

2015 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 fifth annual report provides quantitative measures of the progress that the residents and the City government have made during 2015. These measures are in the form of 20 environmental indicators developed by the EPC in consultation with City staff.

Eco-Cities

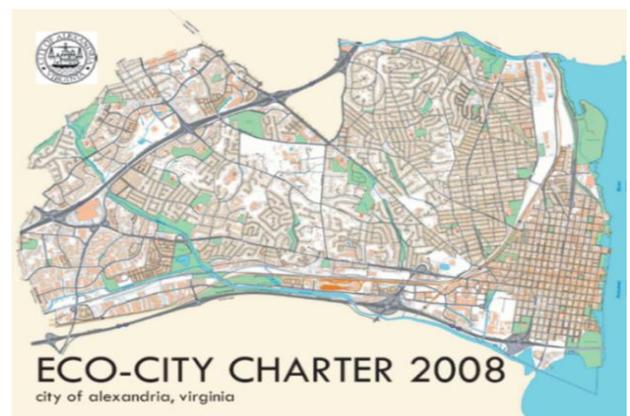
Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize their natural resources and environmental assets with existing policies, regional realities, and economic and business markets. Eco-Cities strive 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.

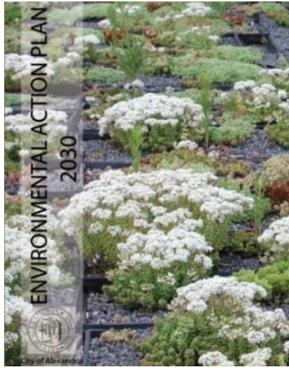
The Eco-City Charter was the first Environmental Charter adopted in Virginia. The Eco-City Charter serves as a document to holistically guide City leaders and residents towards a more sustainable and healthy environment. It defines Alexandria’s commitment to ecological, economic and social sustainability. 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 fifth time these environmental indicators were reported. The base year for each indicator had been 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 2014 reporting year, it was decided to report the most up-to-date data for each indicator as it becomes available. Thus, for this 2015 report year, all indicator values are either for the Calendar Year 2015 or Fiscal Year 2015 (i.e., from July 2014 through June 2015) or CY2014 or FY2014. As can be seen in the Table I, data related to energy and greenhouse gas emissions (Indicators #2-6 and #19) and data on waste recycling rate (Indicator #10) are only available for the year 2014 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.

Main Findings from the 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 2014:

1. Air quality in the Washington Metropolitan area has shown significant improvement over the last ten years. Five Code Orange air quality days were reported in 2015 and 4 in 2014. The slight increase in 2015 is attributable to a revision to the National Ambient Air Quality Standard (NAAQS) for ground-level ozone. The standard lowers the threshold for Code Orange and above on the Air Quality Index (AQI), EPA’s color-coded tool for communicating daily air quality.
2. The solid waste recycling rate held steady at 48.8%.
3. DASH public transit ridership increased slightly in 2015, 0.7%.
4. Alexandrians living in a walkable community increased to 76% in 2015, an increase of 4.1% over 2014.
5. The number of stormwater Best Management Practices installed in the City increased by 6% over last year and 81% since the 2007 base year.
6. The number of respiratory health complaints received by the Alexandria Health Department continues to decline, almost 40% in 2015 from 2014 and 75% since the 2010 base year.
7. The number of acres protected since approval of the Open Space Master Plan has surpassed the original goal, reaching 104.3 acres in 2015 compared to the goal of 100 acres. The 1.3 acres addition is a 1.26% over 2014.

TABLE I – ENVIRONMENTAL INDICATORS 2015

ENVIRONMENTAL INDICATOR (EI)	TARGET	BASE YEAR ¹		REPORTING PERIOD ²			% CHANGE Latest vs. Previous Reported Year ³	% CHANGE Latest vs. Base
		YEAR	VALUE	2015	2014	2013		
1. Air Quality Days - number of days with code red/ orange	TBD	2003	13	5 ⁴	4	4	+25	-69
2. Per capita energy use, MWh per person per year	TBD	2005	24.54		NA	20.31		
3. City government operations energy use, MWh per year	TBD	FY2006	151,964		NA	120,697		
4. Greenhouse gas emissions by City government operations, metric tons of CO ₂ per year	TBD	FY2006	79,820		NA	51,373		
5. Greenhouse gas emissions by residents and businesses, metric tons of CO ₂ per year	TBD	2005	2,092,991		NA	1,664,083		
6. Per capita greenhouse gas emissions, metric tons of CO ₂ per year	TBD	2005	15.8		NA	11.4		
7. Percent of new developments committing to green building standard	100%	FY2010	94%	98.2	99.9%	96	-1.7	+4.4
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	103	102.35	+1.26	NA
10. Percent solid waste recycling rate	35%	2008	26.9	NA	48.8	48.8	0	+81.4
11. DASH Public transit ridership - number of mass transit commuters per year	TBD	FY2007	3,743,499	4,269,915	4,238,784	4,265,417	+0.7	+14
12. DASH Total passengers per mile / Total passenger per hour of service	TBD	FY2007	2.9 / 34.0	2.25/21.27	2.77/23.59	2.89/25.26	-18/-10	-22/-23
13. Per capita water use, gallons per person per year	TBD	2005	38,249	38,858	37,900	36,528	+2.5	+1.6
14. Per capita waste water treated, gallons per person per year	TBD	2009	36,016	43,274	42,762	39,974	+1.2	+20
15. Number of stormwater Best Management Practices (BMPs) in the City	TBD	2005	292	535	503 ⁶	417	+6	+81
16. Number of respiratory health complaints received by the Alexandria Health Department	TBD	FY2010	82	20	33	<u>TBU</u>	-39.3	-75
17. Percent of full service restaurants that are totally non-smoking	100%	FY2010	96.7	98	97.7	TBU	+0.3	+1.3
18. Percent of population living in a walkable community	TBD	FY2010	73	76	73	73	+4.1	+4.1
19. ACPS energy usage per square foot of building space, Btu/ft ² /year	TBD	FY2010	61,717	NA	NA	51,207	---	---
20. ACPS waste composting rate, Pounds per year	TBD	FY2008	77,900	0	NA	NA	NA	NA

NA – data is not yet available; TBU – Data is being requested and will be updated when available.

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

² All report data is reported on either a Fiscal Year or Calendar Year basis. Fiscal year starts July of the year before and ends at the end of June of the current year.

³ This column represents the percent change for the data reported in the 2015 column from the data reported in the 2014 column.

⁴ Air quality action days are for the Washington Metropolitan area <http://www.cleanairpartners.net/aqbyyear.cfm>. All are orange days for both 2014 and 2015.

⁵ The % 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.

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

Alexandria's Top Ten Environmental Achievements for 2015

Highlights on Solid Waste Management -Solid Waste Recycling Rate Remained High at 48% – The City's solid waste recycling rate for 2014 held steady at 48% while the rate of other nearby jurisdictions declined. Alexandria received a grant from the Environmental Protection Agency for a pilot project on food waste recovery at the Henry building located on Fayette Street where food waste was collected and composted into a natural fertilizer at a regional facility. Because of the drop in readership of traditional 'print' newspapers and new light-weight plastic packaging that replaces glass containers, the type of material collected for recycling is changing and providing cause to 'rethink' recycling goals. The emphasis for 2015 was reducing climate changing emissions through improved organics recovery and more efficient trash collection.



Successful SolarizeAlexandria Program Launched - Alexandria, in partnership with the Northern Virginia Regional Commission (NVRC) and the Local Energy Alliance Program (LEAP), launched SolarizeAlexandria. This program is designed make it easier and more affordable for residents to install solar power systems on Alexandria homes. Over 250 Alexandria residents signed up to receive a home energy-efficiency check-up and solar site assessment to evaluate the opportunity for solar power for their home. To date, 10 residents have signed contracts to have solar power systems installed on their homes in spring 2016. Additionally, for the second year in a row, 19% of the City government's electricity use was offset or generated by renewable energy sources.



City Provided Funding to Expand the ACE (Arlingtonians for Clean Environment) Energy Master's Program into Alexandria - Administered by ACE and the Alexandria/ Arlington Office of the Virginia Cooperative Extension Service, the program trains teams of volunteers called Energy Masters to work in groups of three or four to perform energy retrofits in assisted housing units. It is estimated that the improvements completed under the program to date result in estimated annual savings of 186,806 kWh and 5,863,130 gallons of water and that each apartment resident is saving \$48.55 on their electric bills and \$183.01 on their water bills annually.



Significant Progress in Implementing Goals of the Urban Forestry Master Plan (UFMP) – A three-year baseline canopy cover study showed that 34% of the City's surface area is covered by tree canopy. Significant progress was also made toward attaining the 5-year pruning cycle for public trees called for in the UFMP. The number of trees pruned and cared for increased by almost 1,000. The City also planted 454 new trees on public property and supported the planting of 172 more by residents on private property through a native tree sale. The City also expanded its highly-successful Invasive Plant Control Program and was able to expand the acreage of natural areas managed to a total of 54.6 acres.



AlexRenew Dedicated Innovative Multipurpose Athletic Field on the Roof of the New Nutrient Management Facility (NMF) to the City of Alexandria –



This project is an example of innovative green building technique that creates a multi-purpose athletic field with artificial turf on the roof of an 18-million gallon nutrient management facility. This facility also addresses state and federal regulatory requirements to increase nitrogen removal from the wastewater treated at the existing AlexRenew treatment plant. This project is a partnership between AlexRenew, the City and the site developer. The resulting facility also supports Eco-City Alexandria’s goal of increasing open space in the City. AlexRenew also launched first-in-the-nation full-scale sidestream Anammox deammonification system which uses ANAMMOX® microbes. These microbes exist in the natural environment and have the potential to save up to 25 percent on energy and

chemicals consumption when compared to conventional wastewater treatment processes.

City’s Green Building and Energy Conservation Initiatives - Fire Station 210

Achieves LEED Silver-Fire Station 210 (5255 Eisenhower Ave) was recognized for meeting the United States Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) Silver certification. Fire Station 210 was designed to achieve more than 15 percent energy savings from the use of high-efficiency systems, including a ground-source geo-exchange system. In 2015, Four Alexandria affordable multifamily apartments were also completed to meet EarthCraft **Green Building Standards** for energy and water efficiency and interior air quality. The buildings include new construction projects and the rehabilitation of three affordable properties containing a total of 102 units. These communities include AHC Inc. new construction project, Jackson Crossing, and the rehabilitation of three affordable properties assisted by the City – Arbelo Apartments (34 units), Longview Terrace (40 units) and Lynhaven Apartments (28 units).



Traffic Lights LED Replacement Program –



The City replaced over 2500 incandescent traffic lights with energy efficient LED technology in 2015. The City’s traffic signals are now 95% retrofitted to LED technology, with the remaining 5% of signal indications scheduled to be retrofitted by the end of 2016. LEDs are 85-90% more efficient than the incandescent bulbs they replaced, which will reduce annual traffic signal energy consumption by 650,000 kWh.

Increased Participation in 2015 Alexandria Commuter Challenge -

The City joined 36 other employers to compete in the Fifth Annual Commuter Challenge. A total of 312 employees participated by logging alternative commutes for two weeks in April. Based on an improved communication plan, the 2015 Alexandria Commuter Challenge achieved increased participation compared to prior years, with numbers nearly doubling across the board and environmental impact numbers increased by more than 200%: 1) 58,432 fewer single occupancy vehicle miles traveled; 2) 28.09 tons less pollution; 3) 2,219 gallons of fuel saved; and 4) \$31,664 in transportation costs saved.



Alexandria Transit Company (ATC) Purchased Additional 21 Hybrid-Electric Buses in 2015 –



As a result, DASH will be able to expand its fleet of environmentally-friendly buses to 46 (i.e., 54% of bus fleet) into the Alexandria community and further reduce single occupancy vehicle (SOV) trips, vehicle miles traveled (VMT), traffic congestion, fuel consumption, and carbon footprint in our community. 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.

City Recognized for Its Environmental Efforts - Awards and Recognitions –

The City received the (highest) platinum level certification for the **Virginia Municipal League’s Go Green Government Challenge** for Eighth Consecutive Years. 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 City’s Phase II Municipal Separate Storm Sewer System (MS4) Program was recognized by the **Water Environment Federation’s (WEF) National Municipal Stormwater and Green Infrastructure Awards Program** as a Gold-level community for



Program Management and Innovation, and overall winner in the Phase II Innovation category. The City's Department of Recreation, Parks and Cultural Activities (RPCA) was awarded the **Exemplary Environmental Enterprise (E-3) certification by the Virginia Department of Environmental Quality**. This award was based upon the Department's development and implementation of its Environmental Sustainability Management System (ESMS) and the associated Environmental Policy. In April, the City celebrated its 22nd Alexandria Earth Day.

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

Green Building Resource Center

<https://www.Alexandriava.gov/gbrc>

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

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