Environmental Action Plan 2030

Phase One Update (Draft)

October 4, 2018

ECO-CITY ALEXANDRIA

Acknowledgements

Alexandria City Council

Allison Silberberg, Mayor
Justin Wilson, Vice Mayor
Willie F. Bailey Sr.
John T. Chapman
Timothy B. Lovain
Redella S. "Del" Pepper
Paul C. Smedberg

Environmental Policy Commission

James Kapsis, Chair
Praveen Kathpal, Vice-Chair
Scott Barstow
Eldon Boes
Elisabeth Bradley
Geoffrey Goode
Leslie Jones
Jessica Lassetter
Stephen Milone
Brendan Owens
Carolyn Schroeder
Reid Sherman
Sean Wilson

Eco-City Steering Committee

Councilman John T. Chapman
Councilwoman Redella S. "Del" Pepper
City of Alexandria Department Directors

City of Alexandria Departments and Affiliates

Alexandria City Public Schools
City Manager's Office
Code Administration
General Services
Health
Housing
Library
Management and Budget
Parks, Recreation, and Cultural Activities
Planning and Zoning
Project Implementation
Transportation and Environmental Services

Table of Contents

Executive Summary

Introduction

Alexandria has long been a leader in sustainability. The City adopted the first Eco-City Charter in the region in 2008, thereby establishing Eco-City Alexandria. The Eco-City Charter, which sets the vision and guiding principles for sustainability [Appendix B], was followed in 2009 by the adoption of the City's first Environmental Action Plan (EAP) 2030.

ECO-CITY ALEXANDRIA

Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize existing policies, regional realities, and economic and business markets with their natural resources and environmental assets. Eco-Cities strive to engage all citizens in collaborative and transparent decision making, while being mindful of social equity concerns.

With 10 categories, 48 goals, and 363 action items, the original EAP has served as a detailed road map for city leaders, staff, and the community. Since adoption, the City has achieved over 70% of the short-term action items contained within. The resulting impact has been significant despite years of fiscally constrained budgets, the financial crisis and recession, population growth of 12%, and the challenge of balancing economic growth and environmental goals.

The City's priorities in 2009 were air quality, recycling, transportation, and green buildings. Over the last 10 years, knowledge of sustainability issues and the importance of cross-cutting measures has increased. While transportation and green building continue to be priorities, the City is now reframing its approach to sustainability by addressing energy, water resources, solid waste reduction, greenhouse gas (GHG) reduction, and affordable housing. In the fall of 2017, the City hired a sustainability coordinator and embarked on a two-phase update of the EAP. This is Phase One of the update process.

Highlights

The City has a variety of strategic and master plans that layout in-depth policies and processes for implementation supportive of the City's sustainability goals. These plans, such as the City's Strategic Plan, Small Area Plans, Green Building Policy, Energy and Climate Action Plan, Open Space Master Plan, Urban Forestry Master Plan, Stormwater Management Program, Sanitary Sewer Master Plan, and Transportation Master Plan, have led to many environmental achievements [Appendix C] in key EAP categories:

- Air Quality: closed the GenOn coal-fired power plant ahead of schedule; and established ventilation requirements that resulted in smoke free buildings.
- Energy: provision of an annual residential and business solar bulk buying opportunity for four years running; upgraded 100% of traffic lights to energy efficient LEDs; offset 60% of city facilities electrical use with renewable sources as of FY2019; and identified energy efficiency projects in government facilities.

- Climate Change: collaborated with Metropolitan Washington Council of Governments (MWCOG) to prepare a Greenhouse Gas (GHG) Inventory every three years; data analyzed shows a 22% reduction in per capita GHG emissions from 2005 to 2015 (the last report year) and an overall decrease of 13% in GHG since 2005 [Appendix D].
- Green Buildings, and Land Use and Open Space: ensured 95% of new development in the city complies with the Green Building Policy; exceeded the goal of adding 100 additional acres of open space; and, achieved 36% tree canopy coverage citywide as of 2016.
- Solid Waste: increased the city-wide recycling rate of 26% to almost 50%; instituted a year-round Farmer's Market and food composting pilot program; and, expanded the leaf composting program to include free mulch to residents in the spring.
- Transportation: achieved a 12.5% drop in vehicle miles traveled (largest reduction in the region); improved streetscape safety; increased the walk-to-work rate by 28%; improved bikeshare and bicycle infrastructure to include 22 miles of dedicated bike lanes and shared-lanes; achieved an 87% increase in the bike-to-work rate (between 2000 and 2012); and increased transit ridership by 21.8% in part by expanding transit options to include DASH, Free Trolley, Metroway, Metrorail and Metrobus.

- Water Resources: treated more than 1,500 acres to reduce storm water pollution through $3.9 million in grants; adopted a Long-Term Control Plan for the combined sanitary and storm sewer system.

Cross-Cutting Strategies

The City recognized cross-cutting strategies must be integrated into the EAP 2030 to best achieve sustainable programs, policies and processes. This approach continues to enable and encourage City departments to work together and align departmental planning processes to achieve the goals, targets, and actions of the original EAP. Examples of these strategies currently at work include the following:

- Energy and Climate Action Plan (2011) identified GHG emission reductions measures in government operations and community facilities achievable through green buildings, transportation, solid waste, land use, and climate change adaptation policies and practices.
- Green Building Policy (GBP) adopted in 2009 and the GBP update planned for FY2019 will continue to prioritize higher density development around transit centers, balance land use and open space, provide affordable housing, encourage green building to be more environmentally positive for energy, water, transportation, and open space than minimum regulations.

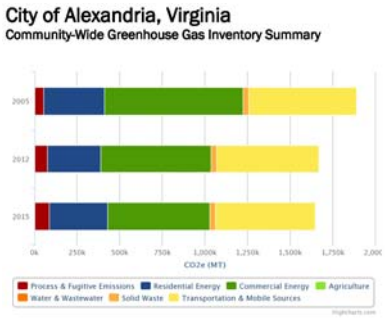
- Stormwater Management Program, Stormwater Utility, Combined Sewer System Long-Term Control Plan, Open Space Master Plan, and Urban Forestry Master Plan work together to establish a strong framework for stream, pond, and wetland restorations.
- Transportation plans continue to incorporate EAP goals, resulting in environmentally-supportive Transportation Master Plan updates; Vision Zero, Complete Streets, and bike share programs; the provision of free Trolley rides; expanded DASH city bus coverage; the establishment of priority transit corridors; and, increased prevalence of walking in the city.

Challenges

The City faces implementation challenges and constraints to action from many sources, so it is imperative City develop a plan capable of implementing responsible actions to meet the City's sustainability goals.

As the local, regional, national, and international environments have changed such as the enactment of China's National Sword policy in 2017change, markets for recycling

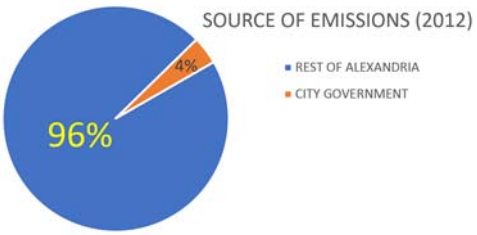
materials will adjust as needed to implement actions that respond to the changing world.



Collaboration with standardized methodology MWCOG uses to compile a GHG inventory every three years ensures the City can be directly compared to other localities in the Washington, DC metro area. In 2015, residential and commercial emissions accounted for 57% of GHG emissions, with 36% coming from transportation and mobile sources. Understanding of the standard methodology used to calculate GHG emissions illustrates that Alexandria's levels are impacted by the through-traffic of commuters and travelers with non-local destinations, as well as the aviation that are outside the control of the city.

Furthermore, regional climate action planning, state energy and utility options, regional plans for air quality, shared resources and data, and coastal flood investigation provide leverage opportunities for action, but the City may be limited in its ability to participate due to Virginia's status as a Dillon rule state. The City also faces local challenges to achieving EAP goals and action items, including evolving fiscal priorities, limited staff resources, competing program demands, new regulatory requirements.

City operations generate only 4% of the City's total GHG emissions. The remaining 96% comes from the community, visitors, and related travel associated with the city. If the City wishes to set and meet a goal such as an 80% reduction in GHG emissions by 2050, it will need support by all who live, work, visit, and enjoy the city.



The cost estimates [Appendix A] are preliminary (order of magnitude) and range from $13 to $15 million. The challenge would be to have the money budgeted for each of the recommended actions. The costs associated with two actions within the energy section account for $12 to $14.6 million of the total. Additional staff resources are identified when required for each of the recommended actions. Adoption of the Phase One Update is not a fiscal commitment to implement every recommended action. The decision to implement, if additional fiscal resources are required, would be determined through the budget process.

Public Engagement

Public engagement is critical to the success of both the EAP update and implementation processes. These events serve to promote an understanding of the issues involved, obtain community feedback in person as well as online, and directly by email and by phone.

The overarching message from the community is a desire for more outreach and education. Change can happen, it will involve all of us. Updates are more frequent on the Eco-City web site and a virtual tour of city sustainable features is planned. Performance dashboards are being added in addition to updating annual key indicators. Look for expanded dashboards to be added over time in many departments. During Phase One implementation and expanded with the Phase Two adoption, the City will increase public education and active participation of the community to to have more information and tools to facilitate sustainable practices by residents and businesses. Education will include a a robust effort of workshops with hands-on learning experiences, online, social media and graphical handouts.

Phase One of the EAP update has featured several opportunities for public involvement. The update process was launched in December 2017 with a public kick-off event in City Hall, followed by more in-person public engagement about the future of Alexandria's sustainability priorities at the Eco-City Café in March 2018, and most recently an Open House in August 2018 presenting the latest draft of the Phase One update. Members of the public interested in these events, but unable to attend in-person could also participate in live discussion via social media. The City hosted an informational booth and presented a 20-minute discussion on the EAP update in April at Alexandria Earth Day 2018. Online surveys and open public discussion at each monthly EPC meeting provided additional opportunities for feedback.

Phase Two of the EAP update process will include similar opportunities for engagement. The public can also provide more targeted feedback by attending public hearings by the Planning Commission on sections The Green Building and Land Use and Open Space sections.

Phase Two is will be another opportunity to involve the community in development of additional goals and actions in all ten topic areas.

Elements of the EAP Update

After ten years of progress, the City is embarking on the next leg of its journey as a sustainable City. Many actions and targets outlined in the existing EAP have been achieved and even exceeded, while others are still a work in progress. This update, which will take place in two phases, lays the groundwork for new goals, targets, and actions to refine the direction of our vision and challenge us to be better stewards of the environment.

In 2017, the City hired a sustainability coordinator to oversee the production and implementation of an update to the EAP 2030. This process is in two phases. The following document comprises the Phase One update, which focuses on short-term actions in five key areas: Energy, Climate Change, Green Buildings, Land Use and Open Space, Solid Waste, as well as an action item encompassing outreach and education. Each topic area chapters will include goals, targets, short-term actions, cost estimates, justifications, and related legislative priorities for the City, if applicable. Furthermore, a greater emphasis will be placed on establishing a more robust presence for Eco-City Alexandria, enhanced online content, new educational resources, and additional outreach opportunities.

The Phase One goals, targets, and actions that follow are provided to be a step in a process that moves us toward an updated EAP that will be a new road map for the city. Some actions require prudent steps of study and evaluation and longer processes of implementation and results. While other actions can be implemented sooner with visible and often measurable results. Phase Two will add the mid- and long-term actions to the EAP and as part of the EAP update process more robust tracking and reporting features will be added.

The Phase Two update, targeted for adoption in FY2019, incorporates and expands on Phase One to create a comprehensive document featuring short-, mid-, and long-term actions for all ten categories: Energy, Climate Change, Green Buildings, Land Use and Open Space, Solid Waste, Transportation, Water Resources, Environmental Health, and Air Quality, and Implementation, Education, and Outreach.

These time frames encompass the following years:

- Short-term actions FY2019-FY2023
- Mid-term actions FY2024-FY2029
- Long- term actions FY2030 and beyond

1. Energy

Renewable Energy

Goal	Transition City of Alexandria government facilities to 100 percent clean energy to mitigate Alexandria's contributions to climate change.
Target	By Fiscal Year (FY) 2020[1], offset electrical energy use by City-owned facilities with 100 percent renewable energy.

Short Term Actions

1. By FY2020, increase Renewable Energy Certificate (REC) purchases to offset 100 percent of electrical energy use by City government facilities. This temporary measure is phased down as direct purchasing[2] and onsite generation represent an increasing share of the City's electrical energy supply over time.

   Cost Estimate: $100,000 per year

   Cost Breakdown: Approximately $58,500 has been committed in FY2019 to achieve approximately 60 percent offset of electricity use. Costs will vary slightly year over year to accommodate net changes in electrical energy use from energy efficiency implementation, weather influences, and operational changes.

2. By FY2021, develop a renewable energy supply strategy to evaluate the risks, benefits, feasibility, optimal mix and timing of potential renewable energy supply implementation pathways considering the City's current and future energy use demands. Should beneficial direct purchase or other opportunities become available before the strategy is complete, the City should conduct appropriate due diligence to prudently evaluate and consider implementation.

   Cost Estimate: $100,000

   Cost Breakdown: $50,000 - $100,000, depending on the quality and rigor of analysis.

[1] Unless otherwise indicated, all targets and actions are intended to be completed no later than the end of the fiscal year identified.

[2] Direct purchasing includes wholesale transactions such as an offsite purchase power agreement (PPA), voluntary purchases via a utility-run green tariff program, or other methods that can demonstrate regional additionality.

3. By FY2023, ensure that direct purchasing of offsite renewable electrical energy accounts for at least 50 percent of electrical energy use at all City-operated facilities. REC purchases and onsite renewable electrical energy generation will make up the remainder, to achieve a 100 percent renewable energy supply.

    Cost Estimate: $3,500,000

    Cost Breakdown: Capital cost (consulting, contracting and procurement, acquisition, installation, etc.) is estimated to be approximately $3,500,000 for implementation of 50 percent electrical energy offset from a direct purchasing opportunity, 5 percent implementation of feasible on-site renewable energy installation opportunities, and the balance through RECs. Both direct purchasing opportunities and feasible on-site renewable energy installations have high potential to result in cost savings to the City, with the highest savings potential resulting from installation of on-site renewable energy followed by direct purchasing opportunities. An estimated 95% of the capital cost associated with this action is attributed to the installation of on-site renewable energy opportunities. Optimal mix, savings estimates, and purchasing strategies will be identified from Short Term Action Item 2.

Legislative Priorities

1. Establish aggressive and mandatory requirements for renewables in the state's overall energy mix, including implementation of a mandatory Virginia Renewable Portfolio Standard (RPS) with a focus on in-state solar renewable energy credit (SREC) markets.

2. Encourage expansion of net-metering options for local governments to include aggregate or virtual net metering, allowing local government entities to install solar facilities of up to 5 MW on government-owned property and use the electricity for schools or other government-owned buildings located on nearby property, even if not contiguous.

3. Support development of distributed generation and net-metering rate structures that provide fair retail value of solar and renewable energy electricity generation for all surplus electricity generated and added to the grid, including value of emissions reductions, resiliency, and related benefits.

Justification

1. By FY2020, offsetting 100 percent of electricity use can be accomplished through the purchase of RECs.

Accountable Parties

General Services (primary); Transportation and Environmental Services

Energy Efficiency

Goal

Accelerate implementation of all feasible energy efficiency and emission reduction measures for City-owned buildings and infrastructure, and City-affiliated transportation.

Target

By FY2023, City-owned buildings and infrastructure should use 20 percent less energy on average (per square foot or relevant normalized metric) using an FY2018 baseline.

Short Term Actions

1. Major City renovations that are more than 25 percent of the building space or 25 percent of the building value, affect building components and equipment, and impact the energy performance of a building or building system should be replaced with better-than-code options where practicable. Update facility asset condition auditing process and Facility Condition Index (FCI) rating (or similar) methodology and process to reflect facility energy and sustainability performance. In addition, include energy audits, portfolio energy optimization, and similar evaluation processes into the facility asset condition auditing process. Develop and utilize a portfolio-wide energy model to identify and develop a portfolio-wide energy optimization investment plan as part of a broader energy supply transition planning effort, as recommended in the Renewable Energy section.

   Cost Estimate: $200,000 per year

   Cost Breakdown: Estimated $150,000 – $200,000 per year funding plus staff resources to development a portfolio-wide energy optimization investment plan independent or as part of a broader energy supply transition planning effort as recommended in the Renewable Energy section.

2. By FY2021, initiate electric passenger vehicle pilot programs for DASH, Alexandria City Public Schools, and the City vehicle fleet to evaluate costs, benefits, technical feasibility, and implementation opportunities to transition City fleet vehicles to electric vehicle technology, and install vehicle charging infrastructure at City facilities.[3]

   Cost Estimate: $150,000 per year

   Cost Breakdown: A small-scale pilot of City passenger vehicles may be accomplished with $100,000 – $150,000 for vehicle acquisition.

[3] Pilot programs for DASH and ACPS would be subject to approval by the applicable boards.

3. By FY2021, complete retrofits of 75 percent of all City facilities' practicable conventional lighting with light-emitting diode (LED) lighting and by FY2023 retrofit 95 percent of practicable streetlights and outdoor lighting to LED technology, subject to the availability of a suitable, safe LED solution and zoning constraints.

    Cost Estimate: Total estimated cost to retrofit practicable lighting is about $7,800,000 – $9,300,000. Retrofit 75 percent of all remaining practicable City facilities' and operations (i.e. parks, area lighting, parking lots, etc.) conventional lighting roughly estimated to be an additional $4,000,000 – $5,500,000 over current funding. Retrofitting 100 percent of practicable streetlights is estimated to be about $3,800,000 ($1,800,000 for conventional basic roadway and traditional streetlighting, and about $2,000,000 for Gadsby streetlighting).

    Cost Breakdown: Lighting retrofits for all City facilities will be dependent on future City Capital Improvement Project (CIP) funding and staffing allocated to lighting retrofits. Not all existing lighting is amenable for retrofit, either financially or technically. Funding to retrofit parks and outdoor lighting is limited or not currently specified in the City's CIP. Retrofitting 75 percent of remaining practicable conventional lighting will result in operating budget savings to the City, as will retrofitting 95 percent of practicable streetlights. Retrofitting practicable conventional lighting at City facilities and operations is estimated to be a simple payback range of approximately 3 – 8 years. The estimated simple payback of retrofitting 100 percent of practicable streetlights is approximately 4 – 7 years. The requested City CIP only specifies funding to support converting 95 percent of streetlights by the end of FY2023. The Gadsbys make up 840 of ~10,000 lights and are custom poles and fixtures are planned to be completed in FY2027. FY2023 recommendation is not coordinated with the practicable considerations of negotiation and funds will come through the normal budget process.

Legislative Priorities

1. Provide financial incentives to local governments, state agencies, and private owners of conventional roadway, street, and outdoor lighting to convert to dark-skies compliant LED technologies.

2. Commission a new energy efficiency potential study to assess the scale, availability, and cost of energy efficiency as an economic, resiliency, and generation resource in the Commonwealth of Virginia.

3. Direct the Virginia Department of Mines, Minerals, and Energy (DMME), State Corporation Commission (SCC), Virginia Department of Environmental Quality (DEQ), utility companies, and relevant stakeholders to pursue strategic partnerships with Virginia local governments to identify electric vehicle charging infrastructure needs, coordinate deployment of public electric vehicle charging infrastructure, and incentivize transition of personal-occupancy vehicles to electric vehicle technologies.

Justification

1. Emphasizing energy efficiency as the ‘first fuel’ to address energy use and greenhouse gas (GHG) reductions to meet our reduction goals.

Accountable Parties

General Services (primary); Code Administration;Transportation and Environmental Services

Community Energy Use

Goal	Reduce GHG emissions associated with community energy consumption in support of the City's global GHG emissions reduction goals.
Target	By FY2023, reduce per capita GHG emissions in Alexandria to 9.7 metric tons per capita per year to exceed beyond the City's Strategic Plan target in further effort to achieve the City's longstanding goal of reducing emissions 80 percent below 2005 levels by 2050.

Short Term Actions

1. By FY2019, expand participation in state-level policy and regulatory activities relevant to identifying and creating opportunities to reduce GHG emissions associated with community energy use. This should include lobbying for bills that would expand renewable energy purchasing by the community or utility, advocating for the state of Virginia to join the Regional Greenhouse Gas Initiative (RGGI), setting a Renewable Portfolio Standard for electricity generation, and granting Alexandria authority to undertake energy and transportation initiatives to reduce GHG emissions that are currently prohibited by state law. This should also include intervening in regulatory dockets related to the composition of the utility generation supply mix, utility energy efficiency programs, or utility rates.

   Cost Estimate: One full-time employee (FTE) at $200,000 per year

   Cost Breakdown: Depending on the necessary expertise and level of involvement, efforts may require external support including specialized legal counsel or technical experts. Based on past intervention efforts, these costs may range from an estimated $50,000 - $500,000 per year.

2. By FY2020, adopt an ordinance implementing a Commercial Property Assessed Clean Energy (C-PACE) program to support sustainable economic development opportunities.

   Cost Estimate: $450,000

   Cost Breakdown: Assumes operation by external administrator. Estimate 75 percent for program implementation and 25 percent ongoing program operation. One full-time equivalent (FTE) at $200,000 per year. The one FTE net time could be allocated accordingly to other programs. Additional one-time start-up costs estimated to be about $100,000 - 200,000 for legal counsel, engagement, systems implementation, etc. Recurring operation

costs would largely be borne by the administrator and fees charged to participants but estimate contingency of $25,000 - $50,000 for any necessary legal counsel or administrative consulting expenditures, etc., which could be included in remittances by external administrator. Do not include costs of recordation or similar costs as the lending volume would not require significant impacts to existing recordation staffing.

3. By FY2020, develop a community electric vehicle charging infrastructure strategy.

   Cost Estimate: $100,000

   Cost Breakdown: Consultant engagement and strategy development are estimated to be about $75,000 - $100,000.

Legislative Priorities

1. Offer state-wide rebates for energy efficient building systems equipment, including lighting, HVAC, hot water, and related systems for all customer classes with primary support for residential customers.

2. Direct the Virginia Department of Mines, Minerals, and Energy (DMME), State Corporation Commission (SCC), Virginia Department of Environmental Quality (DEQ), utility companies, and relevant stakeholders to pursue strategic partnerships with Virginia local governments to identify electric vehicle charging infrastructure needs, coordinate deployment of public electric vehicle charging infrastructure, and incentivize transition of personal-occupancy vehicles to electric vehicle technologies.

3. Provide increased outreach, implementation assistance, start-up financial resources to local governments to implement Commercial Property Assessed Clean Energy (C-PACE) programs.

4. Prioritize and support legislation to authorize localities to establish mandatory benchmarking and disclosure programs.

5. Increase stringency of energy efficiency building codes; including adoption of most recent International Energy Conservation Code (IECC) and International Green Construction Code (IGCC).

Justification

1. The results of additional community energy policies and programs continue to reduce GHG emissions by 3 percent beyond current efforts to reduce per capita GHG emissions in Alexandria to 10 metric tons per capita per year by FY2022.

Accountable Parties

General Services (primary); Transportation and Environmental Services

2. Climate Change

Goal

Institutionalize procedures to facilitate meeting the City's goals for mitigation of community GHG emissions.

Target

By FY2022, reduce per capita GHG emissions in Alexandria to 10 metric tons per capita per year as a step towards meeting the City's longstanding goal of reducing emissions 80 percent below 2005 levels by 2050.

Short-Term Actions

1. By FY2022, establish a multidisciplinary task force to guide an update of the Energy and Climate Change Action Plan. The Plan will include recommendations for specific policies and programs, each with funding strategies, to achieve emissions reductions targets through: improvements in energy efficiency for both new and existing buildings; increasing of renewable energy production and availability for city residents; working to curtail consumption of fossil fuels; engaging Alexandria residents and businesses emissions reducing actions; and, identifying opportunities for climate adaptation policies and practices.

   Cost Estimate: $305,000

   Cost Breakdown: $150,000 is for consultant services to propose recommendations for policies and programs and $155,000 is for staff (1 FTE) to support a new task force.

2. By FY2020, engage the community through a robust education and outreach campaign to inform Alexandria residents and businesses how to adopt emission reducing strategies and practices, solicit community recommendations, and provide opportunities to participate in the City's commitment to reduce GHG emissions and address climate change.

   Cost Estimate: $20,000 per year

   Cost Breakdown: This includes outreach events and a sustained marketing push.

3. By FY2022, determine appropriate policies and guidelines for estimating projected GHG impacts, this includes identifying the types of projects and programs likely to have a significant impact on community-wide GHG emissions and resolving how to consider GHG emissions impacts alongside other city priorities when evaluating options, then calculate costs of programs and projects marked for GHG emissions assessments.

Cost Estimate: N/A

Cost Breakdown: Total annual costs are dependent on the number of projects per year that meet the guidelines (to be developed), but process will require one to three percent of project costs to estimate the GHG emissions.

Legislative Priorities

N/A

Justification

1. The goal, target and short-term actions are consistent with the Metropolitan Washington Council of Governments (MWCOG) Regional Climate and Energy Action Plan[4], align with the Paris Agreement[5], and reinforce our identity as an environmental policy leader by progressing towards our commitment of achieving an 80 percent reduction GHG emissions by 2050.

2. Engagement of the community is essential to reducing the 96 percent emissions generated by the community and the four percent by city operations.

3. Climate adaptation is covered in sections of small area plans for waterfront and other water resource efforts.

Accountable Parties

General Services (primary); Transportation and Environmental Services (secondary); City Manager; Management and Budget; Planning and Zoning

4 MWCOG, Regional Climate and Energy Action Plan, p.24. goo.gl/GmDkzh
5 382 US Climate Mayors commit to adopt, honor and uphold Paris Climate Agreement goals. http://climatemayors.org/actions/paris-climate-agreement/

3. Green Building

Goal

Optimize the economic, environmental, and social performance of new and existing buildings in the City of Alexandria.

Target

By FY2023, the Green Building Policy will enhance sustainable practices within new and existing buildings, establishing the expectations for public and private buildings toward achieving the goals for GHG emissions, water use, and stormwater runoff reduction established in the EAP.

Short Term Actions

1. Review the effectiveness of the current Green Building Policy and update the Policy in FY2019 with a focus on sustainable strategies that have the greatest impact toward achieving targets across EAP principle areas. The Task Force deliberations will inform the medium and long-term EAP actions for Green Buildings. Through this process, with support of third-party consultant analysis, the update will consider topics such as:

    a. Increasing LEED or equivalent third-party green building certification standards for private development;

    b. Establishing a separate green building standard, which includes evaluating the feasibility of a net zero standard where applicable, for new public development, including schools in collaboration with ACPS;

    c. Prioritizing specific green building elements;

    d. Incorporating incentives to promote green building to achieve the quantifiable goals for GHG emissions and water use and stormwater runoff reduction established in the EAP;

    e. Introducing green building practices for existing buildings (including historic) and for small buildings not subject to site plan review;

    f. Instituting a building performance monitoring program;

g. The City's ability to be more ambitious than the private sector in meeting green building goals to serve as a sustainability leader, and

h. Establishing a Green Zone in the City.

As part of this process, a Green Building Policy Update Task Force will be established by City Council. The Task Force, with critical input from the EPC and the development community, will determine the actual topics to be analyzed by the consultant.

Cost Estimate: $75,000
Cost Breakdown: The funds will be used for consultant studies on policy analysis on a cost analysis. Does not include staff time.

2. By FY2020, evaluate additional sustainable features to incorporate into the "Building Section" of the standard development conditions for the Development Site Plans (DSP) and Development Special Use Permits (DSUP) that will contribute toward achieving targets across EAP principle areas.

Cost Estimate: N/A
Cost Breakdown: Existing staff resources

Legislative Priorities

N/A

Justification

1. Climate change presents an existential threat to the future livability of Alexandria and the rest of the planet. Climate science has confirmed that GHG emissions must be rapidly eliminated to avoid a greater than 2°C increase in global average temperatures. Green building is an important instrument in reducing GHG emissions, potable water consumption, raw materials use, and waste output. Green Building also contributes to increased air quality, reduced storm water pollution, reduced energy demands, and economic sustainability.

Accountable Parties

Planning and Zoning (primary); Code Administration; General Services; Transportation and Environmental Services

4. Land Use and Open Space

Tree Canopy

Goal	Preserve and expand a healthy urban tree canopy.
Target	By FY2023, average overall tree canopy is a minimum of 40 percent.[6]

Short Term Actions

1. Update and coordinate the Urban Forestry Master Plan, Environmental and Sustainability Management System (ESMS), and Landscape Guidelines in FY2019 to support increased tree preservation, expansion, maintenance, native species, and a revised tree canopy coverage goal.

   Cost Estimate: $40,000 per year
   Cost Breakdown: $30,000 - $40,000 per year. $30,000 for the yearly tree inventory study plus $10,000 for the tree canopy survey scheduled for every three years. Existing staff resources are accounted for in current budget.

2. Enlist City partnerships (community groups) to provide education and outreach that support technical assistance and opportunities to increase native tree canopy coverage on private property.

   Cost Estimate: N/A
   Cost Breakdown: Existing staff resources are accounted for in current budget.

Legislative Priorities

1. Advocate for state legislation that would enable the City to expand tree protection and preservation and to increase tree canopy requirements.

Justification

1. A healthy and diverse urban forest canopy coverage in Alexandria provides a broad range of environmental and social benefits such as reduced GHG emissions, improved air quality, enhanced property values, stormwater and flood mitigation, public health benefits, and vibrant public spaces. The reduction of GHG emissions improves air quality and contributes to health and wellness.

[6] City of Alexandria Urban Forestry Master Plan, approved 2009 and currently under revision

Accountable Parties

Recreation, Parks and Cultural Activities (primary); Planning and Zoning

Open Space

Goal	Increase open space quantity and improve the environmental quality and social benefits of open space.
Target	Maintain the ratio of 7.3 acres of publicly accessible open space per 1,000 residents.[7]

Short Term Actions

1. Protect and add open space through acquisition, preservation, and conservation as prescribed in the Open Space Master Plan (updated 2017) and by FY2023, evaluate increasing the target to 7.5 acres per 1,000 residents. This includes, by 2023, City Council will reestablish the open space steering committee to re-asses the methodology, evaluate, and prioritize potential open space sites. Tools to be considered for open space preservation or restoration will include purchase, easements, or repurposing land as funds can be made available, development occurs, or partnerships can facilitate.

   Cost Estimate: N/A

   Cost Breakdown: Existing staff resources. No additional cost implications; however, the action is dependent on the development envisioned in small area plans.

2. By FY2023, increase the percentage of acres of public natural lands that are actively managed, including restoration and invasive species removal, by 50 percent (450 acres).

   Cost Estimate: N/A

   Cost Breakdown: Existing staff resources

3. By FY2020, evaluate and update the requirements of open space on residential, commercial and mixed-use private development. Issues include rooftop/ground floor open space, framework for developer contributions to off-site open space, impervious surface percentages and consistency of open space requirements across similar zones.

   Cost Estimate: N/A

   Cost Breakdown: Existing staff resources

Legislative Priorities

N/A

[7] City of Alexandria Open Space Master Plan, approved 2003 and updated 2017

Justification

1. Open space, natural spaces and tree canopy provide physical, mental and community benefits, while offering opportunities for social interaction and the conservation of natural resources and biodiversity. Public open space equitably encourages healthy choices and active lifestyles for the City's diverse population.

2. Reduces GHG emissions and improves air quality by encouraging development density around mass transit centers as mandated in the City Master Plan.

Accountable Parties

Recreation, Parks and Cultural Activities (primary); Planning and Zoning

5. Solid Waste

Recycle

Goal	Recover resources and reduce GHG emissions and other forms of pollution by optimizing and safely handling the collection and processing of solid waste.
Target	Establish a GHG emissions baseline for the collection and processing of solid waste in FY2019, measure emissions at least annually, and reduce the emissions rate by at least 12 percent by FY2023.

Short Term Actions

1. In FY2020, install special containers for only glass at all recycling drop-off centers to improve the recyclability of glass. In FY2021, if no environmentally and economically justifiable alternative can be identified for recycling glass through a single stream system, begin to phase out glass from single stream recycling and temporarily reset the City's recycling goal accordingly.

   Cost Estimate: $70,000 per year

   Cost Breakdown: Cost estimated to be $70,000 per year for glass drop-off initiative and includes containers, plus labor for collection, processing, and administrative fees.

2. In FY2019, launch an enhanced “Recycle Right” education campaign to promote and define recycling best practices with a focus on reducing the contamination of recyclables, discouraging the disposal of recyclables inside plastic bags, and maximizing the reduction of GHG emissions.

   Cost Estimate: $80,000 per year

   Cost Breakdown: Program will be built on the existing recycling campaign. Annual fee will be for program administration.

3. By FY2020, conduct a Route Optimization Study to perform a review of the current truck routing, mileage, staffing levels, homes served per route and tonnages of trash collected. Ensure that routes are performed in the most efficient, economical manner, and maximize the reduction in GHG emissions.

   Cost Estimate: $100,000

Cost Breakdown: One-time maximum expenditure of $100,000 will be used for consultant studies. This does not include staff time.

4. By FY2021, review and update the City's recycling ordinance to reflect changes in the global recycling market and to prioritize recycling practices that maximize the reduction of GHG emissions.

   Cost Estimate: $14,400

   Cost Breakdown: One-time expenditure of $14,400, including staff time.

5. By FY2020, optimize the City's food waste composting program to result in a net reduction in GHG emissions.

   Cost Estimate: Existing staff resources

   Cost Breakdown: N/A

Legislative Priorities

N/A

Justification

1. Improve the quality of collected recyclables in response to more restrictive global recycling markets.

2. The Recycle Right campaign will include outreach and education program in ACPS facilities.

3. These recommendations go a long way to meeting GHG emission reductions.

Accountable Parties

Transportation and Environmental Services (primary)

Reduce

Goal

Reduce total solid waste collected City-served residential customers.

Target

By FY2023, reduce the total solid waste per household collected city-served residential customers by five percent as compared with a baseline of Calendar Year (CY) 2018.

Short Term Actions

1. In FY2019, develop and maintain a reuse (consign), donate, repair online directory including the District of Columbia, Maryland, and Virginia to encourage residents and businesses to prevent waste and reuse existing materials.

   Cost Estimate: Existing staff resources

   Cost Breakdown: Requires approximately 20 hours of staff time for development and 10 hours of staff time for integrating the directory online.

2. By FY2021, evaluate and make a recommendation to Council on whether to initiate variable-rate pricing for solid waste collection services to reduce waste and provide greater economic equity for residents.

   Cost Estimate: $100,000

   Cost Breakdown: One-time expenditure of $100,000 will be used for consultant studies. This does not include staff time.

3. By FY2020, pilot a Share-A-Bag program to encourage residents to use reusable bags over disposable plastic bags.

   Cost Estimate: $3,000 per year

   Cost Breakdown: Cost includes 20 hours in staff time for program development, materials, and community outreach.

Legislative Priorities

1. In FY2019, support the development of a legislative proposal in consultation with neighboring jurisdictions that would authorize the City to enact a deposit program for glass containers (i.e., a “bottle bill”) and to control the sale of disposable plastic bags (i.e., “bag law” or “plastic bag tax”); include in City’s legislative priorities for the next feasible Virginia General Assembly session.

Justification

1. Reducing waste and reusing materials are the most effective ways to save natural resources, protect the environment, and reduce costs. Reducing waste also supports the goal of lowering GHG emissions by shrinking the amount of waste sent to disposal facilities and preventing the need to harvest new raw resources. These actions provide opportunities to reuse materials prior to entering the waste stream, leverage regional resources, expand relationships with regional partners and agencies, as well as improve outreach to residents and local businesses.

Accountable Parties

Transportation and Environmental Services (primary); Parks, Recreation, and Cultural Activities

Appendix A:
Environmental Action Plan 2030 Phase One Update Fiscal Summary

ECO-CITY ALEXANDRIA

Environmental Action Plan 2030
Phase One Update
Fiscal Summary

Focus Areas, Sections, and Action Items	Preliminary Cost Estimates[i] Low	High	Cost Description	Frequency
Energy	$12,350,000	$14,600,000		
Renewable Energy				
1. By 2020, offset 100 percent of City electrical energy use through the purchase of Renewable Energy Certificates (RECs).	$100,000	$100,000	• Project Management • REC Acquisition	Per Year
2. By FY2021, develop a renewable energy supply purchase and generation strategy.	$50,000	$100,000	• Project Management • Consultant Fees	One-time
3. By FY2023, direct purchase sufficient offsite renewable energy accounts to offset at least 50 percent of electrical energy use by all City facilities.	$3,500,000	$3,500,000	• Project Management • Consultant Fees • Account Acquisition	One-time
Energy Efficiency				
1. Utilize better-than-code options for eligible building systems in City renovations greater than 25 percent of the space or value; update facility asset condition auditing process and Facility Condition Index (FCI) rating (or similar) methodology; and, identify and develop a portfolio-wide energy optimization investment plan.	$150,000	$200,000	• Program Administration • Product / Design Recommendations • Inventory System Development • Strategic Planning	Per Year
2. By FY2021, initiate and evaluate electric passenger vehicle pilot programs for the City vehicle fleet.	$100,000	$150,000	• Project Management • Vehicle Acquisition • Evaluation Report	Per Year

Focus Areas, Sections, and Action Items	Preliminary Cost Estimates[i] Low	High	Cost Description	Frequency
3. By FY2021, retrofit 75 percent of all City facility conventional lighting with light-emitting diode (LED) technology and by FY2023, 100 percent of streetlights and outdoor lighting to LED technology, wherever feasible.	$4,000,000	$5,500,000	• Project Management • Fixture and Bulb Acquisition • Installation Labor	One-time
	$3,800,000	$3,800,000	• Project Management • Fixture and Bulb Acquisition • Installation Labor	One-time

Community Energy Use

1. By FY2019, expand participation in state-level policy and regulatory activities relevant to the reduction of GHG emissions associated with community energy use.	$200,000	$200,000	• New FTE Salary and Benefits Program Administration • Policy Analysis • Public Engagement	Per Year
	$50,000	$500,000	• Consultant Fees • Advisory / Advocacy Services	Per Year
2. By FY2020, adopt an ordinance implementing a Commercial Property Assessed Clean Energy (C-PACE) program	$200,000	$200,000	• New FTE Salary and Benefits Project Management • Program Coordination	Per Year
	$100,000	$200,000	• Consultant Fees • Legal Counsel Services • Public Engagement • Systems Implementation	One-time
	$25,000	$50,000	• Contingency Fund	One-time
3. By FY2020, develop a community electric vehicle charging infrastructure strategy.	$75,000	$100,000	• Consultant Fees	One-time

Focus Areas, Sections, and Action Items	Preliminary Cost Estimates[i] Low	High	Cost Description	Frequency
Climate Change	$325,000	$325,000		
Climate Change				
1. By FY2022, establish a multidisciplinary task force to provide guidance and produce an update of the Energy and Climate Change Action Plan.	$155,000	$155,00	• New FTE Salary and Benefits Program Administration • Task Force Support • Public Outreach	Per Year
	$150,000	$150,000	• Consultant Fees	One-time
2. By FY2020, provide education and outreach on emission reducing strategies and practices.	$20,000	$20,000	• Educational Materials • Public Engagement • Marketing Campaign	Per Year
3. By FY2022, develop policies and guidelines for estimating GHG impacts; calculate costs of capital improvement projects and city programs with potentially significant GHG emissions.	Based on Approved CIPs		• Program Design • Program Administration	Per Year
Green Building	$75,000	$75,000		
Green Building				
1. In FY2019, review and update the current Green Building Policy under the leadership of the City Council established Green Building Policy Update Task Force and guidance from the EPC.	$75,000	$75,000	• Consultant Fees	One-time
2. By FY2020, evaluate sustainable features for incorporation into Development Site Plans (DSP) and Development Special Use Permits (DSUP).	Existing Staff Resources		• Updated Permit Standards	Per Year
Land Use and Open Space	$30,000	$40,000		
Tree Canopy				
1. In FY2019, update and coordinate the Urban Forestry Master Plan, Environmental	$30,000	$30,000	• Consultant Fees • Tree Inventory Study	Per Year

Focus Areas, Sections, and Action Items	Preliminary Cost Estimates[i] Low	High	Cost Description	Frequency
Sustainability and Management System, and Landscape Guidelines.				
	$0	$10,000	• Tree Canopy Study	Every Three Years
2. Enlist City partnerships to provide education and outreach that support technical assistance and opportunities to increase native tree canopy coverage on private property.	Existing Staff Resources		• Educational Materials • Public Engagement	Per Year

Open Space

1. Protect and add open space as per the Open Space Master Plan (updated 2017) in conjunction with the Open Space Steering Committee, to be established by City Council prior to FY2023.	Existing Staff Resources		• Program Administration • Task Force Support • Land Acquisition	Per Year
2. By FY2023, increase the percentage of acres of public natural lands that are actively managed by 50 percent (450 acres).	Existing Staff Resources		• Program Administration • Land Acquisition • Land Management	Per Year
3. By FY2020, evaluate and update the requirements of open space on private development.	Existing Staff Resources		• Program Administration • Regulation Evaluation • New / Updated Regulations	Per Year

Solid Waste $367,400 $367,400

Recycle

1. By FY2020, install special containers for only glass at all recycling drop-off centers; by FY2021, if no feasible alternative is available for recycling glass in the single stream, phase out glass from recycling and reset the City's recycling goal.	$70,000	$70,000	• Program Administration • Collection Labor • Processing Services	Per Year
			• Container Acquisition • Installation	One-time
2. In FY2019, launch enhanced "Recycle Right" education campaign to promote and define recycling best practices.	$80,000	$80,000	• Program Administration • Public Engagement	Per Year

Focus Areas, Sections, and Action Items	Preliminary Cost Estimates[i] Low	High	Cost Description	Frequency
3. By FY2020, conduct a solid waste collection Route Optimization Study.	$100,000	$100,000	• Consultant Fees	One-time
4. By FY2021, recycle and update the City's recycling ordinance to address global market shifts and GHG emission reduction goals.	$14,400	$14,400	• Project Management • New / Updated Ordinances	One-time
5. By FY2020, optimize the City's food waste composting program results in a net reduction in GHG emissions.	Existing Staff Resources		• Program Administration	Per Year

Reduce

1. In FY2019, develop a reuse (consign), donate, repair online directory including the District of Columbia, Maryland, and Virginia.	Existing Staff Resources		• Project Management	Per Year
2. By FY2021, evaluate and recommend to Council whether to initiate variable-rate pricing for solid waste collection services.	$100,000	$100,000	• Consultant Fees	One-time
3. By FY2020, pilot a Share-A-Bag program to encourage residents to use reusable bags over disposable plastic bags.	$3,000	$3,000	• Program Development • Program Administration • Public Engagement • Materials	Per Year

TOTAL COSTS	$13,147,400	$15,407,400

[i] Costs represent early order of magnitude estimates.

Appendix B:
Eco-City Charter (2008)

ECO-CITY CHARTER 2008

city of alexandria, virginia

COMPILED BY:

Environmental Policy Commission
City of Alexandria

The Urban Affairs and Planning Program
Virginia Polytechnic & State University
Alexandria Center

SUBMITTED TO:

Alexandria City Council
Mayor, William D. Euille
Vice Mayor, Redella S. "Del" Pepper
Councilman Ludwig P. Gaines
Councilman Rob Krupicka
Councilmember Timothy B. Lovain
Councilman Paul C. Smedberg
Councilman Justin M. Wilson

ADOPTED:

June 14, 2008

Cover | City of Alexandria, GIS Base Map

ECO-CITY ALEXANDRIA

Eco-City Charter

City of Alexandria, Virginia

Vision
Definition of Sustainability
Guiding Principles
Roles & Responsibilities
Pledge & Commitment

JUNE 14, 2008

vision

On September 14, 2004, the City Council of Alexandria, Virginia adopted the 2004-2015 Strategic Plan* that sets forth the following vision:

Alexandria is a Vibrant, Diverse, Historic, and Beautiful City with Unique Neighborhoods and Multiple Urban Villages where we take Pride in Our Great Community.

Using the 2015 Strategic Plan as our guide, we offer the following Eco-City Vision in which Alexandria's citizens, businesses, and City government participate in a vibrant community that is always mindful of the needs and lifestyles of the generations to come.

We see Alexandria as a city where social well-being is supported by a strong economy and sustained by a healthy environment. Specifically, we envision Alexandria as a city that:

Builds Wisely
Where our built environment preserves and maximizes open spaces, natural landscapes, historic resources, and recreational opportunities, while protecting and improving our natural environment and public health.

Embraces Natural Beauty
Where we create beautiful parks, gardens, streetscapes, trails, and open spaces that embrace Alexandria's natural beauty, preserve our biodiversity, increase our tree canopy and streamside vegetation, and encourage a healthy, active lifestyle for all of our residents.

Improves Water Quality
Where we celebrate our heritage as a great port city by improving the Potomac River waterfront, eliminating combined sewer overflows, reducing storm water runoff, and improving the quality of our streams so that they are once again fishable and swimmable.

Clears the Air
Where we reduce significantly air pollution from all sources including vehicles, industrial sources, and power plants.

* See http://www.alexandriava.gov/uploadedFiles/council/info/strategicplan.pdf

Moves Smartly
Where we travel less and less by car and increasingly by mass transit, walking, and bicycling.

Conserves Energy and Resources
Where we reduce our energy and water use and minimize our environmental footprint.

Minimizes Waste
Where we reuse and recycle materials and significantly reduce our volume of solid waste and toxic chemical releases.

Supports Healthy Living
Where we create environmental policy and programs not only for a healthier planet but also for a healthier and safer citizenry.

Readies for Change
Where we foresee and mitigate the impacts of environmental threats such as climate change.

Leads Intelligently & Holistically
Where we implement change harmoniously and synergistically across interdependent areas.

Shares Responsibility
Where individuals take responsibility, decision-making is shared, and the community works together to achieve common goals that reflect the interests of a growing, diverse, and well-informed population.

definition of sustainability

Sustainability means meeting our community's present needs while preserving our historic character and ensuring the ability of future generations to meet their own needs. It involves balancing and integrating environmental, economic, health and social issues so as to maximize the quality of life for all of Alexandria's residents. Sustainability also requires us to consider the impacts of our decisions and actions beyond the City of Alexandria and seek the continuous evolution of policies and programs.

ADOPTED JUNE 14, 2008

guiding principles

The following guiding principles are rooted in the definition of sustainability and reflect the goals established in Alexandria's 2015 Strategic Plan. This interdependent network of guiding principles and policies is consistent with a systematic and integrated approach to sustainability.

LAND USE & OPEN SPACE

The City's land use and open space policies must harmonize its built and natural environments to ensure that growth does not jeopardize environmental sustainability and preserves Alexandria's character. The City's land use policies will accommodate increases in people and jobs through green development that:

- Ensures that land use is designed to encourage walking, biking, and public transportation through mixed-use zoning, interconnected pathways, and targeted density increases around public transportation hubs.
- Creates greater opportunities for sustainable compact development and redevelopment that requires the use of green building practices and prioritizes provision of usable open space and recreational areas.
- Ensures that City building codes, zoning ordinances, and other land use regulations reflect the goals of this Charter, so that sustainability requirements are consistently applied to all preservation, redevelopment, and development across Alexandria in ways appropriate to the character of the particular neighborhood.
- Ensures that development protects and enhances natural resource capacity.
- Protects, enhances, and increases Alexandria's open space and green infrastructure including wildlife habitat, parks, trails, tree canopy, and watersheds.
- Ensures that land use decisions do not foster or perpetuate social injustice.

WATER RESOURCES

Alexandria's past, present, and future are indelibly linked to the Potomac River and the quality of life the river sustains. Water quality in Alexandria will be managed in a sustainable manner consistent with good stewardship of the local streams, the Potomac River and the Chesapeake Bay for the public health, ecological and recreational benefits of current and future generations. The City will:

- Promote public health by continuing to ensure safe and reliable drinking water.
- Use environmentally responsible flood management, stormwater control, and wastewater treatment to protect the public's health and property.
- Promote - through sustainable practices - safe, swimmable, and fishable waterways for its citizens and visitors, and enhance the ecological integrity of its downstream waters, by minimizing stormwater runoff and pollutants draining to the Potomac River and Chesapeake Bay.

- Advocate water conservation and reuse in order to preserve the quantity, not just the quality, of our water resources.

AIR QUALITY

Alexandria faces significant challenges in improving air quality including those presented by emissions from vehicles, older industrial facilities, and the regional transport of air pollution. Given that one in eight residents have respiratory illnesses, the City should influence and control emissions sources in a manner that reflects the choices and wishes of the community. The City and its citizens will:

- Enhance their ability to manage outdoor air quality from damaging pollutants in its jurisdiction and will consider emerging threats when establishing outdoor air quality goals and regulatory approaches.
- Be proactive in protecting public health and ecological quality by lowering the amount and number of sources of air, light, and noise pollution.
- Educate those who manage commercial and public buildings on methods for improving indoor air quality and educate citizens on the harms associated with poor indoor air quality.

TRANSPORTATION

The City of Alexandria will encourage modes of transportation that reduce dependence upon the private automobile by promoting mass transit and pedestrian- and bike-friendly transportation networks. The City will integrate transportation options with land use decisions in order to ensure a healthy environment while continuing economic growth. The City will:

- Provide all its citizens - regardless of age, income, race or ability - with safe, accessible, efficient, and affordable transportation options.
- Prioritize walking, biking, and public transit in order to discourage single-occupancy vehicles.
- Reduce the environmental footprint of travel by introducing, designing and encouraging sustainable methods of transport and infrastructure.

ENERGY

The quantity and sources of energy used by Alexandria's government, businesses and residents impact our environment and quality of life—whether it be through pollutants added to the air, negative effects on water quality or local contributions to climate change. Recognizing this, Alexandria commits to managing its energy—both the electricity that powers our buildings and homes and the fuel that powers our vehicles and other equipment—based upon the following principles:

- Reduce energy consumption through conservation.
- Produce energy locally and sustainably, through installation and promotion of the use of renewable and efficient energy technologies.
- Convert existing uses of fossil-fuel energy to renewable energy.

We envision and work toward a day when Alexandria relies solely on renewable energy sources.

BUILDING GREEN

Alexandria's government, businesses, and citizens impact our environment through the choices they make when renovating existing structures and constructing new ones. These choices manifest themselves in the quantity and types of energy we use, the impact we have on our water quality, the amount of waste we create, the amount and quality of green space available to us, and our public health. Therefore, the City's building practices will:

- Adopt and maintain initiatives that require best in practice measures to reduce overall environmental impact of renovation, redevelopment, and new development.
- Integrate green building and sustainability standards into all private and public development, including historic preservation, renovation, and new construction.
- Encourage the preservation and adaptive reuse of existing buildings, and promote the reuse and recycling of building materials in all development.

SOLID WASTE

Recognizing that managing waste is a public health issue as well as a quality of life issue, Alexandria will maintain its well-preserved public image by managing, handling, and disposing of solid waste in an environmentally sustainable manner. Alexandria will manage waste as a hierarchy of uses with the following priorities:

- Priority One: Reduce
- Priority Two: Reuse
- Priority Three: Recycle
- Priority Four: Resource recovery (e.g., convert to energy, composting, etc.)
- Priority Five: Proper disposal

ENVIRONMENT & HEALTH

Sustainability is not just about the health of the earth; it is also about human health. Indoor and outdoor air quality, water quality, land use planning, toxic chemical exposure, noise and light pollution, and the safety and habitability of buildings directly impact human health and the natural environment. Alexandria will:

- Promote and support policies and individual decisions that reduce exposure to toxins and pollutants, minimize environmental impact, and encourage a healthy lifestyle.
- Increase equitable access to safe, healthy, and organic food, in particular for children and adolescents, and encourage local and regional food production.

EMERGING THREATS

Alexandria must be adaptive and responsive to emerging and unforeseen environmental threats – such as climate change – that could strain infrastructure, deplete natural resources, disrupt the economy, and threaten public health. Failure to respond quickly and appropriately to such threats will likely have severe consequences for the health and economy of Alexandria and its citizens. To better prepare for and avert environmental crises, Alexandria will:

- Make policy, infrastructure, and land use decisions that prepare for flooding, drought, disease, and other impacts to humans and wildlife from environmental threats such as climate change.
- Conserve energy and achieve carbon-neutrality.

- Identify ways to reduce/eliminate nutrient loading to waterways.
- Conduct accurate and continual assessments of resource and infrastructure capacity when planning to ensure growth and development does not exceed capacity.
- Ensure that Alexandria understands these threats, its role in the problem, and its part in the solution.

IMPLEMENTATION

Improving environmental quality, conservation and the public welfare requires a harmonized approach to implementation, as well as collaboration both within and around Alexandria. The primary responsibility of environmental stewardship shall be equally shared by all Alexandrians. In order to achieve the Eco-City Vision and the Guiding Principles set forth in this Charter, the City will:

- Educate and engage its citizens, visitors, local businesses, schools, and civic organizations on the City's concept of sustainability, the importance of identifying goals for environmental quality, and the vision and principles of this Charter.
- Develop and encourage more public-private-civic partnerships within Alexandria and beyond, and work with federal, state, and neighboring governments to implement these principles and achieve sustainability.
- Conserve resources, make sustainable purchasing choices, and make the long- and short-term investments necessary to achieve the principles of this Charter.
- Ensure city policies give incentives for achieving the vision and principles of this Charter and disincentives for behaviors that impede sustainability.
- Become a leader, educator, advocate, facilitator, integrator, and innovator in sustainability.

roles & responsibilities

The Eco-City Charter serves as a guide for moving the city towards a sustainable future. Fulfilling this Charter requires coordinated participation and commitment by the EPC, City government, and the community. The Charter's success depends on each of these parties taking an active and innovative role as stewards and guardians of this Charter's principles and vision.

ENVIRONMENTAL POLICY COMMISSION

- Develop an Environmental Action Plan that adheres to the principles outlined in this Charter and advances the City towards the vision of a sustainable city; review and revise the Action Plan as needed, but no less than once every five years.

ADOPTED JUNE 14, 2008

- Inform and educate the community on the vision, principles, and policies outlined in the Charter and the Environmental Action Plan.
- Identify specific steps that citizens and businesses can take to help Alexandria achieve the principles and vision set forth in this Charter.
- Work with and support City Departments, Boards, and Commissions to promote and ensure that the principles within the Charter are considered in key decisions and infused in City programs and policies.
- Produce an annual report card that evaluates the progress of the City toward meeting the sustainable vision set forth in the Charter and Environmental Action Plan.
- Review the Charter no less than every ten years and amend as necessary to ensure that it continues to meet emerging sustainability issues and the needs of the City and its residents.

CITY COUNCIL, CITY MANAGER, CITY DEPARTMENTS, BOARDS & COMMISSIONS

- Lead by example: identify and implement specific projects for the City government to become more sustainable and create incentives for Alexandria citizens to do the same.
- Maintain our best environmental practices while investing in new ideas to achieve the vision and principles of this Charter.
- Incorporate sustainability practices, and encourage interdepartmental coordination to ensure all City decisions are compatible with the principles of the Charter.
- Work with the Environmental Policy Commission to advance the principles in the Charter and the steps set forth in the Environmental Action Plan.
- Work to make sustainability the natural, easy, and preferred choice for decisions by the City as well as its citizens and businesses.
- Develop and implement an outreach program to educate the community on the vision and principles in the Charter, with particular attention on ensuring that the City's youth are given a foundation of knowledge in the principles of environmental stewardship.
- Identify and develop key regional partnerships to address the sustainability challenges of the region.

CITIZENS & COMMUNITY

- Take responsibility for the social, environmental, economic, and health impacts of our decisions and be accountable for our actions.
- Encourage children, businesses, neighbors and community organizations to practice and demand sustainability.
- Engage in and contribute to the City's sustainability planning processes and bring forth ideas to ensure the Charter and the Environmental Action Plan are current and meet the needs of the community.
- Hold local, regional, state, and national leaders accountable for achieving sustainability.

pledge & commitment

We the undersigned will guide the City of Alexandria to a sustainable future. To achieve this, we commit our active participation and support to the actions outlined in this Charter.

Mayor, William D. Euille

Vice Mayor, Redella S. "Del" Pepper

Councilman Ludwig P. Gaines

Councilman Rob Krupicka

Councilmember Timothy B. Lovain

Councilman Paul C. Smedberg

Councilman Justin M. Wilson

Environmental Policy Commission Chair, Danielle Fidler

EPC Member, David Boxer

EPC Member, Carol Braegelmann

EPC Member, Jeroma Casagrande

EPC Member, David Evans

EPC Member, Keith Freihofer

EPC Member, Patrick Hagan

EPC Member, Jennifer Hovis

EPC Member, Kurt Moser

EPC Member, Christopher Osburn

EPC Member, Peter Pennington

EPC Member, Joy Pochatila

EPC Member, Lucy Shapiro

ADOPTED JUNE 14, 2008

This charter is the result of a collaborative effort between the City of Alexandria, its Environmental Policy Commission, and Virginia Tech's Urban Affairs & Planning Program in Alexandria.

Design by Kimberley Hodgson

Appendix C:

Alexandria's Major Environmental Achievements Since Adoption of the Environmental Action Plan 2030 (2009 – 2017)

Alexandria's Major Environmental Achievements Since the Adoption of the Environmental Action Plan 2030 (2009 – 2017)

In June 2009, the City adopted the comprehensive Environmental Action Plan 2030 (EAP 2030) aimed at achieving the vision and principles set forth in the Eco-City Charter and leading the City further toward environmental sustainability. The following is a summary of major projects and initiatives that are either completed or ongoing since the EAP 2030 was adopted.

TRANSPORTATION & TRANSIT

The City's **Transportation Master Plan** approved in 2008, aims at an unprecedented paradigm shift, putting Alexandrians first, and providing them with innovative options for transportation.

Metroway Premium Bus Service on the Crystal City - Potomac Yard Transitway – With the introduction of the Washington Metropolitan Area Transit Authority's (WMATA) Metroway service in 2016, the Crystal City - Potomac Yard Transitway provides reliable service along the congested Route 1 corridor between the Braddock Road and Crystal City Metrorail Stations, with stops in Potomac Yard. Ridership on this service grew 44% from October 2015 through October 2016.

Expansion of the Alexandria Transit Company (ATC) DASH service and Fleet – DASH operates 12 routes and serves all of the Alexandria Metrorail Stations and the Pentagon Metrorail station during peak periods. DASH operates 54 energy efficient and environmentally friendly hybrid electric buses, representing 60% of its fleet. It is estimated that ATC's hybrid electric buses will reduce annual diesel fuel consumption by 60,000 gallons and carbon dioxide emissions by 1,300,000 lbs. ATC took over operation of the King Street Trolley using five brand new 30-foot low-floor hybrid electric trolleys. Earlier this year, DASH celebrated its fifth anniversary of taking over daily operation of the King Street Trolley. Trolley ridership has grown steadily since 2012, and the single-month record for trolley ridership (115,000 boardings) was set in July 2017.

New Metrobus Route NH2 – Partnering with Fairfax County, State of Maryland, and Peterson Company, the City started a Metrobus route that operates between Alexandria and the new MGM Grand Casino in National Harbor, MD. The route will operate every 30 minutes from early in the morning until late at night and each stop in Alexandria will offer connections to local bus service (DASH, Metrobus), shuttles, Metrorail, Virginia Railway Express (VRE), and Amtrak.

Capital Bikeshare – The City launched its participation in the Capital Bikeshare Network with an initial installation of eight bikeshare stations in the Old Town area in 2012. There are now 31 Bikeshare stations throughout the City, with an additional 10 stations planned for installation in spring 2018. Bikeshare members reported using Bikeshare equally for work and non-work trips, thereby reducing the number of vehicle miles traveled (VMT) in automobiles. This program has been used by residents and visitors alike, with approximately 235,000 trips departing from Alexandria stations since the program began. The average number of rides increased 17 percent between 2015 and 2016 and 24 percent between 2016 and August 2017.

Traffic Lights LED Replacement Program – The City replaced all 2500 incandescent traffic lights with energy efficient LED lights. This reduces energy consumption by 650,000 kWh and $70,000 in electricity costs annually. As a pilot project using a US Department of Energy grant, City also installed 34 LED street lights in partnership with Dominion Virginia Power. Currently, new developments in the City are required to install LED street lights.

Potomac Yard Metrorail Station – The New Potomac Yard Metro Station is aimed at increasing transportation choices and attracting transit-oriented development. The resulting development around the station would support up to 26,000 new jobs within one-quarter mile, and 13,000 new residents within one-half mile, while removing thousands of private vehicles from the congested Route 1 corridor. The Environmental Impact Statement (EIS) was completed in 2016 and WMATA is forecasted to award the project contract in the spring of 2018. The project provides a new direct access point to the regional transit system, maximizes potential transit ridership, and shifts automobile trips to other modes. It provides accessibility to the regional transit system for the greatest number of area residents and employees and results in the following: 11,300 weekday station boardings by 2040; 6,700 daily automobile trips shifted to transit by 2040; 19 - 30% more residents within a half-mile walking; and 43 - 103% more employees within a quarter-mile.

Pedestrian and Bicycle Master Plan – The City's 2008 Transportation Master Plan encourages the use of alternative modes of transportation, reduces dependence on the automobile, and promotes a balance between travel efficiency and quality of life. The City updated the Pedestrian and Bicycle chapters of this plan to reflect changes that have occurred since 2008, including the Complete Streets policy, Capital Bikeshare program, and on-street bicycle facilities.

Complete Streets Policy and Program – Complete Streets are streets for everyone. They are a vital part of livable, attractive communities and are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. City Council adopted a Complete Streets Policy in 2011 and was reenacted on May 17, 2014. In 2016, The City developed Alexandria Complete Streets Design Guidelines for the design of the City's public and private streets. The City has 26 miles of on-street bicycle lanes and 24 miles of sharrows. The City recently completed the highly-visible project on King Street, resulting in a reduction of annual crashes from seven to zero with no traffic diversion on sideroads.

Safe Routes to School – Safe Routes to School (SRTS) is a federal program to improve the well-being of children by improving walking and bicycling conditions on the route to school and enabling and encouraging children to walk and bike. These efforts include new sidewalks, crossing improvements, speed limit reductions, bicycle parking and bicycle lanes; partnering with parents, schools and local non-profits, and evaluating of habits and effectiveness. In 2017, the City completed Safe Routes to School Walk Audits for the 13 Alexandria City Public Schools (ACPS) elementary schools during the 2016/2017 school year.

Multi-use Trail Maintenance and Usage – The City has 29 miles of bicycle and pedestrian paved and unpaved trails. From 2013 to 2017, the number of cyclist in the City has been increasing steadily. In 2015, the City installed data collection devices at strategic locations of a number of trails, including: Eisenhower Ave., Four Mile Run, Holmes Run, Mount Vernon and Potomac Yard Trails. The data collected shows an increase in trail usage of more than 82 percent from 2016 to 2017 alone. Improving commuting conditions for bicyclists and pedestrians represents a significant potential for shifting automobile trips to non-motorized modes that helps reduce air pollutants and greenhouse gas emissions.

WATER QUALITY

Chesapeake Bay TMDL (Total Maximum Daily Load) Action Plan – The City has been proactive in designing and implementing projects for the Chesapeake Bay TMDL to address total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS). The Virginia Department of Environmental Quality (VDEQ) requires a reduction by 2018 of 5% during the 2013-2018 permit cycle. The City's initial 2015 Bay TMDL Action Plan for 5% reductions actually outlined strategies to address approximately 44%, 39% and 39% of TN, TP and TSS reductions, respectively, by 2018, with the City achieving about 21% TP reduction to date. Projects in the Plan include retrofits to existing ponds such as Lake Cook and Ben Brenman Pond to enhance the treatment capacity and/or pollution reduction efficiency, while improving aquatic habitat and recreational benefits. The City continues to look for innovative solutions for addressing the Chesapeake Bay TMDL such as performing stream restorations, retrofitting City properties, and applying an integrated wet-weather approach.

Eisenhower Pond 19, a regional stormwater management facility identified as a strategy in the Bay TMDL Action Plan, was constructed on Eisenhower Avenue by a private developer on newly developed property. This regional pond drains over 67 acres and provides estimated pollutant reductions that exceed the state water quality requirements for development, and provides credits toward the Chesapeake Bay TMDL requirements.

Stormwater Utility – The City has adopted a Stormwater Utility Fee to more equitably funding the City's stormwater management program to reduce the impact of stormwater pollution and flooding, perform infrastructure operations and maintenance, and ensure Alexandria complies state and federal stormwater regulations.

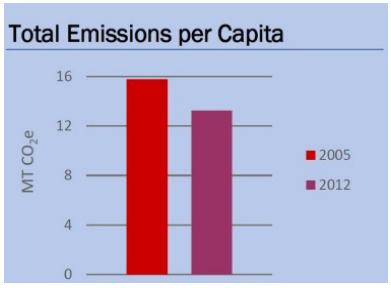
Combined Sewer System (CSS) Long Term Control Plan – The City submitted the CSS Long Term Control Plan Update to the VDEQ for approval on December 2, 2016. As part of the 2017 Virginia Legislative Session, legislation was passed and signed by the Governor that requires the City to revise this Long-term Control Plan Update to meet the 2017 legislation. The legislation requires that 1) the City to remediate all of its combined sewer outfalls, 2) construction of future combined sewer infrastructure projects begin no later than July 1, 2023; and 3) construction of these projects be completed by July 1, 2025. The City is currently revising its plan and will be providing updates on the development of the plan.

AIR QUALITY & GREENHOUSE GAS INVENTORY

City Eliminated the Largest Air Pollutant Source in the City and Northern Virginia – After a lengthy technical and legal challenge in front of the State Air Pollution Control Board, the City of Alexandria successfully reached an agreement with GenOn Inc. to permanently close its outdated coal-fired power plant located on the shore of the Potomac River in 2012. At the peak of its production, this plant emitted 15,000 tons of sulfur dioxide, 6,000 tons of nitrogen oxides and 600 tons of PM10 annually. Its closure also eliminated a major source of up to 4.5 million metric ton of annual carbon dioxide emissions, the equivalent of emissions of 600,000 cars. Substituting the electricity generation capacity of this power plant with one using cleaner

fuel such as natural gas would result in an annual reduction of more than 2 million metric ton of carbon dioxide which is more than the total amount of carbon dioxide emitted annually by the whole city of Alexandria.

Greenhouse Gas (GHG) Inventory Conducted for 2005 and 2012 – City conducted GHG inventories for 2005 and 2012. The results showed total GHG emissions from the whole city decreased by 5% between 2005 and 2012 while the population increased by ~6% for the same period. Furthermore, the per capita GHG emissions reduced by 16%.

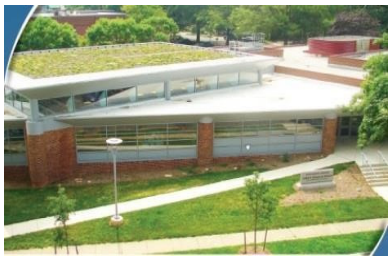


GREEN BUILDING

Private Development and Green Building – Since adoption of the City's Green Building Policy in 2009, approximately 10 million square feet of private development has been approved. Of this amount, more than 95% of the square footage complies with the City's Green Building Policy of LEED Certified (or equivalent) for residential buildings and LEED Silver (or equivalent) for commercial buildings.

Green City Government Buildings – The City adopted a policy of building all government buildings to at least LEED Silver certification. LEED Gold Buildings - T.C. Williams High School, Charles Houston Recreation Center, DASH Administration Facility, Alexandria Police Department Headquarter, James K. Polk Elementary School, Jefferson Houston Elementary School; LEED Silver – 2525 Mt. Vernon Avenue, Fire Station 209, Fire Station 210.

Green Roofs – Green Roofs were installed in the following City buildings: Duncan Library, Cora Kelly School, City Hall, Alexandria Health Department, T.C. Williams High School, James K. Polk Elementary School.



AlexRenew's Multi-purpose Athletic Field on the Roof of the New Nutrient Management Facility – This innovative project creates a multi-purpose athletic field with artificial turf on the roof of an 18-million gallon nutrient management facility. As a partnership between AlexRenew, the City and the site developer, the field supports EcoCity Alexandria's goal of increasing open space in the City.

The City also developed an Online Green Building Resource Center and provided 10 free workshops for residents and business interested in learning about various green topics as part of the EECBG grant program.

LAND USE AND OPEN SPACE

Land Use Planning – The City completed multiple land use plans including the Landmark Van Dorn Corridor Plan, Waterfront Plan, and the Beauregard, Eisenhower West, North Potomac Yard and Old Town North Small Area Plans, several of which are award winning. Each of these Plans includes a sustainability section, establishing standards and guidelines for sustainable practices, in addition to the Green Building Policy, as part of redevelopment that are of importance to the City and its residents and that advance the City's Eco-City sustainability goals. For the first time, the City requires LEED-ND Silver certification for the North Potomac Yard Small Area Plan (SAP) and the former power plant area within the Old Town North SAP.

Open Space and Ecology Restoration – The City adopted an Open Space Plan in 2003 addressing the City's short and longer term open space needs. In 2013, the City achieved its 100-acre goal for acquiring, dedicating or placing land in conservation easements in order to maintain a 7.3 acre per 1,000-person ratio. A 2016 update to the Open Space Plan determined that if every open space specified in all active small area plans comes to fruition, the City can maintain this ratio until 2040.

In 2017, the Northern Virginia Conservation Trust acquired, through a fee simple donation, a 1.97-acre wetland where Cameron Run and Little Hunting Creek meet before flowing into the Potomac. It is a highly developed area and sandwiched between major freeways and the Hunting Terrace residential building currently under construction. The site is listed as an eBird "Hotspot," with more than 100 different bird species observed in the immediate vicinity. The site also includes the two only known, still surviving Pumpkin Ash trees remaining in the City. Currently, the site is only accessible to the public by boat.

Chambliss Stream Restoration and Crossing – The City completed a stream restoration project on Holmes Run near Chambliss Street that restored the stream banks and prevented tons of sediment from entering the stream system.

Four Mile Run Wetlands Restoration Project – The Four Mile Run Wetlands Restoration Project restored an historic 2-acre tidal wetland along Four Mile Run. This wetland plays a prominent role in regional efforts to protect the Potomac River and the endangered Chesapeake Bay by restoring the diverse habitat and natural cycles that support life in and along these waterways. The wetlands restoration project integrates flood protection, environmental restoration, community aesthetics, community access and connectivity, recreation, and education.

SOLID WASTE MANAGEMENT

Solid Waste Recycling Rate – The City's solid waste recycling rate increased steadfastly toward the 2020 Target of 50%. Starting with a solid waste recycling rate below 30% when the Environmental Action Plan was adopted in 2009; the City reported its highest ever recycling rate of 49.3% to the Virginia DEQ for Calendar Year 2016, thanks to several waste collection initiatives.

Covanta Waste-to-Energy (WTE) Plant Significantly Contributes to City's GHG Emissions Reduction Effort – The City Council and Arlington County Board extended the Covanta Waste-to Energy plant lease agreement through 2038 for the disposal of municipal trash. The Covanta waste-to-energy facility meets and exceeds all environmental requirements and co-produces 21 megawatts of energy that can power approximately 20,000 homes. This lease agreement results in estimated cost savings of $26 million through 2038 and yields a significant reduction in greenhouse gas emissions compared to landfilling. Based on Virginia specific data and assuming that the COVANTA WTE plant displaces landfills equipped with modern methane gas recovery systems, every ton of municipal solid waste diverted to COVANTA WTE plant reduces GHG emissions by approximately 0.7 ton of carbon dioxide equivalent (CO_2e). This equals a reduction in GHG emissions of ~220,000 tons a year. To put things in

perspective, it would take the installation of a 10 kW solar photovoltaic system on each of about 34,000 homes in Alexandria to reduce the same amount of GHG emissions.

ENERGY MANAGEMENT & RENEWABLE ENERGY

Renewable Energy – A 42 kW solar photovoltaic system was installed at the Beatley Central Library. Smaller systems were also installed at the restroom building at Witter Recreational Fields (10kW) and Alexandria Renew's main pump station building. The City is Green Power Partner through the United States Environmental Protection Agency's Green Power Partnership program for offsetting 19% of the City's electricity use from renewable energy sourced through Renewable Energy Credits (RECs).

Solarize Alexandria – Solarize Alexandria, a program designed to make installation of solar power systems on Alexandria homes easy and more affordable, was launched in 2015 with campaigns following in 2016 and 2017. So far, fifteen residents installed solar power systems producing 70 KW through the program. The City's renewable energy capacity has increased from 97 kW to 480 kW since 2009.

SolSmart – The City received Bronze designation from the national SolSmart program for making it faster, easier, and more affordable for homes and businesses to go solar. SolSmart is led by The Solar Foundation and the International City/County Management Association (ICMA) and funded by the U.S. Department of Energy SunShot Initiative. As a SolSmart Bronze designee, the City is helping solar companies greatly reduce the cost of installations and pass those savings on to consumers. This allows even more local homes and businesses to obtain affordable, clean, and reliable electricity through solar. By making changes to local processes to reduce the time and money it takes to install a solar energy system, the City is helping and encouraging solar companies to do business in Alexandria, driving economic development and creating local jobs.

City Government Energy Management Program

- **LED Lighting Retrofits –** The City carried out LED lighting retrofits at the Beatley Library and parking lot, Duncan Library, Burke Library, Barret Library, Chinquapin Recreation Center, Ramsay House, Black History Museum, Lyceum, Public Safety Center, Alexandria Health Department parking lot, Market Square parking garage, Courthouse parking garage, Union Street parking garage, Thompsons Alley parking garage, Cora Kelly Recreation Center exterior lighting, Alexandria Community and Detox Center, Ramsey Recreation Center, Chinquapin Recreation Center, and 2900 Business Center Drive.
- **Re- and Retro-Commissioning –** Re- and retro-commissioning projects to enhance the energy performance at Barrett Library, Beatley Library, Burke Library, Courthouse, Duncan Library, and Fire Station 204.
- **High-efficiency Systems –** High-efficiency boiler upgrades as replacements for older boiler technologies at City facilities, including Lee Center, Beatley Library, Courthouse, Barrett Library, Chinquapin Recreation Center, and Fire Station 201. High-efficiency HVAC system upgrades took place at City facilities, including Public Safety Center, Courthouse, Lee Center, Beatley Library, Chinquapin Recreation Center, Fire Station 204. Building Management System upgrades and controls optimization took place at Lee Center, Beatley Library, Public Safety Center, Barrett Library, Alexandria Health Department, and DASH Transportation Center. The City operates 31 hybrid-electric and 1 electric vehicles in the City's vehicular fleet, including the operation of a shared pool fleet for employees to share in order to minimize the number of vehicles the City owns and operates.

The Alexandria City Public Schools (ACPS) completed renewable energy and green projects at several schools including:

- Minnie Howard's renewable energy HVAC system results in a 39% drop in energy costs.
- James K. Polk operates with 5 forms of renewable on-site energy including the first ground to air heat exchange commercial system in North America.

- The City collaborated with ACPS to complete a green roof and monitoring camera at Cora Kelly School to reduce energy consumption and stormwater generation, improve water quality, and to serve as an educational tool.

AlexRenew reduces annual energy consumption by 17% from a 2008 baseline – In 2016, AlexRenew reduced its total energy consumption per million gallons of flow by 13%, while reducing greenhouse gas emissions by 6% from its 2011 baseline. In the process of cleaning dirty water, AlexRenew also produces methane gas that is used to heat its buildings and fuel its boilers. AlexRenew generates more than 150 million cubic feet of renewable methane gas — enough energy to power 1,800 Virginia homes for one year. AlexRenew offset purchased energy by 32% using gas produced in its digesters.

AFFORDABLE HOUSING AND ENERGY EFFICIENCY

Affordable Housing Communities – Since 2009, all new affordable multi-family residential communities in the City of Alexandria have met EarthCraft design and construction certification program, the accepted green standard for assisted housing financed through the Virginia Housing Development Authority (VHDA). Completed affordable communities include the Station at Potomac Yard (64 units) and Jackson Crossing (78 units) and communities under construction include AHC's St. James Apartments (93 units) and AHDC's Gateway Apartments (74 units). In addition, CLI and Wesley Housing have completed substantial renovation of their affordable multifamily properties in the City including installation of energy efficient appliances, window replacement and upgraded heating and cooling equipment. Brent Place, a 207-unit high rise affordable rental property, was selected to participate in an energy and water conservation demonstration program under the Department of Energy's (DOE) Weatherization Innovation Pilot Program. To facilitate Brent Place's participation in the DOE program, the City subordinated its loan for a period of 10 years to allow the property to take advantage of federal dollars available to fund improvements recommended by the audit.

Energy Masters – The City expanded the Arlingtonians for a Clean Environment (ACE) Energy Masters' Program into Alexandria in 2015. This program trains volunteers to work with residents of affordable rental housing to complete basic energy efficiency improvements and train households on energy conservation techniques. Energy Masters volunteers have worked with renters in more than 110 units in the City to make apartments serving low and moderate income households more water and energy efficient. This program has resulted in reduced utility bills for low-income renters as well as increased outreach in the community and schools.

Home Rehabilitation Loan Program (HRLP) – The City's Home Rehabilitation Loan Program (HRLP), primarily funded through the federal Community Development Block Grant (CDBG), assists approximately 10 low income Alexandria homeowners each year to address code violations, energy efficiency improvements, and accessibility needs. This program provides no-interest, deferred payment loans to income eligible households. Common improvements include replacement and installation of energy efficient heating and cooling systems, insulation upgrades, installation of Energy Star certified appliances and water conserving toilets and faucets. While the focus of the program is not limited to energy efficiency, funded improvements have assisted lower income homeowners in lowering their monthly utility costs and have served to reduce the City's carbon footprint. The City also supports home repair initiatives administered by Rebuilding Together Alexandria through annual funding for both their year-round volunteer-based home repair program as well as for their April Rebuilding Day.

Neighborhood Stabilization Program (NSP) – Since 2009, 30 affordable homeownership opportunities have been created through the City's Neighborhood Stabilization Program (NSP) in partnership with Rebuilding Together Alexandria. The City received a grant from the Virginia Department of Housing and Community Development (DHCD) to acquire, rehabilitate and re-sell distressed properties in three target areas in the City. Through this effort, Rebuilding Together conducts a pre- and post-rehabilitation energy audit of each unit and completes a range of energy and water efficiency improvements to help lower energy costs for lower-income first-time homebuyers.

Appendix D:
Community-Wide Greenhouse Gas Inventory Summary Factsheet (2015)

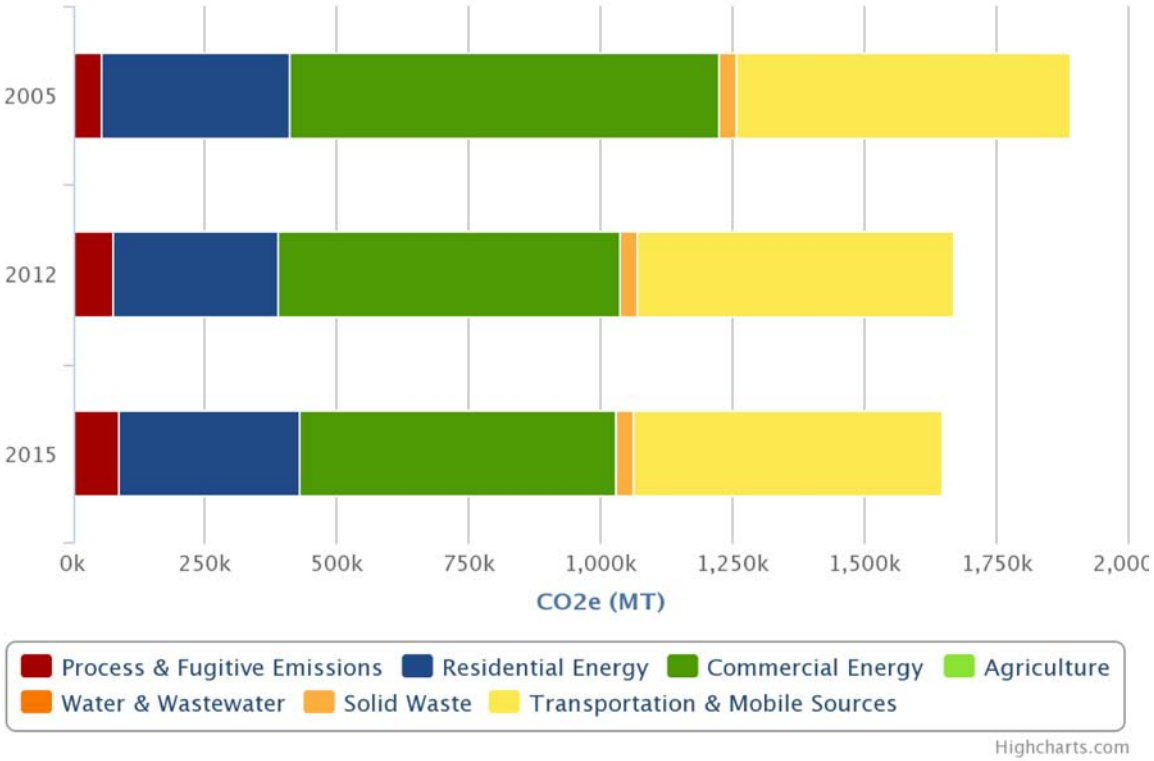
City of Alexandria, Virginia

Community-Wide Greenhouse Gas Inventory Summary Factsheet

Emissions Summary

City of Alexandria community-wide greenhouse gas (GHG) emissions decreased by 13% between 2005 and 2015.

- Despite an 12% growth in population, GHG emissions reduced from 1.89 $MMTCO_2e$ (million metric tons of carbon dioxide equivalent) in 2005 to 1.64 $MMTCO_2e$ in 2015.
- Per capita emissions decreased 22% between 2005 and 2015; from 14.1 $MTCO_2e$ (metric tons of carbon dioxide equivalent) in 2005 to 11.0 $MTCO_2e$ in 2015.
- In 2015, energy consumption (residential and commercial) accounted for 57% and transportation and mobile sources accounted for 36% of GHG emissions. Efficiency and switching to cleaner fuel sources contribute to GHG reductions.



Inventory Background

In 2008, the Metropolitan Washington Council of Governments (COG) and local governments across metropolitan Washington collaboratively established the regional GHG emission reduction goals of: 10% below business as usual projections by 2012 (back down to 2005 levels); 20% below 2005 levels by 2020; and 80% below 2005 levels by 2050. COG and its member jurisdictions are working toward these goals. City of Alexandria surpassed the 2012 goal, demonstrating that GHG reductions are possible even as the population and economy grows.

Emissions Activities

These inventories measured GHG-emitting activities undertaken by residents, businesses, industry, and government located in the City of Alexandria, as well as emissions from visitors. Emissions sources accounted for include:

- Electricity consumption from all sectors within the county;
- Combustion of natural gas and other fuels;
- Mobile transportation, including on-road vehicular travel, air travel, and commuter rail travel undertaken by residents, business, and visitors in the county, and off -road activities such as use of construction and landscaping equipment;
- Collection and treatment of solid waste produced by residents and activities within county boundaries;
- Pumping and treatment of water and wastewater used or produced by residents and activities; and
- Agricultural emissions from enteric fermentation, manure management, and soils (including fertilizer application);
- Fugitive emissions from ozone depleting chemicals and natural gas.
- All emissions are reported in million metric tons of carbon dioxide equivalent ($MMTCO_2e$) or metric tons of carbon dioxide equivalent (MTCO2e).

Methodology

- The methodology for the City of Alexandria GHG inventory is consistent with the metropolitan Washington regional GHG inventory. Both the regional and jurisdictional inventories use the ICLEI US Community Protocol and ClearPath tool to measure emissions.
- Utility data was collected from regional electric and natural gas utilities. Emissions factors for electricity were based on EPA's Emissions & Generation Resource Integrated Database (eGRID) versions for 2005, 2012, and 2014.
- On-road and off-road transportation emissions were calculated using the EPA's Motor Vehicle Emission Simulator (MOVES v2010a and 2014) and based on VMT data provided by COG's Transportation Planning Board. Air travel emissions were calculated using national emissions from the EPA GHG Inventory scaled locally using population and air travel data from the Washington-Baltimore Regional Air Passenger Survey. Commuter rail emissions were calculated using MARC and VRE diesel consumption data scaled to the region.
- Emissions from landfills were calculated based on local and regional solid waste data. Wastewater treatment emissions were determined by data collected from local water utilities.
- Agricultural emissions were calculated using EPA's State GHG Inventory Tool and data from EPA's Chesapeake Assessment Scenario Tool and USDA's Census of Agriculture.
- Ozone depleting chemicals were calculated using national emissions scaled locally by population.

Links

- Metropolitan Washington Climate Energy and Environment Policy Committee Webpage: https://www.mwcog.org/committees/climate-energy-and-environment-policy-committee/
- Eco-City Alexandria: https://www.alexandriava.gov/Eco-City