

INTRODUCTION AND OVERVIEW OF THE COMPENDIUM

Beginning in spring 2007, the City of Alexandria partnered with Virginia Tech's Department of Urban Affairs and Planning (UAP) to design and facilitate a collaborative strategic planning process, called *Eco-City Alexandria*. Working closely with the Alexandria Environmental Policy Commission and managers from the Environmental Quality Division, the Mayor and City Council charged this group to create an *Eco-City Charter* (spring of 2008) and *Environmental Action Plan* (winter of 2008). The Charter would set a new vision of sustainability for Alexandria, while the Action Plan would outline specific goals, policies and programs.

The first step in this strategic planning process was to inventory the city's existing environmental programs, plans and policies. As part of Virginia Tech's first *Eco-City Studio* (spring 2007), a team of graduate students under the direction of Planning Professors Joe Schilling and Shelley Mastran compiled a comprehensive inventory of existing environmental actions. This inventory included general program descriptions and web links, along with preliminary observations and insights. The final *Green-Ventory Report* was presented to and formally accepted by the Alexandria City Council on January 22, 2008.¹

Throughout the *Eco City* process, more than 40 *Eco City Studio* students (spring 2007, fall 2007, spring 2008) conducted research on model sustainability practices (programs, policies, and initiatives) undertaken by local governments, primarily in the United States. The purpose of identifying and understanding these model sustainability practices was to discover what cities and localities like Alexandria are doing to further sustainability and to see whether these programs, policies or initiatives (or aspects of them) might be adapted by Alexandria. These model programs and practices were then presented to EPC and city staff during monthly working sessions to brainstorm ideas for the *Eco City Charter* and Environmental Action Plan.

As a result of the hard work of the students in the *Eco City Studios*, Virginia Tech presents the following compendium of model sustainability practices. Our goal is to provide a resource for city leaders, staff, and the citizens of Alexandria as they continue on their journey towards sustainability. The Compendium is intended as a working document. As we and others discover new ideas and model practices, Virginia Tech intends to regularly update this compendium and post the most recent versions on its special Eco City web pages (<http://ecocity.ncr.vt.edu>).

Creating the Compendium

During the spring of 2007 students were assigned a sustainability topic area in which to identify model sustainability practices (programs, policies, and/or initiatives that address sustainability topics such as water quality, energy, open space, land use, health, etc.). Model sustainability practices were defined as those that have received some kind of recognition or reward; have a relatively long and viable track record; apply a new technology or strategy; and/or have inspired similar programs in other localities. Students were also urged to find programs in cities reasonably comparable to Alexandria in size and geography. It was considered ideal if students

¹ http://ecocity.ncr.vt.edu/docs/ecocityalexandria_greenventory.pdf

could find model programs in Virginia, in the Washington, DC, metropolitan area or from a community in the Mid-Atlantic. We eliminated foreign environmental programs except for a select few from Canada. Students were encouraged to find programs that could be transferred or adapted by Alexandria without great difficulty, cost, or large increase in staffing. Students were encouraged to identify similar Alexandria programs and initiatives and offer suggestions on how to enhance or expand these programs or initiatives based on the model.

Research to identify model programs was conducted primarily via the internet, but students were also asked to review publications and news articles for current initiatives. Once students had identified potential programs, many students contacted city or county staffs who administer the model program to gather detailed information on staffing, budget, and implementation, as well as recommendations for Alexandria. Often these interviews were difficult to schedule and required considerable patience before the appropriate information was in hand.

Once all the research was complete, students were asked to recommend 7 to 10 programs in their issue area that they thought most relevant for Alexandria and submit detailed descriptions of these programs. They were also asked to submit short write-ups of all the other model programs they had identified. In late spring 2007, the studio presented its preliminary list of Model Sustainability Practices to the Environmental Policy Commission. Commission members provided their reactions, favoring some programs over others, and they also recommended ideas for further research. With student research complete, Professors Schilling and Mastran and graduate assistant Sara Hamberg worked during the summer of 2007 to refine the list of model programs and practices. We established a set of criteria against which to weigh each program.

During the fall of 2007 and spring of 2008 new studio students continued to collect ideas and conduct additional research on model programs. These students focused on emerging sustainability topics, such as green buildings, energy, and climate change, and health. They also investigated cross cutting sustainability initiatives undertaken by local governments. Kimberley Hodgson, a registered dietitian with expertise in public health, food policy and nutrition and PhD student in the Department of Urban Affairs and Planning, conducted extensive research and compiled results on the connections between health and sustainability (see the Emerging Sustainability Issues: Health) to round out our list.

The Format of the Compendium

This document presents the list of recommended model sustainability practices for Alexandria to consider, as well as a supplemental list of model programs that the City may want to research further. The model sustainability practices are organized into four major themes and each theme is broken down into several sustainability topic areas:

- Classic Environmental Sustainability Issues
 - Water Quality, Air Quality & Transportation, and Solid Waste
- Planning for Sustainability
 - Land Use, Open Space, Green Buildings, and the Built Environment
- Emerging Sustainability Issues
 - Energy, Climate Change and Health

- Sustainability Initiatives
 - Governmental, Civic & Economic Sustainability Plans & Programs

Considering the multi-disciplinary nature of sustainability issues, several model practices may fall into two or more topic areas. For example, green infrastructure and low impact development practices both enhance water quality (water quality issue) and contribute to a community's parks and open space (open space issue). Green roofs both conserve energy (energy issue) and reduce stormwater runoff (water Quality issue). Food waste composting programs conserve energy (energy issue), reduce waste (solid waste issue), and educate the public about food systems (health and land use issues). Improved walkability both reduces emissions (air quality and health issues), increases physical activity (health issue), and encourages compact development (energy and land use issues). Community gardens, farmers' markets and other forms of urban agriculture provide open and public space (open space and health issues), reduce the distance food travels from farm to plate (energy and air quality issues), and improve access to healthy food (health issue). Due to these overlaps, we have tried to locate the program in the issue that seems most suitable.

Within each sustainability topic area, approximately ten model programs are described according to the following format:

- Locality (where the program is located)
- Department (which governmental department administers the program)
- Description (how the program operates)
- Start Date (when the program began)
- Budget and Staffing (annual budget and number of staff to administer)
- Alexandria Match (how applicable the program is for Alexandria)
- Point(s) of Contact (whom to contact for further information)
- References (relevant web sites and publications)

For the supplemental list of model programs, the descriptions are shorter, and the information is organized according to the following format:

- Locality
- Description
- Contact
- References

Local Government Leadership in Sustainability—A Preview of the Compendium’s Topic Areas

Local governments around the world are taking sustainability from a buzzword to an actual, pragmatic approach to city growth and development. In fact, these efforts at the local level are providing a critical and necessary impetus for state governments and even federal governments to pursue complementary initiatives.

Many of today’s environmental challenges stem from the way we have planned and developed our communities. Sprawling, automobile-centered development patterns throughout much of the country have increased travel distances between destinations, leading to traffic congestion, air pollution, and over consumption of nonrenewable resources. In addition, the built environment has replaced many forests, wetlands, and grasslands – which acted as natural filters – with the impervious surfaces of streets, parking lots, and buildings, causing more pollutants to enter the air and waterways and displacing native plants and animals. How we plan and build cities can decrease pollution, protect our environment, and preserve our ecological resources, which are essential elements of ecological sustainability.

Sustainable management of waterways is crucial for ensuring not only that the direct natural environment is protected for the present and for future generations, but also to help maintain and improve water quality for all living organisms. Many waterways are highly contaminated by excess sediment, fertilizers, pesticides, motor oil, and other contaminants generated by human land use and activities. Local governments can manage water resources in a holistic, or integrated, manner; while simultaneously balancing economic, social, industrial, and recreational interests.

Park land and other open space are critical elements of sustainability, playing key roles in ensuring ecological and environmental health as well as the physical and mental health of its citizens. Green space in communities provides buffers for rivers and streams that filter out harmful pollutants, habitat for wildlife, and trees that lower the temperature of the urban heat island. Green space also provides land for passive and active recreation as well as for community gardens and urban agriculture.

Americans and Canadians consume more energy per capita than any other nation.² Our reliance on the use of oil, gasoline, and other fossil fuels as a primary source increases carbon emissions that contribute to green house gases and the impending threat of global warming. Energy also manifests itself in congested roads, urban sprawl, excessive heating, cooling, lighting, and building ventilation. As consumers of energy local governments can alter the design and construction of city buildings/facilities to become more energy efficient and modify its vehicle fleets to use alternative fuels, such as bio-diesel. While it is difficult for local governments to sway national and even regional energy markets on their own, they can still purchase more power generated from renewal sources, such as wind and solar. When it comes to energy policy local governments can lead by example by ensuring that city facilities and services reduce energy use and increase alternative sources of energy and fuels.

² Roseland, Mark. *Toward Sustainable Communities*, revised edition (Vancouver, 2007).

The design of cities, towns, and neighborhoods greatly impacts not only the health of the physical environment, but also the health of people living within this environment. In consideration of the linkages between human health, the built environment and the physical environment, an ecologically sustainable city is one in which all environments—the natural/physical environment, the built environment, the food environment, the work environment, the home environment, the school environment, etc.—work together as a single ecological system to ensure that the city is a great place to live, work and play for decades to come. Many local governments, community groups, and private and public organizations across the country are taking great strides to improve the health of their communities in order to create vibrant, ecologically sustainable, healthy places for their residents. Through their efforts, these organizations and individuals are making crucial connections between health and other environmental policies and programs—parks and open space, transportation, indoor and outdoor air quality, water quality, energy consumption, climate change, and waste management. From the development of environmental health related zoning ordinances, the inclusion of health and wellness elements to general or comprehensive plans, the implementation of health impact assessments, the creation of public health master plans, and the formation of public-private partnerships and multidisciplinary coalitions, these communities are changing the way health, environment, and sustainability issues are addressed.

Citizens and local governments can design more energy efficient buildings and retrofit existing homes, offices, and civic buildings that can save millions of dollars in energy expenditures. Today, “breakthroughs in building science, technology, and operations are available to designers, builders, and owners who want to build green and maximize both economic and environmental performance.”³ It is important that builders take advantage of these technologies, as building greener can help protect water quality, improve air quality, protect ecosystems and biodiversity habitat, and conserve renewable and non-renewable sources of energy, which in turn affects climate change. In light of these benefits and their importance for public health and well-being, many local governments now actively promote or require developers and homeowners to build green through incentive programs or local regulation.

Whether a city adopts a specific sustainability program or policy or a comprehensive sustainability plan, local governments are taking great strides to improve the environmental, economic and social dimensions of their jurisdiction for current *and* future generations to come.

³ USGBC web site. Accessed December 2007 on: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718>