

2016 Eco-City Progress Report & Key Environmental Indicators



Early in 2007, under the direction of and with strong commitment from the Mayor and Members of City Council, the City of Alexandria, in partnership with its Environmental Policy Commission (EPC), Virginia Tech Alexandria Campus and the community, embarked on a new initiative – Eco-City Alexandria – which culminated in the Council’s adoption of the Eco-City Charter, the first of its kind in the Commonwealth, in 2008, as well as the Environmental Action Plan 2030 (EAP 2030) in 2009. Since then, the City and its residents have collectively completed numerous actions stipulated in this action plan aimed at fostering the goals of the Eco-City and leading Alexandria further towards environmental sustainability. This sixth annual report provides quantitative measures of the progress that the residents and the City government have made during 2016. These measures are in the form of 20 environmental indicators developed by the EPC in consultation with City staff.

Eco-Cities

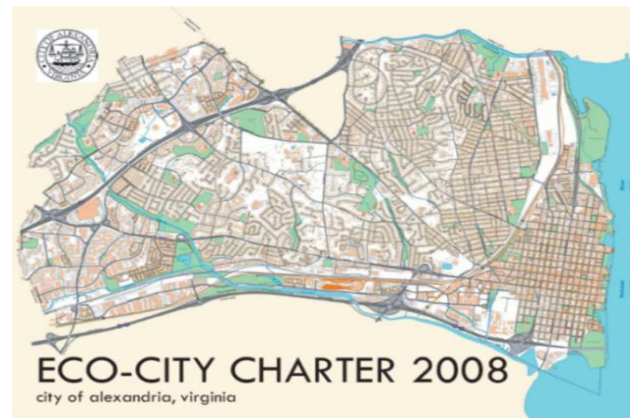
Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize their natural resources and environmental assets with existing policies, regional realities, and economic and business markets. Eco-Cities strive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

Sustainability is defined as meeting our community’s present needs while preserving our historic character and ensuring the ability of future generations to meet their own needs.

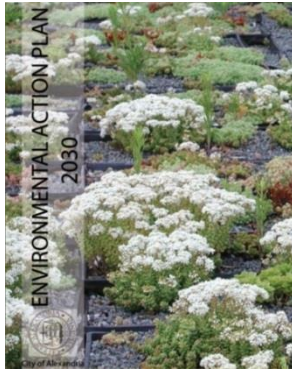
The Eco-City Charter was the first Environmental Charter adopted in Virginia. The Eco-City Charter serves as a document to holistically guide City leaders and residents towards a more sustainable and healthy environment. It defines Alexandria’s commitment to ecological, economic and social sustainability. The Eco-City Charter outlines essential environmental sustainability principles and core values, and is consistent with the City’s 2015 Strategic Plan.

Eco-City Charter’s Ten Guiding Principles

Land Use and Open Space	Building Green
Water Resources	Solid Waste
Air Quality	Environment & Health
Transportation	Emerging Threats
Energy	Implementation



The Environmental Action Plan 2030 follows the guiding principles outlined in the Eco-City Charter, and serves as a road map for City leaders and residents to implement the Eco-City Charter. Following an extensive community outreach program which included an interactive Eco-City Café, open houses, and an Eco-City Summit, City Council adopted the Environmental Action Plan (EAP) 2030 in June 2009. The EAP 2030 consists of 48 goals, 50 targets and 353 actions for the next 20 years to lead the City towards environmental sustainability.



Environmental Indicators - The Environmental Policy Commission spearheaded the development of the environmental indicators that can be measured on a routine (preferably annual) basis to quantify the progress made on the Eco-City initiative. In consultation with City staff, the commission decided on the 20 indicators listed in Table I which are related to the goals and targets of the EAP 2030 and represent activities that cover key stakeholders of Alexandria such as its residents, City government, businesses, the Alexandria City Public Schools (ACPS), DASH, American Virginia Water, and Alexandria Renew Enterprises (formerly ASA). This is the sixth time these environmental indicators were reported. The base year for each indicator was chosen so as to provide a meaningful measure of progress. The “% Change Latest vs. Previous Reported Year” and “% Change Latest vs. Base” indicate the % changes between this year’s report latest data and last year’s report data and between this year’s report latest data and the base year data, respectively. A green value indicates a favorable change and a red value an unfavorable condition. Starting in the 2014 reporting year, it was decided to report the most up-to-date data for each indicator as it becomes available. Thus, for this 2016 report year, all indicator values are either for the Calendar Year (CY) 2016 or Fiscal Year (FY) 2016 (i.e., from July 2015 through June 2016) or CY2015 or FY2015. As can be seen in Table I, data related to City government energy and greenhouse gas emissions (Indicators #3, 4, and #19) and data on waste recycling rate (Indicator #10) are only available for the year 2015 at the time of this writing due to the QA/QC process at Dominion Power and Washington Gas for the energy data and the approval process by Virginia DEQ for the recycling rate data. Further, due to a delay in the quality control/quality assurance procedures for the community energy and greenhouse gas emissions data, at the time of this report, indicators 2, 5, and 6 are only available for 2014.

Findings from the 2016 Environmental Indicators Several findings can be derived from Table I, even though the data reported in this table represents a snapshot of the progress made over a relatively short period of time. Compared to the last year’s reporting period of 2015:

1. The solid waste recycling rate held steady at 48.6%.
2. DASH public transit ridership held steady at 2.25 riders per mile in 2016.
3. Alexandrians living in a walkable community increased to 77%.
4. Per capita water use declined slightly in 2016, by 0.6%.
5. The number of stormwater Best Management Practices installed in the City increased by 2.6 % over last year and 87% since the 2007 base year.
6. The number of acres protected since approval of the Open Space Master Plan held steady in 2016 at 104.3 acres, surpassing the original goal of 100 acres achieved in 2013.
7. The percent of full service restaurants that are totally non-smoking increased slightly to 98%, just 2% short of the original target of 100%.

Since originally identified and tracked, changes have occurred that impact some of the indicator data. For example, the Alexandria Health Department no longer tracks respiratory complaints and ACPS no longer composts food waste. Working with City staff, The EPC is currently reviewing these indicators given City’s current and future environmental priorities, and may propose new indicators as appropriate for future reports.

TABLE I – ENVIRONMENTAL INDICATORS 2016

ENVIRONMENTAL INDICATOR (EI)	TARGET	BASE YEAR ¹		REPORTING PERIOD ²			% CHANGE Latest vs. Previous Reported Year ³	% CHANGE Latest vs. Base
		YEAR	VALUE	2016	2015	2014		
1. Air Quality Days - number of days meeting code red/ orange according to the USEPA Air Quality Index.	TBD	2003	13	9 ⁴	5	4	+80	-30
2. Per capita energy use, MWh per person per year	TBD	2005	24.54	NA	NA ⁸	27.70	NA	+12.8
3. City government operations energy use, MWh per year	TBD	FY2006	151,964	NA	129,948	122,703	+5.9	-14.4
4. Greenhouse gas emissions by City government operations, metric tons of CO ₂ per year	TBD	FY2006	79,820	NA	57,036	54,368	+4.9	-28.5
5. Greenhouse gas emissions by residents and businesses, metric tons of CO ₂ per year	TBD	2005	2,092,991	NA	NA ⁸	1,878,185	NA	-10.2
6. Per capita greenhouse gas emissions, metric tons of CO ₂ /year	10.0	2005	15.8	NA	NA ⁸	12.8	NA	-18.9
7. Percent of new developments committing to green building standard	100%	FY2010	94%	94%	98.2%	99.9%	-4	0
8. Percent tree canopy ⁵	40%	2007	30%	34%	34%	33%	0	+13.3
9. Number of acres protected since approval of Open Space Master Plan in 2003	100	2003	0	104.3	104.3	103	0	NA
10. Percent solid waste recycling rate	35%	2008	26.9%	48.6%	48.8%	48.8%	0	+80.6
11. DASH Public transit ridership - number of mass transit commuters/ per year	TBD	FY2007	3,743,499	4,101,964	4,269,915	4,238,784	-3.9	+9.5
12. DASH Total passengers per mile / Total passenger per hour of service	TBD	FY2007	2.9 / 34.0	2.25 / 19.92	2.25/21.27	2.77/23.59	0 / -6	-28 / -41
13. Per capita water use, gallons per person per year	TBD	2005	38,249	38,607	38,858	38,938	-0.6	+0.9
14. Per capita waste water treated, gallons per person per year	TBD	2009	36,016	44,592	43,274	42,762	+2.0	+19.2
15. Number of stormwater Best Management Practices (BMPs) in the City	TBD	2005	292	547	533	449	+2.6	+87
16. Number of respiratory health complaints received by the Alexandria Health Department	TBD	FY2010	82	NA ⁷	20	33	---	---
17. Percent of full service restaurants that are totally non-smoking	100%	FY2010	96.7%	98%	97.7%	NA	+0.3	+1.3
18. Percent of population living in a walkable community	TBD	FY2010	73%	77%	76%	73%	+1	+4
19. ACPS energy usage per square foot of building space, Btu/ft ² /year	TBD	FY2010	61,717	NA	97,014	74,866	+29.5	+57.1
20. ACPS waste composting rate, Pounds per year	TBD	FY2008	77,900	0	NA	NA	NA	NA

¹Base year for each indicator is chosen to provide a meaningful basis for comparison.

²All report data is reported on either a Fiscal Year or Calendar Year basis. The City's Fiscal year runs from July 1 through June 30 of the next year.

³This column represents the percent change for the data reported in the 2016 column from the data reported in the 2015 or previous year column.

⁴Starting 2016, air quality action days are for the Arlington/Alexandria/Fairfax Co. area as reported to the Virginia Department of Environmental Quality. The ozone standard for calculating this metric was lowered in 2015.

⁵The % tree canopy was measured in 2007 and 2010 using different techniques so these data may not be compared with certainty. RPCA Natural Resources Division and GIS Division are completing a three-year baseline canopy cover study which will provide an increased level of confidence in the determination of the City's percent canopy cover.

⁶This number is different from that reported in the 2014 Report due to changes in the reporting procedure for this indicator.

⁷Number of respiratory health complaints are no longer tracked by the Alexandria Health Department.

⁸Community energy data for 2015 is not yet available.

Alexandria's Top Ten Environmental Achievements for 2016

The Four Mile Run Wetlands Restoration project, completed in May 2016, 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 City and Arlington County worked with community members to develop the Four Mile Run Restoration Master Plan in 2006. Congress appropriated State and Tribal Assistance Grants (STAG) to implement a demonstration project from the plan. The project succeeds in reestablishing the vegetation that once lined the stream prior to subsequent colonization of invasive plant species. The wetlands restoration project integrates flood protection, environmental restoration, community aesthetics, community access and connectivity, recreation, and education.



The Parc Meridian Pond - aka Eisenhower Pond 19 is a regional stormwater management facility that was constructed by the private developer of the property. The pond resulted from a negotiated partnership between the developer and the City to provide for a cost effective treatment of offsite stormwater runoff and allow for more developable area for the project. The pollutant reductions exceed the state water quality requirements and the excess reductions are credited toward the City's Chesapeake Bay Total Maximum Daily Load (TMDL) requirements.



Expansion of Ecological Restoration Planting Program: In 2016,



the City Recreation, Parks and Cultural Affairs (RPCA) Dept.'s Natural Resources Division greatly expanded its ecological restoration plantings in natural areas, parks, and other sites throughout Alexandria. City staff joined forces with conservation partners Earth Sangha, TD Bank, Alexandria Renew Enterprises, Tree Stewards, Master Gardeners, and many volunteers to restore habitats and increase biodiversity throughout the City. A total of 343 native trees and shrubs, along with 1,374 locally appropriate, native wildflowers and grasses were planted at a diverse range of sites, including Monticello Park, Rynex Natural Area, Tarleton Park, the AlexRenew treatment facility, Dora Kelley Nature Park, Charles Hill Park, St. Asaph Park, and Goat Hill Park.

Alexandria City Public Schools (ACPS) initiated multiple environmentally educational projects: 1) **TC Williams Minnie Howard Campus: Emma's Garden** - The courtyard at the Minnie Howard Campus dedicated to the late teacher Emma Cabrera. Students designed the garden space, installed a perennial garden, repainted benches, and maintained the garden through the summer. Master gardeners and ACPS staff volunteers planted flowers and bulbs. 2) **The Watershed Warriors at T.C. Williams High School** work with ACPS fifth graders to promote awareness for the environment through hands-on lessons. Entirely grant-funded, the program partners with The National Parks Service and the Four Mile Run Conservatory to teach fifth grade science through hands on environmentally focused activities. Students plant and care for a wetland garden at their school or learn about stream health. Students also plant wetland vegetation, assess the water quality and participate in trash clean-ups. 3) **Matthew Maury Elementary School partnered with Real School Gardens to create an educational garden in the schoolyard** - Students plan and install a vegetable garden introducing students to the growing process and the ecological benefits of plants. Students nurture the plants, harvest their produce and learn about composting and minimizing waste.



Fifteen new Capital BikeShare stations were installed in Alexandria this year, expanding to the Rosemont, North and South Old Town, Potomac Yard and Fairlington neighborhoods. There are now 31 Bikeshare stations throughout the City. Locations are selected with public input, and preferences shown on an interactive crowd sourcing map. Locations are evaluated using criteria including connectivity to transit to expand between Metrorail stations, mixed-use activity centers, potential bicycle activity, proximity to other Capital Bikeshare stations, as well technical considerations.



New Metrobus Route NH2 - Partnering with Fairfax County, the State of Maryland, and the Peterson Company, the City started a **new**

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. **On another mass transit initiative**, the City continues to subsidize the Metroway service in the Route 1 corridor. Ridership on this service grew 44% from October, 2015 through October, 2016.



The City ran a food waste collection and composting pilot study. 405 city households volunteered to participate by collecting food scraps for special collection each week for three months and completed a survey to capture the residents' assessment of the project. Most responded that they would like to receive the service full-time. However, due to relatively low return on the financial investment to run the program, staff recommended that residential food waste collection be postponed until the regional infrastructure for composting food waste improves. Meanwhile, the City's **solid waste recycling rate remained high at 48%.**



City Completes First Year of Energy Masters Program: Alexandria joined program partners Arlingtonians for a Clean Environment (ACE), Arlington Thrive, and Virginia Cooperative

Extension (VCE) to bring this program to Alexandria. Volunteers completed energy efficiency and water conservation improvements in 68 residential units, installing energy efficient light bulbs, sealing outlets and light switches, and educating residents on energy and water conservation techniques. The City also supported the development of an **affordable energy efficient community**, Jackson Crossing Apartments, which features 78 units serving families earning 60% or less of the area median income (AMI). The community is EarthCraft certified and features energy efficiency features including double-pane, low-e glass, Energy-Star rated windows, Individual hybrid (heat pump) hot water heating, roof insulation, sub-metered water and WaterSense bath fixtures. Lastly, it is worth noting that, for the third year in a row, **19% of the City government's electricity use was offset or generated by renewable energy sources.**



Solarize Alexandria offered its second campaign to promote solar photo-voltaic system installations in Alexandria. Over 110 Alexandria residents signed up to receive a home energy-efficiency check-up and assessment to evaluate the opportunity for solar power for their home. To date, three Alexandria homeowners have signed contracts to install solar power systems in spring 2017. The Local Energy Assistance Program (LEAP), a Solarize partner also completed weatherization projects for Alexandria rental community residents. The projects installed LED lighting, water aerators, shower heads, and insulation within the residential units of the buildings. Water conservation measures installed in the complexes will use up to 55% less shower water and up to 32-40% less bathroom and kitchen sink water.



AlexRenew reduced 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. Last year, AlexRenew generated 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.

Awards and Recognitions – The City received the (highest) platinum level certification for the **Virginia Municipal League’s Go Green Government Challenge** for the ninth consecutive year. The VML Go Green Government Challenge encourages local governments to implement specific environmental policies and practical actions that reduce carbon emissions generated by both the local government and the broader community. The Eisenhower West Small Area Plan was awarded the *2016 Excellence in Sustainability Award* by the American Planning Association – VA Chapter. **AlexRenew’s** nutrient management facility (NMF), received the Institute for Sustainable Infrastructure’s (ISI) Envision Platinum Award for sustainability. This is the first award of its type in the state of Virginia, the DC metro area, and the first for a wastewater recovery facility in the US. **Energy Masters** was selected to receive the Governor’s Best Affordable Housing Energy Conservation Effort award at the 2016 Governor’s Housing Conference and was also recognized by the Virginia Energy Efficiency Council with a 2016 leadership award.

Alexandria Environmental Policies, Plans and Programs Web Links

T&ES Office of Environmental Quality Website

<http://alexandriava.gov/Environment>

Alexandria Environmental Policy Commission Website

<http://alexandriava.gov/EnvironmentalPolicyCommission>

Eco-City Alexandria Website

www.alexandriava.gov/Eco-City

Environmental Action Plan 2030

alexandriava.gov/uploadedFiles/tes/eco-city/EAP_FINAL_06_18_09.pdf

Eco-City Charter

alexandriava.gov/uploadedFiles/tes/oeq/EcoCityCharter2008.pdf

Eco-City Alexandria “A Green-Ventory of City Environmental Policies, Plans and Programs

alexandriava.gov/uploadedfiles/tes/info/GreenVentoryReport.pdf

Eco-City Challenge

<http://alexandriava.gov/EcoCityChallenge>

Open Space Plan

alexandriava.gov/uploadedfiles/recreation/info/OpenSpacePlan.pdf

Recreation, Parks & Cultural Activities Strategic Master Plan

alexandriava.gov/uploadedFiles/recreation/info/StrategicMasterPlan.pdf

Transportation Master Plan

alexandriava.gov/tes/info/default.aspx?id=3088

Water Quality Management Supplement

alexandriava.gov/tes/info/default.aspx?id=3844

Solid Waste Management Plan

alexandriava.gov/uploadedfiles/tes/info/solidwastemgmtplan.pdf

City of Alexandria Green Building Policy

alexandriava.gov/uploadedFiles/planning/info/GreenBuildingPolicyhandout.pdf

For further information on this report or Eco-City Alexandria, please contact:

Department of Transportation & Environmental Services
Office of Environmental Quality
301 King Street, Room 3000, City Hall,
Alexandria, VA 22314
Telephone: 703-746-4065