



The James River Green Building Council's Statewide **Green Building Plan for Virginia**

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Prepared For:

The James River Green Building Council
Spring 2014

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Executive Summary

To create sustainable cities and communities, Virginia must rethink the way it constructs buildings. The built environment is fundamental to our lives, meaning much more than a collection of physical structures. These places are where most of us spend the majority of our lives, working, playing, learning, raising families, and bringing communities together. Likewise, the composition and design of these places matter.

The James River Green Building Council's Statewide Green Building Plan for Virginia contains a vision for and recommendations to guide green building awareness and policy adoption in the Commonwealth of Virginia. This plan has been prepared for the James River Green Building Council (JRGC), a non-profit organization whose mission is to create a positive impact on the region's built environment by accelerating the adoption of green building practices, technologies, policies and standards in the Commonwealth (JRGC Mission, 2013). JRGC recently merged with Southwest Virginia's regional USGBC chapter, and therefore requires a strategy detailing how it will execute its mission of accelerating green building on this new statewide and regionally diverse scale.

A comprehensive data collection and analysis process was undertaken to identify problems and potential opportunities for improvement. JRGC's current state as an organization was analyzed, as were the state's existing green building policies and incentives. I also examined green building policies and programs on a national and international scale, as well, through relevant case studies. Additionally, I conducted twenty-one stakeholder interviews with green building professionals about the state of green building of Virginia and input on best practices to advance green building on a statewide scale. Through academic research, I was also able to determine that climate action plans, energy-efficient building codes, and green building education programs are key indicators to a region having more green buildings. Using those primary indicators, as well as input from stakeholder interviews, I then assessed Virginia's current green building market and made recommendations to place the state in a stronger position to foster and promote green building activities. Those recommendations later guided the final goals and objectives made in this plan.

Based on the research, the following vision statement was established to describe the desired outcome of this plan:

The James River Green Building Council will lead the transformation of the way buildings and communities are designed, built, and operated in Virginia, thus enabling an ecologically and socially responsible, healthy, and prosperous environment that improves the quality of life for all residents. JRGC will use education, advocacy and community outreach to support the development of sustainable buildings and communities. With these changes in place, Virginia will become recognized national leader of green building.

This plan lays out a short-term, achievable roadmap for the next three to five years that builds on the efforts of many of the partners already invested in the James River Green Building Council and green building in Virginia. Organized under four broad themes of 1) Establish supportive and collaborative partnerships; 2) Guide municipal and state decision-makers towards the pursuit of green buildings; 3) Increase community education and awareness; and 4) Chapter development, this plan addresses the unique opportunities that the James River Green Building Council can offer to the green building industry in Virginia.

Establishing supportive and collaborative partnerships

No plan for bringing energy, awareness, and legislative action to an entire industry over a large region can be completed by one organization alone. Partnerships and collaboration are crucial to legislative success for green building policy. This section identifies strategic connections for JRGBC and presents recommendations for forging and strengthening new partnerships for long-term support for promoting green building in Virginia.

Guide municipal and state decision-makers towards the pursuit of green buildings

This section focuses on educating key decision-makers about why green building will be beneficial for Virginia, followed by steps JRGBC will take to advocate green building at both the statewide and municipal levels of government to advance green building policy and practices.

Increase community education and awareness

A collaborative approach with JRGBC's partners is imperative for developing, marketing, and hosting innovative green building educational programs that will increase and enhance public understanding of green building in Virginia. This section focuses on implementing a synergistic strategy to create and maintain innovative education programs that serve member needs, engage and educate green building professionals and decision makers, and address the needs of emerging sectors within the building industry.

Chapter development

Recruiting energetic, active volunteers and members can escalate the innovation and entrepreneurial spirit of the chapter, while also increasing chapter capacity. This section also focuses on strengthening chapter programming and member education/social opportunities with the growth of the chapter.

I. Introduction and Background

The Case for Green Buildings

In the United States, the building sector represents a staggering 48% of total U.S. greenhouse gas emissions (Manning et. al, 2008). Yet there is much more to buildings than energy efficiency. Buildings account for most of our water use and waste stream, and can affect our landscape because lots comprise significant shares of land area (The City of New York, 2013). Building materials also often contain toxic elements like neurotoxins and carcinogens that pollute indoor air quality which can in turn be linked to a number of health issues, such as asthma (Lot and Vallotte, 2013). Additionally, as most urban residents spend up to 90% of their lives indoors, asthma and other respiratory problems, immune disorders, and allergies occur at uncommonly high rates among the urban population, with consequent adverse impact on building occupant productivity and presence (The City of Alexandria, 2007). All of these issues must be addressed if we hope to solve our society's many ecological, health, and social problems.

In recent years, a strategy known as "green building" has emerged. A green building is one that considers and alters its impacts on the environment and human health. It is designed to use less energy and water, through better design, construction, operation, and maintenance of buildings (Yudelson, 2008). Policies and regulations centered on promoting green building generally establish standards for private and public sector construction, as well as context for the implementation of these standards. Green building policies enhance the health and well-being of residents, workers, and visitors by embracing practices in the design and construction of buildings that will decrease per capita energy use, provide energy from renewable sources, and redirect waste from landfills (The City of Alexandria, 2007).

The Client

The James River Green Building Council (JRGBC) is Virginia's nonprofit advocate for and resource on green buildings, and its members represent the broad spectrum of Virginia's green building community, from architects, engineers, and contractors to university professors, government officials, and homeowners. The James River Green Building Council is also Virginia's regional affiliate of the U.S. Green Building Council, a national nonprofit composed of leaders from every sector of the building industry working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work. The mission of the organization "is to create a positive impact on the region's built environment by accelerating the adoption of green building practices, technologies, policies and standards in the Central Virginia region" (JRGBC Mission, 2013). In order to carry out its mission, JRGBC's primary work includes providing educational events for green building professionals, supplying networking opportunities for green building professionals to engage with one another, and encouraging innovation and community development by hosting events like an annual sustainable design competition (JRGBC Mission, 2013).

Plan Purpose

In 2013, the James River Green Building Council merged with the Southwest Virginia chapter of the United States Green Building Council (USGBC), as depicted in Fig. 1. These two chapters and councils were consolidated into a single entity with the hope that regional interests would be better served by a single chapter. In light of these transitions, JRGC requires a strategy detailing how it will execute its mission of accelerating green building on this new statewide and regionally diverse scale. This plan will present a set of recommended actions that JRGC should implement to help make green buildings a common practice in Virginia's building industry.

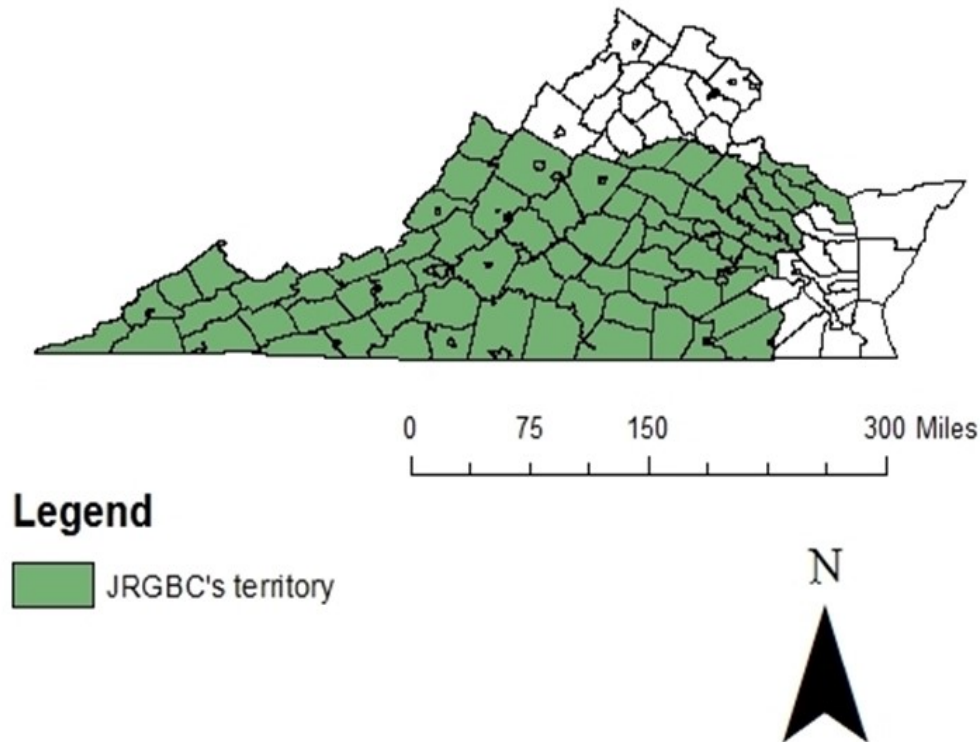


Fig. 1: JRGC's territory, after merging with SWVA USGBC (Source: Author)

USGBC and LEED

The U.S. Green Building Council (USGBC), a non-profit organization, promotes green buildings in the United States (Cidell, 2009). It wrote a comprehensive manual of nationally accepted standards, named Leadership in Energy Efficiency and Design (more commonly referred to by as LEED), by which to measure the energy efficiency of buildings (Rider, 2009). Since LEED was created in 1998, the standards have been adopted in over forty countries, including Brazil, China, India, Canada, and South Korea (Cidell, 2009). During the LEED certification process, USGBC serves as a third party to evaluate the efficiency of a building.

This plan features the LEED (version 2009) rating system, the industry standard for green building development, especially for commercial construction. The LEED system includes mandatory requirements for factors such as energy and water efficiency (The City of Alexandria, 2007). It awards additional points for building characteristics in the following six fundamental categories:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Air Quality
- Innovation and Design

The resulting point total from each category determines a building's final rating. For new construction projects, basic certification is awarded for buildings scoring 26 to 32 points. Higher certification levels include LEED Silver (33 to 38 points), LEED Gold (39 to 51 points), and LEED Platinum (52 to 69 points) (Rider, 2009).

Table 1: Breakdown of Possible Points that can be Awarded for Each Category:

(Source: Rider, 2009)

LEED Category	Points Possible
Sustainable Sites	14
Water Efficiency	5
Energy and Atmosphere	17
Materials and Resources	1
Indoor Air Quality	15
Innovation and Design	5
Total:	69

Overall, LEED is a well-established rating system for green building. The incorporation of the rating system into municipalities' planning processes would be relatively simple in Virginia, as it is regularly updated and maintained by USGBC. Additionally, because the LEED rating system is administered by the USGBC, local and/or state governments would not be required to verify compliance that buildings meet the standards set by LEED.

Green Building on an International Scale

Green building is growing rapidly in popularity around the world. According to a recent study by McGraw-Hill Construction and United Technologies Climate, Controls, & Security, over half of the international firms surveyed are incorporating green practices in their business, rising from 28% in 2012 to a planned 60% of their work by 2015 (Bernstein and Mandyck, 2013).

Green building is widespread. For example, from 2012 to 2015, the number of firms anticipating that more than 60% of their work will be green:

- More than triples in South Africa;
- More than doubles in Germany, Norway, and Brazil;
- Grows between 33% and 68% in the United States, Singapore, the United Kingdom, the United Arab Emirates, and Australia (Bernstein and Mandyck, 2013).

Sustainability will drive market growth, as other owners look to compete and offer residents a healthy, productive environment. Companies adopting green practices respond to the growing demand for green building around the world (Bernstein and Mandyck, 2013). In a 2008 report, McGraw-Hill Construction found doing the "right thing" was most often cited for motivating green building. In 2012, however, business growth reflected the realization that increased efficiency of energy, water and waste lowered building costs and maintained value longer than comparable non-green buildings. (Bernstein and Mandyck, 2013).

Case Study: Germany

Although many countries have a strong background in renewable energy and green building technologies, I will focus on Germany, whose interest with green building can be traced as far back as 1973, when the world oil crisis revealed the world's dependence on oil and other nonrenewable forms of energy. In the 1970s and 1980s, Germany began constructing some of the world's first green buildings, using solar panels and recycled materials. The German government also established a green building program with a focus on renewable energy research (Wustenhagen and Bilharz, 2006). By 2009, 16.1% of total electricity consumption in Germany was from renewable sources, largely wind power (Notoras, 2010). This transformation has been predominantly achieved through Germany's Renewable Energy Sources Act, which put in place a feed-in tariff system that mandates that grid operators pay for renewable energy fed into the electricity supply. Feed-in tariffs, which are subsidies created to encourage investment in the renewable industry, have been resisted by other, more market driven and fossil-fuel dependent economies such as the United States (O'Sullivan et al., 2009). A common argument against transitioning towards a greener economy is that many jobs in energy-related industries will be lost. According to a 2008 report for Germany's Ministry of Environment, however, approximately 278,000 were employed in the country's renewable energy sector, which could increase to 400,000 by 2020 (O'Sullivan et al., 2009). Overall, Germany has seen great success with green building and renewable energy technologies because the current political climate is open to green ideas and puts them into action, leading the way to a nation-wide green transformation. All countries can learn from Germany's successful investments in society, technology, and infrastructure.



Fig. 2: A parking garage in Germany where vehicles are "retrieved"; takes up 80% less space than traditional American parking garage. (Source: Eilert, 2010)

Green Building Policy in the United States

By 2006, at least 15 U.S. states had mandated green building practices for state buildings and other public facilities, and several others had passed legislation surpassing federal incentives or requirements for reducing energy use (May and Koski 2007). The image below (Fig. 3), created by the American Institute of Architects, shows 92 U.S. cities with over 50,000 residents have green building programs. By 2008, over 42 million people live in cities with green building programs.

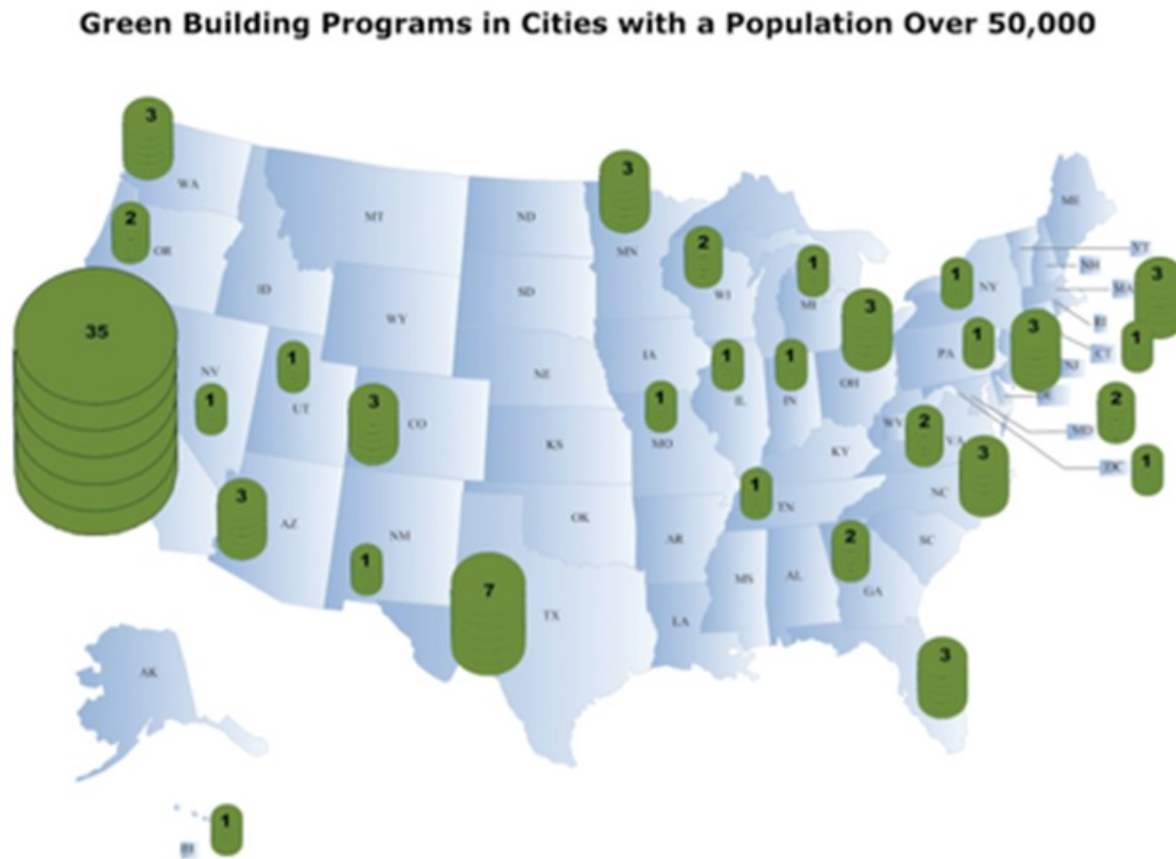


Fig. 3: Green building programs in cities with a population over 50,000 (Source: Jetson Green, 2008)

Cascadia Region Green Building Council: Living Building Challenge

In 2006, the Cascadia Region Green Building Council commissioned a study to obtain pricing information and building strategies for nine building types and four climate zones in the chapter's territory (which includes Oregon, Washington, Alaska, and British Columbia) to compare their findings to a set of buildings that had all achieved LEED Gold certification (Turner, 2006). The study examined the cost and methods used to create zero-energy buildings (that do not consume more energy than they produce), are able to harvest all water, treat wastewater on-site, and are constructed from locally-sourced building materials. These types of buildings are also referred to as "living buildings." The study found that given the rising costs of energy and water, living buildings *can* be built cost effectively in today's market economy.

Since then, the Cascadia Region GBC has launched a Living Building Challenge, which asks the building community in the Pacific Northwest to rethink how buildings are created, operated, and maintained. In 2009, Cascadia published two reports, funded jointly by Washington State and King County (Seattle is the county seat of King County), which identified code and regulatory barriers encountered by projects pursuing the Living Building Challenge (King County, 2012). The studies identified common obstacles within land use and building codes that affected project teams, and made recommendations for regulatory changes to remove the hurdles. Washington's building codes were not developed to permit living buildings. To remove this hurdle on a municipal level, that same year, the Living Building Challenge/Cascadia Region GBC, the Bullitt Center (a Seattle-based organization dedicated to creating sustainable marketplace transformations) and the City of Seattle developed and enacted a demonstration building ordinance for the City of Seattle, which allowed departures from the city's building code for buildings attempting to meet the strict performance standards of the Living Building Challenge (O'Brien et al., 2013).

Later that year, Washington State's Department of Ecology called for changes to the State Building Code, local building codes, and other state regulations to remove regulatory hurdles that prohibit or contradict green building policy. The City of Seattle also added another section to its building code in 2009 that regulates the energy-use features of new and remodeled buildings. Some of the code's extensive requirements are that builders must install a clear rooftop "solar zone" for future solar energy arrays in new building, and that existing buildings undergoing substantial alterations will be required to meet a specific degree of energy performance (O'Brien et al, 2013). Additionally, King County also updated the Sustainable Development section of its comprehensive plan to encourage the use of LEED and any other comparable green building standards in both the public and private sectors (King County, 2012). Through the marketing of its research and annual challenge, Cascadia has been able to advocate policy change in Washington State.

USGBC Northern California: Building Health Initiative

The Northern California chapter of USGBC has made great strides towards transforming green building in their respective region. The chapter is spearheading a movement to promote green buildings as a health concern. Its new Building Health Initiative brings together big-name partners like Adobe, Google, and Salesforce with contractors, architects, designers, and healthcare professionals (USGBC Northern California, 2014) that signed on and committed to a 20% reduction in energy, water, and waste by 2014. They intend to raise awareness about the health effects of the built environment, shifting the market in favor of products and services to promote human well-being with transparency about building materials, as many known ingredients in common building materials - such as flame retardants and formaldehyde, can cause serious health issues. The Initiative will proceed in two phases, beginning with the Building Health Challenge, in which participants pledge to promote conservation about health and buildings (USGBC Northern California, 2014). The second phase, which begins in 2014, will be a two-year program of actions to develop procurement practices that favor transparency in building materials and emerging standards, as well as educational efforts about the health effects of toxic building materials (Sullivan, 2013). This program is particularly innovative in the green building industry, as human health is rarely argued as the single major reason to convince the public to build green (USGBC Northern California, 2014).

Urban Green: Greener Greater Buildings Plan

The New York City chapter of the U.S Green Building Council is another successful and innovative chapter. At the request of the Mayor's Office, the Urban Green Council (New York's USGBC chapter) helped shape and enact New York City's *2009 Greener, Greater Buildings Plan* (GGBP), a comprehensive program to reduce greenhouse gas emissions from new and existing buildings. Legislation passed under the GGBP is expected to reduce the city's carbon footprint by nearly 5%. The regulations include:

- Local Law 84: Benchmarking: annual requirement to benchmark energy and water consumption
- Local Law 85: NYC Energy Conservation Code (NYCECC): New York City's local energy code
- Local Law 87: Energy Audits & Retro-commissioning: conduct an energy audit and perform retro-commissioning once every 10 years
- Local Law 88: Lighting & Sub-metering: by 2025, the lighting in the non-residential space will be upgraded to meet code and large commercial tenants will be provided with sub-meters (Urban Green, 2014).

The Energy Conservation Construction Code of New York State is now mandatory throughout the state. The code regulates the design and construction of buildings for the effective use of energy, while providing flexibility to allow the use of innovative approaches and techniques. The New York City Energy Code is even more stringent than the state code and works in conjunction with the other three laws of the GGBP to address greenhouse gas (GHG) emissions from the largest emitters. Buildings over 50,000 square feet represent only 2% of all properties in New York City, but account for half of the city's square footage and 45% of the city's total greenhouse gas (GHG) emissions. Taken together, the GGBP laws encourage energy efficiency in these larger buildings, whose owners have the financial, technical and administrative resources to implement these important changes (Urban Green, 2014).

Questions for Research and Key Data Sources

To achieve the ambitious goals of JRGBC's *Statewide Green Building Plan for Virginia*, the plan needed a comprehensive approach. Improvements must be made in how Virginia's government addresses green building policy, and green building literacy must be broadened across all segments of the community. To make informed planning recommendations for JRGBC's plan, the following questions were first addressed:

What is the current status of JRGBC as a non-profit organization with a focus on promoting green building awareness and education?

I addressed the data needs listed below to help develop a foundation for the planning process.

- What is the history of JRGBC?
 - ◊ This information was found on the JRGBC's website.
- What are JRGBC's member demographics?
 - ◊ When analyzing demographic forces, I first examined population and demographics of the current "green building" industry in Virginia. This data is needed because USGBC membership represents the core group and "first adopters" of green building innovation practices. The following information was obtained from USGBC's Annual Chapters Report (a publication that also contains each chapter's annual report).
 - ◆ What is the membership demographic breakdown? (i.e. How many LEED certified professionals, students, businesses, etc.)
 - ◆ What is the current state of membership?
 - ◆ Is the JRGBC membership base shrinking or growing?
- What educational programs are being implemented?
 - ◊ This information was found on JRGBC's website, as well as through conversation with JRGBC staff.
- What are JRGBC's key functional areas?
 - ◊ What are the organization's accomplishments? Are any of its programs successful?
- What are JRGBC's financials?
 - ◊ USGBC publishes an Annual Report of the Chapter's each year with information about each chapter's financial and membership data.
 - ◆ What is JRGBC's annual budget?
 - ◆ How much does it fundraise each year?
- What strategies are other USGBC chapters taking in order to change green building policy?
 - ◊ I examined five thriving USGBC chapters (USGBC-Illinois, USGBC-NC, Urban Green, USGBC Northern California, and Cascadia GBC) to determine the efforts they are taking to increase the number of green buildings. Such information was obtained from USGBC's website and through personal interviews with USGBC contacts.

What is the current status of green building in Virginia, and what factors hinder or encourage its use?

The current status of green building was primarily determined through interviews with green building professionals who work or have worked in Virginia. To identify the individuals that I needed to interview for this plan, I created a list of categories within the green building sector, in which I needed to make contacts. These categories (which were determined through consultation with JRGBC, as well as my own research and analysis of green building stakeholders in Virginia) included four broad categories: people associated with the building industry, policy experts, advocacy experts, and other Virginia-based green building organizations. From these four categories, I was able to branch out into other categories where I located other stakeholder groups, as indicated below in Fig. 4.

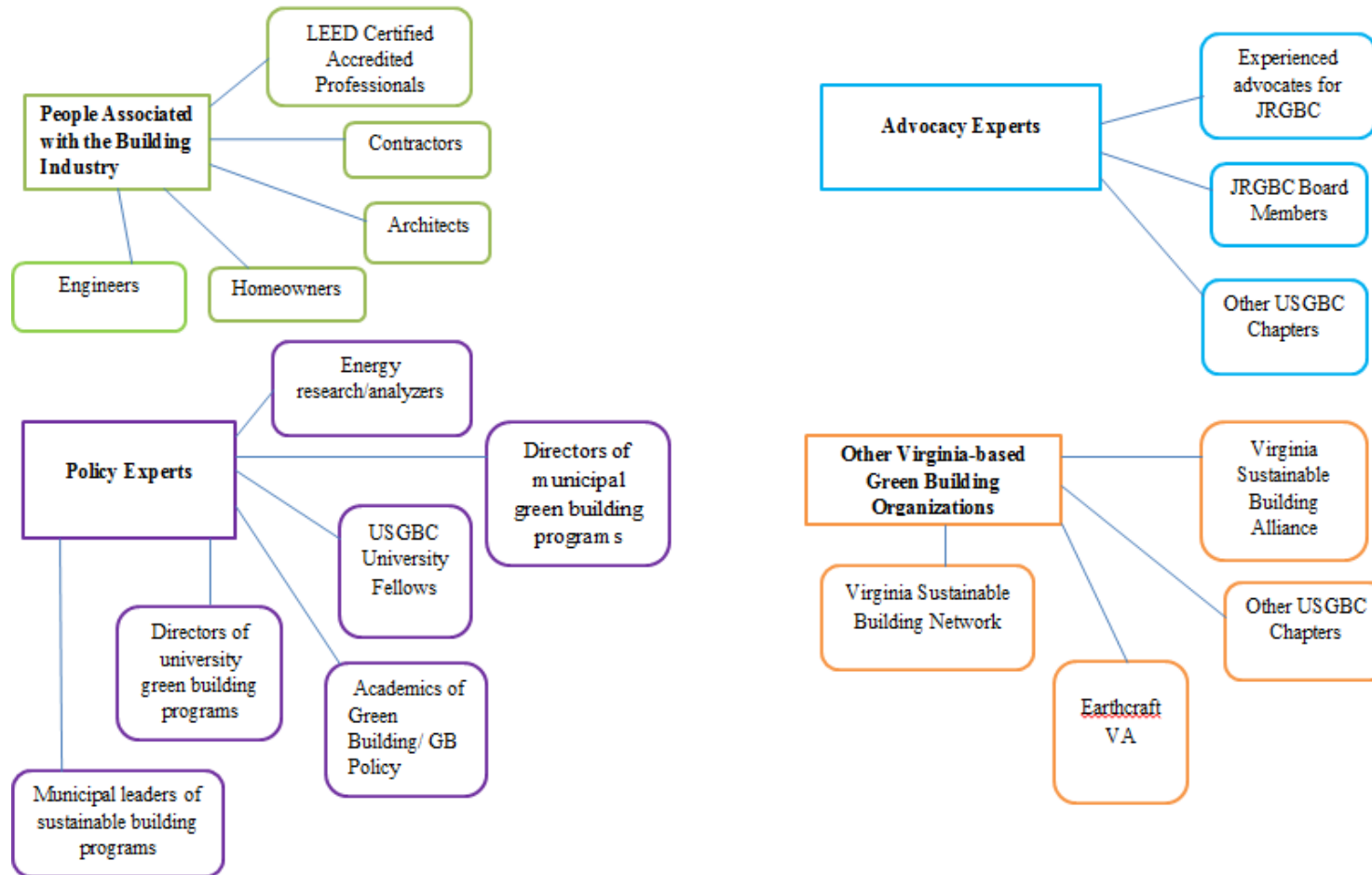


Fig. 4: Chart of major stakeholder categories that were considered when selecting interviewees (Source: Author).

Using this chart for guidance, I made a list of 90 contacts, of which 21 responded to my phone calls and emails to interview them for this plan.

I also conducted a gap analysis, which compared the performance of green building in Virginia to potential performance determined through research and stakeholder interviews. The gap analysis sought to: 1) to identify practices and policies proven to enhance reliance on green building practices; but absent in Virginia, and 2) to examine Virginia's current green building performance, and describe the gap between current performance and desired future goals to recommend actions that state agencies, local jurisdictions, and other stakeholders in Virginia can take to achieve total compliance with the model practices and policies. I then was able to assess Virginia's current green building market and made recommendations to place the state in a stronger position to foster and promote green building activities.

In what other areas could JRGBC work to expand green building in Virginia?

Interviews with board members, other USGBC chapters, and green building professionals working in Virginia provided ideas on how to increase JRGBC's reach.

In what ways can JRGBC influence green building legislation and policy?

Interviews with green building professionals in Virginia provided useful information on previous state-wide advocacy campaigns. I also researched how well green building policy can be incorporated with current policies, incentives, and standards in Virginia.

Roadmap to the Document

This section briefly describes the sections in the *Statewide Green Building Plan for Virginia*:

I. Findings

The next section of this plan provides current financial, membership, and program data about JRGC. The first sub-section describes the organization's key functional areas, as well as areas where the organization could improve. The next sub-section discusses the current green building policies that exist in Virginia. These findings, as well as other outside research and stakeholder interview input feed into the gap analysis, in which I discuss how current legislation in Virginia may either impede or encourage widespread green building usage. Finally, I report the results of my stakeholder interviews, in which I discussed various green building topics with 18 members of the green building sector in Virginia and 3 in Illinois, Oregon, and North Carolina.

II. The Plan

The final section of the document is a detailed three-to-five year action plan that includes strategies organized under four guiding principles: 1) Create supportive and collaborative partnerships; 2) Guide municipal and state decision-makers towards the pursuit of green buildings; 3) Increase community education and awareness; and 4) Chapter development. Although presented as different themes, they are interrelated and mutually supportive, with each theme carrying equal importance for promoting green building strategies in Virginia. Each principle includes a list of strategies for implementation. Finally, an implementation table describes the organizations responsible for each objective, as well as an estimated cost and timeline for each.

II. Findings

JRGBC: Current Status

History

The James River Green Building Council began in October 2001, when a small group of concerned members from Richmond design firms began regular meetings to discuss a range of topics within the building industry, with particular focus on environmental and social issues (JRGBC, 2014). By fall 2003, the group discussed forming a local chapter of the USGBC, and by late fall, decided to establish a chapter. Through the winter months into 2004, members met monthly to discuss chapter goals and establish vision and mission statements, gaining endorsement from the members to establish a foundation for the James River Chapter (JRGBC, 2014).

JRGBC Financial and Administrative Breakdown

In 2013, the chapter had an expense budget of \$134,406, a significant decrease from the \$190,000 of 2010 (USGBC, 2013). Most of its revenue came from events the organization hosted, and most was spent on its sole full-time staff member, a common feature of many small, similar non-profit organizations. As of 2012, the chapter had 247 members, a slight decrease from past years. Since 2004, JRGBC has had 125 volunteers who have contributed approximately 2,500 hours towards education programs, advocacy campaigns, and other projects. JRGBC, however, has made no legislative contacts in Virginia's state legislature, and has put on only one advocacy campaign, letters and outreach, that has directly affected green building policy. Its major educational programs include a monthly educational luncheon series in Charlottesville, where a green building professional gives a presentation about a green building topic, as well as a green schools mentorship program, called Connect the Dots, where JRGBC volunteers educate interested public schools in the Central Virginia region about how they enact green building/energy-efficient practices. Mentors work with selected teachers and students for 5-6 months to plan and implement low-cost sustainable projects. Through its 14 different membership and educational programs, in 2012, JRGBC reached a total of 1,620 people (USGBC, 2013).

Summary

From the above findings, we can conclude the following about the current state of JRGBC:

JRGBC's Strengths

- A solid and committed volunteer base
- A solid foundation in educational programming

JRGBC's Weaknesses

- Minimal number of advocacy programs
- Declining membership over time
- Declining expense budget over time

State Overview

As of 2014, Virginia ranks 12th in population with about 8.3 million inhabitants (Gunter, 2014). Its most populated regions are the Washington DC, Hampton Roads, and Richmond metropolitan areas. The UVA Weldon Cooper Center for Public Service found that between 2012 and 2013, most urban localities in Virginia experienced above-average growth, representing a change from the previous decade (Gunter, 2014). As illustrated in the table below, Fredericksburg City, Loudoun County, Arlington County, Alexandria City, and Falls Church City are among the localities growing at the fastest rate (Gunter, 2014). All are located within the Washington DC Metropolitan Area.

Table 2: Fastest Growing Localities in Virginia

Source: (Weldon Cooper Center for Public Service Demographics Research Group, 2014)

Locality	2010 Census	2013 Estimate	Numeric Change	Percent Change
Fredericksburg City	24,286	27,945	3,659	15.1%
Loudoun County	312,311	347,969	35,658	11.4%
Arlington County	207,627	227,146	19,519	9.4%
Alexandria City	139,966	151,218	11,252	8.0%
Falls Church City	12,332	13,315	983	8.0%

In a number of cases, population and population density appears to be highly correlated with sustainability policies (Lubell et al. 2009). Researchers found that highly populated and/or very densely populated cities in California’s Central Valley create an increased level of development and strain on resources which in turn generates a need for sustainability measures (Lubell et al., 2009). As Virginia’s population grows, greening the built environment—the buildings themselves as well as how and where they are sited—will help jurisdictions reduce consumption of energy and conserve natural resources.

As indicated by the Fig. 3 below, Virginia’s population is expected to increase by nearly 2 million people (from 8.3 million in 2014 to over 10 million in 2040) in the next 25 years, further illustrating the immense need for green building in the Commonwealth (Fig. 5 depicts the different regions of Virginia and provides context for Fig. 6, which illustrates the past and projected population growth trends for each region).

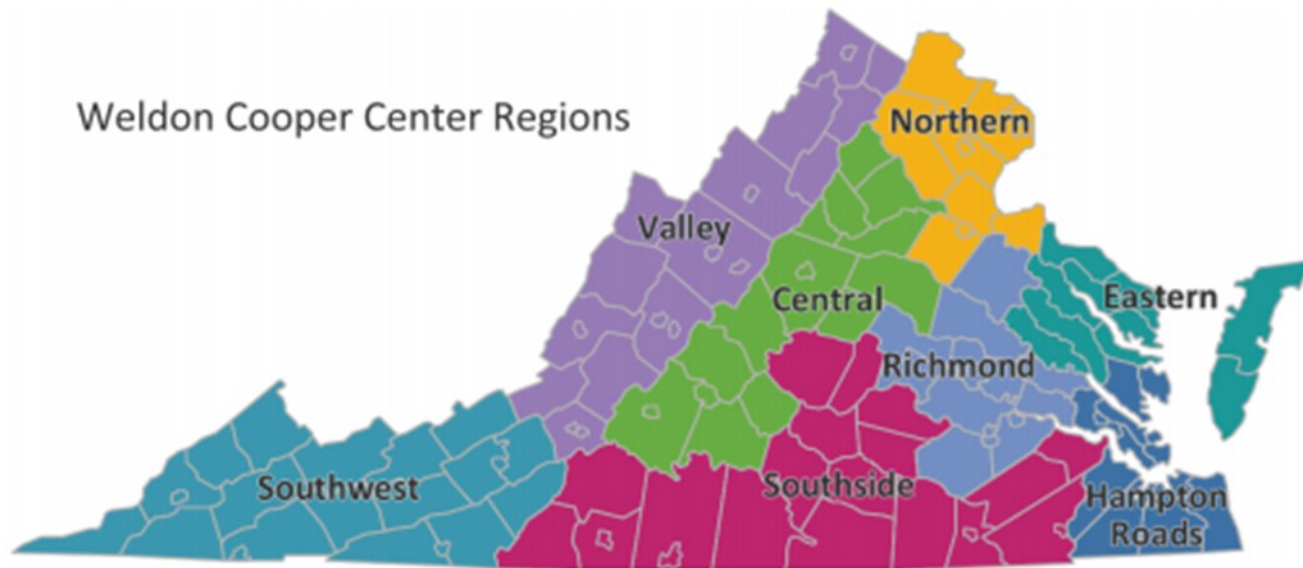


Fig. 5: Different regions of Virginia (Source: Weldon Cooper Center for Public Service, 2014)

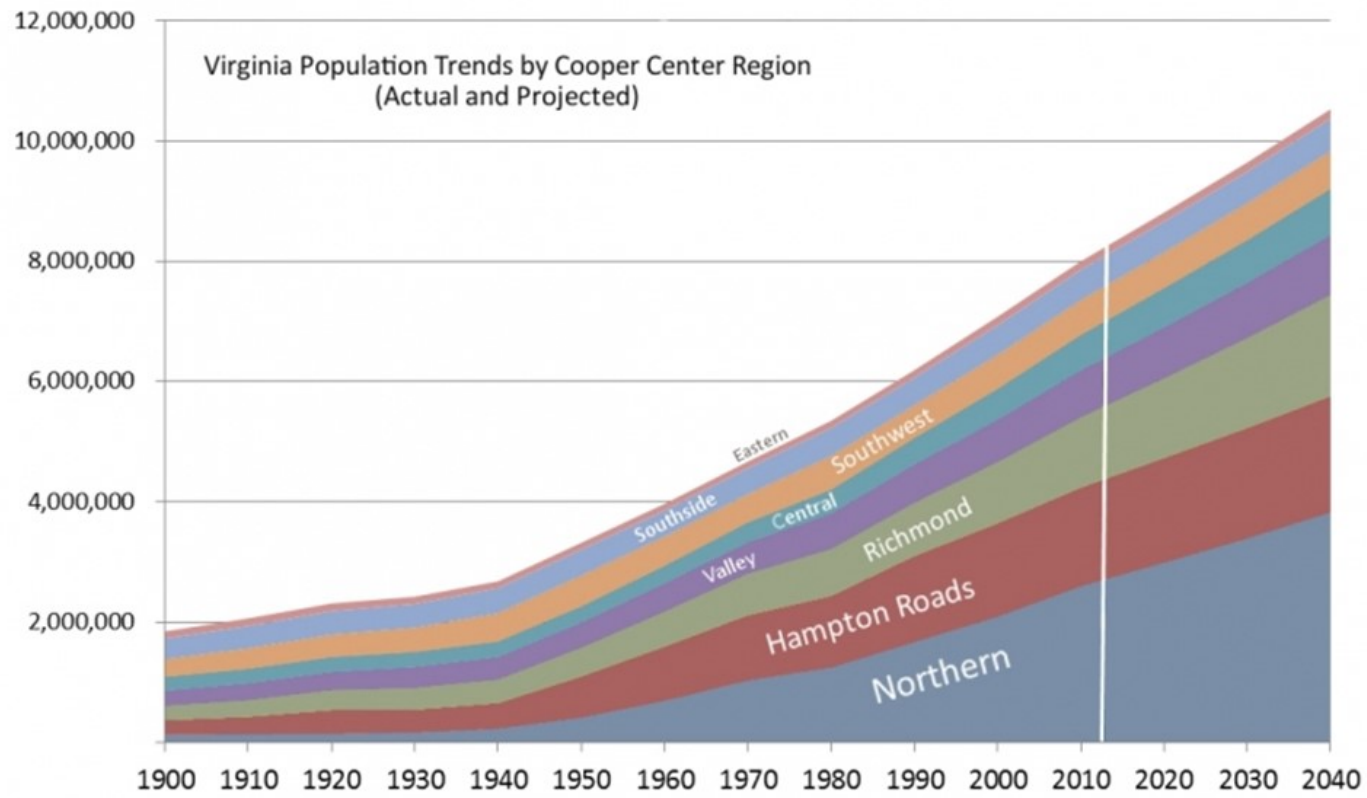


Fig 6: Projected Population Trends for Virginia (Source: Weldon Cooper Center for Public Service, 2014)

Green Building Policy in Virginia

In 2009, Former Governor Timothy Kaine released Executive Order No. 82, which required all executive branch agencies and institutions entering the design phase for the construction of buildings over 5,000 square feet, or renovations with costs over 50% of the building value, to meet energy and water conservation standards (Hughes, 2009). All such buildings had to comply with LEED silver or Green Globes (an alternative green building rating) two-globe standards. The executive order also offered explicit direction with regard to procurement, use of fuel-efficient vehicles, energy efficiency in government, and other matters (Hughes, 2009). In 2012, Former Governor Bob McDonnell turned this commitment into formal policy by signing the High Performance Buildings Act (U.S. Department of Energy, 2014).

Virginia does not abide by a green building code. The Virginia Uniform Statewide Building Code (USBC) is a state regulation promulgated by the Virginia Board of Housing and Community Development, a Governor-appointed board, to ascertain minimum regulations to standardize construction and maintenance of buildings (Davis, 2014). The USBC is based on model codes developed by the International Code Council (ICC), which has developed the International Energy Conservation Code, and recently launched an initiative to develop an International Green Construction Code, focused on new and existing commercial buildings (Beatley, 2008). Table 3 lists other major statewide policies and regulations relative to green building:

Table 3: Major Virginia Green Building Policies and Regulations

(Source: U.S. Department of Energy, 2014)

Policy	Year Passed	Description
Mandatory Utility Green Power Option	2007	Provides that electricity customers in Virginia must have the option to purchase 100% renewable energy from their utility provider.
Energy Efficiency Resource Goal	2007	Electric industry providers are required to have an energy efficiency goal of 10% electricity savings by 2022 relative to 2006 base sales.
Solar Rights	2008	Community associations in Virginia generally may not prohibit a homeowner from installing or using a solar energy collection device on their property.
Voluntary Renewable Energy Portfolio Goal	2009	Allows investor-owned utilities to meet up to 20% of a renewable energy goal through certificated research and development activity expenses related to renewable energy and alternative energy sources.
Voluntary Solar Resource Development Goal	2011	All utilities are required to provide a link on their web site to a web site where customers can make contributions to the Voluntary Solar Resource Development Fund, which is used to provide loans for residential, commercial, or nonprofit solar energy projects.

As of January 2014, there were 726 LEED certified green buildings and 1,057 Energy Star certified buildings in Virginia (GBIG, 2014). As indicated in Fig. 7, the number of LEED certified buildings peaked in 2012:

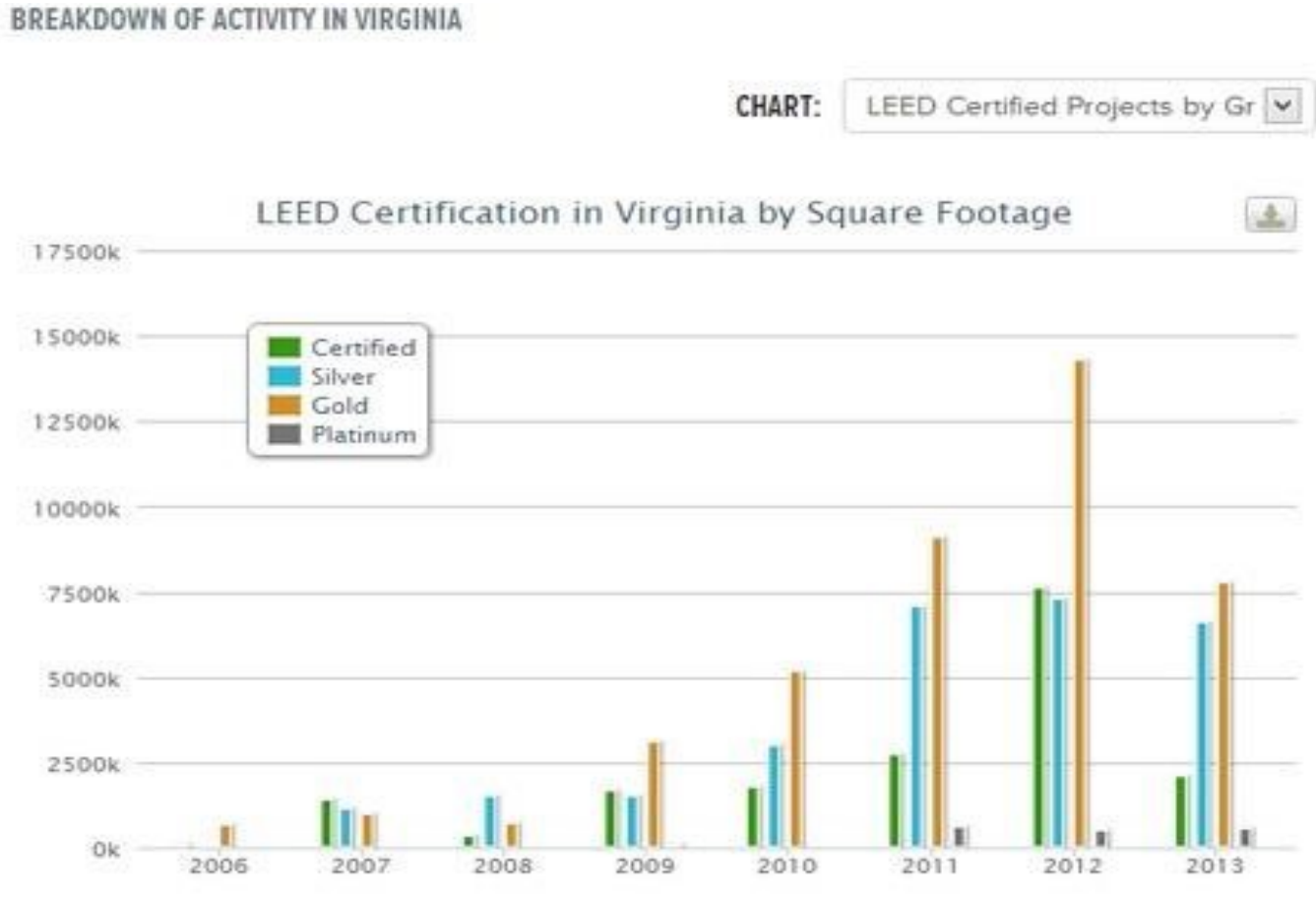


Fig. 7. Breakdown of Green Building Projects in Virginia by Sq. Footage. (Source: GBIG, 2014)

A map of green buildings in Virginia (Fig. 8) depicts where most of the activity has been concentrated (most of it being in Northern Virginia), with each dot representing a LEED certified building:

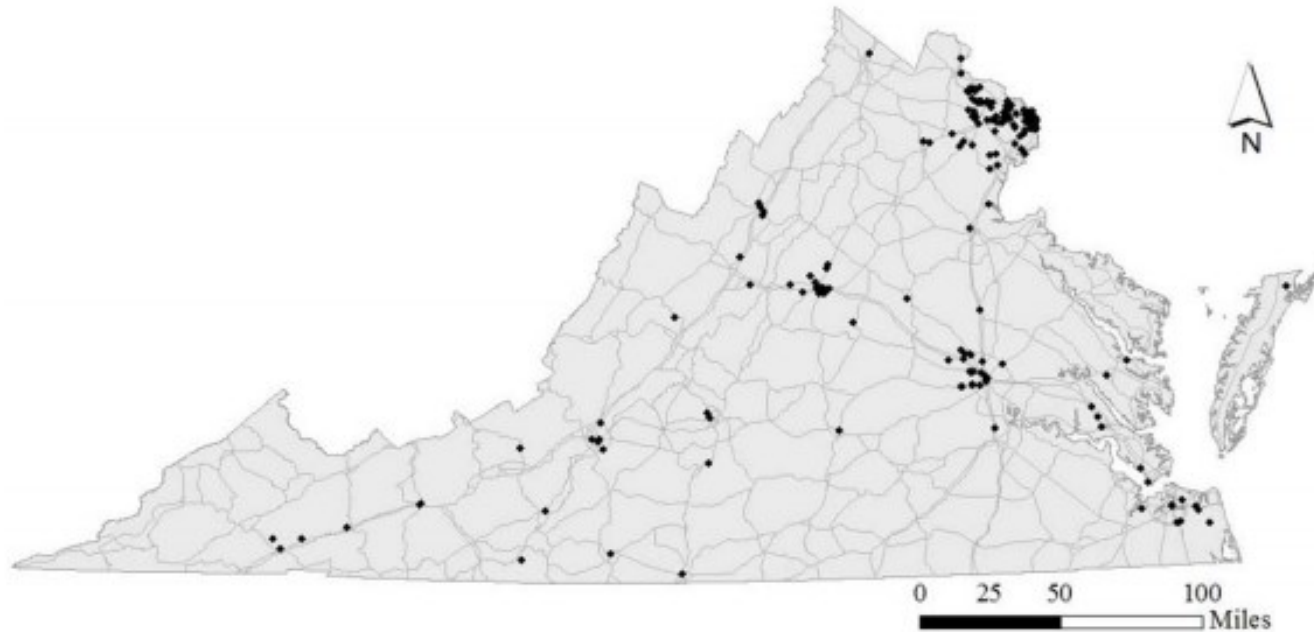


Fig. 8. Map of Green Buildings in Virginia as of 2013 (Source: USGBC Idaho, 2013).

State and Local Incentives

In Virginia, the General Assembly has authorized localities to incorporate “incentive zoning” into their local zoning ordinances, thus allowing the use of increased project density or other benefits and bonuses to a developer that provides certain features or amenities desired by the locality, such as energy-efficient building design (Via, 2010). As depicted in Fig. 8 above, most of the green building activity is concentrated in northern Virginia.

Arlington County has encouraged a significant number of LEED certified projects through incentives tied to bonus densities. Fairfax County issued a policy that all county buildings over 10,000 square feet must reach LEED silver certification, but this policy excludes single-family homes, townhomes, or low-rise, multi-family buildings. The City of Alexandria recently issued a requirement that all new developments requiring a site plan or special use permit must achieve a LEED silver or equivalent rating for non-residential developments and a LEED certified rating for residential development (Hughes, 2009). The following sub-sections provide a more in-depth review of all of the green building policies and programs implemented by local governments in Virginia:

Arlington County

Arlington County rewards private development projects that achieve LEED Silver certification or higher. The county uses a tiered benefit system rewarding projects that strive for the highest LEED certifications with the most generous density bonus (American Institute of Architects and the National Association of Counties, 2012). In addition, participating projects must report energy usage to the County for 10 years. Projects may also request a small amount of additional density in exchange for a commitment to achieve LEED for Existing Buildings Operations and Maintenance or ENERGY STAR building certification (AIRE, 2014). Fig. 9 below depicts program participation. As indicated by the chart, the number of green building approved dropped during 2009 to 2010, but that most likely can be attributed to the global economic recession and associated lack of building activity. Over time, participation generally has increased.

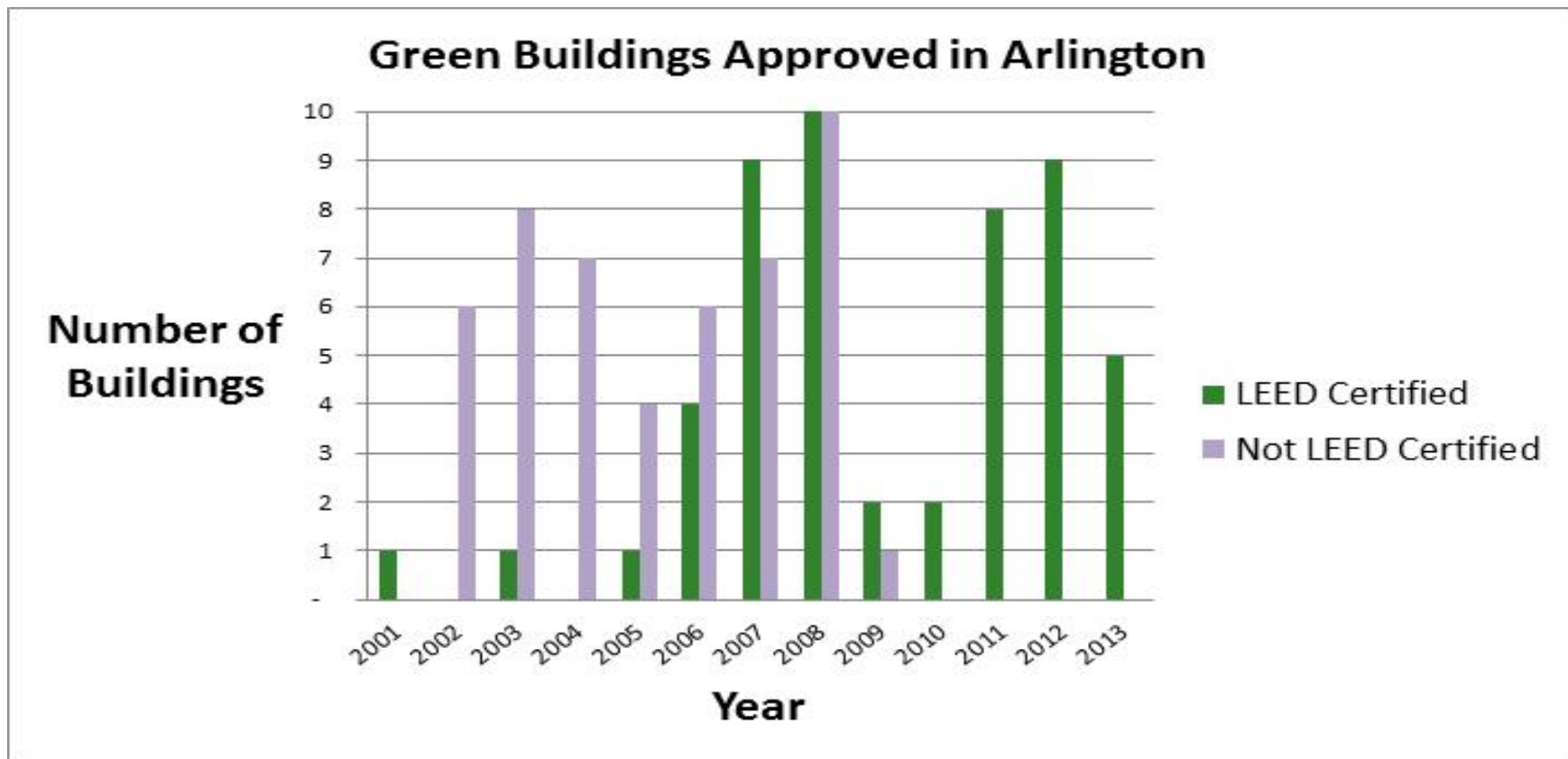


Fig.9: Building Participation. (Source: AIRE, 2014).

Fairfax County

After pledging to reduce its greenhouse gas emissions by 80% by 2050, in December 2007, Fairfax County adopted a Green Building Policy Plan Amendment to its Comprehensive Plan. The plan encourages green building throughout the county through incorporation of green building practices and the fulfillment of certain planned development uses in the Comprehensive Plan (Fairfax County, 2008). To meet the county's sustainability goals, the county mandates that all municipal government buildings over 10,000 square feet must reach Silver level LEED certification. The policy applies to the construction of new county buildings and renovations or additions to existing buildings. The policy excludes county-constructed single family homes, townhouses and low-rise multi-family buildings, which instead use Energy Star rating system (Fairfax County, 2008).

City of Alexandria

In 2009, the City of Alexandria adopted a green building policy, which establishes baseline green building standards for new private sector construction and provides a framework for implementation. The policy requires LEED Silver or comparable green building standards for new commercial construction and LEED Certification or comparable green building standards for residential construction (City of Alexandria, 2014). Mayor William D. Euille joined with 935 mayors who endorsed and signed the 2005 U.S. Mayors Climate Protection Agreement, committing Alexandria to meeting or exceeding the Kyoto Protocol greenhouse gas reduction targets through the use of local land use planning (City of Alexandria, 2014). Officials in each of these cities have publicly recognized global climate change as a legitimate local concern and have committed themselves to addressing that threat by controlling local GHG emissions (Betsill, 2001).

City of Virginia Beach

For over a decade, the Virginia Beach City Public School System (VBCPS) has pursued initiatives to become a leader in sustainability education. In 2012, the U.S. Green Building Council selected VBCPS as the Best Green School District in the United States based on initiatives such as developing a sustainable building infrastructure, integrating sustainable practices throughout the school division, and educating the public about sustainability (VBCPS, 2014). As of 2014, nine school facilities have achieved LEED Certification or higher. Each school has a Sustainable School Liaison tasked with increasing sustainability awareness throughout the school division (VBPS, 2014). Through their leadership, many elementary, middle, and high schools have developed programs or clubs addressing the issue of sustainability (VBPS, 2014).

Stakeholder Interviews

Twenty-one different interviews were conducted with green building professionals across the Commonwealth (except for three interviewees, based in North Carolina, Illinois, and Oregon). Those who gave input included everyone from an executive director of a green building construction business to a professor of green building at Virginia Polytechnic Institute and State University. Incorporating stakeholder interviews into the analysis process helped identify attributes important to green building professionals in Virginia, while also assessing the general climate of the green building market in Virginia. I developed a set of open-ended questions in order to allow for varying opinions and input about the status of green building and green building policy in Virginia.

Nine of the questions related to professionals' opinions and experience with green buildings and green building policy in Virginia. Every respondent was either currently involved with a green building project or initiative or had been in the past. The motivations for green building projects varied with every respondent, but most related to energy efficiency and improved quality of life. The products and services to meet green building goals differed among respondents, ranging from using recycled building materials to using construction software, the most cited being the use of a LEED consultant (4 out of 21) to help guide them through the construction and application process. Respondents said they will definitely use all mentioned products and services again.

According to interviewees, a major issue to passing green building policy in Virginia is the belief that green buildings cost significantly more to build. Likewise, it is a challenging proposal for the Commonwealth to mandate that commercial businesses build green. Chris Earley, the Principal of Greening Urban, a Richmond-based civil engineering and green infrastructure firm, and member of the City of Richmond's Green City Commission complained that "politics and ignorance are two major barriers because the government and people are scared of change" (Earley, 2014). Another interviewee, Annette Osso, President of the Virginia Sustainable Building Network (VSBN) and former board member of USGBC National Capital Region, also stated that "Dominion Power controls the state legislature in Virginia and they are not supportive of renewable energy at all" (Osso, 2014). She suggested getting business leaders who may have had a positive experience with green building involved with advocacy efforts, as business interests have a strong influence on Virginia's legislature (Osso, 2014).

The single biggest opportunity in relation to the green building industry in the future (according to 4 respondents) was real-time electricity use/ cost energy meters. Jerry Walker, Henrico County's Energy Manager and former Board Chairman of VSBN, believes that opportunities for green building in Virginia will arise as young people entering the workforce "understand that we cannot survive as a species without change" (Walker, 2014). Virginian state and local governments should pursue minimum green building goals, State and City project requirements for green building practices, and State and Local tax incentives.

Most respondents feel that green building would not become more mainstream (mainstream meaning a large percentage of buildings built to green building standards) for 5 to 10 years. Steven Luck, the Director of Construction for Habitat of Humanity of Greater Charlottesville (which builds only Energy Star Earthcraft rated homes), believes green building already is mainstream. “Green building is already highly valued, and there is a viable market,” he said (Luck, 2014). Four interviewees doubted green building would become commonplace within 25 years. Emily Scolfield, Executive Director of USGBC-North Carolina wrote that “more than 50% of all construction is now considered green construction...USGBC needs to promote these facts and do all it can to educate the public on the benefits of green building and ways to achieve green communities” (Scolfield, 2014). Chris Earley noted green building is already common practice in Northern Virginia, but definitely not in the rest of the state. As head of a Richmond-based civil engineering firm that specializes in green infrastructure, most of his company’s projects are in Northern Virginia and Washington DC. “I would be starved if I did all of my projects in Richmond,” he joked (Earley, 2014). “The South is scared of change, of anything labeled as green” he said (Earley, 2014). Ideally, all respondents would like to see green building as a standard practice in Virginia, and something that homeowners demand from a new home. One respondent brought up that he would like to see a “green” standard design for an average home (ex: a \$220,000 green home). Another respondent mentioned wanting local governments to have the courage to do the most they can in regards to green building given the political realities (that are generally against spending money on green building). Four doubted green building would become commonplace in 25 years.

When asked to describe programs to build public support for green building, 7 out of 21 suggested education programs or campaigns that highlight innovation in the green building industry. Brian Imus, the Executive Director of USGBC-Illinois cited a recent, successful example where he featured a net-zero energy Walgreen’s. The event turnout was extremely high, with many compliments, which Imus attributed to the building being an extremely innovative project that people could actually experience. A few respondents (3 out of 20) suggested an educational event that offered an opportunity to talk with people who have helped make significant and successful green building progress. Annette Osso stressed the importance of engaging and educating school districts and universities about green building, because as institutions of innovative-minded young people, they are more likely than local governments to create green building initiatives. She suggested that JRGBC host an annual state conference for K-12 public schools and higher education centered on green building practices, innovation, and successes. “Schools often get competitive when they see all the wonderful green things one school is doing, which can encourage them to work on their own innovative green building initiatives. A conference like this gets people motivated.” (Osso, 2014).

I also asked some of the stakeholders with experience in advocacy about successful past strategies. Jerry Walker, Energy Manager for the County of Henrico and Chairman of the Virginia Sustainable Building Network, had been involved with advocating the High Performance Buildings Act (passed in 2009). His advice was to “stay on point, and do not let up pressure” (Walker, 2014) when advocating for green building policy. Brian Imus cited education as a key advocating strategy, as “raising public awareness by demonstrating projects that work can change public perception about renewable energy, and in turn create a movement towards policy changes” (Imus, 2014). Annette Osso agreed, stating “Education is advocacy. Public support for a cause gets politician’s attention” (Osso, 2014).

Gap Analysis

This gap analysis identifies practices and policies proven to enhance reliance on green building practices; but which are absent in Virginia, and examines Virginia's current green building performance, and describes the gap between current performance and desired future goals to recommend actions state agencies, local jurisdictions, and other stakeholders in Virginia can take to achieve total compliance with the model practices and policies. Research links three major concepts with having more green buildings: the presence of climate action plans, green building codes, and education about green building. Assessment of Virginia's green building performance by those criteria revealed vital disparities in the market hindering the state's ability to foster and promote green building activities.

Climate Action Plans

Local governments must be included in efforts to mitigate climate change. Although the political emphasis has primarily been on developing an international response to global warming through the negotiation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol, countries will not be able to meet the commitments contained in these agreements without the assistance of city governments (Betsill and Corell, 2001). Correspondingly, a growing number of municipal governments are joining global efforts to mitigate climate change through the control of GHG emissions.

Municipal governments assist by preparing a local climate action plan that tracks community-wide greenhouse gas emissions by conducting a baseline inventory of emissions by source (Bassett and Shandas, 2010). Equipped with this knowledge, municipalities can better target programs to address these sources (Pitt, 2010). In most of these municipalities, local policies and programs to control GHG emissions are generally motivated by recognizing these activities contribute to other objectives, such as saving money, reducing local air pollution, enhancing alternative transportation, and promoting an enhanced quality of life for community members (Betsill and Corell, 2001). Research has also found that localities that establish climate action initiatives as a priority are more frequently associated with having more green buildings, as the goals of both are often interrelated (Mason, Marker, and Mirsky, 2011). Climate action plans establish a need for green buildings, and often implement the framework to incorporate green building practices at a municipal-wide level.

As of 2014, over 1,000 U.S. localities have signed on to U.S. Conference of Mayors Climate Protection Agreement, committing to take action to reduce GHG emission and alleviate global climate change (Pitt et al., 2012)(The US Conference of Mayors, 2014). Unfortunately, of those that signed on, only 11 (or 1%) are from Virginia. Furthermore, only five Virginian local governments have developed and adopted climate action plans:

Table 4: Virginian Localities with Adopted Climate Action Plans
 (Sources: Georgetown Climate Center, 2014; City of Charlottesville, 2014; Arlington County, 2014).

Locality	Year Adopted	Name of Plan/Initiative
Fairfax County	2007	Environmental Improvement
Arlington County	2007	Community Energy Plan (CEP)
City of Alexandria	2009	Energy and Climate Change Action Plan
City of Charlottesville	2009	Charlottesville City Council Vision 2025: A Green City
City of Virginia Beach	2009	City of Virginia Beach 2009 Comprehensive Plan- Policy Document

Climate action planning is absent from Virginian localities, as well as in other states, because conservative interest groups strongly oppose the global warming predictions of mainstream climate scientists (Dunlap and McCright, 2008). Government action on the topic is often risky for political leaders and may undercut community support for the climate action planning processes. Another common barrier is the long-term funding requirements of climate action policies and programs. To ensure that short-term decisions do not prevent long-term options, planning for 50 to 100 years in the future is often necessary (McCarney et al., 2011). This can present a significant challenge for municipal governments as decision-makers struggle to weigh the long-term resilience and sustainability needs of their localities against short-term and more immediate needs. Lack of administrative capacity can also be a major obstacle of climate action planning. If the individuals responsible for the implementation of the plan do not have the technical capacity nor the time to gather and analyze the necessary data, the implementation of climate action objectives can be extremely difficult (Pitt and Randolph, 2009). A final obstacle to climate action planning activities is that in Virginia, and many other Dillon's rule states, state laws prohibits local governments adopting energy efficiency requirements stronger than those in their respective state-wide building codes (Pitt and Randolph, 2009).



Fig. 10 Norfolk, VA is increasingly experiencing the effects of climate change and rising sea levels.
 (Source: Weeks, 2012).

Green Building Codes

In the United States, state and local governments adopt building codes. The process differs from state to state, but in most cases, codes are adopted through a legislative process, a regulatory process, or a combination of both. Every state is unique in how it conducts business and creates policy, and each state requires its own strategy for developing the best possible code for its local governments, citizens, and businesses. Research in Arizona has found that green building plans are frequently denied approval with code officials and code users, due to the lack of recognized standards, test results, or other technical data to support the ability of the green building alternative to meet the intent of the code (Eisenberg et al., 2002). This type of problem generally results from lack of information or prior experience, lack of expertise to judge the technical merits, and lack of time to research or analyze the green building alternative (Eisenberg et al., 2002).

With the release of the first public versions of the International Green Construction Code (and ASHRAE Standard 189.1 as a jurisdictional compliance option), there is now a green building code baseline jurisdictions can consider. When adopted and implemented as mandatory, these codes can provide regulatory oversight of a spectrum of measures that can lessen the impact of our buildings on human and environmental health, while also taking advantage of energy, water and resource efficiency (USGBC, 2011). For example, in 2011, Maryland became the first state to adopt the International Green Construction Code (IGCC) by all local governments across the state (USGBC, 2011). Schaack and Bendor (2011) found that the number of states adopting building and energy codes to improve building energy efficiency is gradually increasing, as over 500 cities have begun enacting policies geared toward reaching or exceeding the Kyoto Protocol energy efficiency (Schaack and Bendor, 2011). In any case, green building codes are crucial tools for tapping into the potential of the built environment to help us achieve a safer, healthier, more efficient and environmentally responsible world (USGBC, 2011).

As mentioned previously, Virginia's current building code is the 2009 USBC/ICC. There are several advantages to adopting and using a national model energy codes or standard like the USBC. For example, the International Energy Conservation Code (IECC), which is a part of the USBC, offers design and construction guidelines based on regional climates, providing states and jurisdictions with sustainable building techniques designed for their precise needs. The IECC also provides states and jurisdictions support for successfully adopting, implementing, and enforcing an energy code, through administrative provisions governing the use of the code and establishing requirements for the enforcement of the code (Department of Housing and Community Development, 2011). The USBC is updated every three years by the International Code Council (ICC), and states are required to report and certify to the U.S. Department of Energy whether it is appropriate to update their building codes to meet the newest requirements. If it is not appropriate, they have to explain why (Laustsen, 2008).

Virginia adopted the 2009 codes, but lags behind other states like Florida and Rhode Island when it comes to regularly updating codes to most recently issued standards. As of spring 2014, it is updating the codes to 2012 standards, mostly because the Board of Housing and Community Development abides by a code change process where committees of stakeholders convene for 25-40 meetings during a 18-month period to approve code changes and reach consensus (U.S. DOE, 2014). This process also does not occur until the latest code revision has been issued for at least one year. So usually it takes at least three years before Virginia's code is officially updated, and usually by that time, the next update has been issued.

Code revisions typically result in stricter energy codes. Regularly updating state building energy codes to reflect the latest editions of the ICC can lead to extensive energy and GHG emissions savings across the state (Northeast Energy Efficiency Partnerships, 2012). Fig. 10 shows millions of metric tons of carbon emissions reductions and trillions of BTUs (British thermal unit), a unit used to measure energy output) in energy savings achievable for states with the later residential code:

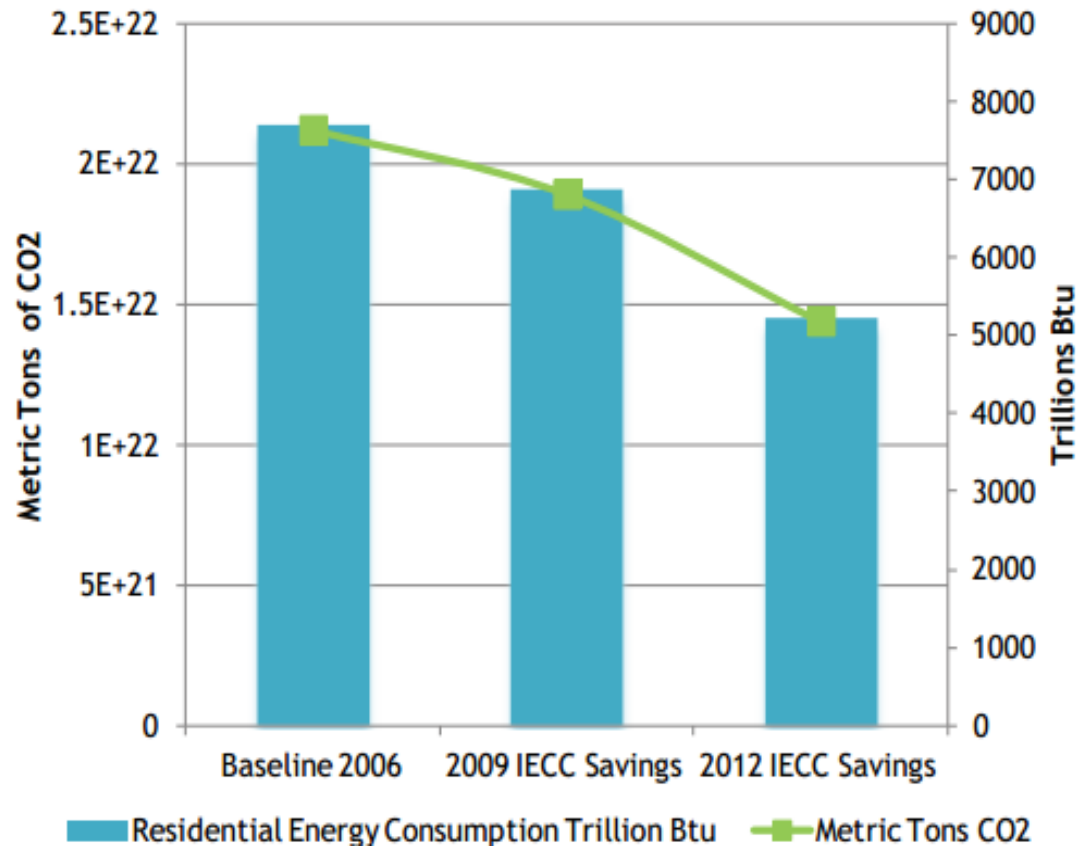


Fig. 11: U.S. Residential Sector Energy Consumption Estimates (Source: Northeast Energy Efficiency Partnerships, 2012)

Research has found that state measures to mandate the updating of state energy codes every three years to coincide with the release of national codes are more effective at increasing energy efficiency than reliance on market based outcomes, such as the rising cost of fossil fuels (Nelson, 2012). An automatic update provision, allows for modifications to the national codes, but also makes sure that state codes do not become outdated due to a lack of legislative or agency attention (Nelson, 2012). Furthermore, one of the easiest methods that a state government can take to increase energy efficiency and ensure that all new construction and renovation is built to much higher energy efficiency and safety standards is to adopt an automatic update provision (Osso, 2014).

Education about Green Building

In Virginia, the significant lack of local policy and incentives outside of Northern Virginia also suggests that green building is not as widespread and exposed as it could be. As noted above, a major barrier to green building policy change is the perception that green buildings cost significantly more to build (Cupido et al., 2010). Further reasons for a major lack of green building practices are: resistance by established builders to change and learning new techniques, administrative and logistical difficulties of the green building certification process, and code enforcement officers and building inspectors unfamiliar with green building standards. (Schaack and Bendor, 2011).

Stressing the importance of green building can strengthen support for it. Educating the construction community is important because research has found that if builders and developers in a region adopt green building practices to meet the needs of one type of building owner, they are likely to maintain those practices on other projects (Cidell, 2009). It is not a coincidence that areas of the country with more LEED APs also tend to have more green buildings (Cidell, 2009). By developing LEED education programs, JRGBC can help expand the current market in Virginia for green building services.

Schaack and Bendor find that education and outreach are critical components of a virtuous cycle of green building activity (Schaack and Bendor, 2011). The authors found a strong correlation between the presence of major universities in an area with a green building initiative and higher green building activity levels (Schaack and Bendor, 2011). One explanation is that sustainability planning often serves as a meeting point for universities and local governments to collaborate and work together. Frequently, universities look to state and local governments to fund their green building efforts. In Atlanta, Emory University presents an example of a positive relationship that can grow from sustainability planning (Ried, 2008). Since it began its green building in the early 2000s, Emory has received much applause from the city. As a result, Atlanta has asked them to participate and assist with the city's own efforts- including testifying for the city's green building ordinance that was recently passed (Ried, 2008).

Local governments can also coordinate with advocacy groups to provide education and community outreach. Critical factors in initiating and sustaining a virtuous cycle of green building activity in areas gradually transitioning to green building efforts, such as in most of Virginia. Regional cooperation and information sharing are essential for the successful creation and implementation of green building policies by local governments. Just as the benefits of green building extend beyond the borders of any one county or municipality, so too should the efforts to promote it (Schaack and Benton, 2011). Local and regional advocacy groups (such as JRGBC) and local governments need to expand communication efforts between one-another.

Gaps Found in Virginia

Based on the above research, including the input from the stakeholder interviews, we can conclude the following about disparities in the state's green building situation:

Gap #1: As of 2014, only 11 Virginian municipalities had signed the U.S. Conference of Mayors Climate Protection Agreement, committing to take action to reduce GHG emission and alleviate global climate change through climate action plans and programs, and **only 5 localities (out of 134) have developed and adopted climate action plans.**

Gap #2: Virginia's Board of Housing and Community Development **has not approved a Building Code that considers energy efficiency, nor have they updated to the most current USBC standards.**

Gap #3: Regarding the considerable lack of green building policy at both the local and statewide levels of Virginian government, there is likely a **significant lack of awareness in the state regarding green building.**



Fig. 12: Virginia has potential to lead the United States with green building efforts, if these gaps are recognized by policymakers, as well as the general public. (Source: Katz, 2013).

III. The Plan

With a proper understanding of the state of current building policy and practices in Virginia, the following plan is based on a vision of increased awareness of the benefits of green building throughout the entire Commonwealth, and stricter green building codes and policy. In achieving this vision, goals, objectives, and implementation strategies are provided.

Vision Statement

The vision of this plan is as follows: The James River Green Building Council will lead the transformation of the way buildings and communities are designed, built, and operated in Virginia, thus enabling an ecologically and socially responsible, healthy, and prosperous environment that improves the quality of life for all residents. JRGC will use education, advocacy and community outreach to support the development of sustainable buildings and communities. With these changes in place, Virginia will become a recognized national green building leader.

Goals, Objectives, and Implementation Strategies

The following goals, objectives, and implementation strategies seek to capitalize upon JRGC's identified strengths to maximize awareness of green building and advocate for policy that will promote green building strategies throughout Virginia. Successful implementation of this five-year action plan will foster a more economically and energy efficient built environment for the people of Virginia. The goals and objectives are organized under four broad themes: 1) Establish supportive and collaborative partnerships; 2) Guide municipal and state decision-makers towards the pursuit of green buildings; 3) Increase community education and awareness; and 4) Chapter development. Although presented as different elements, they are interrelated and mutually beneficial, with each theme equally important for promoting green building strategies in Virginia.



Fig. 13: Vancouver's Olympic Village development is an example of a successful, thriving community of green buildings (Source: The Architect's Newspaper, 2010)

Theme I: Create Supportive and Collaborative Partnerships

Goal 1: Establish the framework for an advocacy campaign.

Objective 1.1: Create a Green Building Advocacy Committee to assist and oversee advocating efforts outlined in Goal 2.

Strategies:

- Work to establish new partnerships and strengthen existing partnerships with organizations that can assist the James River Green Building Council with advocacy committee interviews.
 - ◇ Contact potential representatives from higher education institutions, businesses, and the public sector across the state to ask to oversee campaign (8-10 representatives would be ideal).
 - ◆ Group will assist the committee with communications between JRGBC's Board/Staff and the Public/Community.
 - ◇ Establish metrics to track effectiveness of annual advocacy agenda. Track laws passed, local ordinances updated, and plans created.
 - ◆ Create a database of past successes and future goals and track how policy changes have positively affected local communities, municipalities, and the Commonwealth of Virginia.

Objective 1.2: Establish multiple legislative contacts.

Strategies:

- Make connections with members of Virginia's General Assembly to gauge interest in support and assistance with the advocating objective in Objective 2.2.
 - ◇ Request and schedule a meeting to discuss the member's priorities on green building and energy efficiency, inform them about USGBC and LEED, brief them on the chapter's activities in the community (JRGBC will have a "who we are" fact sheet on hand) and will support them on state green building policymaking.
 - ◇ It will be advantageous to frame advocacy in terms of how the issues can be realized for positive economic impact and creation of green jobs., so legislators can understand the broad effects of green building on other areas than the environment and health.



Fig. 14: The Virginia State Capitol, in Richmond, where the General Assembly convenes. (Source: Lascalea, 2031)

Theme II: Guide municipal and state decision-makers towards the pursuit of green buildings.

The following goal addresses the gap found regarding climate action plans and updated building codes in the Commonwealth of Virginia.

Goal 2: Design and launch a green building advocacy campaign in Virginia.

Objective 2.1: Ask for Virginia's largest localities to create their own Climate Action Plans

Strategies:

- Develop a climate-action plan advocacy agenda that targets municipal governments in Virginia
 - ◇ Establish strong partnerships with environmental organizations in Virginia (examples include Earthcraft VA and Virginia's local chapter of the Sierra Club)
 - ◇ Arrange meeting with municipal leaders as soon as possible to gauge their interest in advocating in creating a climate action plan.
 - ◆ Provide education/awareness/understanding to government leaders and other key stakeholders on green building standards and rating systems.
 - ◆ Address how a climate-action plan may assist in achieving other government goals, such as reducing public building costs.



Fig. 15: A public engagement meeting regarding a climate-action plan in Ann Arbor, MI (Source: Stafford, 2012)

Objective 2.2: Advocate provision that mandates automatic updating of the Uniform Statewide Building Code.

Strategies:

- JRGBC will develop an advocacy agenda to ensure that the all of the latest code revisions and energy standards are adopted immediately.
 - ◇ Create partners within Virginia’s business community that have been positively affected by green building or energy- efficient practices.
 - ◇ As a newly formed collaborative partnership (JRGBC Advocacy Committee, business community, and legislative contact), convene, mobilize and inspire elected officials, organizations, and governmental employees to implement the public policies needed to promote green buildings.
 - ◆ Provide understanding and awareness to government leaders and other key stakeholders on the need for energy-efficient codes and green building standards and rating systems.
 - Organize a green building tour, showcasing an innovative energy-efficient building in Virginia (Ex: The Chesapeake Bay Foundation’s net-zero headquarters in Virginia Beach, VA).
 - ◆ Coordinate an advocacy day for USGBC members at Virginia’s State Capitol that focuses on encouraging lawmakers to support an automatic update provision to the Uniform Statewide Building Code.
 - 3-6 months in advance:
 - ⇒ Solicit initial volunteers using social media and emails to members and Virginia’s green building community.
 - ⇒ Select a day and time.
 - 2 months in advance:
 - ⇒ Schedule rooms and schedule legislative appointments.
 - ⇒ Advertise for volunteers through JRGBC website, emails to members and Virginia’s green building community, social media, and flyers posted at major Virginian universities.
 - 1-3 weeks out:
 - ⇒ Confirm volunteers for event, as well as nametags.
 - ⇒ Organize materials that support advocacy agenda.
 - Post advocacy day:
 - ⇒ Follow up with lawmakers within one week of meeting and publish press statement/pictures on JRGBC website on event.
 - ◇ Create an initiative that encourages the Governor of Virginia to create an executive order that mandates automatic updating of the Uniform Statewide Building Code adoption process, for buildings to be constructed at the highest possible standards.
 - ◇ Support municipal and state policies and legislation that adopt energy-efficient policies, standards, or codes.
 - ◇ Engage and collaborate with USGBC nationally on building code advocacy issues.

Theme III: Increase community education and awareness

The following goals (3 and 4) address the gap found in Virginia regarding awareness about green building and its benefits.

Goal 3: Expand educational and outreach opportunities for the construction industry and local government sector.

Objective 3.1: Establish education opportunities for aspiring LEED professionals in the building industry.

Strategies:

- Offer basic green building training, LEED Green Associate and Accredited Professional education, including LEED credential exam preparation workshops, to Virginia's rapidly diversifying green building industry.
- Supplement these with online offerings and practice exams.



Fig. 16: Construction workers breaking ground for a LEED-certified home in Wichita, KS (Source: Bauer and Son Construction, 2009).

Objective 3.2: Create a virtual Local Government Resource Center

Strategies:

- The Local Government Resource Center will be a free online resource for Virginia local governments and their employees to obtain important and accurate information on a wide range of green building topics.
 - ◇ Accessible through a page on JRGBC's website
 - ◇ Displays multiple links to:
 - ◆ Current green building policies and incentives in Virginia
 - ◆ Virginia legislative framework for enacting incentives
 - ◆ Links to USGBC State and Local Government Toolkit documents

Local Government Resource Center



Fig. 17: North Carolina USGBC's online local government resource page offers white paper, articles, case studies, legal documents, and USGBC toolkit documents on its virtual local government resource center (Source: USGBCNC, 2014).

Goal 4: Improve awareness among citizens regarding the economic and environmental benefits of green building.

Objective 4.1: Serve as a resource to promote green building for colleges and universities throughout Virginia

Strategies:

- Establish relationships with and provide support to existing USGBC Student Chapters
- Help lead the creation of new USGBC Student Chapters at Virginian universities through collaboration with college/university administration, faculty, staff and students.
 - ◊ Put universities in contact with Virginia's regional manager of USGBC's Center for Green Schools
 - ◆ Contact each university's sustainability director or similar position via phone, email, or in-person visit, explaining the need for an USGBC Student Chapter at their institution.
 - ◆ Regional chairs can help with training, recruiting, planning and overall assistance, such as finding a faculty advisor and writing by-laws for the student organization.
- Showcase the USGBC Student Chapters on website.
- Stay in contact and offer assistance with USGBC Student Chapter events, such as a campus sustainability education day or recycling drive.



Fig. 18: A member of Boston University's USGBC Student Chapter spreads awareness about the organization to fellow students (Sustainability at BU, 2014).

Objective 4.2: Host an annual one-day expo that displays the work of some of the industry's most innovative leaders in Virginia and along the East Coast.

Strategies:

- Along with displaying innovative green building design and construction work, the exposition will host expert seminars, which will provide those attending with information on topics like water, waste and materials, refurbishing and retrofit, design, and renewable energy.
 - ◇ Create partnerships with green building businesses and organizations, universities, public schools, and local governments. Partnerships are crucial to hosting a large-scale event such as an expo. As many partners as possible will be ideal, but having a partnership with at least one local government/ local government agency, green building organization, universities, and business will be sufficient.
 - ◆ Partners can also be possible presenters at the expo.
 - ◇ Contact possible speakers from regional or local businesses and universities.
 - ◆ Secure a keynote speaker (nationally-recognized, if possible), as well as 3-4 other speakers.
 - ◇ Secure a location, date, and time for exposition.
 - ◇ Hire a student intern to help market the event via social media, website, flyers, etc.



Fig. 19: A presenter at green building expo, hosted by USGBC (Source: www.usgbc.org, n.d.)

Objective 4.3: Continue and strengthen JRGC's Connect the Dots Green Schools Mentorship program

Strategies:

- Partner green professionals with schools to create no-or-low cost sustainability programs.
 - ◇ Host a semi-annual Connect the Dots mentor training workshop for interested members/volunteers.
 - ◆ Mentors will provide sustainability expertise and guidance at their assigned school.
 - 4 hours per month during the school year.
 - 3 in-person school visits.
 - ◇ Each Mentor team will be assigned to a grade level or classroom for the duration of a school year, and will select a low or no cost (\$250 or less) project to work on during that period.
 - ◆ Possible projects could include planting a rain garden or improving a school's existing recycling program.
 - ◇ Support the school's application process for the U.S. Department of Education's Green Ribbon Schools Award, which recognizes and awards schools that are exemplary in reducing environmental impact and costs; improving the health and wellness of students and staff; and providing effective environmental and sustainability education (U.S. Dept. of Ed., 2014).



Fig. 20: Students participating in a green schools educational program in Arkansas (Source: USGBC Arkansas, 2013).

Objective 4.4: Engage Virginia’s business community with a year-long energy efficiency challenge.

Strategies:

- Challenge local businesses to improve energy efficiency, conserve water and reduce waste with a Green Business Challenge
- Business will be advised to track their energy and water use through resources like EPA’s Portfolio Manager and tracking waste reduction through EPA’s WasteWise Program, and report monthly totals to JRGBC
- Boast results to the community at large via JRGBC’s website and social media



Fig. 21: A sign posted outside a business’ window in Charlottesville indicates it is participating in a regional energy efficiency and sustainability challenge hosted by Better World Betty and Local Energy Alliance Program (LEAP) (Source: Better Business Challenge, 2014).

Objective 4.5: Host an annual one-day Green Schools Summit conference for Virginia’s K-12 public school systems, private educational institutions, colleges, and universities.

Strategies:

- The Green Schools conference will celebrate the innovative green building and energy-efficiency practices that school(s) have initiated. This event will incorporate six to eight 30-45 minute presentations from individual schools or school systems that highlight the green building measures they have taken.
 - ◇ 3-6 months in advance:
 - ◆ Select a day, time, and location for event.
 - ◆ Create list of K-12 public schools systems, private education institutions, colleges, and universities, and advertise the event through invitation to event.
 - ◇ 2 months in advance:
 - ◆ Schedule speakers/presentations for conference
 - ◆ Schedule a caterer to provide refreshments post-conference.
 - ◇ 1-3 weeks out:
 - ◆ Confirm attendees and keynote speakers for event, as well as nametags for attendees
 - ◆ Organize equipment/materials needed, like a Powerpoint projector
 - ◇ Post event:
 - ◆ Post pictures from event on website
 - ◆ Thank attendees via email for attending the conference



Fig. 22: A presentation at the annual Arizona Higher Education Sustainability Conference. (Source: AASHE, 2014).

Theme IV: Chapter development

Goal 5: Develop and sustain the growth of the chapter.

Objective 5.1: Increase chapter membership to 600 by 2019 by increasing membership 20% per year each year over the next 5 years.

Strategies:

- Identify and communicate the value and benefits of chapter membership to potential members and established members.
- Continue to provide educational programming and events that maximize membership value, including tiered pricing and free sponsored events for members.
- Provide robust member engagement opportunities on key chapter initiatives and programs.
- Consistently pursue member and sponsor feedback and input through interviews and surveys to inform the continuous development and communication of membership and sponsorship benefits.
- Measure the number of new members each month and track the source of membership (e.g. event, program, etc.)
- Evaluate and expand member services when needed

Implementation

The following table is an implementation schedule that assigns objectives to an organization(s), identifies potential financial costs to carry out each objective, and recommends the year in which the objective should be started. This schedule should be used by JRGBC as a guideline for the prioritization of objectives and strategies. The actor(s) listed as responsible for each objective are considered to be necessary parties in the completion of any given strategy. Below the implementation schedule is a table of organizations that serve as potential collaborative partners for a number of strategies.



Fig.23: JRGBC members with smiling faces at a membership event (Source: JRGBC, 2014).

Table 5: Implementation Schedule

Strategy	Responsible Actor(s)	Estimated Cost*	Time Frame
1.1	JRGBC Staff and Board	Small	Immediately (Less than 1 year)
1.2	JRGBC Staff, Board, and GB Advocacy Committee	Small	Short-term (1 to 2 years)
2.1	JRGBC's staff, Board of Directors, and GB Advocacy Committee	Medium	Short-term (1 to 2 years)
2.2	JRGBC GB Advocacy Committee	Small	Short-term (1 to 2 years)
3.1	JRGBC Staff	Medium	Immediately (Less than 1 year)
3.2	JRGBC Staff	Small	Immediately (Less than 1 year)
4.1	JRGBC Staff and Volunteers	Small	Immediately (Less than 1 year)
4.2	JRGBC Staff (and intern) and Board, volunteers, and partners	Large	Long-term (3-5 years)
4.3	JRGBC Staff and Volunteers	Small	Short-term (1 to 2 years)
4.4	JRGBC Staff	Small	Short-term (1 to 2 years)
4.5	JRGBC Staff and Board	Small	Short-term (1 to 2 years)
5.1	JRGBC Staff and Board	Small	Long-term (3-5 years)

*Estimated Cost = Small (\$0-10,000) Medium (\$10,001-20,000) Large (greater than \$20,001)

Conclusion

The author of this plan encourages the James River Green Building Council to move forward with the recommended actions outlined in this Plan as quickly as possible. By pursuing the tactics discussed above, it is clearly possible to implement recommendations that will leverage the power and potential of a green building movement in the Commonwealth of Virginia. Virginia can become a progressive and flourishing center of green building and legislation.

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III. Appendices

Appendix A.

JRGBC 's Current State (Source: USGBC, 2013)

Year Founded	2004
Average Membership Attendance at an Event	116 (#42 out of 77 USGBC chapters)
Expense Budgets	
2013	\$134,406
2012	\$114,778
2011	\$117,800
2010	\$190,000
2009	\$165,000
Membership/Contacts	
2012	247
2011	263
2010	263
2009	263
Regular Members	109
Contacts on Email Lists	3,021
Advocacy	
Legislative Contacts	0
Policies Influenced	1; JRGBC advocated for the High Performance Building Act to be signed into legislation in 2012.
Past Advocacy Programs	Letter Campaign and Outreach

Education and Programming

Quantity of Programs	14
Advocacy	2
Emerging Professionals	0
Membership	6
Green Schools	3
Education	3
Trade Shows and Conferences	0
Major Events	0
Total People Reached	1,620

LEED Statistics in Virginia

Total LEED Professionals	1,315
LEED Projects Registered	53
LEED Projects Certified	36

Staff and Volunteers

Board Members	13
Full-time staff	1
Committees	11
Volunteers	125
Total Volunteer Hours Donated in 2012	2,500

Social Media Platforms

Twitter, Facebook, Yammer, Linked-In

Appendix B: Stakeholder Interviews

Stakeholders Interviewed:

Adrian King, Capital Project Manager and Architect with the City of Alexandria's Department of General Services

Bryna Dunn, AICP, Director of Environmental Planning & Research, Mosely Architects, Richmond, VA

Emily Scofield, Executive Director of USGBC North Carolina

Matthew Trowbridge, MD, MPH, Mark Ginsberg Sustainability Fellow at U.S. Green Building Council and Assistant Professor at University of Virginia Health System in Charlottesville, VA

Don Summers, Principle Capital Projects Manager for the City of Richmond, VA

Megan Zanella-Litke, LEED AP, Sustainability Coordinator at the University of Richmond

Robert L. Smith, Department Head, Ph. D., Associate Dean and Professor of the Department of Sustainable Biomaterials at Virginia Tech, Blacksburg, VA

Bill Greenleaf, Executive Director of the Richmond Region Energy Alliance and Board Member at Virginia Energy Efficiency Council, Richmond, VA

John Dunlap, LEED AP, Founder and President of Dunlap & Partners Engineers, Richmond, VA

K.C. Bleile, Executive Director of Earthcraft Virginia

Alisa Kane, Green Building Manager for the City of Portland, Oregon

Brian Imus, Executive Director of USGBC-Illinois Chapter

Parker Long, LEED Green Associate, Sustainability Reporting and Outreach Coordinator at VCU Goes Green, Virginia Commonwealth University Facilities Management, Richmond, VA

Melissa Ingram, Member of Hampton Roads Sustainable Living Expo Executive Committee, Virginia Beach, VA

Chris Earley, LEED AP+, Principal of Greening Urban and member of the City of Richmond's Green City Commission

Jerry Walker, CEM, LEED AP, Energy Manager for the County of Henrico and Chairman of the Virginia Sustainable Building Network's Board of Directors, Henrico, VA

Tyler Orton, Project Innovation Coordinator for the Office of Sustainability at George Mason University, Fairfax County, VA

Annette Osso, LEED AP, Executive Director of the Virginia Sustainable Building Network and former Board Member of USGBC-National Capital Region, Arlington, VA

Jordan Starbuck, LEED AP, Sustainability Coordinator for Virginia Commonwealth University, Richmond, VA

Larry V. Schoff, P.E., Principal of Energy Efficient Solution and Treasurer of the Virginia Sustainable Building Network, Blacksburg, VA

Steven Luck, Director of Construction, Habitat for Humanity of Greater Charlottesville

Stakeholder Questions Asked:

(Note: answers in bold were most commonly mentioned by respondents).

1. Are you currently involved with a green building project or initiative? If not, have you been in the past?

All but two respondents answered “Yes” to both questions. The outlier stakeholders had been involved with green building efforts in the past, but were not at the time I called him.

2. What were your green building goals for this project? What drove your decision-making?

A myriad of answers were provided to these questions:

-Energy efficiency

-LEED certification (LEED silver most common goal)

- Improved indoor air quality

-Health and wellness

-Aesthetics

-Cost-efficiency for residents

-Discover ways in which buildings can foster physical and social health

-Owners wanted a LEED-certified building

-Finding how to make a building as sustainable as possible

-Trying to get homeowners to make their home 20% more energy-efficient

-Educate other about green building opportunities

-Long-term goals for energy use

-Goals regarding green building design standards

-Finding a better way to construct buildings to use less energy, have better facilities, and meet building codes

-Informing the public about innovate green building projects going on

-Educating universities about what they should be doing to meet green building goals

-Grant funding for project had specific guidelines for construction project

3. *What were the most important products and services you used to meet those goals? Would you use these again? Why or why not? (optional)*

--LEED or other green building consultant

- Building science
- RESNET (Residential Energy Service Network)
- Energy Modeling
- Building commissioning so it can operate as designed
- Sustainable/recycled products such as carpet, lumber, paints, steel
- Recycled construction debris
- High-energy efficient HVAC equipment
- Low energy lighting
- Public transportation
- Auditor

Most respondents would use same criteria in the future because they were helpful and/or easily achievable.

4. *What do you see as the biggest barriers to the green building industry in Virginia (or in general)?*

-Perception that green building is expensive

-Lack of awareness

- Low utility rates in Virginia

- Construction firms (have a lot of say if building is “green” or not)
- Myth about timber credit (not all Sustainable Timber certifications are ecologically preferred)
- Promoting LEED as the premiere green building system
- Perception of governments that green building will increase construction costs
- Other states (not Virginia) make better financial cases for green building
- People don’t care about green building
- Confusing standards
- Complexity of standards- requires a lot of paperwork and time to apply for certifications
- Lack of dialogue about green building
- Politics and ignorance
- The fact that a green building isn’t necessarily sustainable even if it is LEED certified, because human action inside the building (turning off lights, saving water, etc.) can “make or break” a green building.

5. *What do you see as the biggest opportunities in the green building industry in the future?*

- Real-time energy use meters

-Sitework Products

-Interior Finishes

-Assistance with Environmental Product Declarations (EPD)

-LEED consultants experienced in LEED v4

-Products and services that help teams achieve LEED v4 credits

-Recycling

-Variable flow refrigerant systems

-Front-load controls

-Smart plaques (display energy consumption)

-Energy efficient distribution transformer (if every energy transformer followed energy efficient standard, America could save nine days of electric generation annually)

-Subtle things that homeowners can do to make house more energy efficient for not much upfront cost (ex: installing insulated windows).

6. *What can/should the State of Virginia (or your current state of residence) or your locality do to support green building professionals and the industry?*

-Minimum green building goals

-State and City project requirements for green building practices

-State and Local tax incentives

-Require new buildings to meet green building standards

-Advocate against bills that attempt to ban the use of LEED

-Advocate against bills that weaken current building or energy codes

-Promote green building and smart growth policies

-Public awareness campaigns

-Education of engineers and architects

-Simplification of green building standards

-Showcasing green building innovation in Virginia

-Supporting green building in community colleges

-Financial support for communities that rely on coal (the interviewee gave the example of the state promoting other forms of economic development in the region other than coal, so the community is not so economically dependent on the coal industry)

-Strengthen its current green building policies

-Limit costs of LEED professional certifications and seminars

-Every municipality should create a full-time position for an energy analyst

-Reach out to the business community to fund green building projects

-Push for green building education for people of all ages (city/county public schools, universities, businesses, etc.)

-Mandatory green building education programs for building industry professionals

-Create sustainability MBA programs at Virginia universities

7. *What types of educational programs do you believe to be most effective to spread public awareness about the benefits of green building?*

-Health campaign (tie it to green building)

-Residential education program

-Educational posters

-Youth education programs in schools

-Talks with building designers (showcasing innovation)

-Opportunities to talk with people who have helped make significant and successful green building progress

-Technical knowledge

-Free lecture series

-Explaining what makes something a “green building”

-Showcasing projects that work

-Educating consumers why paying more up-front costs for an energy efficient product can save money in the long run

-Continuing education for contractors

8. *What, in your opinion, is a realistic time frame for green building to become more mainstream in Virginia (or your current state of residence)?*

For this question, I got answers ranging from 0 to 20 years. Most answers, however, ranged from 5-10 years. An interviewee from North Carolina wrote that “more than 50% of all construction is now considered green construction....USGBC needs to promote these facts and do all it can to educate the public on the benefits of green building and ways to achieve green communities.” Another interviewee simply answered “as soon as people get realistic.”

9. *What would you ideally like to see for future of green building in Virginia (or your current state of residence) or your locality?*

- Continued support for building LEED
- Showcasing innovation
- Green City Commission
- Less support and reliance on coal
- Green building as a standard practice
- Green practices for all renovations and new buildings
- Something homeowners want (ex: I won't buy house unless green)
- More like Portland, Oregon
- Standard design for average home (ex: a \$220,000 green home).
- Communication and dialogue about green building
- The maintenance of LEED certification at a local government level
- A progressive political structure that is open to green building policy
- More revitalization done to existing older buildings in Richmond
- Half of Virginia's government building stock as LEED-certified or Green Globes rated
- Continuing education required for contracting licenses

10. *Anything else you would like to add (as time allows)?*

- Showcase green building programs
- Green K-12 schools
- Health initiatives will be the next big marketing campaign for green building

-JRGBC's biggest advocacy achievement was sitting in on 4 or 5 Virginia legislative sessions to get High-Performance Building Act passed in 2012, that states that any executive branch agency or institution entering the design phase for the construction of a new building greater than 5,000 gross square feet in size or the renovation of a building shall be built and designed in compliance with either LEED or Green Globes standards

Appendix C: Guide to Potential Partners, Projects, and Contacts

Plan Partners	Potential Collaboration	Benefits to JRGBC and Virginia
JRGBC Advocacy Committee	Advocacy resource <i>Goals 1 (1.2) & 2 (2.1 and 2.2)</i>	Strengthened networks with legislative partners in order to implement green building policy in VA
State and local government agencies in VA	Legislative resource <i>Goals 2 (2.1 and 2.2) and 3 (3.2)</i>	Realistically able to address and implement green building policy through open conversation and dialogue with all parties involved
Virginia newspapers and news media	Marketing assistance (image, messaging, branding, and outreach) <i>Goals 2 (2.1, 2.2) & 4 (4.1, 4.2)</i>	World class marketing of green building efforts; Strong networks with creative professionals to market the benefits of green building in Virginia
VCU Sustainable Communities Institute Meghan Z. Gough 804-827-0869 mzgough@vcu.edu	University partner for JRGBC <i>Goals 2 (2.1, 2.2) & 4 (4.1, 4.2, 4.3)</i>	Credible research and planning free of charge through student interns; Advocacy partner
VCU School of Urban and Regional Planning I-Shian (Ivan) Suen 804-828-2721 isuen@vcu.edu	University partner for JRGBC <i>Goal 4 (4.1, 4.2, 4.3)</i>	Credible research and planning free of charge through student interns; Professional Plan or Public Participation project to develop and enhance community connections
USGBC Students – University of Richmond Megan Zanella-Litke 804-287-1268 mlitke@richmond.edu	University partner for JRGBC <i>Goals 2 (2.1 and 2.2) & 4 (4.1, 4.2, 4.3)</i>	Credible research and planning free of charge through student interns; Advocacy partner
Local public school and higher education systems	Educational partners <i>Goal 4 (4.1, 4.2, 4.3)</i>	Host green building exhibition; Collaborate with green building education initiatives
EarthCraft Virginia KC McGurren 1431 West Main Street 804-212-1895 kc.mcgurren@earthcraftvirginia.org	Advocacy resource and collaborative partner <i>Goals 1 (1.2), 2 (2.1, 2.2) & 4 (4.2)</i>	Collaborate with green building advocacy and education initiatives

Plan Partners	Potential Collaboration	Benefits to JRGBC and Virginia
<p>National Capital Region U.S. Green Building Council</p> <p>Emily English 101 L St., NW, 5th Floor Washington, DC 20037 eenglish@usgbncr.org</p>	<p>Advocacy partner</p> <p><i>Goals 2 (2.1, 2.2)</i></p>	<p>Collaborate with green building advocacy efforts at the statewide level.</p>
<p>Hampton Road U.S. Green Building Council</p> <p>Errol F. Plata, Jr. P.O. Box 3813 Norfolk, VA 23514-3813 757-214-6732</p>	<p>Advocacy partner</p> <p><i>Goals 2 (2.1, 2.2)</i></p>	<p>Collaborate with green building advocacy efforts at the statewide level.</p>
<p>Virginia Chapter Sierra Club</p> <p>422 East Franklin Street, Suite 302 Richmond, VA 23219 804-225-9113</p>	<p>Advocacy Partner</p> <p><i>Goal 2 (2.1)</i></p>	<p>Collaborate with advocating for climate action plans for Virginia municipalities.</p>
<p>The Hampton Roads Sustainable Living Expo</p> <p>Melissa Ingram 2435 Princess Anne Road, Building 16 Virginia Beach, VA 23456 757-263-1090</p>	<p>Possible collaborative partner</p> <p><i>Goal 4 (4.2)</i></p>	<p>Collaborative partner with green building exposition.</p>

