



City of Somerville, Massachusetts

**JOSEPH A. CURTATONE
MAYOR**

SUSTAINABLE SOMERVILLE:

AN ENVIRONMENTAL STRATEGIC PLAN

Mayor's Office of Sustainability and Environment
April 2007

Executive Summary

Under the leadership of Mayor Joseph A. Curtatone, Somerville's city government is making a long-term commitment to sustainability and environmental stewardship. As one of the nation's most densely populated cities – and coping with an older and deteriorating physical infrastructure – Somerville recognizes both the operational challenges and opportunities that it will face in the years ahead. Nonetheless, Somerville is committed to fashioning a set of governmental policies, goals and benchmarks that will assure that the city, its businesses and its residents are able to take proactive steps to meet ongoing environmental challenges as well as capitalize on new, emerging opportunities. The City of Somerville recognizes that significant economic, social and environmental benefits will accrue to communities that successfully integrate sustainability as an operational objective. In a time of substantial and rapidly growing interest in mitigating the impact of human economic activity on global climate, Somerville seeks to minimize its own impacts while securing a healthy and prosperous future for its residents.

In 2006, Mayor Curtatone established a new city department – the Mayor's Office of Sustainability & Environment (OSE) – and tasked it with the mission developing and implementing a comprehensive environmental vision and agenda. Now in its first year of operation, OSE is releasing the city's first Environmental Strategic Plan (ESP). The Plan sets forth a series of guiding principles for effective and sustainable decision-making and identifies a number of objectives that decisively move Somerville city government toward sustainability.

The Plan introduces a number of specific actions that the city will take in a variety of programmatic areas. These action steps are based on a review of best practices in municipal government and an assessment of the most cost-effective sustainable policies available to Somerville at the current time. In many cases, these actions are also aligned with specific goals set forth in the U.S. Mayor's Climate Protection Agreement signed by Mayor Curtatone and over 450 mayors from around the nation.

Among the initiatives featured in the Plan are:

- **Resource Conservation**
 - Energy Management
 - Biodiesel
- **Environmental Protection**
 - Single Stream recycling
 - Underground Storage Tank cleanup
- **Transportation & Infrastructure**
 - Alternative vehicles
- **Land Use & Open Space**
 - Brownfield Redevelopment

- **Economic Development**
 - Cleantech Cluster Development
- **Community Education**
 - Educational Programming & Curriculum development

As Somerville implements the first round of these policy initiatives, OSE is committed to continually reviewing its policy goals in light of new technologies, scientific advances and changing local, regional and national objectives. As a necessary part of fulfilling its mission and evaluating progress, OSE intends to update the ESP on an annual basis.

In future versions of the Environmental Strategic Plan, OSE will look for opportunities to expand environmentally sensitive and sustainable policies across additional areas of municipal operations and, consistent with rigorous cost/benefit analysis, will adopt those policies and programs that offer the greatest benefit to the citizens of Somerville.



Sustainable Somerville
An Environmental Strategic Plan

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Introduction

In the latter half of the 20th century, cities were generally regarded as, by definition, damaged ecosystems that had been largely stripped of their “natural” environmental capital; they were foreign impositions on the native landscape.¹ Somerville and similar cities confronted environmental challenges driven by population density, a shortage of open space, old and deteriorating physical infrastructure, and continuing pressure on their scarce natural resources.

While these daunting challenges remain, the City of Somerville has, in recent years, rewritten its environmental policies based on the emerging paradigm that the urban environment is a viable ecological unit in its own right, possessing uniquely valuable natural characteristics and resources that are worthy of study and protection. Under the leadership of Mayor Joseph A. Curtatone, and in the belief that environmentally responsible policies enhance the city’s prosperity and livability, Somerville has embraced the doctrine of sustainability in its economic and social development. In 2006, in an effort to develop appropriate long-term strategies to protect and enhance the quality of Somerville’s urban environment, Mayor Curtatone established an entirely new city department – the Office of Sustainability and Environment (OSE) – and charged it with the oversight, coordination and monitoring of all citywide environmental initiatives.

In its first year of operation, OSE has taken on a wide range of programs, issues and projects, ranging from enhanced recycling efforts to energy conservation studies to a series of oil leak and storage tank remediation events on city properties. At the same time, OSE has worked to provide the city with a longer term, strategic approach to environmental policy by surveying best practices in other communities and analyzing Somerville’s unique issues.

This first Environmental Strategic Plan (ESP) is the result of that experience and analysis. It is not intended to be a static document, but is designed to grow and evolve in accordance with changing priorities, resources, and technologies. In order to incorporate best management practices and establish a culture of continuous improvement in its operations, OSE is committed to performing a regular evaluation of its policies and programs. Accordingly, what follows is a snapshot of where OSE, and the city in general, stands today and where we hope to go in the years ahead. This plan will be updated annually to reflect changing circumstances and priorities as well as to recognize both successes and continuing challenges.

- Peter Mills, Environmental Programs Manager

¹ This concept is discussed at length in “Natural Cities: Urban Ecology and the Restoration of Urban Ecosystems;” C. Lord, E. Strauss, A. Toffler; Virginia Environmental Law Journal, (21 Va. Env’tl. L.J.) 2003.

What is Sustainability?

In Somerville, in Massachusetts, and indeed, across the nation and the entire planet, population growth, high levels of resource consumption and the desire to renew and strengthen our economy have resulted in ever increasing demands on our shared resources - natural, human and social - on a scale that, left unchecked, can adversely (perhaps irreversibly) affect the natural environment, and by extension, the health of our communities and our quality of life. In the face of these challenges, cities like Somerville have sought to develop an increased awareness of both the value and fragility of their urban environment. This, in turn, has led many urban communities to adopt the concept of sustainability as a guiding principle in the context of public policy development.

Sustainability is often defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”² Implicit in this definition is the idea that communities must pay consistent attention to responsible stewardship in order to assure their long-term prosperity. To fully understand the concept of sustainability, however, governments and their citizens must understand two essential ecological principles that underpin all sustainable programs and policies. These two fundamental principles are that:

- The earth and its resources are finite; and
- The earth’s capacity to absorb waste is constrained.

Significant natural resources remain available on a global scale to meet current needs, but their limits are already apparent, and their use entails costly side effects. Despite a few claims to the contrary, there is a broad, deep consensus in the scientific community that current levels of per-person consumption of our natural resources will lead, within the foreseeable future, to the breakdown of the planet’s ability to provide those resources to a growing human population.

At the local level, this breakdown can lead to deterioration of quality of life and economic opportunity, and can condemn previously dynamic communities to stagnation, decline and physical decay. For these reasons, and for the equally compelling reasons of economic fairness, environmental justice and intergenerational equity, human communities at every scale should adopt levels of resource consumption that are in accordance with the earth's natural ability to provide resources.

Just as natural resources are finite, so also is the earth’s capacity to absorb waste, toxicity and contamination. The second principle of sustainability is therefore to adopt economic processes, systems and policies that minimize waste and maximize reuse. Cities are particularly challenged in this respect because they have population and development densities that traditionally concentrate large volumes of waste, with little or no space for waste assimilation.

² World Commission on Environment and Development, “Our Common Future,” 1987.

Given these stark realities, Somerville is proceeding from the core belief that the principle of sustainability must be honored in all aspects of municipal life as part of any successful strategic effort to enhance and maintain the economic prosperity and the livability of Somerville for both current and future residents.

As Somerville plans for its future, OSE intends to assist the city in identifying and implementing eco-friendly practices across all aspects of city operations. This approach will make city operations more sensitive to preservation and protection of the urban environment, and should also bring long term cost benefits to the city as it reduces waste and streamlines its operations. Ultimately, sustainability is about improving the quality of life for all Somerville residents, while best positioning the city to reap the benefits of a robust economic, social and environmental future.

Principles and Program Areas

The OSE's Environmental Strategic Plan is founded on the following series of guiding principles for effective and sustainable governmental decision-making. These principles are:

1. The concept of sustainability should act as a citywide guide to policy development and implementation.
2. A due regard for the protection, preservation and enhancement of the natural environment is a desirable and necessary element in every aspect of Somerville's municipal governance.
3. Economic prosperity, environmental quality and social equity are interrelated and mutually dependent.
4. Community awareness, citizen participation, and education are key ingredients of a sustainable community.
5. Somerville recognizes its economic and environmental linkages to, and interdependencies with, other communities in the region, the nation and the world.
6. Because financial and human resources are limited, Somerville will responsibly prioritize its actions based on those issues that are of highest importance and greatest benefit to the community.
7. Effective leadership by city government, and partnerships between agencies of government, the private sector and community groups are essential for Somerville to reach its sustainability goals.

This year's ESP includes activities in six broad programmatic areas:

- Resource Conservation
- Environmental Protection
- Transportation and Infrastructure
- Land Use and Open Space
- Economic Development
- Community Education

Within each program area, Somerville has already implemented a number of continuing programs and is developing new initiatives. Many of the goals and objectives identified in this plan relate to more than one measure of sustainability, yet all seek to recognize and incorporate the underlying principles of sustainable decision-making for the long-term benefit of Somerville residents.

Program Area - Resource Conservation

Somerville's economic prosperity, and indeed its very existence, depends upon the ready availability of a wide variety of natural resources, from clean drinking water to natural gas and petroleum, to lumber and other construction materials. Strictly speaking, none of these resources is produced locally. Like most modern cities, our community has come to rely on outside sources for these commodities, and on the hitherto safe assumption that they will be available whenever and wherever they are needed.

While many of the natural resources on which Somerville relies are renewable (provided, of course, that we use them in a sustainable manner), many other resources on which we depend are clearly finite. Chief among these are fossil fuels. Accordingly, in the near term, OSE will advocate policies that foster more efficient use by the city of fossil fuel resources and, in the longer term, will seek ways to reduce Somerville's dependence on fossil fuels by substituting renewable resources for non-renewable resources where feasible.

Initiative: Energy Management

With respect to energy use, OSE has launched an ambitious project to manage the city's energy demand in order to drive down Somerville's annual energy costs. Through the implementation of an Energy Performance Contract, Somerville intends to secure the services of an established Energy Services Company (ESCO) that will design and put into service a series of energy savings projects in municipally owned buildings. By undertaking this initiative, Somerville city government can expect to cut its aggregate energy consumption by at least 20 percent from current levels. In a time of increasing energy prices, this program will ease the financial burden that energy places on the city's operating budget. At the same time, and of equal importance, this project also gives the city a unique opportunity to make significant upgrades to a number of its older building systems. These improvements will not only pay for themselves in energy savings, but also will give city office buildings and schools enhanced functionality, occupant comfort and productivity, and improved environmental performance.

Goal: *Reduce energy demand at city owned buildings by at least 20 percent over FY2006 levels beginning in FY 2009. Expand and centralize citywide energy management capabilities to facilitate monitoring and analysis of municipal energy use, positioning the city to realize long-term benefits of a comprehensive energy management strategy.*

Status: *The city expects to select a contractor to implement this project in the second quarter of 2007, with project implementation to commence within the current fiscal year.*

Initiative: Renewable Energy

As a matter of policy, the City of Somerville is determined to increase the share of renewable energy in its energy mix. While current state law mandates that a nominal percentage of energy sold in Massachusetts come from renewable sources,³ Somerville will look to lead by example by voluntarily increasing its share of renewable energy. Simply put, pursuing this strategy promotes the objective of sustainability by supporting domestically produced sources of renewable energy and decreasing dependence on foreign sources of fossil fuels. As a first step, OSE proposes that Somerville City Hall investigate opportunities to become “100 percent renewable” at the beginning of fiscal year 2008. Going forward, as the city examines options for procuring energy through a competitive supply contract, OSE recommends that the energy procurement strategy for Somerville specify a percentage of renewables that exceeds the state-mandated percentage by at least 5 percentage points.

Goal: Monitor the energy supply markets and determine best practices for procurement of competitive energy supplies, and in this context, look to increase the share of renewable energy used by city government to at least 10 percent by 2010.

Initiative: Procurement & Purchasing

One of the goals of OSE is to assist all city departments in continuing the shift toward environmentally preferable purchasing and environmentally conscious resource use. Implementation of this policy will also include looking for specific opportunities to reduce resource consumption, pursue the reuse of resources where practicable, and promote effective recycling practices by all city departments. OSE will work closely with the Purchasing Department in an effort to reduce the overall impact of Somerville’s resource use. One way for city government to create this change is by publicly expressing, and then demonstrating with its purchasing decisions, a preference for products that are environmentally preferred, either because they are produced with recycled and/or renewable resources, or because they demonstrate lower overall environmental impacts as compared to comparable products in the same category.

Case Study: Office Supplies

The city’s contracted suppliers of office products offer recycled content versions of many of the common office supplies that we use every day. Some examples of these are photocopy and inkjet/laser printer paper, letterhead and stationery, post-it notes, inks and toners, file folders, envelopes and business cards.

Objective: While recycled content versions of these everyday supplies are available now to all city departments, to date, they have not been widely adopted. To begin to alter purchasing behavior to reflect the city’s long-term sustainability goals, OSE recommends that an environmental purchasing policy memorandum be developed to make all city departments aware of the benefits of using environmentally preferable products.

³ As of 2006, the state Renewable Portfolio Standard requires that 2.5 % of energy sold at retail in Massachusetts be from “new” renewable sources. This percentage is scheduled to increase at rate of 0.5 % annually through 2009, and 1% annually thereafter, as determined by DOER.

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Broadly speaking, Somerville is committed to procuring products and services that minimize environmental impacts across all of the city's operations. In addition to office supplies, the city is formulating environmentally conscious procurement strategies for goods and services as diverse as energy supply, cars and trucks, and landscaping supplies. In general, OSE is looking to incorporate consideration of environmental performance as part of the normal procurement process alongside the more traditional metrics of price, performance, availability and product safety.

Goal: OSE's goal is to assist the Purchasing Department in modifying the purchasing habits of all city departments over time to reflect the city's preference for products that offer best-in-class environmental performance. Practically speaking, purchasing decisions will reflect a preference for products with an increasing share of renewable materials and/or post consumer or recycled content, and will likewise favor products where pollution prevention has been integrated with design and / or where simplified end-of-life recycling has been designed in.

Program Area - Environmental Protection

In the area of environmental protection, Somerville continues to benefit from a number of successful programs based on implementation of state and local regulations, public health considerations, planning, zoning and community development objectives, and voluntary measures – all of which are designed to keep Somerville's urban environment clean and livable. Many of these programs are interdisciplinary in nature, requiring cooperation between OSE, through the Environmental Coordinator, and other city departments including Public Works, the Office of Strategic Planning and Community Development, the Police and Fire Departments, the Health Department and the School Department.

With the creation of OSE, administrative oversight of all Environmental Protection programs has become the responsibility of OSE. The consolidation of oversight for these programs is currently under way, and will be complete before July 1, 2007.

Environmental Protection maintains responsibility for the following functional areas:

- Sanitation
- Household Hazardous Waste
- Watershed Management
- Air Quality Management

Sanitation

Sanitation involves aspects of several city operations that, taken collectively, comprise "Solid Waste Management." There are three major components of the Somerville solid waste management program: (1) trash collection and disposal, (2) curbside recycling, and

(3) yard waste separation and collection/drop-off of yard waste materials. The Somerville Environmental Protection Office actively seeks state and federal grants for sanitation related projects.

Trash Collection

Solid waste consists of non-hazardous, non-recyclable waste. The City of Somerville offers regularly scheduled curbside solid waste collection services to all residents and businesses. For buildings with nine or fewer residential units, trash collection is free. For multifamily units, there is a \$150 per unit annual charge. Businesses are charged a set rate based on the number of barrels collected by the city.

Initiative: Trash Ordinance

A new trash ordinance has been developed by the city with the objective of introducing standards for containment and storage (curbside) of household trash prior to pickup. This ordinance, which went into effect on January 1, 2007, seeks to maintain clean and sanitary conditions within the city by limiting releases of loose trash and reducing animal and rodent access to stored trash. The new rules require that all trash be stored in closed containers, and specifies appropriate timeframes for placement of trash at the curbside prior to collection. A phased enforcement policy, implemented by Inspectional Services, will support compliance with this program.

***Goal:** Improve city cleanliness and sanitary conditions, and reinforce efforts to control rodents.*

***Goal:** Make determination on feasibility of pursuing an IWMP, or other changes with respect to trash collection and hauling, in Somerville by 2008.*

Curbside Recycling

Somerville offers regularly scheduled, weekly curbside pickup of recycling for residents, interested businesses and non-profits. Somerville's program is customer driven, and is designed to minimize the burden placed on participants with respect to separation and bundling of recyclable materials. By researching ways to make recycling as easy as possible for residents, Somerville is looking to further its sustainability goals by diverting recoverable materials from the traditional waste stream and make a larger, more valuable stream of recoverable raw materials available to local and regional manufacturers.

Case Study: Integrated Waste Management (IWMP)

Somerville is considering options to overhaul its trash collection program in the future. Integrated Waste Minimization programs, also commonly known as Pay-As-You-Throw (PAYT) programs, ask that residents pay by volume for the amount of trash they generate. PAYT programs are designed to create greater transparency with respect to waste disposal costs by continually reinforcing the concept that waste disposal represents a direct economic and environmental cost to the city and its residents. It is well documented that such programs, once underway, result in both source reduction and increased recycling rates.

Objective: By shifting to an Integrated Waste Management Program (IWMP), Somerville might be able to expect a 15-20% reduction in aggregate trash volumes after the first year of operation. Further study of costs and benefits of IWMP, along with interactions between IWMP and other potential initiatives, including single stream recycling, is planned for the year ahead.

Goal: *Develop a cost effective approach to single stream recycling as a means to increase recycling participation rates and material volumes within Somerville, leading to local and regional economic and environmental benefits. A detailed alternatives analysis is expected to further inform the city's decision as to whether to go forward with a pilot of a single stream recycling program in FY 2008.*

Yard Waste

Somerville offers residents scheduled curbside pickup of yard waste and year-round drop-off at the DPW yard. Somerville also offers residents the opportunity to purchase Earth Machine Composters, through the Environmental Protection Office, at reduced rates. Separate collection of yard wastes has several positive effects: removal of these materials from the traditional solid waste stream, beneficial reuse of organic materials, and conservation of landfill space. This successful program will continue as designed in 2007. OSE is also looking at opportunities to offer Earth Machine Composters to residents via an online sales platform. Rain barrels and other environmentally-friendly consumer products would also be examined for inclusion in an online sales/marketplace.

Case Study: Single Stream Recycling

The city is looking in depth at developing and testing a single stream recycling program in 2007-08. With single stream recycling, residents would be able to commingle all recyclable materials in one receptacle, ending the need to separate paper from plastic and other materials. Evidence from single stream recycling programs elsewhere indicates that recycling rates can be increased substantially under this scenario. By offering a program that provides for greater ease of recycling, the city can expect to reduce its overall solid waste volumes, thereby driving down disposal costs. In general, the goal of single stream recycling is to generate a significantly better financial and environmental return on the city's recycling efforts.

Air Quality

At the regional level, New England's quality of life and business climate are routinely affected by changes in air quality. In fact, many parts of New England experience episodic summertime ozone events that are regarded as "very unhealthy" for humans and the environment. New England also suffers from the effects of acid rain. These and other air quality issues in the region are partly the result of the influx of airborne pollutants originating in industrial regions, metropolitan centers, and transportation corridors located in upwind source regions (particularly the Midwestern and mid-Atlantic states), although emissions from within New England from transportation, power generation and other industrial activities also play a key role.

At a more local level, urban communities are often disproportionately affected by air pollution as compared to suburban or more rural communities. Pollutants, such as ground level ozone (created by chemical reactions between oxides of nitrogen and volatile organic compounds in the presence of sunlight) and particulate matter (a combination of dirt, dust, pollens, molds, aerosols, etc.) negatively impact air quality and can be especially harmful to people with asthma and other respiratory or pulmonary diseases. Sources of these pollutants in Somerville are principally automobiles, railways, diesel trucks and local industrial activity, including power generation.

As a means to address local and regional air quality, Somerville has developed the following programs and policy goals:

Initiative: Anti-Idling Program

Idling vehicles contribute unnecessarily to local air pollution, which can lead to adverse health impacts. Current state law limits unnecessary vehicle idling to five minutes.

In connection with this state-level policy, a graduate intern from Tufts University conducted a study with SPCD to explore possible strategies for enforcement of the state anti-idling regulations. However, after careful consideration, it was decided that the city's focus should be directed toward a public education component rather than on developing punitive measures. As a result, educational materials will be developed to let the public know about the benefits of shutting off vehicle engines instead of idling. The Environmental Protection Office (EPO) applied for an educational material assistance grant to DEP and received printed materials, signboards etc., some of which are on display at selected locations in the city.

<p><i>Goal:</i> Increase public awareness of Massachusetts' anti-idling provisions and gradually build support and momentum for compliance through a public education and outreach campaign.</p>

Initiative: Update the City's Greenhouse Gas Inventory

Several years ago, the City of Somerville worked collaboratively with the Tufts University and the International Coalition of Local Climate Initiatives (ICLEI) in order to measure the city's contribution to regional greenhouse gas emissions. In 2001, the city's Environmental Coordinator, with support from an ICLEI intern, produced a comprehensive Greenhouse Gas (GHG) Inventory for the city. This report analyzed the environmental impact (in terms of carbon dioxide equivalent or "eCO₂") of both municipal and community-wide economic activity in Somerville, resulting in a measure of the carbon footprint per capita for Somerville. The report called for the development of a local action plan designed to address municipal CO₂ emissions and called for the city to implement targeted reductions of carbon emissions based on an assessment of available options, including energy management, building retrofits, integration of alternative vehicles and fuels, and implementation of smart growth and public transit initiatives. In 2002 the Board of Aldermen passed a resolution calling on the city to reduce its CO₂ emissions to 1990 levels by 2010. In 2003, the Somerville Commission on Energy Use and Climate Change leveraged the results of the 2001 study to produce the Somerville Climate Action Plan.⁴

Goal: With assistance and input from the Somerville Commission on Energy Use and Climate Change, consider revitalizing the city's participation in and relationship with ICLEI, and promote the resumption of periodic measurement and updating of GHG emissions against the 2001 inventory to allow for assessment of progress against the reduction targets outlined in Somerville's 2001 inventory document. OSE intends to pursue Somerville's GHG reduction goals by a host of means, including several of those identified herein, and in the Climate Action Plan.

Initiative: Diesel Retrofits

There are clear and significant benefits associated with the reduction of emissions from the nation's in-use heavy-duty diesel fleets. Current air quality inventories estimate that heavy-duty engine emissions comprise 33% of all nitrogen oxides (NO_x) pollution and 80% of all particulates (PM) originating from mobile sources in the Northeast states. These pollutants contribute to ground level ozone, smog and cause undesirable and costly public health effects such as increased incidence of asthma, particularly in urban populations.

In order for the region to achieve its air quality goals, significant reductions in heavy-duty diesel emissions are required. The diesel retrofit program takes advantage of commercially available retrofit/rebuild devices that reduce heavy-duty engine emissions significantly. Examples of these devices are oxidation catalysts, fuel borne catalysts, and new engine components configured for low emissions such as pistons and camshafts.

In 2006, the Somerville Environmental Protection office successfully applied to the Massachusetts Department of Environmental Protection for direct assistance for

⁴ Commission on Energy Use and Climate Change, July, 2003.

retrofitting six DPW vehicles. Five of the six retrofits were completed in 2006, helping the city to reduce emissions from DPW fleet vehicles. The sixth vehicle is scheduled to be retrofitted in the near term.

Goal: *Significantly reduce harmful air emissions from Somerville's existing diesel vehicle fleet. Recent federal clean diesel standards apply to new vehicle purchases, but retrofits can significantly improve the environmental performance of older units until they reach retirement. OSE will continue to seek funding opportunities to reduce emissions from existing vehicles. Beginning with the 2007 model year, all diesel powered fleet purchases will meet new federal standards for highway diesel vehicles. By rule, diesel vehicles purchased in 2007 and beyond must meet stringent emissions standards, which are driven primarily by specifying sole use of Ultra Low Sulfur Diesel.*

Water Quality

Somerville is located within the lower Mystic River basin and is bounded by the Mystic River and Alewife Brook along its western and northern parts. The Mystic River is one of three major rivers draining into Boston Harbor. Environmental hazards in the Mystic watershed include chemicals leaching from waste disposal sites, contaminated sediments, excessive input of plant nutrients, discharges of sewage containing pathogenic bacteria, and excessive inputs of fuel hydrocarbons, road salt and toxic metals, principally from storm water runoff.

In 2001, Somerville, along with Commonwealth of Massachusetts and Tufts University, expressed a commitment to make the Mystic River swimmable and boatable by 2010. Although this ambitious goal depends heavily on the active involvement by the state in terms of funding the river cleanup, Somerville is nonetheless doing its share to alleviate water pollution in the Mystic by means of the following regular and special initiatives:

1. Active Stormwater Management

- a. Solid Stormwater Management Plan
- b. Catch basin cleanup
- c. Street sweeping program (*Each side of the street is swept twice a month*).
- d. Stormwater public education
- e. Detection and closure of illicit sewer connections
- f. Combined sewer overflow closures

2. Special Projects

- a. EPA-funded EMPACT project for water quality monitoring and predictive modeling (*Study Concluded*)
- b. EPA Region 1- funded Stormwater Asset Management Project (*Study Concluded*)
- c. StormTreat System for stormwater treatment funded by DEP (*Engineering Concluded*)
- d. GIS Layers of Stormwater Utilities (*Ongoing*)
- e. Mass Environmental Trust Funded educational project (Funded for FY 2006 to EPO and After School Program)

Initiative: UST Removal Project

In most instances, buildings that use heating oil have associated underground oil storage tanks. While some of these tanks are in service at city buildings, in past years, the heating systems at several city-owned buildings have been converted from heating oil to natural gas. As a consequence, a number of these converted buildings have out-of-service underground storage tanks (UST) on the premises that must now be removed.

Under Massachusetts law, any out-of-service UST must be emptied and secured, and then excavated and removed from the premises, or alternatively, closed in place. At the time of closure, testing for soil contamination from leaks or spills is also required. Somerville has engaged licensed tank removal contractors to complete this work at several city facilities, including the Brown and Cummings Schools, Central Library and the DPW yard.

In addition to USTs that are no longer in use, a number of the city's in-service tanks are not compliant with current codes. This is due mainly to the age of these installations. Some of the more modern requirements that UST be equipped with spill containment, leak detection and other protective measures were not required, or were simply unavailable, when these tanks were first installed. Tanks that are not upgradeable to meet codes must typically be removed from service. The city may, at its option, replace these facilities with code compliant units.

<p><i>Goal: Close known out-of-service UST locations on city property by May 1, 2007. Upgrade or replace known non-compliant USTs on city property in FY 2008.</i></p>

Initiative: City-wide Inventory of Flammable/Combustible Substances

In order to appropriately account for and manage hazardous substances and materials that are either in use or stored on city property, OSE plans to undertake an inventory of these materials, to document quantities and storage conditions. This inventory will result in updating of permit applications for all storage locations with Somerville Fire Prevention.

<p><i>Goal: Develop a complete listing of flammable and combustible substances and storage locations on city property before the end of FY07. Obtain all necessary permits from Somerville Fire Prevention.</i></p>

Program Area – Transportation & Infrastructure

Transportation is an enduring challenge for most cities and Somerville is no exception. Somerville's transportation infrastructure is devoted almost exclusively to the automobile, although a few inroads have been made in recent years, including the highly successful community path that runs through Davis Square to Cedar Street, and dedicated bicycle lanes on portions of Washington Street. Public transportation options are limited to the MBTA Red Line Station at Davis Square and MBTA bus service. City and regional planned development objectives call for significantly improved access to light rail, including new Orange and Green line stops planned within the city. Nonetheless, any city policy that is to truly achieve a lasting impact on transportation within Somerville must start with trucks and automobiles.

Initiative: Biodiesel

Biodiesel is a domestically produced renewable fuel derived from plant material, and is suitable for combustion in all diesel engines. The Office of Sustainability and Environment encourages the use of biodiesel in city fleet vehicles as a means of reducing the environmental impact of city operations. Since joining the Cities for Climate Change Protection Program in 2001, the city has expressed a commitment to addressing global warming and climate change by reducing emissions of greenhouse gasses, among them carbon dioxide (CO₂). The combustion of fossil fuels is a principal source of CO₂ emissions to the atmosphere. Because biodiesel is a carbon neutral fuel, its use would result in a measurable net reduction in municipal CO₂ emissions. Biodiesel is available to Somerville through an existing statewide procurement contract. Environmental benefits of using biodiesel include improved air quality and public health. Importantly, use of biodiesel is also a measurable step that the city can take toward decreasing national dependence on foreign oil. At current prices, biodiesel would cost between 12.5 and 16 cents per gallon more than straight petroleum diesel, depending on formulation.

Goal: *Switch to blended biodiesel (B20) at the city fueling station located at the DPW yard. Assuming historic fuel usage patterns, this change likely represents an increased cost of \$6000 per year, or \$16/day over straight low sulfur diesel. In terms of environmental benefits, preliminary calculations indicate that switching to B20 would result in avoided CO₂ emissions of 140,571 lbs, or some 70 tons, annually.⁵ The public health benefits of reducing diesel emissions and associated fine particulates include reduced respiratory stress on youth and elderly populations, and persons suffering from respiratory or pulmonary illnesses including asthma. These sensitive populations are increasingly clustered in cities, making incremental air quality improvements a particular priority for Somerville. The switch is planned for summer 2007.*

⁵ Additional air quality benefits would come from an accelerated switch to Ultra Low Sulfur Diesel. Biodiesel blends are formulated with ULSD, as opposed to Low Sulfur Diesel, which otherwise remains available to the City.

Initiative: Alternative Fuel Vehicles / Hybrids

Since its inception, OSE has held a number of discussions with DPW staff on the subject of hybrid and alternative fuel vehicles (AFV). As greater varieties of AFVs and hybrids penetrate the market, Somerville should lead by example by procuring AFV or hybrid vehicle technologies in every instance where it can be determined that the city's operational requirements can be met by alternative fuel or hybrid technology. Among the types of hybrid vehicles available to the city is the Chevrolet Silverado pickup truck, however at the present time, only non-commercial grade (i.e., ½ ton) pickups are available. Heavier duty pickups are expected to become available by later in 2007. By automatically shutting down engine operation when the vehicle is stopped, these vehicles are designed to be compliant with the state's anti-idling laws. Additional benefits include onboard 110/120 VAC service suitable for powering pumps and hand power tools.

Hybrid or all-electric vehicles are also considered to be promising applications in the areas of city inspectional services and parking enforcement. In the coming year, OSE plans to examine vehicle use by city departments to identify the most advantageous applications for alternative vehicles.

Goal: Integrate assessment of options for procurement of AFV and hybrid vehicles in all vehicle procurement decisions beginning in FY2008. Assess vehicle use by city employees to identify the most promising uses for city owned AFV or hybrid vehicles.

Case Study: Preferred Parking for Hybrid and AFV Vehicles

OSE is studying options to recognize environmentally preferable vehicle technologies (i.e., hybrids and alternative fuel vehicles), including the possibility of designating one or more parking places at municipal buildings and facilities as preferred parking for hybrid or AFV vehicles. These spots would likely be situated adjacent to handicapped access spots, offering hybrid/AFV preferred parking at City Hall, Somerville High School, and perhaps other locations, as determined to be appropriate. This program would be phased in according to an objective assessment of hybrid vehicle presence in Somerville and eventually phased out as hybrids achieve a greater degree of market penetration.

A second alternative to promote hybrid and alternative fuel vehicles within the city might be to waive parking meter fees for hybrid or AFV vehicle classes. This policy is potentially complicated by the need for parking enforcement personnel to be able to accurately identify exempt vehicles. Although this represents a challenge, parking stickers provided to Somerville residents could be modified to identify qualifying hybrid or alternative fuel vehicles, thereby extending the benefit to residents of the city, if not to visitors.

Objective: Encourage and reward hybrid and AFV vehicle ownership amongst city employees and residents.

Program Area - Land Use and Open Space

Brownfields Program

Somerville's brownfields program is administered by the Office of Sustainability and Environment, with assistance from the Mayor's Office of Strategic Planning & Community Development (OSPCD) and the Department of Public Works (DPW). Prior to 2006, OSPCD had primary responsibility for administration of the brownfields program. OSPCD's history of redeveloping brownfields sites dates back to the 1980's, when OSPCD and the Somerville Redevelopment Authority jointly undertook the Boynton Yards Revitalization Project, involving redevelopment of ten (10) acres of industrial land through an urban renewal process. Since 1997, Somerville has been awarded EPA assessment, cleanup, and revolving loan fund grants as well as other federal and state brownfields grants. Somerville's brownfields program includes sites owned by public, private and non-profit developers and, to date, has resulted in new housing, parks, and commercial end uses.

***Status:** Brownfields projects currently underway include site assessment activities at three sites; 100 Temple Street (former St. Polycarp site), 20-22 Prospect Street (former Kiley Barrel site), and 112 A Central St. (Community Path parcel), and remediation activities at one site; 30 Allen St.*

***Goal:** OSE's goal for the current set of sites undergoing assessment and remediation is to achieve completion of all remediation and cleanup activities at 30 Allen Street in FY 2007, and completion of scheduled activities at the three assessment sites in FY2008.*

Initiative: Brownfields Inventory and Redevelopment Priority List

In order to continue the success enjoyed by Somerville in the area of brownfields redevelopment, OSE intends to develop a brownfield inventory and database that will assist the city in identifying high priority sites for future assessment and cleanup work. Development of a site priority list is considered to be a critical component of maintaining the forward momentum of this program. Once OSE is able to identify and prioritize additional sites within Somerville, the parallel objective of renewing key EPA grants will be pursued. It is also expected that upcoming redevelopment activities in Assembly Square and Union Square have the potential to create a new round of interest in the city's Brownfield Cleanup Revolving Loan Fund.

***Goal:** The next full EPA grant cycle for which Somerville is expected to be eligible is anticipated in mid-FY 2008. Accordingly, development of the Somerville brownfields inventory is planned for the first half of FY 2008. Recent developments have allowed the city to apply for a Cleanup Grant in the current cycle that closed in December of 2006. If successful, this grant would be applied to the preparation of a portion of the Community Path extension between Cedar and Central Streets.*

Initiative: Street Tree Inventory

In 2003, the U.S. Conference of Mayors passed an urban forestry resolution designed to promote preservation and new growth of trees in city environments. In support of this objective, OSE proposes to undertake a comprehensive street tree inventory in Somerville in partnership with the Urban Ecology Institute (UEI), a Boston based non-profit that has

recently performed similar study in the City of Boston. A key attribute of the UEI approach is citizen involvement. Consistent with this approach, OSE also sees a potential role for Somerville based educational organizations (e.g., Groundwork, Eagle Eye Institute) that are local champions for urban environmental awareness and forestry in particular. By recruiting and training Somerville residents to identify and assess the health of trees that are present in their neighborhoods, the UEI Urban Forestry program is able to efficiently divide project workload, and build effective neighborhood teams that become empowered to protect and improve their neighborhoods as volunteer stewards of the urban forest.

Goal: *OSE is looking at the feasibility of launching a street tree inventory project, with support from UEI, in FY2007 or FY2008. This project would result in several GIS data layers detailing the characteristics of Somerville's urban forest by species, geographic distribution, abundance, and health. Also included in this project is an orthophoto layer with infrared signature that is produced by a flyover conducted by the US Forest Service. This flyover would be coordinated by the UEI project manager, and is expected to be offered at no cost to the city. The resulting data can be used by the city to plan public works projects that may affect trees, and to assess opportunities for increasing or diversifying tree cover in sections of the city where trees are found to be either stressed or under represented.*

Smart Growth & Public Transit

Mobile pollution sources (e.g., trucks, buses, passenger cars, construction equipment, locomotives, and other types of vehicles) are major contributors to air pollution because they emit smog-forming pollutants such as nitrogen oxides (NOx) and hydrocarbons, as well as particulates, toxics, and greenhouse gases (GHGs). The contribution of mobile sources to pollution emissions, and in particular to GHG emissions, is highly correlated to the number of vehicles and the total vehicle miles traveled within Somerville. Thus, finding ways to reduce emissions from mobile sources is vitally important for achieving Somerville's air quality, climate change and sustainability objectives. Through the adoption of zoning and land use regulations that are conducive to smart growth and by fighting for improved access to public transit, Somerville residents stand to reap long term air quality and health benefits.

Objective: *OSE will look to be an active contributor to community discussions surrounding projects that involve transit oriented development and other smart growth objectives and improved access to public transit. Somerville is ideally positioned to benefit from these types of projects, as evidenced by the highly publicized recent developments with respect to Assembly Square and the planned MBTA Green Line extension.*

Program Area - Economic Development

One of the primary missions of city government is to foster improvement and stability of the city's economy and its commercial areas. OSPCD is currently engaged in major projects to redevelop former industrial districts in Assembly Square and the Innerbelt, which could result in almost \$2 billion in new growth over the next twenty years. In addition, a major revitalization effort in Union Square will seek to strengthen the vitality of the business community in that area, highlight the presence of Somerville's arts scene, and improve streetscapes in the square. As the city's lead voice on environmental issues, OSE is positioned to serve as a resource to other city departments that are pursuing all manner of development objectives in the city.

Initiative: Somerville Cleantech Cluster

In partnership with SPCD, OSE is spearheading a project that would investigate strategies for attracting a "cleantech" business cluster to Somerville. The cleantech industry encompasses a broad range of products and services, from alternative energy generation to wastewater treatment to resource-efficient industrial processes. A long list of drivers, from rising oil prices to improvements in materials science and technology are propelling global demand for innovative cleantech products and services. As a result, this burgeoning sector is attracting intense investor interest. Industry studies anticipate increasing activity beyond the currently popular energy-tech segment, into areas such as water purification, transportation and logistics, agriculture, nutrition and clean industrial technologies. Although these industries are very different, all share a

common thread: they use new, innovative technology to create products and services that are able to compete favorably on price and performance while simultaneously producing fewer negative environmental impacts as compared to the competition.

This particular long-range commercial district revitalization project envisions the transformation of Innerbelt into a research and development community focused on renewable energy and related cleantech business sectors. One area of investigation relates to the possibility of renewable energy center or energy park in the Somerville Innerbelt. One possible model tenant for this particular type of development is a 0.42 MW solar array called Brockton Brightfields, which is located in Brockton, MA.

The organizational elements of this initiative may include a series of roundtables to scope and gauge interest within the local research and business communities, followed by a business plan symposium and competition. The city is also investigating opportunities to

About Cleantech In Massachusetts

Massachusetts is already a recognized center of cleantech business activity, owing in large part to a successful track record of technology transfer from Boston/Cambridge area universities and research centers. In 2005, venture capital investment in the cleantech sector totaled \$410 million in the northeast alone, with Massachusetts companies receiving the majority of these investments. This level of investment activity represents a 43% increase over 2004. Nationally, recent figures for 2006 show continued rapid expansion in the sector, with investments in cleantech totaling in excess of \$2.2 billion through Q3 2006 with the northeast cluster, centered around Boston, receiving roughly 30 percent of these investment dollars.

- *Cleantech Venture Network, 2006.*

participate in the greater New England Energy Innovation Collaborative (NEEIC), which is being developed by the M.I.T. Center for Entrepreneurship in partnership with local venture capital firms. If Somerville is successful in catalyzing a cleantech cluster in the city, it will benefit from a surge in cleantech investing in local businesses, driving significant job growth and broader economic activity.

Objective: *Promote opportunity to redevelop Somerville's Innerbelt district as a center of future cleantech business activity.*

Program Area - Community Education

In pursuit of Somerville's environmental and sustainability goals, OSE is committed to forging and enhancing relationships with any and all community groups and individuals who are looking for ways to share and realize their vision for Somerville's environmental, economic and social future. Somerville is blessed with a citizenry that is characterized by diversity, creativity and true passion for the City of Somerville and all of its possibilities.

Many of the programs and initiatives set forth in this Strategic Plan have been shaped and informed by community input that has been solicited through various public education and outreach efforts. OSE recognizes that the policies and practices it studies and recommends almost can always benefit from public involvement. For this reason, in developing city policies, OSE will always endeavor to ask the question: "What is it that we as a city have in mind for our future, and what does that look like?" With the continued interest and commitment of the Somerville community, OSE looks forward to helping to shape this vision.

Forging Partnerships

Groundwork / Eagle Eye / Somerville Climate Action

Initiative: Green Building and Renewable Energy Curriculum

In partnership with the Somerville Climate Change Commission, OSE will contribute to an application for an education grant relating to energy education curriculum development. Funding for this project comes from the Massachusetts Technology Collaborative and is part of the Capuano Green School Grant.

Goal: *Develop curriculum that will become a model for practical environmental education in the early childhood and elementary school setting. Student interest in these topics will be cultured by a developmentally appropriate project-based curriculum that meets city and state standards while integrating alternative energy and green building components. Discussion and hands on activities in these subject areas is made possible by the presence of many green features in the Capuano Early Childhood Education Center and eventually, a number of green building elements that are being incorporated in the forthcoming Argenziano Lincoln Park School.*

Mayor's Office of Sustainability & Environment

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