Orlando Magic needed a specialist in sports construction, and Rayborn's firm, Turner Construction, was

selected as the owner's Program Manager in early 2007. Rayborn emphasizes that after the facility was turned over to its owner, the City of Orlando, it adopted a sustainable building maintenance and cleaning program. He believes that, overall, the employees and the fans are healthier in a sustainable building and that the environment's health is improved with a building that has less negative impact on the natural world. According to Rayborn, "The Amway Center was not set out to be a recognized symbol for the City when design and construction began. The decision to implement sustainable design and construction was a core decision made during the programming aspect of the facility."

Success Metrics/Impact

Amway Center officials measure the success of their sustainability efforts according to the following metrics:

- Water savings of more than 1.3 million gallons through the use of low-flow fixtures and faucets.
- Utilizing Orlando Utilities Commission (OUC) chilled water to provide efficient air conditioning. OUC worked with the USGBC to qualify district-chilled water systems for additional LEED points.
- Diverting more than 8,000 tons of construction waste from the landfill.
- Collecting rainwater from the roof and condensate water from the chiller equipment into a 5,000-gallon cistern to be used for site irrigation.
- Using more than 20 percent recycled materials and 30 percent regionally sourced materials in the building's construction, thereby saving transportation and production costs.
- Building on an ideal sustainable site. The downtown location helped combat urban

sprawl by redeveloping an existing area rather than having to clear new land and build new roads and other infrastructure. ("Amway Center Achieves LEED Gold Certification," 2011)

Obstacles/Challenges

When the Amway Center opened on October 28, 2010, preceded by several press releases detailing the focus on sustainability embodied by the arena, environmental critics noted that solar panels had not been implemented in a city known for a prevalence of sunlight (Boudway, 2010). Mike Wooley, the operational consultant for the Amway Center, explains that this decision was made because of a lack of a significant return on investment associated with solar panels; solar panels typically have an ROI of about ten years, which may not be as important right now as upgrading luxury features associated with a state-of-the-art arena (Boudway, 2010). Solar panels present a conflict of interest for the Amway Center because this roof space could instead be used to display corporate logos that reduce the load-bearing capacities, "a prized commodity for concert engineers seeking to hang hundreds of thousands of pounds of sound and lighting gear from trusses" (Boudway, 2010). Although the NBA announced in 2010 that it was beginning an initiative to encourage sports teams' facilities to implement solar panels, the majority of individual arenas have not found such panels to be an economically viable choice, as improving water and energy efficiency drives down costs (Boudway, 2010).

Sustainability of the Organization

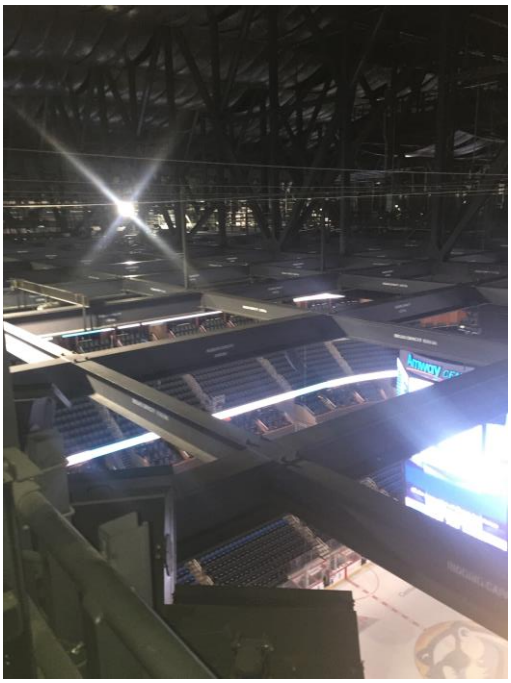
As long as the Amway Center can continue to provide a favorable sports fan and audience experience, it has a monopoly on this niche in Orlando. With proper maintenance and a continued dedication to innovation, the Amway's existence should not be threatened.

Future Scalability

There are no plans to make a bigger Amway Center or to construct another one. It is, however, worth noting that the parking garage adjacent to the Amway and meant for visitors has also been LEED certified.

Replicability

Project managers of other major national arenas have approached Rayborn and his team for consulting assistance on constructing LEED certified facilities.



Rayborn describes the steel beams in the catwalk overlooking the arena as structural supports for concerts performers that can hold either 5, 10, or 16 pounds. An example for the use of the beams would be Britney Spears Circus performance. On top of a commitment to environmental sustainability, ensuring that the needs of visiting performers are met is a top priority for providing quality entertainment.

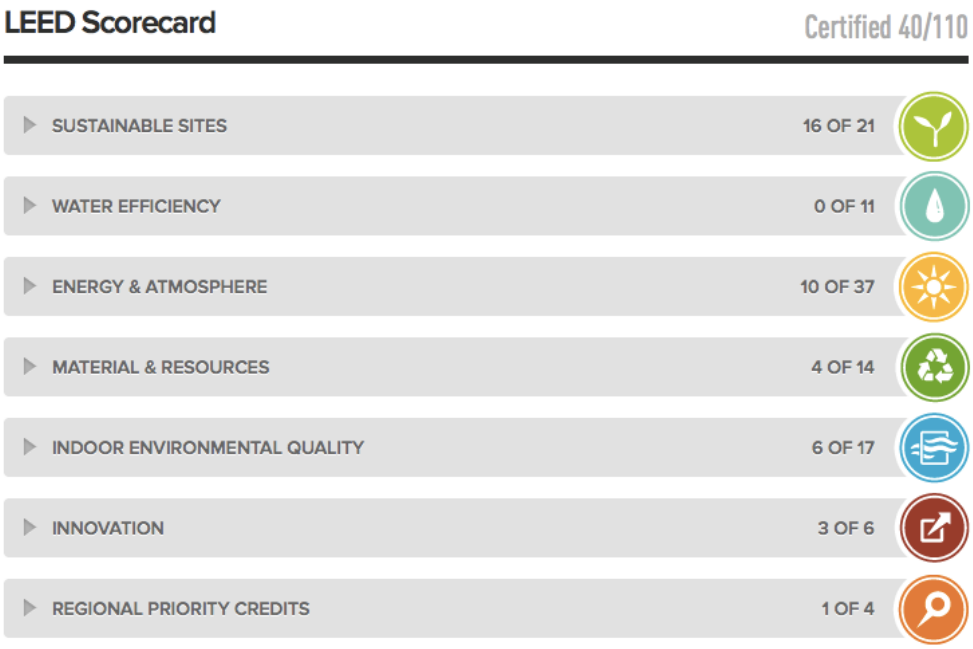
Factors that led to seeking LEED certification

Rayborn is confident that his team would seek LEED certification again, if the opportunity to start from the beginning of the process of constructing the Amway ever arose. LEED certification was sought for the facility because the Amway was part of the 2007 Orlando community venues initiative, which specified a commitment to sustainable building design. The City of Orlando "approved a public/private partnership with Orange County" that made the construction of community venues like the Amway Center possible ("Community Venues",

2014). Rayborn assesses statewide sustainability efforts in relation to the Amway as follows: "With the focus on energy and planet resources, especially in the State of Florida, it is imperative that our buildings are sustainable."

Case Study 2: First Green Bank

Opening



First Green Bank is "a local bank with a global mission," being "the first bank of its kind to promote positive environmental and social responsibility while operating as a traditional community bank" ("About Us," 2016). The bank was founded in 2009, headquartered in Orlando and with branches in Winter Park, Clermont, Mount Dora, and Ormond Beach, Florida. The Orlando headquarters office was LEED certified under the Commercial Interiors v2009 rubric. According to Mary Sekac, assistant Vice President of First Green Bank and a trained LEED Green Associate, the Orlando branch is located in a leased office condo. The business

undertook extreme office renovations to qualify the space for LEED for Commercial Interiors Certified. Certification became official on May 6, 2014, with the office opening in December 2012.

Background

Kenneth LaRoe, the founder, largest shareholder, CEO, Chairman and President of First Green Bank, was granted the last Floridian bank charter in 2009 ("Executive Members," 2016). A LEED Accredited Professional, he is an avid environmentalist who used his extensive banking prestige and intellect to pursue these passions ("Executive Members," 2016). He is currently a board member for the Global Alliance for Banking on Values ("Executive Members," 2016). Instead of entering retirement, he decided to create a holistic approach to a traditional community bank, encouraging not only profits but also positive societal impacts ("Ken LaRoe," 2016).

The modern exterior of First Green Bank speaks to its ability to provide the financial services of a modern-day traditional bank while still serving environmental and social purposes.

Location

The Orlando headquarters of First Green Bank are located at 1118 S Orange Avenue, Orlando, FL 32806.

Problem Definition

First Green Bank wanted to solve the large problem of combining economic success with social and environmental awareness. In recognizing specific areas where banks could be more holistic in their approach, First Green Bank focused on the following initiatives and incentives:

- Discounted interest rates for commercial and residential projects that meet green building criteria of LEED certification by the U.S. Green Building Council
- Solar Loan program which offers a long-term fixed rate to encourage customers and employees to install solar panel systems for energy use
- Non-profit "First Green Foundation" provides assistance to community members for installation of solar panel systems in addition to providing assistance to community supported agriculture
- Current buildings built or converted for energy efficiency
- Commitment to alternative transportation by offering charging stations at most branches
- Approximately 90% of all customers are on paperless statements. ("Our Story," 2016)

The Innovation/Change

Sekac speaks of First Green Bank as the only financial institution in Central Florida with an environmental mission, many of its financial products designed exclusively with their environmental impact in mind. LaRoe asserts that First Green Bank is foremost a traditional community bank, but it operates with specific goals in mind that surpass simply earning profits.

The Value Proposition

The institution offers an alternative approach to traditional banking, creating "deep and self-sustaining roots in local communities while reaching beyond the concept of sustainability" (Burger, 2015). LaRoe describes his financial model as "regenerative," a term that goes beyond

the ideal of sustainability to encapsulate the importance of growth in the environmental and social sectors (Burger, 2015).

Implementation

Since 2009, First Green Bank has operated according to its business plan, which accounts for the opening of one new branch per year ("Investor Relations," 2016). As of 2012, the bank held 13.1 percent of the total market share for its industry in the Floridian counties in which it has a presence. First Green Bank will continue to broaden its field of influence through creating marketing opportunities that meld sound business principles and attracting "projects that incorporate elements to save energy and reduce environmental impact" (Jackson, 2012).

Success Metrics/Impact

As of September 2015, the bank's current assets were over $374 million, and it had lent over $305 million to local businesses and people in surrounding communities of the various branches. First Green Bank is also part of an elite few banks that have received "to receive coveted 5-star Bauer Financial rating from the nation's leading independent financial institution rating service" ("Our Story," 2016). Earning credibility as a reliable financial institution creates leverage as a bank for encouraging strong social and environmental endeavors.

Obstacles/Challenges

First Green Bank deals with similar struggles to any small bank, particularly intense competition from big banks that control 80 percent of America's capital (Debower, 2015). Another specific example given by LaRoe is that the *de novo* period, when new banks have tight restrictions and regulations, has recently increased from three to seven years (Debower, 2015).

Sustainability of the Organization

Thus far, the bank has been financially viable, as shown in the impressive banking statistics, even having opened during an economic recession. If First Green Bank can continue to prove the financial benefits of supporting social and environmental ventures, their status as a top-tier Floridian bank should not waver.

Future Scalability

The scale of First Green Bank is potentially unlimited; the bank's scope is currently in limited Floridian locations because of the origins and network of the founder, but growth potential is at a maximum. Not only could the bank be scaled up to become a prevalent establishment in the majority of Florida, but also the success of the financial model is not restricted by state boundaries.

Replicability

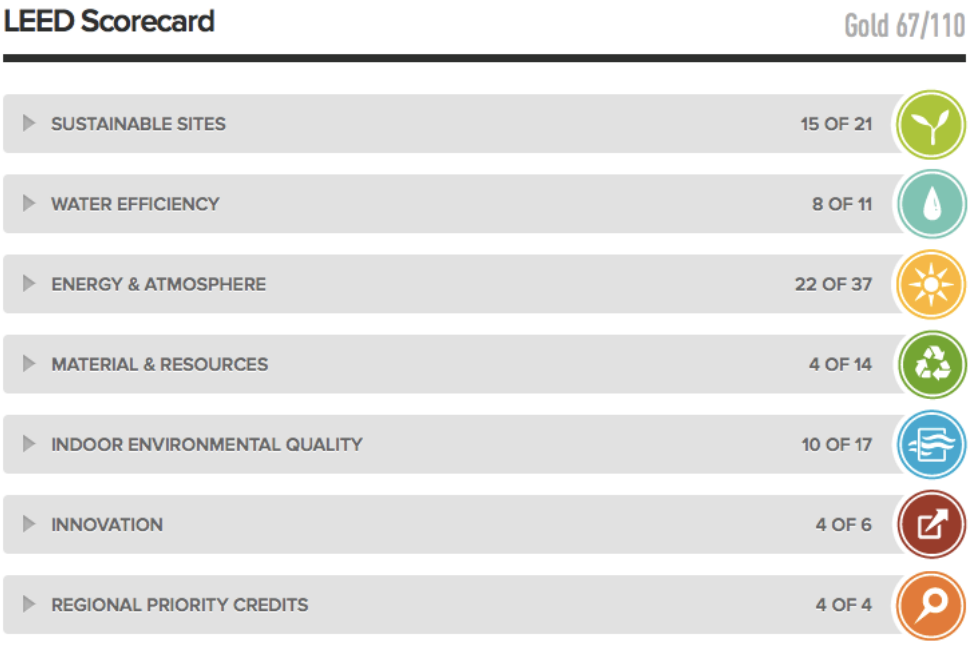
The multiple branches of First Green Bank are proof that a profitable business inhabiting a LEED certified space could be replicated. The initial First Green Bank building in Mount Dora received LEED Platinum status, a new construction project that spurred further LEED certification for the bank. Other banks could replicate the financial model of First Green Bank; however, as pioneers in this niche industry with a strong presence in renowned Floridian communities, it would be difficult to compete with their existing knowledge and sustainable infrastructure.

Factors that led to seeking LEED certification

Sekac asserts that the core reason for First Green Bank seeking LEED certification was the environmental mission of the company itself. She explains that the central commitment to environmentalism is "the impetus to reach for LEED certification for buildings where possible." She sees the role of LEED within the greater Orlando community, as a guiding force that is

meeting the increasing environmental desires of the commercial sector. In particular, she cites that local governments and universities are "leading the way with Green teams working on environmental initiatives." Reflecting on the LEED certification and performance process, Sekac says that she feels the bank would undertake the project again. While other environmental sustainability certifications do exist for the built environment, in particular the Green Globes, the LEED experience has been a both encouraging and holistic approach that aligns with the mission of First Green Bank. The benefits of LEED incorporate the mentality of "walking the walk and talking the talk" for a bank that is respected as a leader in environmental issues. Sekac concludes her affirmations of the presence of LEED in the commercial sector with the following testimony: "Although many consumers are not aware of LEED or its requirements, we know our mission and our obligation to always do the right thing. If we didn't live up to what we are advocating we could not be taken seriously. So certainly LEED or another standard is very important to our success."

Case Study 3: Siemens Nacelle Training Center



Opening

Built on LEED Gold standards for Commercial Interiors, the Nacelle Training Center is among the most advanced training facilities for wind power globally ("Siemens Announces Plans," 2013). A nacelle is a wind turbine generator that frequently needs repairs or maintenance from specially trained service technicians.

Background

Siemens, founded in 1847, currently serves over 200 countries as "a global powerhouse focusing on the areas of electrification, automation and digitalization," fulfilling the need for "energy-efficient, resource-saving technologies ("About Siemens," 2016). A specific market Siemens fulfills is that of wind power and renewable energy, combining environmentally friendly with cost-efficient. The goal for Siemens-provided wind power is encompassed in this mission: "Driving down the cost of wind power is our key target as we strive to make renewable energy fully competitive with conventional energy sources" ("Wind Power and Renewables," 2016).

Location

The training facility is located at Emerald Dunes Dr., Orlando, and FL 32822. The building is located near Siemens global headquarters of their energy services division.

Problem Definition

Wind power is becoming an increasingly prevalent and financially competitive form of sustainable energy, and Siemens wants to ensure that there will be technicians properly trained to maintain both the "technology and operational reliability" of wind turbine nacelles ("Siemens Announces Plans," 2013).

The Innovation/Change

The facility is equipped with every modern technology, slightly advancing the training methods used in its other wind power training facilities because of the excess of training equipment it was able to bring into the space.

The Value Proposition

The Nacelle Training Center does not necessarily have a value proposition above and beyond what Siemens has already accomplished in its other training centers within the industry. It is the first training center of its kind that Siemens has built in America, due to an increasing number of wind project developing in the Americas ("Siemens announces plans," 2013).

Implementation

The Center received a LEED Gold rating based on the LEED Commercial Interiors rating tool. It is 40,000 square feet, with two full-sized nacelles located within the Center for training purposes. Siemens invested $7 million dollars in the facility, which also includes "three 30-foot high climbing towers, ladder structures, electrical and hydraulic modules, and maintenance crane to make training, safety and rescue simulations possible under realistic conditions" ("Siemens Energy Wind Power Service," p. 1). According to Jim Valade, the project manager for Siemens Real Estate (SRE), real estate business for the company is separated from operational business and consolidated in his department's single unit. Valade says that SRE "bears global responsibility for all real estate activities and property-related services, for which it exercises a governance function."

Success Metrics/Impact

The primary goal of the facility is its training features, and so the number of technicians who are fully trained through these programs should measure the success of the facility. Retention rates throughout training and then later out in the field in a Siemens service technician

position should also be measured to quantify how effective the training center truly is within the wind power industry. The Center is expected to host 2,400 trainees per year. The success of the training center will also be measured by the economic impact it has on the Orlando area; Valade states that annually, the facility will be responsible for 7,200 hotel room nights occupied by 2,400 visiting technicians.

Obstacles/Challenges

The LEED process, and the operations of the plant in general, Siemens had been through before with previous training centers. While the project was large, understanding the task the company was taking on allowed for a smooth construction, and now operational, process.

Sustainability of the Organization

Siemens is a world leader within their industry. They are a unique case study because they are not a local Orlando, or even a local Florida, business. Headquartered in Munich, Germany, Siemens has been a renowned company for over a century. As they continue to provide cutting-edge solutions to today's technological and environmental crises, Siemens' longevity will be secure.

Future Scalability

Siemens has four wind power training centers globally, the Nacelle Center being the newest. The training centers take into account a lifelong learning experience, providing over 100 various courses designed for service technicians (Froese, 2015).

Replicability

The economies of scale are substantial for such a training facility. Siemens would have the financial ability to create further wind power technician training centers, and most likely will.

Factors that led to seeking LEED certification

Siemens is committed to sustainable energy, so building facilities that would qualify for LEED certification is an inherent business goal. Worth over $100 billion, Siemens is an ideal candidate of a massive corporation showing a strong commitment to corporate social responsibility both in their internal operations and in the services they provide. It is a Siemens requirement that all new construction projects receive either silver or gold LEED certification. Valade has previously been involved with four Siemens LEED projects; SRE hires a LEED AP architect to oversee the certification process, and Valade's role is to ensure that "the architect, engineers, general contractor, and building occupants comply with the LEED requirements from the design phase through the building's life cycle."

Case Studies: Not LEED Certified

Case Study 1: Alfond Inn

The atrium of the Alfond Inn represents the nature of "bringing the outside in," a design mindset that lends itself to incorporating sustainable features to create an aesthetically pleasing and efficient indoor environment.

Opening

Dr. Michelle Stecker describes the Alfond Inn as an example of a nonprofit mission fulfilling a social entrepreneurial concept. The Alfond Inn and Conference Center are both

owned and operated by Rollins College, a nonprofit institution (Stecker, 2014). However, it provides a social impact in the Winter Park community because "for twenty-five years or $50 million – whichever comes later – all net proceeds from the Alfond Inn business enterprise go into an endowment for Alfond student scholarships" at Rollins College (Stecker, 2014, p. 8). There are as many as 10 recipients of the Alfond Scholarship in each incoming freshman class at Rollins, and these students have their room, board, and tuition covered by the gift. The scholarship has been funded by the Harold Alfond Foundation since its inception and is now sustainably sourced by profits from the Inn.

Background

While many universities provide inns and hotels near campus for family members to utilize when visiting students, Rollins had not historically seriously considered how such infrastructure would exist among Park Avenue boutiques and restaurants. The Rollins College Board of Trustees decided in 2008 that building such an inn would be beneficial for the institution and purchased land for construction in April 2009 (Stecker, 2014). The timing of this real estate move was difficult because the decision was made in the midst of an economic recession; therefore, a creative solution for funding was necessary (Stecker, 2014).

Location

The Alfond Inn is located at 300 E New England Ave in Winter Park, FL 32789. The location places it near both the luxurious Park Avenue and Rollins College.

Problem Definition

The problem the Alfond Inn was hoping to overcome was the fact that there was not an obvious place for visitors of Rollins College to stay for a weekend. The other problem Rollins

College wanted to address was its constant reliance on the Harold Alfond Foundation for funding Alfond Scholarships, an angel donation that could not necessarily be qualified as sustainable.

The Innovation/Change

The way that profits from the Inn are allocated is innovative for an institution of higher learning to implement, but the financial model of the Alfond Inn operates just as any other for-profit hotel does. In terms of being a top-tier inn, the Alfond is an aesthetically pleasing option in an area where there are not many hotels to begin with.

The Value Proposition

The Inn is larger and newer than other local options such as the Park Plaza Hotel. The nightly rates are competitive, and the Inn also serves as a mecca for art lovers. Barbara Alfond of the Harold Alfond family attested that with the Morse Museum situated in Orlando, designers of the Alfond Inn wished to construct the new Inn in the style of Louis Comfort Tiffany. Not favoring the use of dark jewel tones and drapery for a location meant to be a Floridian haven, Mrs. Alfond instead suggested that the Inn be styled as an homage to Tiffany's travels, incorporating the Mediterranean ideal of "bringing the outside in." In the 19th century, people took the Grand Tour, travelling to places like Tangier, Tunisia, Spain, and Egypt. Certain aspects of this time period can be seen around the Inn, such as the Egyptian sconces and light fixtures. The distinctive art collection was specifically designed for Rollins students by Barbara and Ted Alfond with the assistance of independent curator Abigail Ross Goodman, "specifically for Rollins as an affirmation of the benefits and rewards of a liberal arts education, which encourages critical thinking, the exploration of one's personal values, the appreciation of cultures around the world, and above all, the possible pathways towards love, understanding, and change for good" ("The Alfond Inn," 2013).

Implementation

The President and CFO of Rollins College presented the plan for the future Alfond Inn to the Harold Alfond Foundation, knowing that private investors were not the answer to such a large project during a time of deep economic recession (Stecker, 2014). The Foundation contributed a $12.5 million grant and Torre asserted in 2012 that Rollins College paid $9.9 million for the land and "funded a $20 million internal 25-year loan from the College's reserves at a 4.5 percent interest rate" (Stecker, 2014, pp. 8-9). The Inn is registered as a limited liability corporation (LLC) (Stecker, 2014). Understanding that Rollins does not have personnel trained in running a hotel and conference center, a professional hotel management firm was hired to run the Inn (Stecker, 2014).

Success Metrics/Impact

The success of the Inn as a social venture can be measured by how many Alfond Scholarships are bestowed upon incoming Rollins freshmen. As a destination location within Winter Park, the success of the Inn could be described by how many visitors are annually present and how many of them are repeat customers. As of September 2015, the Alfond Inn had consistently been booked at a rate of 90 percent, mostly full on weekends ("Alfond Inn Exceeds Expectations," 2015). Compared to a 64 percent industry occupancy average, the Inn could be said to be performing both better than anticipated and competitively against other local inns and hotels ("Alfond Inn Exceeds Expectations," 2015). Eisenbarth shared that the Alfond surpassed its initial monetary goals, dubbing it a success in the financial department from an early stage.

Obstacles/Challenges

Initially the summer season was thought to be a challenge, because this is when college students would not be as heavily abundant to draw in visitors. However, the Inn has proved

popular with the Winter Park community in general and year-round capacities are attracting inflated profits. The largest challenge presently is in fact not having enough rooms to meet regular demand.

Sustainability of the Organization

Because it solves the issue of how future Alfond Scholarships will be funded by Rollins College, the Inn answers one question of sustainability. The other question is whether or not people will always want to stay at the Alfond Inn. Right now, the Inn is new and has garnered interest as a high-end hotel in an affluent area. The Inn will continue to see success as a coveted destination location if the high quality of the rooms and amenities continues on a trajectory ahead of its competitors. However, its convenient location for Rollins visitors presumably ensures its status as a Winter Park landmark.

Future Scalability

The project team is already developing plans to expand the Alfond by 70-80 rooms to meet growing demand. The model of funding philanthropic works through a for-profit venture is one that Rollins College is researching how to implement in other areas, potentially funding various athletic and academic scholarships in the near future. The Alfond is unique both as a vacation location and as a financial model, and both have the ability to increase their scope of influence.

Replicability

Any university or college worldwide could essentially copy this model of social entrepreneurship, promoting a top tier hotel experience that is in the business of providing young collegians with opportunities otherwise not available to them. A future study of the Alfond Inn

could involve polling visitors to see if they were more inclined to visit after knowing about the social mission of the business.

Factors that led to not seeking LEED certification

According to Jeff Eisenbarth, the Alfond Inn does qualify for LEED certification. The relationship between Rollins College and the Alfond Inn has created a unique situation in which this for-profit venture can use the non-profit college as a guideline in certain respects. All campus projects are now built to LEED certification, the most recent being Strong Hall and Bush Science Center. After undergoing these projects, the project managers and developers who were now ready to embark on the Alfond Inn adventure knew what measures needed to be taken to qualify for LEED certification. Eisenbarth cites the LEED process as expensive (it would have added an estimated $75,000 to the overall cost of the Inn's construction) and time consuming. Eisenbarth and the Harold Alfond Foundation chose to spend that money towards creating an even more sustainable inn, sans the plaque of recognition. Rollins, and the Alfond by association, has become an example of sustainable building design being automatically included in initial building plans as opposed to counting towards extra effort intended for recognition.

Case Study 2: East End Market

East End thrives on active examples of sustainability as opposed to static. Lineage coffee, a renowned merchant, resides next to a communal kitchen that encourages not only East End vendors, but any food artisan within the community, to share the space and learn from veterans of the local food movement.

Opening

East End Market's official mission statement is as follows: "East End Market is a neighborhood market and cultural food hub inspired by Central Florida's local farmers and food artisans. Through collaboration and creativity, we strive to cultivate an appreciation for our true sustenance, a better understanding of our food system, and a dynamic local economy" ("About: Mission," 2016). East End is meant to mirror an outdoor farmers' market, allowing for year round local options whose availability is not dependent on weather or a certain day of the week. East End Market places a strong emphasis on the business's triple bottom line, ensuring that while profitable, the market also considers lessening environmental impacts through localizing Orlando's food systems.

Background

The owner of East End Market is John Rife, an entrepreneur with roots in Orlando commercial real estate. He wanted to open the market as an asset to the Orlando community he already enjoyed, providing a space for local food artisans to share their locally harvested foods (Thompson, 2013). He and his wife became invested in the local food movement through inspirational travelling, and his work with the Winter Park Harvest Festival solidified his goal of wanting to create a physical space for local food artisans.

Location

East End Market is located at 3201 Corrine Avenue, Orlando, Florida, 32803. The various vendors sell their local goods in this renovated abandoned church in the Audobon Park Garden District, a neighborhood with a trendy reputation that is known for an abundance of cutting-edge food entrepreneurs and craftsmen. The location of East End, as well as the nature

of the business, serves as a natural and local counterpoint to Orlando's stereotypical theme park attractions.

Problem Definition

East End Market is a solution to the lack of relationship the general population of Orlando has with its food sources. Small-scale vendors needed a platform to make their goods accessible, and traditional farmers' markets simply did not provide the regularity or volume needed to make a significant difference in where Orlando citizens are purchasing their sustenance. A gap in the local economy also existed because food-purchasing decisions did not include an abundance of local options. The problem is not defined as an explicitly environmental issue; East End observed the poor quality of food education within the community and responded in a localized, convenient, and decidedly delicious manner.

The Innovation/Change

Its grassroots methods of entrepreneurialism make East End Market an innovative concept. John Rife, through his connections with the Audobon Park Community Market, reached out to local vendors and farmers to gauge how great their interest would be in becoming part of a permanent farmers' market. The empathic process of understanding what both consumers and farmers were willing to partake in resulted in a unique space that allows new entrepreneurs to work alongside veterans of the food industry. There are twenty new businesses located within East End, six of which have moved from previous locations to join the new venture (Thompson, 2013). East End Market also includes space to hold events, catering, and demonstration and incubator kitchens (Thompson, 2013). Another innovation the market has implemented involves the partnerships they have built within the community; vendors work with local Orlando groups like a Local Folkus, Audubon Park Community Market, Winter Park

Harvest Festival, Winter Park Urban Farm, and Winter Garden Harvest Festival to educate the community on local food systems and what it means for produce to be sustainably-sourced.

The Value Proposition

Simplistically stated, the value proposition of the business is better-tasting food every day of the week. People go to farmers' markets to purchase seasonal produce and enjoy the harvests of local farms. The social impact is matched by the financial impact, in which profits are kept within the Orlando community because they are going to local farmers and artisans as opposed to money being spent on imported products. Rife calls the market both a face for the local food movement and a venue for launching new entrepreneurs.

Implementation

The two-story building, formerly the Living Faith Christian Church, is home to 20 successful independent merchants. Renovations began in March 2012 and were completed in November 2013. The abandoned building was cheap, so start-up costs for the business were relatively low. It was also very large, so the potential for numerous vendors to occupy the market was a feasible goal. The location was prime, given Audobon Park's progressive reputation and eco-conscious clientele (Thompson, 2013). Rife played into the feel of this particular community by livening up East End Market and creating it as a small environmental haven with garden beds, bike racks, and outdoor seating to compliment the sustainable food offerings (Thompson, 2013).

Success Metrics/Impact

The number of different vendors that are able to be profitable within the space and the number of customers that circulates through the Market daily measure the success of East End. Further metrics include the success of various events that are hold at East End and the number of people they can encourage to partake in local farming efforts such as Fleet Farming.

Obstacles/Challenges

Rife describes the largest challenge as the beginnings of the business, specifically in preparing the building he purchased in 2010 to be inhabited. The building was most likely vacant because of formidable obstacles like asbestos, septic tanks, and storm water retention mechanisms that needed to be paved over. Rife knew how to solve these issues and turned an undesirable location into a home for 20 different local artisan businesses.

Sustainability of the Organization

The learning curve of East End Market vendors was designed with business sustainability in mind. The process of having new businesses train alongside experienced vendors provides a holistic food system experience for customers.

Future Scalability

East End Market serves the Orlando community, but people travel from all over the central Florida area to experience the unique food experience that it offers. Because of its popularity and the demand for the goods offered by the various vendors, the idea of growing the market to include more vendors could be a fiscally strategic decision. Owner John Rife has not spoken of such plans, but the current success of the market is undeniable based on the retention rates of vendors and high flow of customers.

Replicability

The concept of an indoor farmers' market could be replicated essentially anywhere, a physical building taking away dependency on fair climatic conditions. East End Market could potentially make it difficult for other similar business models to see immediate success in the Orlando area, but they should be seen as a teaching tool for other local food entrepreneurs.

Factors that led to not seeking LEED certification

The mission of East End Market and its commitment to providing a space for artisans to validate their food businesses and learn from aligned mentors make it a strong candidate for incorporating principles of environmental sustainability. Rife shares that the building would most likely earn several points on the LEED rating tools, but he did not see the need for receiving such an endorsement. He compares LEED certification to seeking organic certification for food products. He is an Orlando local and understands where quality produce can be found because of the relationships he has built and the experiences he has had. A sticker of approval, in his opinion, can in many cases be a form of greenwashing that does not look closely at the actual mission of a business. East End Market earns 60 percent of its revenue from merchant rent payments, and achieving LEED certification is not a channel that would increase rent revenues. Rife acknowledges that from a marketing standpoint, LEED certification could be beneficial; however, he also feels that the sustainability of the mission of East End speaks volumes on its own. Without a capitalistic gain from LEED, Rife prefers to promote environmental sustainability in the Orlando community in an active manner (bikes, composting, farming) instead of only through static building qualifications.

Case Study 3: Clean the World

Vice President Randy Wise refers to the Clean the World facility as the "worst building in Orlando" in regards to sustainability. However, major plans for improvement are pending now that they are financially possible.

Opening

According to Randy Wise, Vice President of Clean the World, the organization is a B-corporation with a two-part mission:

1) to collect and recycle soap and hygiene products discarded everyday by the hospitality industry and other sectors that generate environmental waste
2) to prevent hygiene-related deaths of impoverished people, reduce the morbidity rate for hygiene-related illnesses, and encourage vigorous childhood development

He summarizes the importance of Clean the World's work as getting essential hygiene items to those in need by capitalizing on partnerships within the hospitality industry.

Background

Wise describes how when Clean the World's CEO Shawn Seipler found out that used bars of soap in hotel rooms ended up in landfills, his retirement took on new meaning. He realized this significant amount of waste could be prevented if these bars of soap and plastic bottled amenities were recycled to also solve the social issue of hygiene-related illnesses in developing countries. Once these different types of soaps are repurposed, the 2 million bars that hotels throw away every day can change the lives of 2.2 million children dying annually of hygiene-related diseases. In this way, Clean the World is making both a social and environmental difference.

Location

Currently, Clean the World resides at 400A Pittman St, Orlando, FL 32801. However, a large move is underway to a location near the Orlando International Airport

Problem Definition

Hotels are creating mass amounts of landfill waste through disposing of used soaps, and millions of children are dying yearly of hygiene-related diseases.

The Innovation/Change

The 2 million bars of soap that hotels throw away every day can change the lives of 2.2 million children dying annually of hygiene-related diseases. In this way, Clean the World is making both a social and environmental difference.

The Value Proposition

Clean the World is the first and only high-volume soap recycler that exists globally. Orlando is home to hundreds of hotels, and Wise describes Clean the World as an outlet for those hotels that wish to reduce waste and protect the environment.

Implementation

Clean the World could not operate without the assistance of its volunteers. "Voluntourism" and "alternative spring breaks" are recent trends that include giving back to the community utilizing tourism channels, a concept that tourist-oriented Orlando companies understand. Clean the World also partners with Orange County schools to give special needs students the opportunity to volunteer.

Success Metrics/Impact

So far, Clean the World has distributed 30 million bars of soap in over 100 countries ("Improving Global Health," 2016). Success is measured through their social mission, the number of underserved people to which they are able to provide soap and thus prevent disease. It is also measured by the number of hotels they create partnerships with and the number of volunteers that serve with them on a monthly basis.

Obstacles/Challenges

Wise cites the organization's largest challenge as increasing the number of development dollars they can raise. The prices that they charge hotels to repurpose their soaps usually lie between 50 cents and 80 cents per room. These prices typically only cover the cost of actually repurposing the soap, but being able to carry out distribution of the product to global locations is a cost that goes above and beyond. Clean the World does additional fundraising to cover these costs. The hope is to eventually only need to charge hotels what they would pay to send the soaps to landfills, providing a social good for the same effort as disposing of valuable resources.

Sustainability of the Organization

The cutting-edge financial model of Clean the World speaks to its sustainability. It became Florida's first benefit corporation, or B-Corp. A B-Corp is a hybrid between a non-profit and for-profit company, acting as what Wise describes as the best possible operating structure for companies that want to devote a significant portion of their business resources and revenues to socially beneficial activities. Clean the World is at its core a non-profit centered social enterprise, comprised of two for-profit entities (and four non-profit branches (Clean the World Foundation, Clean the World Canada, Clean the World Asia, and the Global Soap Project). Clean the World Ventures is the corporate management entity that provides operational and business services to the non-profit entities that comprise the Clean the World sustainable ecosystem. It maintains a contractual service agreement with the non-profit entities to perform sales, marketing, recycling operations, administrative services, and equipment leasing among other corporate functions. These services are not typical of non-profits, showing that Clean the World has evolved business sustainability as a B-Corp that shifts the paradigm of traditional philanthropic efforts.

Future Scalability

Clean the World is constantly increasing its global outreach and number of volunteers involved. As more hotels wish to become involved with their mission, the more product Clean the World will have to distribute. With initial beginnings of repurposing soap in the CEO's garage, the organization is a success story in scaling a business to meet global demand.

Replicability

The model of a B-Corp is a smart financial decision that other Floridian and national charities are beginning to consider and adopt. While the actual mission of Clean the World is a unique one that would be difficult to replicate, the basis of their success could be copied in essentially any non-profit.

Factors that led to not seeking LEED certification

Clean the World leases their current building, making alterations to the facility a difficult task without a landlord pushing LEED certification. However, with Clean the World's commitment to environmental sustainability, LEED certification has been considered in regards to a facility for the operation. Efforts have been made to make the current building more environmentally sustainable, but the team is hesitant to invest too much money in a space that the operation probably will not inhabit much longer. Wise says that they are currently in the pre-development process for a new facility and are aiming to be in a LEED certified building by the beginning of 2017. With an end-goal of being "the greenest building in the world," Clean the World emphasizes its values of efficiency, innovation, and corporate social responsibility, all of which would be improved by being in a LEED certified facility. While such a building was not affordable when the business first began, the financial sustainability provided by becoming a certified B-Corp and growing the scale of the operation means LEED is no longer out of the question.

Results

This study's results include both a compilation of secondary data and primary interviews that revealed the reasoning behind sustainability decisions within the businesses that were investigated.

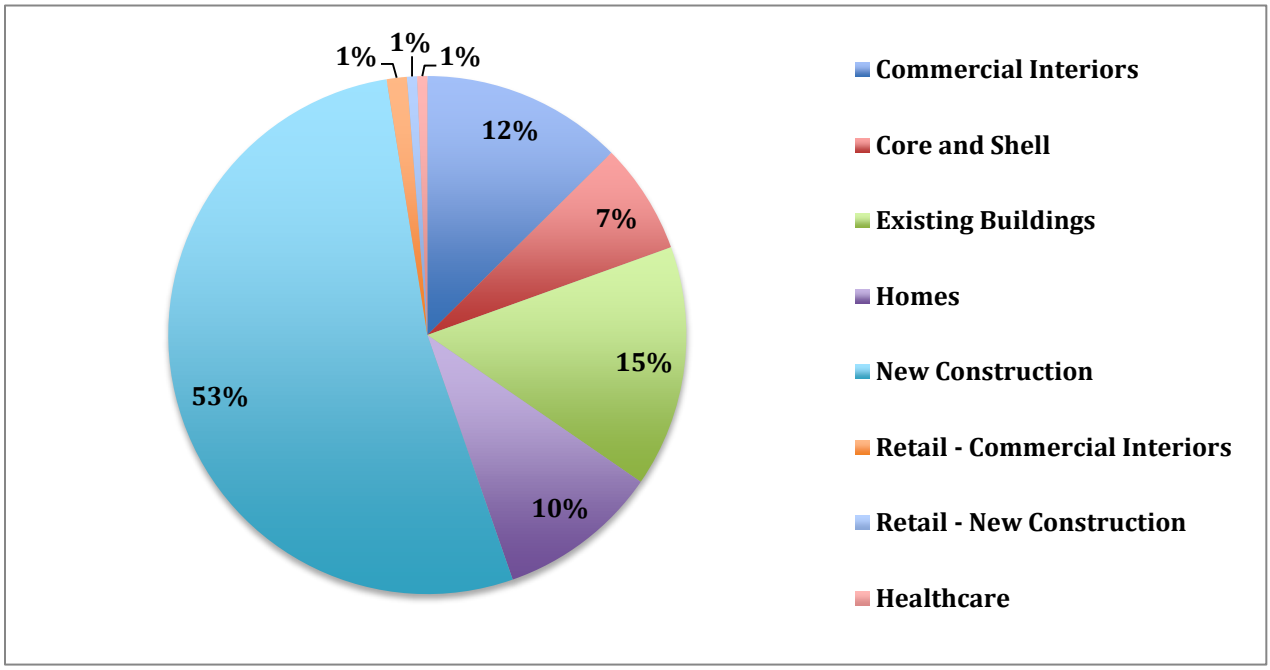


Figure 1. Percentage of total Orlando LEED projects that use each type of LEED rating tool.

Figure 1 gives a detailed breakdown of the utilized rating tools of the 159 projects that have received some form of LEED certification or are searching to qualify for LEED certification in the City of Orlando. It is abundantly clear that the most prominently used rating tool is LEED-New Construction, particularly version 2009 and version 2.2 as Table 2 in Appendix A depicts. With the knowledge that 53 percent of LEED certified and potentially LEED certified structures are largely new commercial buildings, there appears to be a gap in incentivizing owners of older, pre-LEED structures to seek a retrofit that would qualify for

certification. Only 10 percent of the 83 projects qualified as homes, proving that the commercial sector is currently most avidly wanting to implement LEED qualifications and be recognized for them.

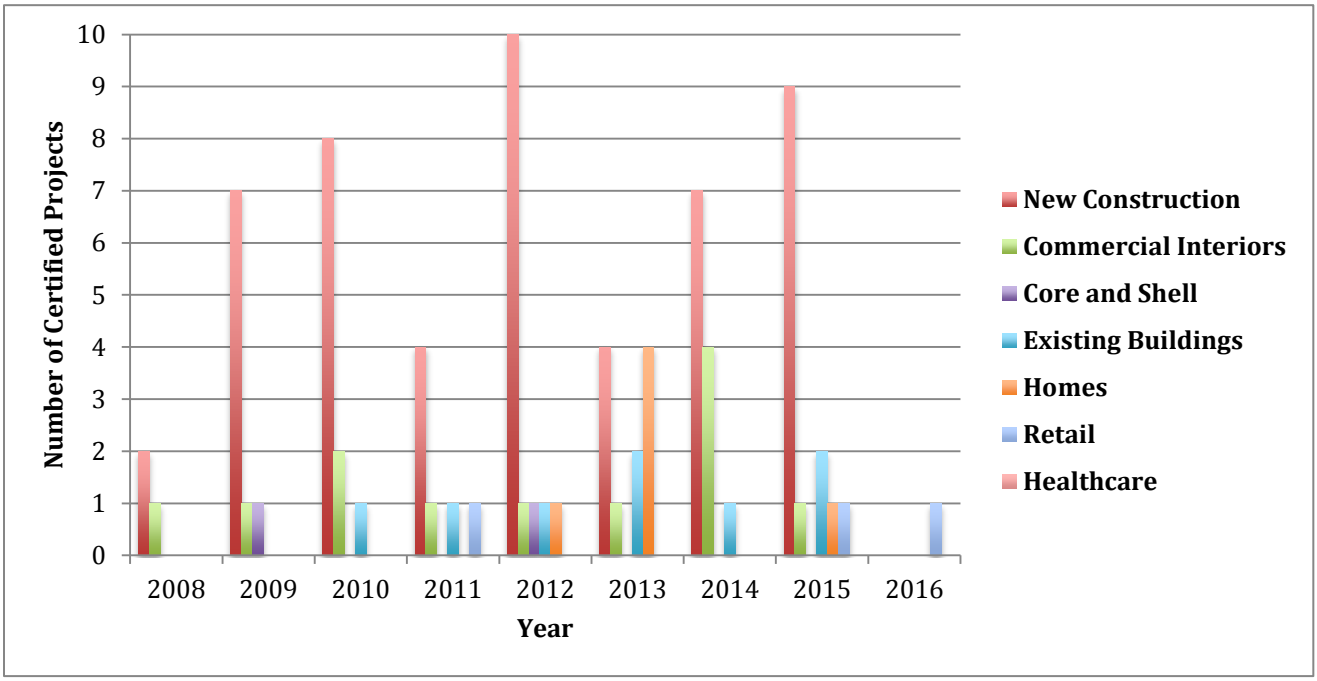


Figure 2. Frequency of various LEED rating tools used for certification from 2008 to 2016.

Figure 2 is an exercise in gauging the trends of LEED certification in Orlando over the past 8 years. It depicts the annual distribution of the rating tools used to certify buildings that fall within one of the seven niches. Only the 83 certified projects (it should be 85 but 2 projects do not include certification details on the USGBC LEED website) are included in this graphical depiction. New construction has always been the predominant type of structure most likely to work for LEED certification. However, Orlando does not have unlimited space for exponential growth of its built environment, and eventually the niche LEED will have to primarily work with will be existing buildings.

Table 3 is the most simplistic textual version of the answers this study was seeking. It distinguishes between the subtle financial models of the businesses and the clarified reasons why the buildings they inhabit are LEED certified or not. The two strongest arguments that business had for being able to undergo the LEED process included having the money available and wanting to support the environmentally sustainable missions that their businesses embody. The businesses that do not inhabit LEED certified buildings did not believe LEED would bring financial benefits and they felt they could develop sustainable design without going through the certification process.

Business	Business Model	LEED Certified? Version?	Certification Decision Factors
Amway Center	Private/public partnership	Yes, New Construction	City regulations
First Green Bank	For-profit	Yes, Commercial Interiors	Mission-aligned
Siemens Training Center	For-profit	Yes, Commercial Interiors	Mission-aligned, well-funded
Alfond Inn	For-profit, founded by a non-profit	No	Would qualify, money re-allocated
East End Market	For-profit	No	Mission strong enough alone, cost
Clean the World	B-Corp	No	Cost

Table 3. Summary of factors that encourage or dissuade the Orlando commercial sector to seek LEED certification

Discussion

The dichotomy exists, particularly after close inspection of the Alfond Inn and East End Market, in evaluating whether LEED or simply what it denotes is more important. LEED buildings are not always the most sustainable, and the most sustainable buildings in Orlando are not necessarily LEED certified. John Rife of East End Market spoke of his issues with

certification processes in general, citing them as a way for businesses whose missions may not completely embody the ideals that a certain certification stands for to be masked behind a seal of approval. The Amway Center, for example, as a large facility, achieved a high level of sustainability. The LEED process did allow them to make fiscally responsible decisions for the time being in terms of solar panels because these lost points could be made up in other, potentially less impactful, areas. In this sense, a uniform rating scale can become a game in which companies become experts.

LEED is lauded as the most holistic and most adaptable sustainability rating tool, and both secondary research and testimonies from case study interviewees has supported this claim. However, simply because it is the best of the certification processes does not mean it is the ultimate guide for sustainability. Even though it is the national tool with the best localization ability, a tool of such uniformity cannot encompass the subtle nuances in design that will guide each specific project towards the most harmonious relationship with the environment. The question that the Alfond Inn brought to life is exactly how long society needs a certification process to determine environmental sustainability before it is simply a given, a common practice as normal to building design as doors and windows. Experts know that the benefits of sustainable design are healthier for employees, cost-effective, and obviously less detrimental to the natural world. When does this become common knowledge?

Chris Castro, the Orlando City Advisor, recently announced that as of March 2016 the City of Orlando passed the PACE Home and Building Improvement Financing Program, enabling roughly $500 million in clean energy financing and capital. This will aid property owners in making energy and water efficiency upgrades on their properties (“Orlando Picks Up PACE”, 2016). This announcement came while research for this paper was gathered, offering a

fresh glimpse into what the future of environmental sustainability looks like for the Orlando commercial sector. Research conducted by the City shows that financing options for property improvements is the main hindrance for home and business owners "looking to modernize, mitigate wind damage and improve the energy and water efficiency of their property" ("Orlando Picks Up PACE", 2016). Orlando will be joining 60 other cities and counties in Florida who have also approved the PACE program, which allows critical financing for property improvements to be amortized over five to 20 years ("Orlando Picks Up PACE", 2016). Another initiative, Building Energy & Water Efficiency Strategy (BEWES) policy, is still being developed. Castro shares that the policy is in the final stakeholder engagement phase and should be brought forward in summer 2016. These initiatives do not always directly draw upon LEED qualifications, but there is substantial overlap in what these programs want to provide and what the LEED process is looking for.

He also mentions that high-performing sustainable buildings will see an increase in demand because of the aforementioned policies both present and future, which implies a predicted peak in new and existing LEED certified buildings. His dream as the Orlando City Advisor is to see Orlando support those initiatives while also striving for standards like those of the Green Building Standard for Miami Beach, which requires all new construction over 7,000 square feet to be LEED Gold certified.

Conclusion

The City of Orlando is looking at channeling funds into environmentally sustainable initiatives that will aid commercial businesses in achieving new levels of limited eco-footprints. The City has included mentions of LEED when detailing expectations for municipal buildings, but the emphasis on LEED for homes and businesses is not currently present. Businesses that

did choose to have their office buildings not only built to LEED specifications but also officially certified did so for the following reasons: environmental sustainability is directly inherent in their company mission statement and they had a large enough scale of funds that an expensive certification process would not be a severe financial burden. The major reasons for businesses to avoid seeking LEED certification, based on the three case studies that were conducted in this sector, included the process being too lengthy and costly for the benefits that it was perceived to bring and the business feeling that they could design a comparably sustainable building without having to undergo the certification process.

Larger companies with multiple branches or locations throughout Florida/on a global scale are more likely to have the resources and the corporate social responsibility mentality that fosters a desire to seek LEED certification. This can only be seen as an asset, both in the corporate and environmental worlds. LEED should remain a renowned national tool implemented in Orlando, even if for the marketing prestige that it lends towards the city. It also serves as a benchmark of environmental sustainability, at least while such features are not universally inherent within building design. To reduce the financial burden that can become synonymous with LEED, Orlando public policy could offer tax breaks extended over a certain period of time to promote the financial feasibility of undergoing the LEED certification process. The focus, however, should not necessarily be on LEED, but firstly on environmental sustainability itself. For this reason, localized Floridian initiatives that accentuate their ability to lower the cost of particular sustainable building features will be beneficial to the Orlando business community in keeping costs low and reducing their environmental impact.

The environmental crisis society is currently trying to mitigate should not have to wait for a business to garner the capital to embark on the LEED process at its current associated costs to

see a lessened commercial building environmental footprint. Orlando businesses will see financial and environmental improvements in their companies and communities when the City of Orlando favors local financing of sustainable design in correlation with lessening the financial burden of the LEED certification process. Perhaps someday soon, a benchmark like LEED will not need to be as heavily promoted not because it is no longer important but because the goals the process wishes to see are inherently embedded in every piece of the built environment.

Appendix A

Table 2: LEED Project Directory for the City of Orlando

Project	Certification date	Rating system	Version	Certification level
Starbucks International Dr & Sand Lake R	13-Jan-16	Retail - Commercial Interiors	V2009	Certified
One Orlando Centre	24-Dec-15	Existing Buildings	V2009	Certified
NSA PASS AND ID BUILDING	1-Sep-15	New Construction	V2009	Certified
Jefferson at Baldwin Park	21-Nov-14	New Construction	V2009	Certified
First Green Bank Orlando Branch	6-May-14	Commercial Interiors	V2009	Certified
140727-Sand Lake Road	12-Mar-14	Existing Buildings	V2009	Certified
NTC Orlando Armory		New Construction	V2009	Certified
Sand Lake Road	29-Jan-14	New Construction	V2.2	Certified
Rosen Medical Center	23-Jan-14	New Construction	V2009	Certified
Jefferson at Baldwin Park		New Construction	v2009	Certified
Orange County Fire Station No. 35	16-May-11	New Construction	v2.2	Certified
City of Orlando Fire Station 17	24-Mar-09	New Construction	v2.2	Certified
City of Orlando Fire Station 16	24-Mar-09	New Construction	v2.2	Certified
City of Orlando Fire Station 14	24-Mar-09	New Construction	v2.2	Certified
US Citizenship and Immigration Services	10-Jan-11	Commercial Interiors	v2.0	Certified
City of Orlando Fire Station 15	4-Sep-08	New Construction	v2.2	Certified
COLONIAL 9TH GRADE CTR BUILDIN	6-Jun-08	New Construction	v2.1	Certified
Lincoln Plaza	18-Apr-10	Existing Buildings	v2008	Certified
IKEA Orlando, FL	11-Sep-09	New Construction	v2.2	Certified
3024 Lake Shore Dr	14-Jul-15	Homes	v2008	Gold
UCF Classroom Building II	4-Jun-15	New Construction	v2009	Gold
UCF Greek House 411	22-Aug-13	Homes	v2008	Gold
UCF Greek House 409	22-Aug-13	Homes	v2008	Gold

UCF Morgridge Int. Reading Center	26-Mar-14	New Construction	v2.2	Gold
UCF Career Services & Experiential Lrng	19-Jul-12	New Construction	v2.2	Gold
UCF Public Safety Building	13-Sep-12	New Construction	v2.2	Gold
UCF Physical Sciences Building Phase 2	2-Jun-15	New Construction	v2.2	Gold
UCF Recreation & Wellness Expansion	11-Sep-12	New Construction	v2.2	Gold
UCF Laboratory and Environmental Support	6-Aug-10	New Construction	v2.2	Gold
UCF Physical Sciences Building Phase 1	14-Dec-09	New Construction	v2.2	Gold
NIKE Clearance Store: Orlando	10-Sep-15	Retail - Commercial Interiors	v2009	Gold
Siemens Nacelle Training Center	21-Jan-15	Commercial Interiors	v2009	Gold
University Corporate Center I & III	14-Jan-15	Existing Buildings	v2009	Gold
Bartolomei Residence	31-May-13	Homes	v2008	Gold
1906 Curry Ford	13-Nov-12	Homes	v2008	Gold
Translational Research Institute	6-Jan-14	New Construction	v2009	Gold
George C Young Federal Building	19-Dec-13	New Construction	v2009	Gold
Wyndham Vacation Ownership Office	2-Dec-13	Commercial Interiors	v2009	Gold
Orange County Convention Center N/S	20-Sep-13	Existing Buildings	v2009	Gold
142042 Legacy Place Customer Service Ctr	19-Aug-13	Existing Buildings	v2009	Gold
City of Orlando GEICO Parking Garage	23-Aug-11	New Construction	v2.2	Gold
Perkins+Will Orlando	5-May-10	Commercial Interiors	v2.0	Gold
City of Orlando Fire Station 1	30-Aug-12	New Construction	v2.2	Gold
DISCOVERY TECH CENTER II	20-Jul-09	Core and Shell	v1.0 pilot	Gold
Hensel Phelps Southeast District Office	29-Jun-10	Commercial Interiors	v2.0	Gold
Science & Allied Health	13-Jul-09	New Construction	v2.2	Gold
Culinary Lab & Conferencing Center	17-Feb-10	New Construction	v2.2	Gold
VCC 11 - UCF/VCC Joint Use Building	25-Jan-10	New Construction	v2.2	Gold
Turner Orlando Office Renovation	30-Nov-12	Commercial Interiors	v2009	Gold
Orlando Science Center	2-Aug-12	Existing Buildings	v2009	Gold
Millenia Mall	31-Jan-11	Retail - New Construction	v1.0 pilot	Gold
Skanska Orlando Headquarters	23-Jun-09	Commercial Interiors	v2.0	Gold
Darden Restaurants RSC	14-Apr-10	New Construction	v2.2	Gold
Fifth Third Bank - SODO	19-Jul-11	New Construction	v2009	Gold
OUC Administration Building	13-Jul-09	New Construction	v2.2	Gold
Orange County Medical Examiner's Office	27-Oct-10	New Construction	v2.2	Gold

355 North Orange, LLC	5-Mar-10	New Construction	v2.2	Gold
Amway Center	23-Feb-11	New Construction	v2.2	Gold
City of Orlando Fire Station 7	15-Apr-10	New Construction	v2.2	Gold
UCF Performing Arts Center	19-Apr-12	New Construction	v2.2	Gold
9001 Charles E. Limpus Rd.		Homes	v2008	Platinum
UF Res.& Conf. Facility at Lake Nona	27-Jun-13	New Construction	v2.2	Platinum
Citrus Bowl Stadium Renovation	19-Oct-15	New Construction	v2.2	Silver
UCF Fraternity and Sorority Life	10-Sep-14	New Construction	v2009	Silver
UCF Neptune Community	9-Sep-15	New Construction	v2009	Silver
UCF Visitor and Parking Information	30-Jul-15	New Construction	v2.2	Silver
UCF Partnership III	9-Oct-12	New Construction	v2.2	Silver
UCF Medical Education Building	10-Apr-14	New Construction	v2.2	Silver
UCF Burnett School of Biomedical Science	13-Sep-10	New Construction	v2.2	Silver
DPC for the Performing Arts - Stage 1	4-Sep-15	New Construction	v2.2	Silver
Courtyard Marriott Orlando South	13-Aug-15	New Construction	v2009	Silver
ORMC North Patient Tower	21-Jul-15	New Construction	v2009	Silver
CBRE Orlando	6-Oct-14	Commercial Interiors	v2009	Silver
Orlando Tech Office	21-Apr-14	Commercial Interiors	v2009	Silver
Office Depot Store 03261	31-Jan-14	Commercial Interiors	v2009	Silver
1600 Lakeside Drive	14-Feb-13	Homes	v2008	Silver
Barry University Law school	7-Feb-13	New Construction	v2009	Silver
First United Methodist Church of Orlando	14-Mar-13	New Construction	v2.2	Silver
UUUS Classroom	5-Mar-12	New Construction	v2.2	Silver
Megastron I	1-Aug-12	Core and Shell	v2009	Silver
Sterling University UCF-2	27-Feb-12	New Construction	v2009	Silver
SunTrust Center	1-Nov-11	Existing Buildings	v2009	Silver
Wyndham Vacation Ownership	10-Nov-08	Commercial Interiors	v2.0	Silver
Dr. Phillips Charities Headquarters	2-Jun-12	New Construction	v2.2	Silver
Orange County Sheriff Office	10-May-12	New Construction	v2.2	Silver
UCC		New Construction	v4	
RONALD MCDONALD HOUSE AT NEMOURS		New Construction	v2009	
PNC Bank Branch - Mills Park		Retail - Commercial Interiors	v2009	
UCF -554 IRIF PH I		New Construction	v2009	
Orlando Fire Station 2		New Construction	v2009	
UCF Facility Support Building		New Construction	v2009	
Orlando Police Dept Crime Scene Facility		New Construction	v2009	

Orlando Police Department Headquarters	New Construction	v2009
PCL Orlando Office Relocation	Commercial Interiors	v2009
PCL Orlando Office Relocation	Commercial Interiors	v4
WDCSAL UCF -570	New Construction	v2009
Florida Hospital for Women	Healthcare	v2009
AIPO Spec C	Core and Shell	v2009
Global UCF	New Construction	v2009
Center For Student Athlete Leadership	New Construction	v2009
Robins and Morton Orlando	Commercial Interiors	v2009
Valencia College Building 3 East	Existing Buildings	v4
MCO South Airport APM & ITF	New Construction	v4
OC Convention Center N/S Recertification	Existing Buildings	v2009
BioResearch Center Health Village	Core and Shell	v2009
Excellence Assisted Living Facility	New Construction	v2009
Orlando City Soccer Stadium	New Construction	v2009
DPC for the Performing Arts - Stage 2	New Construction	v2009
1717 S Eola	Homes	v2008
1010 Colyer	Homes	v2008
Badaloo Residence	Homes	v2008
The New American Home 2011	Homes	v2008
Westar Development	Homes	v2008
849 Kenilworth Terr.	Homes	v2008
Lake Nona Innovation Center Phase 1	Core and Shell	v2009
Retreat Orlando Clubhouse	New Construction	v2009
EastGroup Southridge 11	Core and Shell	v2009
Peabody Orlando	Existing Buildings	v2009
University of Central Florida Starbucks	New Construction	v2009
Margaritaville Corporate Office	Commercial Interiors	v2009
Student Union Expansion	New Construction	v2.2
Tower Place at The Summit	Existing Buildings	v2008
3920 Edgewater Drive	New Construction	v2.2
Interior Renovation for CB Richard Ellis	Commercial Interiors	v2009
FTCF - Reams and CR535	New Construction	v2009
Dr P Phillips Hospital	Existing Buildings	v2009
Greek House A	Homes	v2008
Greek House B	Homes	v2008
Cambria Suites Hotel	New Construction	v2.2
Macquarie	Existing Buildings	v2008

Montage Apartments	New Construction	v2.2
777 N Orange Office Building	Core and Shell	v2.0
Orlando Police Training Facility	New Construction	v2.2
Sapphire Professional Office Complex	New Construction	v2.2
Megastron	New Construction	v2009
CCS Office Building	New Construction	v2.2
GAI Consultants	Commercial Interiors	v2009
SGM Engineering Office Building	New Construction	v2.2
Colbourn Hall UCF	Existing Buildings	v2008
VOA Associates Inc	Commercial Interiors	v2009
Sand Lake IV	Existing Buildings	v2008
University Tower	Existing Buildings	v2008
Research Pavillion	Existing Buildings	v2008
Institute for Simulation and Training	Existing Buildings	v2008
Baldwin Park Building IV	Core and Shell	v2.0
Shoppes at Alafaya Trails	Core and Shell	v2009
Sterling University UCF	New Construction	v2.2
Atkins Orlando Office	Existing Buildings	v2009
CENTRAL FLORIDA RESEARCH PARK	Core and Shell	v1.0 pilot
1901 Summit Tower	Existing Buildings	v2.0
Maitland Summit II	Existing Buildings	v2.0
Maitland Summit I	Existing Buildings	v2.0
New FBO Terminal	New Construction	v2.2
Microtel -Orlando	New Construction	v2.2
MMAE Laboratory	New Construction	v2009
VILLA DEL SOL	New Construction	v2.2
FIS at Maitland Summit 3	Commercial Interiors	v2009
Glatting Jackson Arcade	Existing Buildings	v2008
4787 New Broad Street	Core and Shell	v2.0

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