2014 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 fourth annual report provides quantitative measures of the progress that the residents and the City government have made during 2014. These measures are in the form of 20 environmental indicators developed by the EPC in consultation with City staff.

Eco-Cities

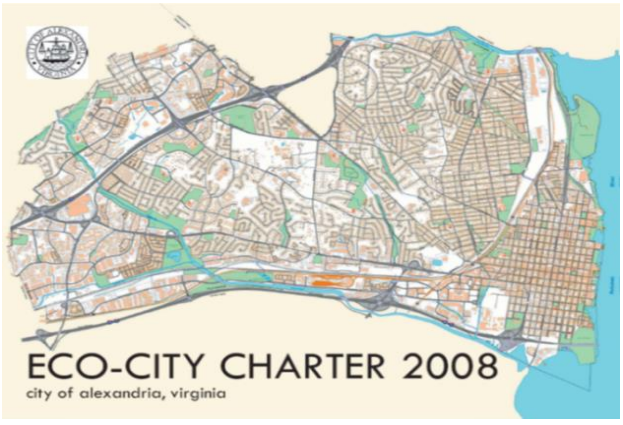
Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize their natural resources and environmental assets with existing policies, regional realities, and economic and business markets. Eco-Cities strive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

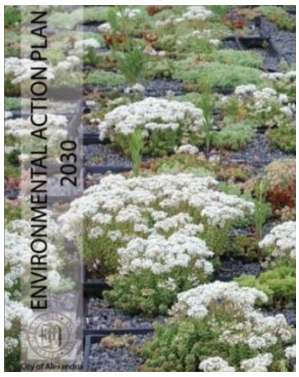
The Eco-City Charter was the first Environmental Charter adopted in Virginia. The *Eco-City Charter* serves as a document to holistically guide City leaders and residents towards a more sustainable and healthy environment. It defines Alexandria's commitment to ecological, economic and social sustainability. 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 fourth 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. Last Year" and "% Change Latest vs. Base" indicate the % changes between this year's report latest data (2013 or 2014) and last year report data (FY2012 or CY2012) and between this year's report latest data and the base year data. 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 2014 report year, all indicator values are either for the Calendar Year 2014 or Fiscal Year 2014 (i.e., from July 2013 through June 2014) or CY2013 or FY2013. 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 2013 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 2013:

1. Air quality in the Washington Metropolitan area was significantly improved with only four orange air quality action days and no red days in both 2014 and 2013.

2. The City government has made great strides in reducing GHG emissions by 35.6% over the period from 2006 to 2014. Likewise, for Alexandria, the per capita GHG emissions reduced by 27.9% from 2005 to 2014, mainly due to the fact that the region's utility companies have increasingly used more natural gas and renewable energy during this period which resulted in a significantly lower GHG emission factor of 946.1 lbs. CO2e/MWh for 2013.

3. DASH public transit ridership increased by 9.2% and the total passenger per mile increased by 6.5% compared to 2012.

4. Compared to 2012, the per capita water use increased by 3.2% in 2014, but the per capita waste water treated increased by 13.4% most likely due to increased rain falls (42.73 in. compared to 32.06 in.).

5. The number of stormwater Best Management Practices installed in the City increased by 19.4% going from 2012 to 2014.

6. The number of respiratory health complaints received by the Alexandria Health Department reduced significantly by 56.6% from 2012 to 2014.

7. The number of acres protected since approval of the Open Space Master Plan has surpassed the original goal, being at 103 acres compared to the goal of 100 acres. Staff is currently working to update this Plan.

TABLE I – ENVIRONMENTAL INDICATORS

ENVIRONMENTAL INDICATOR (EI)	TARGET	BASE YEAR[1]		CURRENT PERIOD		LAST YEAR FY2012 or CY2012	% CHANGE Latest vs. Last Year	% CHANGE Latest vs. Base
		YEAR	VALUE	2014	2013			
1. Air Quality Days - number of days with code red/ orange	TBD	2003	13	4[3]	4	7	-42.9	-69.2
2. Per capita energy use, MWh per person per year	TBD	2005	24.54	NA	20.31	20.31[4]	0	0
3. City government operations energy use, MWh per year	TBD	FY2006	151,964	NA	120,697	116,608[5]	+3.5	-20.6
4. Greenhouse gas emissions by City government operations, metric tons of CO_2 per year	TBD	FY2006	79,820	NA	51,373	53,777[6]	-4.5	-35.6
5. Greenhouse gas emissions by residents and businesses, metric tons of CO_2 per year	TBD	2005	2,092,991	NA	1,664,083	1,755,395[6]	-5.2	-20.5
6. Per capita greenhouse gas emissions, metric tons of CO_2 per year	TBD	2005	15.8	NA	11.4	12.3[6]	-7.3	-27.9
7. Percent of new developments committing to green building standard	100%	FY2010	94%	99.9%	96.0%	84%	+18.9	+6.3
8. Percent tree canopy	40%	2007	30%	34%[7]	33%	33%[7]	+3.0	+13.3
9. Number of acres protected since approval of Open Space Master Plan in 2003	100	2003	0	103	102.35	100.5	+2.5	-
10. Percent solid waste recycling rate	35%	2008	26.9	NA	48.8%	48.7%	0	+81.4
11. DASH Public transit ridership - number of mass transit commuters per year	TBD	FY2007	3,743,499	4,238,784	4,265,417	3,882,022	+9.2	+13.2
12. DASH Total passengers per mile / Total passenger per hour of service	TBD	FY2007	2.9 / 34.0	2.77 / 23.59	2.89 / 25.26	2.6 / 24.6	+6.5 / -4.1	-4.5 / -30.6
13. Per capita water use, gallons per person per year	TBD	2005	38,249	37,900[8]	36,526	36,718	+3.2	-0.1
14. Per capita waste water treated, gallons per person per year	TBD	2009	36,016	42,762[8]	39,974	37,723[8]	+13.4	+18.7
15. Number of stormwater Best Management Practices (BMPs) in the City	TBD	2005	292	449	417	376	+19.4	+53.8
16. Number of respiratory health complaints received by the Alexandria Health Department	TBD	FY2010	82	33	TBU	76	-56.6	-59.8
17. Percent of full service restaurants that are totally non-smoking	100%	FY2010	96.7	97.7	TBU	97.0	+0.7	+1.0
18. Percent of population living in a walkable community	TBD	FY2010	73	73	73	73	0	0
19. ACPS energy usage per square foot of building space, Btu/ft^2/year	TBD	FY2010	61,717	NA	51,207	49,351	+3.8	-17.0
20. ACPS waste composting rate, Pounds per year	TBD	FY2008	77,900	NA	NA	222,477	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. Fiscal year starts July of the year before and ends at the end of June of the current year.

[2]2013 report data are for Fiscal Year 2012 or Calendar Year 2012.

[3] Air quality action days are for the Washington Metropolitan area starting 2013. All 4 are orange days for both 2013 and 2014.

[4]Energy use comprises electricity use (per calendar year) provided by Dominion and natural gas use provided by Washington Gas; based on Alexandria population of 137,602 for 2005, 144,301 for 2011, and 146,294 for 2012, and 148,892 for 2013 (US Census data).

[5] City government operations include Alexandria City Public Schools (ACPS) and for calendar year 2012.

[6] For electricity, GHG emission factor of 1,041.7 lb. CO2e/MWh was used for 2012 and 946.1 lbs. CO2e/MWh for 2013. The inventory does not include emissions associated with air or vehicle travel outside City limits, or emissions embedded in food or other consumer goods from outside of the City.

[7]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.

[8]Based on 2013 population estimate of 148,892 (US Census data). AlexRenew re-estimated the 2013 Report figure to be 37,723.

Alexandria's Top Ten Environmental Achievements for 2014

Alexandria Introduced New Metroway Premium Bus Service on the Crystal City - Potomac Yard Transitway –The Crystal City-Potomac Yard Transitway opened in August with the introduction of the Washington Metropolitan Area Transit Authority's (WMATA) Metroway service. The bright blue buses will provide more reliable service along the congested Route 1 corridor between the Braddock Road and Crystal City Metrorail Stations, with stops in Potomac Yard. Amenities will include a branded bus fleet, high-visibility crosswalks, and near-level boarding at stations. The Metroway service will be paid for entirely by the City of Alexandria and Arlington County, with a portion of the cost offset by passenger revenue. This project is the Washington metropolitan area's first right-of-way dedicated to premium bus operations, designed to encourage transit use along the heavily traveled Route 1 corridor. Increased use of public transportation yields significant environmental benefits and is a key lever for the City's Energy and Climate Change Action Plan.

Highlights on Solid Waste Management - The City's solid waste recycling rate for 2013 increased slightly to 48.8 %, a new record level. In 2014, new programs and enhancements to existing programs were introduced that moved Alexandria to the forefront of Northern Virginia's recycling efforts, and the City is aiming for 65% recycling rate by 2020. Yard waste is now collected separately and composted at a regional facility. Since July, 270 tons of yard waste have been composted. Food waste recovery stations have been opened at the four City Farmers' Markets and residents have dropped off a total of 35 tons of food waste to be composted. T.C. Williams High School received trash and recycling compactors which reduced trash truck visits to the high school from five times a week to one. Fewer truck visits equal reduction in global warming emissions and contributes to less traffic congestion.

Capital Bikeshare Expansion - In August, the Capital Bikeshare system in Alexandria doubled in size with the addition of eight new stations in the Carlyle and Del Ray areas. By September, ridership had more than doubled from the same month in 2013. According to the 2013 member survey, over half of Bikeshare members used Bikeshare to access transit stops. Members also reported using Bikeshare equally for both work and non-work trips, thereby reducing the number of vehicle miles traveled (VMT) in automobiles with 11% reporting they reduced annual miles driven by at least 1,000 miles. Half of the survey respondents reported driving a car less often, and sixty percent said they use a taxi less often now that they have joined Capital Bikeshare. Regionally, Capital Bikeshare members reduce about 2.1 million commute driving miles annually, reducing traffic during the peak commuting periods. It is estimated that annual commute VMT are reduced by 265 miles per member.

City Received $1.75 Million Under Stormwater Local Assistance Fund Grant - The City of Alexandria received $1.75 million financial assistance from the Virginia Department of Environmental Quality through the Stormwater Local Assistance Fund Grant. This grant will be used to help fund the $3.5 million stormwater retrofit project to enhance the treatment efficiency of stormwater and improve aquatic habitat of the Ben Brenman Pond as part of the City's stormwater regulatory requirements.

City's Initiative on Removing Invasive Plants in 2014 - The City, with the invaluable participation of hundreds of volunteers, had a landmark year in reclaiming and restoring many acres of City natural areas and parkland through the removal of decades-old, pervasive non-native invasive plants like Callery Pear, Siberian Elm, White Mulberry, English Ivy, and others. Standout sites include the 3.5 acres of managed native meadow at the Telegraph Road and Duke Street interchange (T & D Meadow), INOVA Alexandria Hospital Scenic Easement, Rynex Natural Area, Fort Williams Park, and others. As a result, this year's work restored nearly 40 acres of the City's natural areas to pre-disturbance conditions, thus preserving their ecological sustainability and aesthetic beauty, and allowing Alexandria's diverse, native biodiversity to flourish. Ecological restoration and natural lands management is ongoing, with many new City sites prioritized annually for restoration and restored sites maintained in their appropriate, natural condition.

Alexandria Participated in DOE Weatherization Innovation Pilot Program - Brent Place Apartments, a 207-unit building which serves lower income Alexandrians, was selected to participate in an energy and water conservation demonstration program under the Department of Energy's (DOE) Weatherization Innovation Pilot Program. Under this program, an energy service company performs an investment grade audit to identify energy savings opportunities at this property and recommends a bundle of energy efficiency improvements which are expected to be sufficient to pay for the installation costs of the measures. The City supported Brent Place's participation in this program by agreeing to subordinate payment on an existing City loan for a period of 10 years. It is anticipated that the energy efficiency measures to be undertaken will result in 10-year savings of $226,060.

City's Green Building and Energy Conservation Initiatives - These included 1) the substantially completed construction of the Eisenhower Fire Station 210 which is expected to be certified for LEED Gold in 2015; 2) more than 19% of the City government's electricity use was offset or generated by renewable energy in 2014; and 3) the City carried out LED lighting retrofits at the Beatley Library, Duncan Library, Burke Library, Chinquapin Recreation Center, Ramsay House, Black History Museum, and the Lyceum.

AlexRenew Continued Tradition of Sustainable Environmental Stewardship – Of the 13.2 billion gallons of wastewater treated at its facility in 2014, AlexRenew used about 10% of this treated wastewater for non-potable purposes within its operations in place of potable water. This water conservation measure yielded environmental benefits and saved its customers $2.8 million. It also used 145 million cubic feet of the methane gas generated in its digesters to replace natural gas, the amount of which was enough to heat over 1,000 homes for a year. For its environmental stewardship, AlexRenew received the National Association of Clean Water Agencies Platinum Peak Performance Award for 100% compliance with National Pollutant Discharge Elimination System (NPDES) permits over a consecutive nine-year period.

Alexandria Transit Company (ATC) Continued to Replace Its Fleet with Hybrid Electric Buses – ATC operates quality award winning transit services in the City of Alexandria utilizing a fleet of 79 transit buses. Of these 79 buses, 32 are energy efficient and environmentally friendly hybrid electric buses, comprising 40% of its fleet. The new hybrid electric clean diesel buses have served to reduce ATC's overall carbon footprint by reducing fuel consumption and emission levels. In 2014 alone, it is estimated that ATC's hybrid electric

buses have reduced diesel fuel consumption by 38,000 gallons and carbon dioxide emissions by 836,000 lbs. In July, ATC started the new AT9 crosstown route using quiet, environmentally-friendly hybrid buses that helped alleviate public concerns about noise and air pollution associated with this new service. In 2015, ATC will be taking delivery of 14 additional hybrid-electric buses which will bring its fleet of hybrid-electric buses to over 50% of the total bus fleet.

City Recognized for Its Environmental Efforts - In October, the City was recognized for the seventh consecutive year by the Virginia Municipal League (VML) as a platinum-level "Green Government." This platinum-level certification, VML's highest for local governments, is awarded to those scoring more than 175 out of 200 possible points. The program encourages local governments to implement specific environmental policies and actions that reduce carbon emissions generated by both the local government and the broader community. In May, the City was rated number one of the 10 "greenest" mid-sized cities in the nation. The study, conducted by My Life.com, a social aggregation site, ranked 189 cities using the following criteria: 1) number of public parks; 2) number of recycling centers; 3) environmentally conscious commuters; and 4) a walk score. Alexandria was the only city to rank in the top 20 of in all four categories, and was noted for its implementation of climate change initiatives.

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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