

ECO-CITY ALEXANDRIA

2011 Eco-City Progress Report & Key Environmental Indicators



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 and the community, embarked on a new initiative – Eco-City Alexandria – early in 2007 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) in 2009. Since then, the City and its residents have collectively completed numerous actions aimed at fostering the goals of the Eco-City. This report is the first attempt to quantitatively measure the progress that the residents and the City government have accomplished in leading Alexandria further towards environmental sustainability. These quantitative measures are in the form of 20 environmental indicators developed by the EPC in consultation with City staff.

Eco-Cities

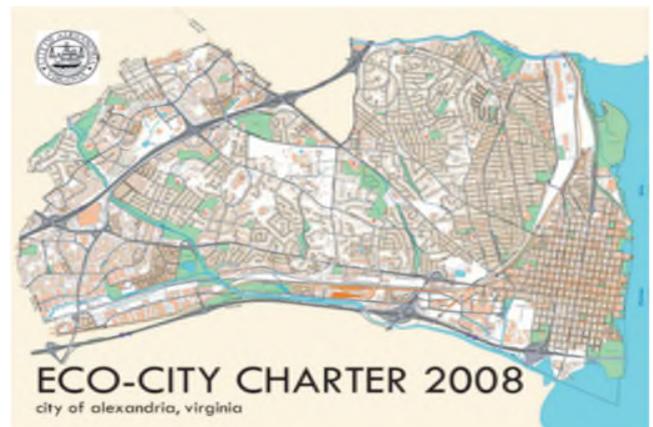
Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize existing policies, regional realities, and economic and business markets with their natural resources and environmental assets. Eco-Cities strive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

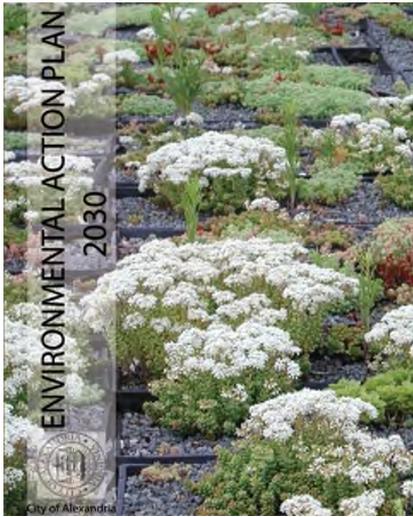
The Eco-City Charter was the first Environmental Charter adopted in Virginia. The *Eco-City Charter* serves as a document to holistically guide City leaders and residents towards a more sustainable and healthy environment. It defines Alexandria’s commitment to ecological, economic and social sustainability. 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 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 2030 in June 2009, which outlines 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 the Alexandria Sanitation Authority. This is the first time these environmental indicators are being reported and subsequently some indicators do not yet have a target value. The base year for each indicator is chosen so as to provide a meaningful measure of progress. The “% Change Compared to Base Year Value” indicates the change between the current reporting period and the base year, with a green value meaning a favorable change and a red value an unfavorable condition. The current reporting period is either calendar year 2010 or Fiscal Year (FY) 2010 since some data for 2011 or FY2011 have yet to become available at the time of this report.

TABLE I – ENVIRONMENTAL INDICATORS

ENVIRONMENTAL INDICATOR	TARGET	BASE YEAR ¹		CURRENT REPORTING PERIOD			
		YEAR	VALUE	YEAR	VALUE	% CHANGE COMPARED TO BASE YEAR VALUE ²	% CHANGE COMPARED TO TARGET VALUE
1. Air Quality Days - number of days with code red/ orange	NA	2003	13	2010	10	-23	NA
2. Per capita energy use, MWh per person per year ³	NA	2005	24.54	2010	24.28	-1	NA
3. City government operations energy use, MWh per year ⁴	NA	FY2006 ⁵	151,964	2010	121,064	-20	NA
4. Greenhouse gas emissions by City government operations, metric tons of CO ₂ per year	NA	FY2006	79,820	2010	65,616	-18	NA
5. Greenhouse gas emissions by residents and businesses, metric tons of CO ₂ per year ⁶	NA	2005	2,092,991	2010	2,184,371	+4	NA
6. Per capita greenhouse gas emissions, metric tons of CO ₂ per year ⁷	NA	2005	15.8	2010	16.1	+2	NA

ENVIRONMENTAL INDICATOR	TARGET	BASE YEAR ¹		CURRENT REPORTING PERIOD			
		YEAR	VALUE	YEAR	VALUE	% CHANGE COMPARED TO BASE YEAR VALUE ²	% CHANGE COMPARED TO TARGET VALUE
7. Percent of new developments committing to green building standard	100%	FY2010	94%	2010	94%	0	-6
8. Percent tree canopy	40%	2007	30%	2010	34%	+13 ⁸	-15
9. Number of acres protected since approval of Open Space Master Plan in 2003	100	2003	0	2010	69	-	-31
10. Percent solid waste recycling rate	35%	2008	26.9	2010	41.4	+54	+18
11. DASH Public transit ridership - number of mass transit commuters per year	N/A	FY2007	3,743,499	FY2010	3,805,551	+2	NA
12. DASH Total passengers per mile / Total passenger per hour of service	NA	FY2007	2.9 / 34.0	FY2010	2.8 / 32.5	-3/-4	NA
13. Per capita water use, gallons per person per year	NA	2005	38,249	2010	38,116	-0	NA
14. Per capita waste water treated, gallons per person per year	NA	2009	36,016	2010	36,723	+2	NA
15. Number of stormwater Best Management Practices (BMPs) in the City	NA	2005	292	2010	399	+37	NA
16. Number of respiratory health complaints received by the Alexandria Health Department	NA	FY2010	82	FY2010	82	0	NA
17. Percent of full service restaurants that are totally non-smoking	100%	FY2010	96.7%	FY2010	96.7%	0	-3
18. Percent of population living in a walkable community	NA	FY2010	73	FY2010	73	0	NA
19. ACPS energy usage per square foot of building space, Btu/ft ² /year	NA	FY2010	61,717	FY2010	61,717	0	NA
20. ACPS waste composting rate, Pounds per year	NA	FY2007	77,900	FY2010	266,329	+242	NA

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

² % Change Compared to Base Year is calculated as ratio of current value and base year value multiplied by 100 minus 100; green color indicates a favorable change and red color, an unfavorable condition

³ Energy use comprises electricity use provided by Dominion and natural gas use provided by Washington Gas; based on population of 137,602 for 2005 and 139,966 for 2010

⁴ City government operations include Alexandria City Public Schools (ACPS)

⁵ City's Fiscal Year covers July through June of the following year

⁶ Values are as-is and not normalized for weather conditions or building square footage

⁷ 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

⁸ The % tree canopy was measured in 2007 and 2010 using different techniques so these data may not be compared with certainty

Initial Findings from the Environmental Indicators

Several findings can be derived from Table I, even though the data reported in this table represents a snap shot of the progress made over a relatively short period of time for a majority of indicators.

- Indicator #10 – Alexandria’s residents and businesses are to be commended for significantly increasing the waste recycling rate by 54% (from 26.9% to 41.4%) during the period 2008-2010. The City’s introduction in the later part of 2010 of 18, 35 and 65 gallon recycling carts appeared to be effective, but active participation from residents and the commercial sector was the prime factor for achieving this significant increase in waste recycling rate.
- Indicator #3 - City government operations which include the Alexandria City Public Schools reduced their energy (natural gas, electricity and other fossil fuels) usage by about 20% over the period from FY2006 to FY2010. This reduction reflects on-going energy conservation efforts at both ACPS and the City government. As a result, greenhouse gas emissions from City government operations reduced by 18% over the period 2005-2010 (Indicator #4). However, the per capita GHG emissions (Indicator #6) increase by 2% going from 2005 to 2010.
- Indicator #5 - In sharp contrast, the greenhouse gas emissions by residents and businesses increased by 4% in 2010 compared with those in 2005. Since greenhouse gas emissions from City government operations account for only 4% of the total GHG emitted from the city of Alexandria, activities by residents and businesses have by far, the most impacts on these emissions. Pro-active participation and commitment from residents and businesses are thus vital to Alexandria’s success in reducing GHG emissions.
- The percent tree canopy (Indicator #8) for the period 2007-2010 lies in the range 30-34%, being measured by different techniques in 2007 and 2010. However, with adverse climate events during the last few years, there is strong evidence that the City will not achieve the 40% target in the foreseeable future. Residents can help greatly by growing at least one new tree in their property.
- The City Green Building Policy (Indicator #7) has proved to be very effective in reducing the greenhouse gas footprint, with 94% square footage of new developments conforming to green building standards.
- The number of acres of land protected since the approval of the City’s Open Space Master Plan in 2003 amounts to 69 (Indicator #9), i.e., a significant progress since the Plan approval in 2003, but still 31 acres short of the target of 100 acres. With present difficult economic conditions, the effort to create more protected land is anticipated to slow down significantly.
- Regarding air quality days (Indicator #1), the number of days with code red/orange was computed by Virginia DEQ/AQS using the most recent set of air quality standards (75 ppb ozone, 100 ppb SO₂, 75 ppb NO₂). The number of days with code red/orange reduced from 13 in 2003 to 10 in 2010. However, looking into more details of this information, the air quality days in 2003 were caused by ozone (6 times) and SO₂ (7 times) while ozone was the sole cause for all air quality days in 2010. This is directly attributable to the City’s past effort during this period to curb SO₂ emissions from the GenOn Potomac River Generating Station. Ozone emission is a regional issue largely related to NOx and volatile organic compounds emissions from vehicles.
- The number of stormwater Best Management Practice (BMP) facilities has increased significantly from 292 facilities in 2005 to 399 facilities in 2010 (Indicator #15), increasing the total acres treated by BMPs from 887 to 1285 acres, a 45% increase.
- ACPS made great stride in composting its waste, increasing the waste composting rate by 242% from FY2007 to FY2010 (Indicator #20).
- It is worthwhile to note that about 97% of full service restaurants in Alexandria are totally non-smoking (Indicator #17).

Alexandria’s Top Ten Environmental Achievements for 2011

1. **GenOn PRGS Permanent Closure** - The City and GenOn Energy reached an agreement in August 2011 to permanently close the company’s Potomac River Generating Station by October 1, 2012. PRGS has been the single largest source of air pollutant emissions in Northern Virginia, and its retirement will undoubtedly yield significant air quality improvement and health benefits to Alexandria residents and those of neighboring jurisdictions.



2. **Solid Waste Recycling Rate** - The City reported its highest ever recycling rate of 41.4% to the Virginia DEQ for CY 2010. This dramatic increase over last year’s reported 28.6% recycling rate was



due primarily to significant increases in overall recycling collection efforts, which include 18, 35, or 65 gallon recycling carts.

3. **New Hybrid DASH Buses and King Street Trolleys** – DASH purchased and received seven 35-foot hybrid buses, three 40-foot hybrid buses and the City purchased five 30-foot hybrid trolleys.



4. **EECBG Projects** – Using funds received from the Department of Energy’s Energy Efficiency and Conservation Block Grant (EECBG) program, the City carried out several green initiatives including the following:

Developed and launched an online Virtual Green Building Resource Center, conducted six workshops and two internal training sessions, and completed 19 energy assessments at residential, commercial, and City buildings.

City Hall Green Roof - The installation of a vegetative “green” roof on the East and West courtyard structures of City Hall.

Alexandria Continued to Green Its Fleet –The purchase of 11 new Ford Fusion hybrid-electric cars, bringing the total number of hybrid vehicles in the City’s fleet to 30.

LED retrofits of traffic lights and a pilot project for replacement of street lights with energy saving LED lights.

5. **City Continued to Green Its Facilities and Promote Green Building Construction -**

New Alexandria Police Department – the new Alexandria Police Department, a 124,000 square foot facility designed and built according to the Leadership in Energy and Environmental Design (LEED) standards. The facility is pursuing LEED Gold certification.



Community Building at Four Mile Run Park - Completed in June, the former Duron Paint building, located at 4125 Mt. Vernon Avenue, was converted using green building practices to a 4,700 square foot multi-use community building.

Green Building Policy – The Green Building Policy (approved by City Council in 2009) was applied to some notable projects in 2011 that will obtain a green building certification including a 332-unit residential building (the Calvert), a 52,000

square-foot grocery store with 175 residential units (Old Town North Harris Teeter), and a 23,000 square-foot retail and office building (Yates Corner).

6. **Alexandria Joins Capital Bikeshare** - On October 11, the Alexandria City Council voted to authorize Alexandria to join the regional Capital Bikeshare network. The program will begin with eight bikeshare stations in Old Town and expand as funding becomes available. The Alexandria Capital Bikeshare network is expected to be in place by the summer of 2012.



7. **Pocket Park Improvements** - The City, in partnership with the community, enhanced two pocket parks acquired through open space funds:

Commonwealth/Reed Ave Park - The former Dominion VA Power site was adopted by Arlandria volunteers who have cleaned up, re-planted, and maintained the site throughout 2011.

Del Ray Avenue Pocket Park Phase 1 Site Improvements - Improvements at the pocket park include a rain garden- designed to capture and filter stormwater, and a nature-inspired play area constructed from renewable/recycled materials such as recycled rubber, plastic bags, and other building materials. The park is adopted by the Del Ray Citizens Association.

8. **Alexandria Sanitation Authority (ASA) Strived to Enhance Sustainable Practices** - In 2011, ASA reused more than a billion gallons of treated wastewater on the treatment plant site, thus minimizing the need to use potable water. It also reused 22,500 tons of biosolids produced on agricultural farmland in Virginia, reducing the need for commercial fertilizers. ASA also used over 118 million cubic feet of digester gas produced in its process to replace natural gas requirements and saved \$150,000 in natural gas costs. In October, City Council approved plans for an expansion to the wastewater treatment plant.

9. **Alexandria Recognized as Silver-Level Walk Friendly Community** - Alexandria was recently recognized as a Walk Friendly Community by the Pedestrian and Bicycle Information Center (PBIC), as one of ten communities recognized across the nation in the September 2011 awards. The City's Silver Level "Walk Friendly" designation, evaluates success in working to improve a wide range of conditions related to walking, including safety, mobility, and access.



10. **VML Platinum Certification** - For the fourth straight year, the City earned Platinum level certification, the highest level, in Virginia Municipal League (VML) Green Government Challenge. The City received innovation points for its adoption of the Energy and Climate Change Action Plan and the development of a virtual Green Building Resource Center.

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>

Compendium of Model Sustainability Practices

ecocity.ncr.vt.edu/model.html

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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