Executive Summary:
Arlington County recently completed and approved an ambitious Community Energy Plan ("CEP" or the “Plan”) after a lengthy and rigorous development and review process. This paper, proudly developed by Smart Green Initiatives (SGI), is a review of Arlington County’s CEP and implementation plan. SGI is a five-person consultancy team from Virginia Tech’s Executive Master of Natural Resources (XMNR) program.

The CEP outlines a vision for a comprehensive plan to produce a sustainable community through a series of six goals that will reduce the County’s overall carbon emissions, improve energy security, advance economic prosperity and competitiveness, and ultimately demonstrate the County’s commitment to environmental integrity and a healthy and productive community. This vision will be achieved by implementing actions towards six goals. For the purposes of this review, SGI has completed a strategic analysis of the CEP’s goals and policies and recommends that the County initially focus its efforts on buildings, where over three quarters of all energy is consumed in Arlington.

SGI then undertook a stakeholder analysis and identified the top audiences for the County to educate, engage, and incentivize to take action. This paper is organized by the following stakeholder groups and includes a brief summary of the opportunity, key messages, and current and potential tools to employ in achieving substantial carbon reductions through buildings with each audience:

1. Building Developers
2. Building Owners, Asset Managers and Property Managers
3. Business Community (Building owners and Tenants)
4. Residents (Homeowners and Tenants)
5. Government: Arlington County Operations

A full copy of the Arlington County CEP and Implementation Plan are available on Arlington County’s Initiative to Rethink Energy’s (AIRE) website.
Arlington County: Ahead of the Energy Curve
May 2013

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Authors: Smart Green Initiatives
Smart Green Initiatives (SGI) developed this paper as part of Virginia Tech’s Executive Masters of Natural Resources (XMNR) program located at the school’s Ballston Campus in Arlington County. SGI would like to thank members of the Advisory Board and specifically, Rich Dooley, for his time spent with us during this process. His personal passion and commitment will ultimately advance the County’s energy work and ensure that Arlington County remains a leader in the community climate mitigation space.

Below are your SGI members.

Dolores Schroeder
(co-project manager)
Commercial Real Estate Attorney and LEED AP

Aurora Swanson
(co-project manager)
Budget Analyst for a Federal Agency

Sara Mascola
Associate at Environmental NGO

Spencer Cooper
Environmental Consultant

Kiel Stone
Chief of Staff for Virginia Elected Official
Introduction

Arlington County: Ahead of the Energy Curve

Arlington County (the “County” or “Arlington”) recently completed and approved an ambitious Community Energy Plan (“CEP” or the “Plan”) after a rigorous development and review process. The plan is among one of the more comprehensive and innovative energy plans developed by a local government in the United States. The Plan is an innovative climate mitigation tool intended to reduce the County’s carbon emissions while simultaneously reaping other benefits for the community. The goals outlined in the CEP intend to transform the County’s energy framework by reducing consumption, improving efficiency, increasing energy security and generally reducing carbon emissions. Each outcome provides additional benefits such as improvements to community health, livability and increased economic development.

The vision and activities for the CEP are framed in two documents developed by the Community Energy and Sustainability Task Force with input from a wide variety of stakeholders. The documents focus on six distinct goals and a set of corresponding policies, strategies, and tools intended to accomplish the County’s energy goals. The goals address the role of energy in the County through (1) buildings, (2) district energy, (3) renewable energy, (4) transportation, (5) County government activities, and (6) education and human behavior. SGI completed an initial strategic assessment of the various goals and strategies outlined in the CEP and Implementation Plan (“CEIP”) reviewing costs, timeframes, political and social receptiveness, and potential carbon emissions reductions to identify immediate actions for the County to undertake to reach short-term milestones.

While all of the goals are critical to achieving the energy transformation envisioned for Arlington County; SGI concluded that the largest and most accessible opportunity for the County is to initially focus its limited resources on Buildings for the following reasons:

1. Currently over 75 percent of the County’s energy is consumed in buildings, offering the largest opportunity for reducing overall energy usage and carbon emissions.
2. By 2040, Arlington County is expected to grow 29 percent, increasing its population by over 60,000 and demanding an increase in an already small residential market and expanding the need for new residential buildings as well as services buildings.
3. People can relate to buildings—urban populations spend the majority of their time in buildings and are therefore more motivated to take interest and action regarding buildings. Success with transforming buildings can establish momentum and interest in other actions addressed by the CEP.
4. On average, buildings are highly energy inefficient; improving building energy efficiency presents a significant opportunity to reduce carbon emissions at each site.
5. In general, improving energy efficiency (and reducing carbon emissions) leads to long term cost benefits for energy users and may therefore attract and reward new businesses, homeowners, and tenants, ultimately improving the County’s economic competitiveness.
6. There are already a wide variety of established tools and incentive programs available that Arlington can deploy to improve energy efficiency and reduce carbon emissions in buildings.
7. Building carbon emission reduction programs and incentives primarily rely on external stakeholders to take action and make investments and consequently require little to no
upfront investment on behalf of the County. Those programs that do require financial commitment on behalf of the County often have grants or federal government programs that can help deflect the cost incurred to the County.

8. Technology that leads to energy efficiency and reduced carbon emissions within buildings already exists - with both new buildings and retrofits, results can be seen in the very near term, aiding the County in reaching their first milestones in 2020.

9. Finally, buildings are highly integrated into the other five goals of the CEP and will ultimately help the Country achieve its larger vision of “an Arlington in which our residents and businesses save money by owning and operating more energy efficient buildings; in which we breathe healthier air…and in which new businesses and residents are attracted to a higher quality of life supplied by cleaner and more reliable energy.iii

The CEP specifically identifies buildings as a primary target and established its first goal to “increase the energy and operational efficiency of all buildings,” ultimately reducing carbon emissions from buildings by 55 to 60 percent and contributing to the County’s target to reduce carbon emissions from 13.4 metric tons to 3.0 metric tons by 2050.iv

Building Energy Efficiency Writ Large
The County’s environmental commitment and pursuit of energy security are clear in the CEP’s visions and goals. However, a closer look at the strategies and tools also reveals significant benefits to be gained in economic competitiveness. The focus on the improved energy efficiency of buildings allows us to demonstrate that leveraging existing and potential tools to promote building energy goals can generate a considerable return on investment for both the public and private sector. For example, residential and commercial buildings account for 40 percent of all energy consumed in the US, which represented energy expenditures of about $432 billion in 2011. That is roughly equal to US businesses’ costs for employee health insurance and more than their payroll tax bills.v A recent study by United Technologies and the Rhodium Group found that businesses that invest in energy efficiency improvements are more competitive because they lower their energy costs and can use those freed resources to expand by investing in new production infrastructure or hiring new employees. They may also lower prices leaving consumers with more disposable income to either save for the future or spend on other goods and services. Basically, reducing energy costs will benefit the entire American economy.vi Within Arlington this translates into a more attractive community for business and residential investments with an improved quality of life for all residents.

The same study also reported that if today’s energy efficient technology and designs were fully deployed in all of America’s buildings we could improve efficiency—as measured by the amount of energy consumed per square foot—by an estimated 30 percent. At currently projected energy prices, a $275 billion investment in building efficiency would pay for itself through lower energy bills in four years or less.vii The numbers illuminate considerable profit opportunities for the private sector and increased saving opportunities for households freeing up resources for other investments that will ripple through the US economy.viii Widespread distribution of this type of analysis and case studies describing successful implementation of energy efficiency strategies for buildings will be critical to overall success of the CEP to inspire buy-in and action in the private-sector.
Road Map for the Report
SGI conducted a stakeholder analysis of potential key audiences for the County to engage in reducing carbon emissions from buildings looking at impacts, motivation, available tools, and interest. Through the stakeholder identification and review process, three discrete interest groups were identified with distinct realities and motivations for improving building efficiencies: those who design and construct buildings, those who manage them, and those who inhabit them. The following five target audiences were identified as the key partners to engage with on improving energy efficiency and carbon emission reductions in buildings at all stages of the buildings life cycle:

1. Building Developers
2. Building Owners, Asset Managers and Property Managers
3. Business Community (Building owners and Tenants)
4. Residents (Homeowners and Tenants)
5. Government: Arlington County Operations

For each of these audiences we examined the opportunities for building energy efficiency, key messages to motivate action, existing tools reviewed in the CEP and potential tools we unearthed in our research that are available now or are worth consideration for implementation in Arlington. Throughout the report, we focus approaches on crafting a business case for improved building energy efficiency and carbon emissions reductions dealing with the actual building’s development, investment and operations. The buy-in and participation of these key audiences is critical to achieving the milestones outlines in the CEP plan.

Finally, this report contains two supporting annexes including an initial argument for developing an adaptation plan for Arlington. Community adaptation planning and actions are a complementary activity that can improve the community’s resiliency in the wake of evolving ecological realities from climate change. This high-level review demonstrates the need for the County to further assess the risks of climate change impacts. This means the County needs to evaluate it’s ability to 1) leverage existing capacity and 2) recognize where additional capacity may be necessary to adequately address the community’s vulnerabilities to climate-related events. The final section also points to adaptation activities in other localities in varying degrees of maturity and provides examples of how other local governments are starting to address the idea of community resiliency.

Target Audience: Building Developers

Opportunities: Developers play an essential role when it comes to the topic of improved energy efficiency. They have direct decision-making power on choices related to selection of building materials and energy systems. Developers have a business focus and prioritize the following elements in developing a proforma for the design and construction of a new building project:

- minimizing building materials and construction costs
- minimizing construction time (quick turnaround)
- maximizing the “cap rate for sale of the property,” i.e., the return on investment in real estate based on the expected income that the property will generate.

S 1.2 Encourage new buildings to be designed, constructed and operated more energy efficiently.
S 1.3 Ensure compliance with energy efficiency code provisions.
S 1.6 Use the special exception development process to create more energy-energy efficient buildings.
Traditionally, developers have a short-term interest in the buildings they develop and construct. Therefore, energy efficiency is not a priority for developers unless it is a priority for the potential buyer or the developer plans to hold the property for a period and therefore needs to be more concerned about operating costs. Since its inception in 1998, the Leadership in Energy and Environmental Design (LEED) has provided a framework to help educate developers about the benefits of building more energy efficient buildings.

Although historically high design/build costs of green infrastructure can deter developers, the reality is it is more financially feasible to build efficient buildings today compared to any time in our history.

Targeted training and education for developers is recommended to make them aware of realities of today’s green building costs. A few key examples to share include:

- **LEED premium costs** have been reduced over the years (see Figure 1).\(^{ix}\)
- **The Perception Gap** - Actual premium cost for building green are lower than the industry estimates.\(^x\)

Within the Arlington County CEIP,\(^{xi}\) developers are the main focus of strategies S1.2, S1.3\(^{xii}\) and S1.6. These strategies allow developers to continue supporting their financial and competitive focus, while constructing buildings more efficiently in the process.

**Tools, Strategies, and Messages to Consider**: The County should consider using the following tools to influence developers to participate in the CEP:

**Existing Tools**: The County is already utilizing the following tools but have the potential to be expanded or evolved to accrue further benefits:

- **Site Plan Development Process**: In addition to an implementation tool, this can also be used as an education tool by bringing focus to the CEP and District Energy. PlaNYC\(^{xiii}\) can be used as a model, as they combined varying initiatives/plans/goals of New York.
- **LEED Green Building Bonus Density Incentive**: The Seattle New Building Energy Efficiency Policy Analysis did an analysis of Arlington’s Density Bonus Program.\(^{xiv}\) They found that the cost for developers to qualify for Density Bonus programs ranges from 0 to 1 percent for LEED® Certified to 3 to 6 percent for LEED® Gold.

**CASE STUDY**: The Arlington Navy League Building,\(^{ xv}\) which was completed in 2004, was a LEED® Silver building. The developer, The Keech Company said that achieving the LEED® Silver certification was less than one percent of the total project cost. They went on to say the initial upfront costs were more than repaid by the additional 12,000 office spaces they were able to lease because of the Density Incentive, resulting in more than $400,000 in additional **annual** lease revenue. The County should document and share...
these types of examples to further motivate potential developers in participating in the program.

- **Energy Star**: Home developers have the opportunity to improve their marketability by participating in Energy Star Programs. Figure 2 shows a few Energy Star statistics for Virginia.

### New Homes Partners in Virginia

<table>
<thead>
<tr>
<th>Program Indicators in Virginia</th>
<th>ENERGY STAR certified homes built in 2012 are the equivalent of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>17,151 ENERGY STAR certified homes built to date</td>
<td>• Eliminating emissions from 1,782 vehicles</td>
</tr>
<tr>
<td>136 ENERGY STAR certified homes built 2013 to date</td>
<td>• Saving 10,790,686 lbs of coal</td>
</tr>
<tr>
<td>3,637 ENERGY STAR certified homes built in 2012</td>
<td>• Planting 2,946 acres of trees</td>
</tr>
<tr>
<td>156 ENERGY STAR for Homes Partners</td>
<td>• Saving the environment 21,141,581 pounds of CO₂</td>
</tr>
</tbody>
</table>

*Figure 2: New Homes Partner in Virginia*

### Potential Tools:

- **Time Incentives**: Expedited Review/Permitting Process: A number of cities and counties, including Washington D.C., have a priority permitting review process for either Green or LEED buildings. Reducing the permitting process time means higher efficiency and fewer costs for the developer, leading to faster construction.

- **Financial Incentives**:
  - **Reduced Permit Fees or Rebates**: The city of Northbrook IL is one of many cities that have a permit fee rebate and has seen success from its program: “The first building to attain a LEED Certified rating in a newly constructed residential, commercial or institutional building or an alteration on an existing building will receive a 100 percent refund on all covered permit fees. All subsequent projects that are LEED Certified will receive a 10 percent covered fee rebate, Silver Certified a 20 percent rebate, Gold Certified 30 percent and Platinum 40 percent rebate.”
  - **Tax Incentives**: Consider instituting tax incentives to motivate developers to build LEED certified buildings. Baltimore County & Howard County, MD offer significant property tax credits for LEED projects.
  - **Boundary Spanning**: Find creative ways to get tenants and developers to share the initial investments in energy efficiency. For example, if a developer already has a tenant lined up, they can share the upfront costs and returns in the future.

- **Smart Building Energy Management**: Leverage companies in Arlington (e.g. Starbucks, Walgreens, Macy’s, Best Buy) or governments that have existing energy commitments (e.g. C40, Better Building Challenge); these companies want efficient buildings that will help them meet internal and external efficiency commitments. Developers can benefit from these partnerships through long-term quality tenants and quick leasing.

- **Regulations**: New green regulations can require developers to react quickly. As of May 10, 2013, California passed a new requirement that all new buildings must be built with solar panels. Arlington County should consider potential regulations that encourage developers to meet set standards for energy efficiency and reduced source emissions. These needs to be balanced with the County’s need to drive new business development.
and should be done in conjunction with the business community in order to gain buy-in. Ideally the County will identify “champions” for regulation from the developers and business community who help to garner support and lead by example.

- **Improved Education:** Increased educational sources for developers. In addition to AIRE’s website, the County should consider other venues for reaching out to and educating developers about the potential benefits of developing buildings that emit less carbon. For example, West Hollywood, CA has expanded their City Hall into an education center and resource for developers wanting to incorporate green building practices into projects.

- **Marketing Incentives:** Evaluate new marketing opportunities to help promote developers who are not only meeting, but also exceeding standards. Some counties already do free marketing/recognition for developers of green projects; Arlington should consider offering free, reduced cost, or prioritized marketing to developers within different venues.

### Target Audience: Building Owners, Asset Managers and Property Managers

**Opportunities:** Building Owners (“Owners”) and Portfolio Investment Managers (“Asset Managers”) of existing buildings in Arlington County can be best influenced to participate in the CEP by emphasizing the benefits of economic competitiveness that will be derived from performing retrofits and renovations that increase energy efficiency to the levels required under the CEP Implementation Plan **Policy 1.2.** For Owners and Asset Managers, action will hinge on the outcome of detailed cost/benefit analyses used to determine the profitability of investments in energy improvement. Therefore, it is critically important that the County show Owners and Asset Managers that the return on investment for capital improvements in multi-tenant buildings will justify the capital expenditure required to implement the energy efficiency improvements. It has been suggested that returns on investment for energy improvement projects will be more economically favorable if such retrofits and renovations are coordinated with planned replacements or upgrades of other building systems which aligns with Strategy 1.1 of the CEP. The renovation of the Empire State Building is an example of a successful, large-scale renovation project in a multi-tenant commercial building. The renovation was structured to provide energy savings that would offset the required capital expenditures. The results were much better than anticipated and the building’s energy savings one year after the core retrofit was complete exceeded its energy-efficiency guarantee by five percent, saving $2.4 million. While the Empire State Building example serves as a model showing that large energy improvement projects can return significant economic and environmental benefits, it is important to note that it is often difficult to measure the costs/benefits of retrofits accurately. Therefore, it will be important for the County to provide tools, incentives, and access to financing to help Owners and Asset Managers evaluate their options in favor of undertaking renovations that include energy improvement components.
Property Managers are incentivized to increase net operating income (“NOI”) for the buildings they manage. As indicated on the AIRE website, the use of energy management tools such as improved lighting and energy measurement and tracking software can make a significant impact on NOI as well as provide a more desirable environment for the tenants. The County should reach out to area Property Managers to engage them in discussions about buildings in their management portfolios located in Arlington County that are in the pipeline for upcoming renovations and could accommodate energy efficiency projects.

Tools, Strategies, and Messages to Consider: The County should consider using the following tools to influence Owners, Asset Managers and Property Managers to participate in the CEP:

Existing Tools: Expand use of the tools highlighted in the Draft CEP Implementation Plan to influence participation, as follows:

- **The Better Buildings Challenge**: Highlight the County’s participation in the BBC to encourage Owners and Asset Managers to participate by emphasizing the industry-leading companies that have committed to the BBC program. Those companies, such as Starbucks, Macy’s, Walgreens and Sprint, are going to be looking for space as potential tenants in energy efficient buildings.

- Engage local Property Managers in efforts to identify buildings that might be ready for energy renovations. Jones Lang LaSalle and Lend Lease, both global commercial property managers responsible for managing large portfolios of commercial buildings, have a significant presence in the D.C. Metro area and are corporate partners in the BBC. The County may be able to work with them to encourage their client roster of Owners and Asset Managers to participate in the CEP.

- **Lighting Rebate Program**: Procure additional funding to continue the program for commercial projects.

Potential Tools:

- **Energy Performance Labels ("EPLs")**: Expand to private sector and use to demonstrate a building’s enhanced energy performance and attract tenants.

- **Updated State Building Code**: Continue to advocate for legislative change to the State Building Code in order to incorporate higher energy standards and the possibility of phasing-out low performing buildings and energy equipment as well as requiring energy controls at the office-level in multi-tenant buildings.

- **Facilitate Financial and Other Incentives**: Consider offering incentives to provide assistance to help Owners and Asset Managers overcome some of the financial barriers that make investment in energy efficiency unprofitable. Such incentives can be targeted to certain areas of the County, to renovation of buildings of a certain age or those presently using types of energy generating equipment that are least efficient.
  - Expand Green Buildings Bonus to include incentives to achieve LEED for Existing Buildings certification.
  - PACE Financing- Partner with private venture capital firms or other financial institutions to establish a PACE financing program (in accordance with applicable...
local law, xxxvi) to offer a way to help Owners and Asset Managers deal with the issues involved in “split incentive” concerns. Such concerns center on the belief that they cannot reap the benefits of their investment in energy efficiency improvements due to lease structures where by the Owner makes the investment but the tenant receives the benefit of lower energy costs, xxxvii.

- Explore the possibility of offering tax incentives for investment in energy efficiency (to the extent allowed under applicable law).
- **Demonstrate Success**: Develop and highlight local case studies demonstrating successful retrofit projects in the County such as the Arlington Central Library project,xxxviii and others in the area such as Macy’s Metro Center with an expected 27 percent reduction in energy use and an annual energy savings of $212,200,xxxix and 815 Connecticut Avenue with an expected 45 percent energy reduction and a projected annual energy savings of $305,000.xl
- **Good Neighbor Status/Increased Exposure**: Design and implement a program to market energy efficient buildings to the business community and leasing and commercial brokerage companies as preferred locations for occupancy.
- **Create Award or Recognition System**: Develop an award to be given to the Owner or Asset Manager whose building is proven to improve its energy performance by a given percentage in a particular year. The building manager will need to partner with tenants in order to qualify. The award can be in the form of a plaque or other trophy given by the County Board with press releases and media alerts so that the winner receives public recognition for the accomplishment. One example of such a program is the Chicago Green Office Challenge, a program designed to engage tenants and buildings in a friendly competition to reduce environmental impact and win an award.xli The program is aimed at commercial offices, retail stores, schools and industry and targets energy efficient, water conservation, materials and waste, and transportation along with education, interiors and innovations.

**Target Audience: Businesses**

**Opportunities:**
Arlington's businesses, both large and small, have the potential to significantly reduce their carbon emissions through increased energy efficiency and reduced energy source emissions. The CEP identifies that 53 percent of all energy use in Arlington is from non-residential buildings,xlii and that commercial official buildings offer one of the largest opportunities to reduce emissions through efficient technologies. xliii The CEP therefore identifies increased energy efficiency in non-residential buildings as a key strategy and has adopted **Policy 1.2** aiming to decrease energy consumption by 60 percent in non-residential buildings.xliv

Businesses are the primary tenants of these buildings and are a key audience to achieving the County’s goals. Therefore, the County needs to put more emphasis on providing education and incentives for the business community. For example, if the County is using source energy as the standard of measure for emissions, then more needs to be done to educate businesses on fuel...
source options and how that will impact their carbon emissions (such as which building equipment to buy, encouraging renewable systems, combined heat and power systems). The County should make this information readily available to local businesses and create or facilitate incentive programs to encourage these improvements.

**Tools, Strategies, and Messages to Consider:** It is recommended that the County pursue the following tools and add summary links on AIREs website Businesses tab:

**Focus on Long Term Cost Savings through action:** Demonstrate the long-term profitability of these investments and incentivize action in the short-term.

- **Demonstrate Success:** Develop local case studies demonstrating the cost effectiveness of reduced energy consumption and/or implementation of improved energy source measures. This could be in conjunction with local universities or EDF’s Climate Corps. In the interim, the County can promote case studies demonstrating cost savings for businesses who increased their environmental efficiency outside of Arlington: [Energy Star Small Business (Restaurants); Industry and Operational Case Studies](#)
- **EDF’s Climate Corps:** Encourage businesses to apply to have a graduate school fellow work with their company for 10-12 weeks to create a detailed business plan for energy efficiency within their operations including recommended opportunities and actions comparing costs and impacts, operational statistics, and identified barriers. On average, EDF Climate Corps fellows have recommended $1 million worth of energy savings to the sponsoring enterprise. The cost of the fellow is approximately $15,000.
- **Facilitate Rebates and other Financial Incentives from Partners**:
  - Dominion Virginia Power offers rebate programs and assistance for implementing energy efficiency measures, up to $4,000 per customer. Dominion also offers energy audits, duct testing and sealing, and provides incentives for select customers for implementing customer-owned backup generation of power.
  - **County Financial Incentives for Small Businesses:** Explore programs similar to Washington DC’s Small Business Energy Efficiency Program (SBEEP) which provides technical and financial support to small businesses who want to improve their energy efficiency. Funding for these types of programs could come from a grant through the Department of Energy “Energy Efficiency and Conservation Block Grant Program” or other grant opportunities found in Annex II of this report.
  - **Green Building Standards:** Promote the Better Buildings Program to offer financial incentives for energy efficiency and reduced emissions.
  - **Incentives for Installation of Solar PV Systems:** Starting on June 20, 2013, Dominion Virginia Power will begin to accept applications for a Solar Purchase Program for buying solar energy produced by residential or non-residential properties. Businesses can earn 15 cents per kWh and are capped at 3 MW.

**Good Neighbor Status/Increased Exposure:** Businesses with improved energy efficiency measures are valuable assets to the community who can benefit from increased exposure and reputation.
- **Existing Tools** defined in the Draft CEP Implementation Plan, including the Green Games and EPLs. EPLs have primarily existed within government facilities and buildings but they also present a potential exposure tool for local businesses who want to demonstrate their energy efficiency and may also serve as a motivation to high energy consuming, consumer facing businesses to make significant improvements.

- **Create an Award or Recognition System**\(^{dix}\): As previously highlighted, recognition can be a key motivational factor. The County should consider the creation of an award for businesses that reduce emissions by a certain percent or annually select one business that has taken the most action to reduce emissions. The award could come from the County, NV Regional Commission or MW Council of Governments and could include a small banquet and limited publicity for a nominal expense. The County could also work with the Arlington Chamber of Commerce to have a green business category in their annual Best Business Awards.

- **Create Exposure Opportunities**: Incentivize local businesses to participate in County programs to increase their energy efficiency by offering potential opportunities to expand their market or name recognition. The County can host a Featured Business blog or article on their website, in local papers, NOVA magazine, or on ARLnow.com. The County could also work with local community groups to sponsor a Green Business Week encouraging patrons to shop at energy efficient buildings in Arlington.

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**Corporate or Industry Standards**: Arlington County should focus initial outreach on businesses that have already adopted internal or external policies to improve their energy efficiencies and reduce carbon emissions.

- **Energy Industry**: The County should consider partnering or actively engaging with Gridpoint, an energy solutions company headquartered in Arlington. Gridpoint helps companies use a smart grid to monitor and reduce energy use across their operations. By partnering with Gridpoint to offer these services at a discounted or featured rate the County could improve energy efficiency both within and outside of Arlington.

- **Energy Consultants**: Several consulting firms based within the County offer energy solutions and emissions programs including SAIC,\(^1\) Booz Allen Hamilton, and SRA International\(^{li}\); these service providers could potentially partner with the County to offer reduced cost services to businesses located in Arlington or build tools and resources for reducing energy emissions targeted at businesses within the County.

- **Largest Employers with Energy Commitments**: Four of the top ten employers in Arlington have committed to energy efficiency standards at a corporate level including Deloitte,\(^{lii}\) Lockheed Martin,\(^{liii}\) Marriott\(^{liv}\) US Airways.\(^{lv}\) Since these companies have made a corporate commitment to implementing energy efficiency within their operations, the County should target outreach at their Arlington based offices to ensure compliance with corporate policy and engage these companies as demonstration cases to encourage other large businesses to make a commitment towards energy efficiency or reduced emissions.

- **Promote Best Practices**: The County should share or promote existing best practices through educational programs and/or basic outreach with interested businesses. Many resources already exist that the County can share including Manuals,\(^{lvi}\) Guides and Energy Star Guides for Specific Industry Types.\(^{lvii}\)
Target Audience: Residential

Opportunities: Arlington’s residential buildings account for 26 percent of all energy in the County—more than transportation. Residents are likely to change their energy behaviors with financial motivation. There are plenty of opportunities that already exist within the County to help these residents save money on their energy bills and reduce their carbon emissions for a better, healthier community. Additionally, providing access to improved energy efficiency programs for affordable housing candidates also meets the Counties CPHD housing target number 4. Many programs already exist that help incentivize homeowners to improve their home’s energy efficiency. Therefore, this is a low cost option for the County as homeowners can be educated about existing programs without having to make a large investment to create new programs or financial incentive mechanisms.

Tools, Strategies, and Messages to Consider: It is recommended that the County promote the following tools and add summary links on AIREs website Residents tab:

Cost Savings to the Resident: There are many existing programs that the County can promote in order to provide cost savings to residents who are considering improving their energy efficiency in their homes. Short term (and eventually long term) cost savings will come with increased energy efficiency and reduced energy consumption after initial investments are made to improve the home’s energy efficiency (weatherization, efficient appliances, improved lighting, etc.). There are several local and federal programs aimed at mitigating this initial investment to incentivize homeowners to improve their home’s energy efficiency:

- **Existing tools** outlined in the draft CEP and implementation plan include the Energy Master’s program that provides energy efficiency services to affordable housing tenants, the EPA’s Energy Star program, the Local Energy Alliance Program (LEAP).
- **Rebates from Partners**. Both Dominion Energy and Washington Gas offer rebate programs for implementing energy efficiency measures, up to $4,000 per customer. Dominion also offers Smart Cooling Rewards, Income-Qualifying Home Improvement, Home Energy Check-up, Heat Pump Tune-Up or Upgrade Rebate, Duct Testing and Sealing Rebate. Washington Gas offers rebates to residents who implement energy efficient equipment such as “tankless water heaters, storage (tank) water heaters, boilers, programmable thermostats, heating system checkups, and energy star home certification.”
- **Discounts on energy efficient appliances**: Energy Star provides a search feature on their website that locates discounts for energy efficient appliances within a given zip code. Residents can use these discounts to reduce up-front costs for reduced energy consumption and emissions. Energy Star also provides information for improved energy efficiency for residents through their website.
- **Federal Tax Credits for Energy Efficiency**: The US federal government offers tax incentive programs for residential energy efficiency. The Energy Star website lists available tax credits and conditions for homeowners (does not include rental properties) including biomass stoves, heating/ventilating/air conditioning, insulation, roofs, water heaters, windows, and doors. Residents can receive 20 percent of all state sales tax paid (up to $500) for energy efficient dishwashers, clothes washers, air conditioners, ceiling...
fans, compact fluorescent light bulbs, dehumidifiers, programmable thermostats or refrigerators that meet or exceed federal Energy Star standards.

- **Weatherization Assistance**: For qualifying homeowners and renters (low-income qualifications), local weatherization assistance is available. After a home energy audit, the weatherization authority will recommend and undertake actions to improve the energy efficiency of the home and may include insulating walls or the roof and upgrading appliances in the home free of charge.

**Attracting Tenants**: Approximately 57 percent of Arlington residents are renters. It is important to note that incentives for landlords and renters are distinct from homeowners. Landlords will be more interested in attracting and retaining reliable tenants, while renters will be interested in short term cost savings only. Many of the aforementioned programs only apply or will be of interest to homeowners as a substantial investment is usually required upfront. Several programs should be promoted to renters that will help reduce their energy costs and do not require a large investment in the property. Energy Master’s program and weatherization assistance is available to renters with written permissions from their landlords. Long-term renters may have more interest in upgrading appliances to energy efficient models and can assess the previously mentioned Energy Star programs.

**Improving our Neighborhoods**: Arlington County residents should be engaged and educated to learn more about the CEP and how it impacts the County residents. Two critical outreach strategies are recommended to improve resident’s knowledge and action to implement emissions reducing actions in their own homes.

- **Community Competition**: Similar to the Business focused Green Games, the County could establish and facilitate an Arlington County Neighborhood based competition working with local Homeowners Associations or other local civic groups to encourage residents to take small actions improve their home’s energy efficiency. Such actions include (among others) switching out incandescent light bulbs, completing energy audits, undertaking personal actions to reduce energy consumption through non-technological means (such as not turning on the air conditioning or always turning off the lights). The competition could be based on points or average household energy consumption in any given neighborhood but its critical that local community groups that can directly engage residents are involved to educate and encourage action.

- **Educational Programs**: The County should continue to promote educational programs and awareness campaigns related to improving energy efficiency and
carbon emission reductions through the school system, County events, local press, County and AIRE websites, and special events.

**Target Audience: Government: Arlington County**

**Opportunities:**
Despite its progressive nature, if the benefits of the CEP were environmental only, even Arlington County would have a near impossible task in generating the buy-in necessary for the plan’s implementation and long-term success. However, a tremendous positive working in the County’s favor is that there are real and significant monetary benefits to be gained by taking this approach. These benefits are both economic (job creation) and fiduciary (County cost reduction). Highlighting this reality will be critical to ensure support and convince homeowners and businesses alike to participate.

Across the nation, more than 8 million jobs have been created since 2006 in energy efficiency technologies and services.\(^{lxvi}\) Perhaps even more important to a place like Arlington, with an already vibrant local economy, are the cost savings inherent in energy efficiency. “The lifetime energy cost savings produced by an energy-efficient building, when compared with a conventional one, can reach millions of dollars.”\(^{lxvii}\) Furthermore, according to EPA, “modification of a pre-existing building for energy efficiency (a process known as retro commissioning), can save a typical 100,000-square-foot school building between $10,000 and $16,000 annually.”\(^{lxviii}\) With 35 schools, that represents a potentially significant savings of $350,000 to $560,000 annually.

Arlington is in a unique and delicate position. The County is the entity responsible for the implementation of the CEP, owns many buildings and is a voluntary participant in improving energy efficiency. There are many ways in which the County can involve itself (or not) that will influence whether or not the identified goals are met. It must act judiciously - so as to not push too hard or too fast and risk losing the widespread support needed from both the business and residential communities. The County should not pursue initiatives that are not well-thought-out and waste taxpayer money - but it cannot act so timidly as to render the whole effort meaningless.

**Strategies and Messages to Consider:** It is recommended that the County pursue the following broad strategies and incorporate the associated tools/action items.

**Leading by Example:** One of the most important things the County can do, and in keeping with our emphasis on Goal 1 (Increase the energy and operation efficiency of all buildings) is to lead by example. Nothing would erode confidence more quickly than if the County, as a building owner, decided to shirk the responsibilities building owners have as laid out in the CEP.

- Use the CIP to Enhance Current Plans: With Strategy 1.1 emphasizing the need for the private sector to take advantage of the renovation process to reduce energy usage, the County must also have an identifiable plan. To do this, they could make use of the County’s Capital Improvement Plan (CIP). As structures
move through their life cycle and come up for renovation the energy reductions measures to be taken (as well as their benefits and costs) need to be clearly spelled out.

- **Go Public in a Bigger Way:** If it were to take sentiment behind its current use of Energy Performance Labels to the next level, Arlington has a great opportunity, with transparency and honesty, to foster a sense of competition and, if needed, even engage in a bit of public shaming. Cambridge, Massachusetts tracks the energy consumption for all publicly owned buildings in the city. This includes schools, police/fire stations and libraries. Using consumption data gathered from the local utility and a software program designed for their use, they are able to chart their monthly progress in improving energy efficiency. If Arlington were to engage in a similar process, the County could take advantage of the data gathered to highlight progress made, show tangible evidence of how certain changes can lead to energy reductions and attach a cost to that effort, while also pointing out the money that will be saved in the long run. By doing something like this itself, the County can then go to developers or property owners looking to renovate and provide concrete facts and figures. It can also use this data to pressure neighboring localities to take the leap as well. If successful, it will make the task of convincing property owners easier, as they cannot just chose to locate in a Fairfax County or Falls Church to avoid the same requirements.

- **Take the Long View:** Because it has the flexibility to do so, Arlington should always think about the long term. Certainly the County is doing that in its planning processes or it would not have developed the CEP. But that type of thinking must be applied to its purchasing decisions as well. Typically, a project’s cost effectiveness is dependent upon its initial design and construction costs in the short term. The life cycle cost of a product or service, however, “is the sum of the present value of the costs of investment, capital, installation, energy, operation, maintenance, and disposal over the life of the product...because life-cycle analysis reveals whether energy efficiency investments are cost-effective in the long run, in can be an important feature of an overall energy policy.” The County should thinking about codifying that mindset, ideally in language adopted by the Board.

**Spend the Money:** A variant on the “Lead by Example” theme, it goes without saying that the County will have to spend money if it is to truly transform the energy efficiency of its buildings. Raising the funds to do so will not be easy, nor will it necessarily be popular. The County will have to be creative in its financing options and look to save money wherever possible.

- **Use EPCs:** Energy Performance Contracts (EPC) is a contracting vehicle that provides localities a financing option that does not require the issuing of bonds. It is particularly valuable in financing renovation projects, including schools. The energy performance contractor that is selected would be paid based on a portion of the energy savings realized. This strategy is currently be implemented by the Buffalo City Schools.

- **Develop a Sustainable Energy Utility (SEU):** Unlike the previous option, creating and then funding this non-profit entity would likely require utilizing bonding capacity, but it could also be backed via a specific fee or tax placed on Arlington businesses and residents related to their energy consumption. In Delaware, a statewide SEU is used to pay for performing an audit on older buildings and as well as the costs of the retrofit. The savings generated by the reduction in energy use would be put back into the SEU to cover the costs. Delaware may also look to this model to pay for renewable energy
improvements. “The SEU would pay to have solar panels, for example, installed on a school. Then it would arrange a contract to sell power to the school district over a decade or two, usually for the same price as electricity off the grid, until the cost of the system was paid off.”

- Increase Economies of Scale Whenever Possible: In its tools section of Strategy S1, Arlington identifies implicitly (and explicitly in its section on “The Local Energy Alliance Program”) that it has to commit to purchase more energy efficient products and engage in more energy efficient building practices. These are not challenges they are facing alone. The surrounding jurisdictions, which are also interested in reducing their energy usage, must also engage in these efforts. It would make sense for partnerships to develop wherever possible and as Arlington is the leader in this arena, it makes sense for them to spearhead this. Joining forces increases the buying power localities will have and can help drive down prices, which is better for taxpayers in all participating jurisdictions.

**Conclusion**

Arlington’s CEP provides a tremendous framework through which a great deal of energy reduction can occur. While its adoption by the County Board signals just how seriously the effort is being taken, the County needs to focus on actual implementation. The CEP identifies a number of courses of action and lays out various paths to take; making it important that strategic focus is maintained. Initiatives must be allowed their full life cycle and the County must take great care to avoid a scattershot approach where too many items are being pursued simultaneously and none are given the attention required.

This paper argues that due to their enormous energy consumption habits and the fact that Arlington is a growing and urbanizing jurisdiction, addressing the issues surrounding buildings is the place to begin to achieve the greatest improvements in County-wide energy efficiency. The impact of buildings’ energy efficiency and the near, mid and long term opportunities for improvement are the most significant and must be the first priority. Addressing the energy efficiency of Arlington’s buildings also creates an environment where many of the County’s other goals identified in the CEP, particularly District Energy, can then succeed. Working with the key audiences outlined in this report, and considering the highlighted messages and tools will help the County ultimately achieve its goals and vision regarding climate mitigation. In the end, this requires action and collaboration across all sectors of the community, and identifying key motivational factors or incentive programs will enable those actors to change the energy trajectory in Arlington County.
Annex 1: Adaptation Assessment

What is Adaptation?
The main function of local governments is to provide reliable public services to their citizens and protect their health and welfare. To fulfill this role, local governments must periodically assess risks to life and property of its citizens and develop plans to mitigate them. The goal of these actions is to avoid disastrous outcomes and provide the conditions for the citizens to thrive. Similarly, adaptation is the assessment of the risks resulting from climate change—those that are already occurring and those that are expected to occur in the next few decades—and the actions that are taken to mitigate those risks.

For many local governments the concept of adapting to climate change can seem like an enormous undertaking. Although the concept is relatively new, many concerned organizations have created process guides to help local governments get the process started. The International Council for Local Environmental Initiatives (ICLEI) is an organization that works with local governments all over the globe on climate change issues. ICLEI published a comprehensive guidebook to help local governments understand the steps of developing, deploying, and managing an adaptation plan. ICLEI also has a climate program called Climate Resilient Communities (CRC) which is focused on supporting adaptation planning for local governments in the U.S. The City of Alexandria—Arlington’s neighbor—is an active member of CRC. The Metropolitan Washington Council of Governments (MWCOG) is developing an adaptation plan for the National Capital Region—which includes Arlington County—and is working with universities to determine what adaptation strategies are necessary for the region to prepare for changes expected between now and 2050. Additionally, the Intergovernmental Panel on Climate Change (IPCC) has published a special report for policy makers and many local and state governments that have already begun adaptation planning have published risk assessments and details about the actions they are taking to address climate change risks. The relevant literature is expanding quickly and can provide useful resources for local governments that are only beginning to plan.

Arlington County and Adaptation Planning: Where to Start?
Local governments routinely assess risks and make adjustments to better serve their citizens in the normal course. As localities begin developing adaptation plans they will discover they are already engaging in some adaptation activities. For some risks, it may be sufficient to expand the existing capacity to address climate change impacts. This can be encouraging for local governments that are just beginning to think about adaptation. Of course, for many other risks, new capacity will need to be developed to effectively address them.

A formal plan to address the risks of climate change impacts cannot be developed until the risks are identified. The focus for this risk assessment is Arlington County, however, risks in nearby localities can also have impacts for Arlington. This also presents an opportunity for Arlington because some of its neighbors have already begun to analyze risks and develop adaptation plans. The activities of the City of Alexandria, and the State of Maryland and other proactive state and governments are included in the table below to provide examples of programs and initiatives that Arlington may be able to leverage or adapt or implement.
Although not exhaustive, the table lists some risks that are likely important for the County as well as identifying activities or capacity already in place to address the existing level of risk and that could be leveraged to deal with climate change impacts.

<table>
<thead>
<tr>
<th>Risks (existing/potential)</th>
<th>Capacity/Opportunities/in Arlington</th>
<th>Suggestions and Actions in other locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks to the Ronald Reagan National Airport from Flooding and Storms: While the airport is a federal responsibility its function is important for the economy of Arlington.</td>
<td>Sustainable Shorelines Community Management Project in Northern Virginia: The thorough risk assessment published in December 2012 includes analysis of flooding at the Airport under scenarios of sea-level risk and storms. The participants of the project are also working with MWCOG on the adaptation plan for the region to address these vulnerabilities</td>
<td>The City of Baltimore: Risks of flooding of airport runways in addition to other transportation infrastructure including Baltimore Harbor Tunnel, coastal roads all located near the Chesapeake Bay. Baltimore is evaluating different solutions to deal with these challenges.</td>
</tr>
<tr>
<td>Flood and Erosion Risk</td>
<td>Sustainable Shorelines Community Management Project and CIP (p. C32) Four Mile Run Near-Stream Improvements. Part of a larger improvement project with the US Corps of Engineers, NRVC and the City of Alexandria to address erosion and flood risks and ‘enhance environmental, recreation, and open space resources.’</td>
<td>The San Francisco Bay Plan: Analysis of shoreline protection options in the SF Bay acknowledges that building static structures for protection—like levees or dykes—can cause the natural habit to erode. The SF plan requires a design review process for each project to determine the least damaging options to the natural habitat. Currently, the Corps of Engineers and the U.S. Geological Survey are also researching options for the SF Bay.</td>
</tr>
<tr>
<td>Risk of Water Scarcity</td>
<td>CEP has integrated water conservation and security into the CEP goals including building efficiency, ‘using district energy to share hot and cold water,’ renewables as ‘solar thermal water systems.’ CIP (p. F-14). The County is developing a Water Master Plan to address water distribution issues and aging infrastructure.</td>
<td>To protect their supply of drinking water, New York City has a comprehensive water delivery system that includes preservation and restoration of the New York City watershed system. The system provides high-quality water with minimal filtration. NY recognizes that continued investment is required including upgrading the in-city distribution infrastructure and improving efficiency and conservation.</td>
</tr>
<tr>
<td>Risks from inadequate storm Water management</td>
<td>CIP (p. F-39): Master plan stream restoration projects. CIP (pF.20) Wet Weather Filtration Facility retrofits to address equipment failures.</td>
<td>The Greater Vancouver Regional District (GVRD) recognizes the need for investments in storm sewer infrastructure to handle larger water volumes from more severe rainstorms but sees those large investments as not occurring until a decade from now. In the meantime, the GVRD</td>
</tr>
</tbody>
</table>
developed parameters to reduce impervious surfaces promoting instead permeable pavements, green roofs for new buildings, and swales constructed to help manage runoff.\(^{lxxxv}\)

| Risks from extreme heat to public health and infrastructure | Virginia Department of Emergency Management provides cooling shelters throughout the states. Virginia Department of Health provides information on how to stay cool, well hydrated and informed. | Maryland Department of Health and Mental Hygiene and Maryland Emergency Management Agency are partnering to conduct health impact assessments and are developing a coordinated plan to deal with vector-borne illnesses resulting from climate change\(^{lxxxvi}\). The City of Chicago’s Urban Heat Policies. “New buildings are required to meet reflective roof standards” according to the Chicago Energy Conservation Code adopted in 2001. The plan has also resulted in an effort to plant 110,000 new trees in the areas experiencing the greatest warming in Chicago\(^{lxxxvii}\). |

NOTES:

**Sustainable Shorelines Community Management Project in Northern Virginia:** Joint effort between Northern Virginia Regional Commission (NVRC), the local governments, —including Arlington County—universities and landholders in Northern Virginia on the Potomac River. The project enjoys support and involvement of National Oceanic and Atmospheric Administration (NOAA), Virginia Coastal Zone Management Program, and Virginia Network for Education of Municipal Officials Program (NEMO).

**Arlington Community Energy Plan (CEP)\(^{lxxxviii}\):** The CEP—discussed in the bulk of this report—is Arlington’s comprehensive mitigation plan to address climate change. Many of the policies, strategies and tools may play a dual role in also addressing adaptation risks.

**Capital Improvement Plan (CIP)\(^{lxxix}\):** The CIP is a 10-year infrastructure investment plan that is revisited every other year. Many of the objectives will address existing and potentials risks expected to occur in the next decade. Although expectations of climate change impacts might not be fully taken into consideration, the CIP does attempt to address some of the issues. It could be a great vehicle for future planning as the County’s adaptation activities begin the pick-up momentum.
 Annex II: Potential Grant Sources for County

Federal Government Grants:
SGI encountered the following potential grant opportunities while researching financial incentives for the key audiences. These are all grants that are available to the County from the Federal Government and could be potentially used as a funding source for the projects and programs mentioned in the CEP implementation plan and this paper.

Energy Efficiency and Conservation Block Grant Program
Copied from DOE website [http://www1.eere.energy.gov/wip/eecbg.html](http://www1.eere.energy.gov/wip/eecbg.html)

The Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time by the American Recovery and Reinvestment Act (Recovery Act) of 2009, represents a Presidential priority to deploy the cheapest, cleanest, and most reliable energy technologies we have—energy efficiency and conservation—across the country. The Program, authorized in Title V, Subtitle E of the Energy Independence and Security Act (EISA) and signed into law on December 19, 2007, is modeled after the Community Development Block Grant program administered by the Department of Housing and Urban Development (HUD). It is intended to assist U.S. cities, counties, states, territories, and Indian tribes to develop, promote, implement, and manage energy efficiency and conservation projects and programs designed to:

- Reduce fossil fuel emissions;
- Reduce the total energy use of the eligible entities;
- Improve energy efficiency in the transportation, building, and other appropriate sectors; and
- Create and retain jobs.

Through formula and competitive grants, the Program empowers local communities to make strategic investments to meet the nation's long-term goals for energy independence and leadership on climate change.

Better Buildings: Commercial Energy Efficiency Solutions
Copied from DOE website: [https://eere-exchange.energy.gov/#FoaId61f75f1e-1d39-4fa5-9b8e-69b5f609c56f](https://eere-exchange.energy.gov/#FoaId61f75f1e-1d39-4fa5-9b8e-69b5f609c56f)

This funding opportunity seeks proposals for new technical, business and implementation solutions to deliver energy efficiency in small commercial buildings (50,000 sq. ft. or smaller) resulting in energy savings of at least 20% in existing buildings and meeting or exceeding Architecture 2030 50% Challenge targets in new construction. Proposers should identify and address the key barriers in the market, and demonstrate how their solution will address these barriers, through demonstration and deployment activities, resulting in uptake at scale in the target market. Proposals should concisely describe how the team, as led by a partner that exhibits deep understanding and orientation to the small commercial buildings market, and has a demonstrated ability to successfully implement market uptake programs, will move innovative energy efficiency solutions forward in at least one subsector of the small commercial buildings market. Successful proposals must demonstrate a clear plan for further scalability so that projects come out of the funding period with the necessary elements to support a robust multi-region or national program. Successful awards will fund the design and development of innovative
technical and market uptake solutions, demonstration of the solution to reach energy performance targets in at least one sub-market (geographic and/or building type), and development or implementation of a plan to take the model to national scale.

**Rooftop Solar Challenge II**

Copied from DOE website: [https://eere-exchange.energy.gov/#FoaId61f75f1e-1d39-4fa5-9b8c-69b5f609c56f](https://eere-exchange.energy.gov/#FoaId61f75f1e-1d39-4fa5-9b8c-69b5f609c56f)

*the inscription for the 2013 Rooftop Solar Challenge has already closed*

The Rooftop Solar Challenge II (RSC II) is a program intended to deploy, at the regional and national scale innovative, local government-level solutions towards eliminating market barriers and lowering the non-hardware balance of system costs (“soft costs”) of grid-tied solar photovoltaic (PV). Applicants will be expected to have already demonstrated exceptional progress towards achieving soft cost reductions in specific geographic areas, and must present a credible plan to build on these successes by rapidly deploying techniques and tools to achieve larger-scale impact on solar PV markets. In addition to receiving a rigorous qualitative evaluation, Applicants will be quantitatively assessed and scored during and at the end of the project period according to the DOE Solar Market Maturity Model (SM³). Applicants are expected to propose a means for achieving the widespread process standardization that is critical to achieving rapid scale-up of PV markets.
Works Cited and End Notes


4 ibid, page 10.


6 Ibid page 6

7 Ibid page 10

8 Ibid page 7

Developers


12 A potential setback, and subsequent challenge in bridging the gap described above, is that S1.3 relies on codes that have not yet passed. Should these codes fail to pass or be delayed, it could result in a continued gap, as requirements force/require change. With that being said, minimum standards for building codes are progressively becoming stricter at all levels. From a long-term business perspective, it is in the best interest of developers to change prior to anticipated standards in order gain prior experience.


Building Owners, Asset Managers and Property Managers

xxv The Official Site of the Empire State Building “Lessons Learned” nd. Web 22 May 2013
http://www.esbnyc.com/sustainability_lessons_learned.asp#Maximizing_Energy_Savings

xxvi Jones Lang LaSalle, Clinton Climate Initiative et.al., The Official Site of the Empire State Building, “A Landmark Sustainability Program for the Empire State Building” ESB White Paper 06.18.09. Web. 22 May 2013

http://blog.rmi.org/blog_empire_state_retrofit_surpasses_energy_savings_expectations

xxviii Ibid

xxix Rocky Mountain Institute “True Stories” nd. Web. 22 May 2013
http://www.rmi.org/retrofit_depot_get_connected_true_retrofit_stories


xxxii Ibid


xxxiv World Business Counsel for Sustainable Development “Energy Efficiency in Buildings Transforming the Market”, page 45

http://www.usgbc.org/ebom

http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=VA20F&re=1&ee=1


Ibid “Metro Center Showcase Project: Macy’s” nd. Web 22 May 2013
http://www4.eere.energy.gov/challenge/showcase/macys/metro-center

Ibid “815 Connecticut Avenue Showcase Project: Transwestern” nd. Web 22 May 2103
http://www4.eere.energy.gov/challenge/showcase/transwestern/connecticut

City of Chicago’s Green Office Challenge. ”About the Challenge” nd. Web. 22 May 2013
http://www.chicagogoc.com/pages/aboutchallenge

Businesses


This is primarily because large office buildings usually have centralized HVAC systems, control over their operations, and have access to capital to invest in improvements

As previously mentioned in this report, a significant enabling factor to this strategy is implementation of the International Energy Conservation Code (IECC) 2012 which will require all buildings to improve efficiency by 30%; however, this code has yet to be adopted by the County and is therefore still a variable factor.

http://edfclimatecorps.org/about.

EDF Climate Corps Fellows can also work with universities and non-profit organizations and are offered at a discounted cost of $2500 for the summer. For more information about applying for a fellow and expected deliverables visit their website at edfclimatecorps.org.

For more information on Dominion Virginia Power’s energy efficiency rebate and assistance program visit their website at https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/ec-programs.jsp.

DC’s Small Business Energy Efficiency program provides financial and technical support to small businesses to improve Air Sealing, Insulation, Energy Star Appliances, Heating/Cooling System Repair or Replacement, Hot Water Tank Repair or Replacement, High Efficiency Lighting Fixtures and Bulbs. For more information visit their website at http://ddoe.dc.gov/smallbusiness.

Cost effective awards and recognition systems are an easy way motive some businesses to take action and also reward those who have demonstrated significant commitment towards meeting the County’s goals. For an example visit the Southwest Energy Efficiency Project’s [SWEEP] press release on their 2012 Partner’s of the Year in Colorado:


More information about SRA International’s energy consulting services is available at http://www.sra.com/energy/.

Marriott International has pledged to improve energy efficiency within their hotel operations including hotels receiving energy star certification located in Arlington, more information available at http://www.marriott.com/corporate-social-responsibility/corporate-environmental-responsibility.mi#/section/water-waste-energy.
US Airways has undertaken significant steps to reduce emissions within their operations but have not yet pledged to improve energy efficiency within their office spaces. Information about their emissions reductions is available at http://www.usairways.com/en-US/aboutus/pressroom/gogreen/green.html.
Energy Star guides for specific facility types include auto dealers, grocery and convenience stores, healthcare, home based businesses, lodging, office, renters and tenants, retail, restaurants, service and produce providers, and small and medium sized manufacturers and are available at http://www.energystar.gov/index.cfm?c=small_business.sb_index.
Residential
For more information on Dominion Virginia Power’s energy efficiency rebate and assistance program visit their website at https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/ec-programs.jsp.
Energy Star’s website contains valuable information for residents who are interested in improving their home’s energy efficiency at http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_index&s=m.
For information on Federal Tax Credits for homeowners visit Energy Star’s website at http://www.energystar.gov/index.cfm?c=tax_credits.tx_index#s2.
For the Virginia Weatherization contact information visit http://www1.eere.energy.gov/wip/project_map/project_details_new.aspx?pid=103.
For information on weatherization assistance visit http://www1.eere.energy.gov/wip/wap_apply.html.

Government
ibid

Ibid, 9.


Adaptation


It may also be necessary to define the level of risks that are acceptable by agreeing on probability thresholds for climate change impacts, but that discussion is beyond the scope of this report.


http://www.arlingtonva.us/departments/ManagementAndFinance/CapitalImprovementProgram/file88080.pdf