

## **SUSTAINABILITY AMENDMENT**

**Adopted – December 21, 2010**

### **INTRODUCTION**

Since 2002, there has been a growing awareness of the importance of including sustainability in planning and other public and private policies, strategies, and programs. Although a number of the policies in the *Stamford Master Plan 2002* relate to sustainability, there is no specific section dedicated to this topic.

While definitions abound, the following best represents the concept of sustainability:

“Sustainability is a balanced approach that considers people, planet, and prosperity. By ‘people,’ it means community well-being and equity. ‘Planet’ refers to the environment and resource conservation. And ‘prosperity’ means economic vitality. In the long run, sustainability means adapting human activities to the constraints and opportunities of the natural system we need to support life. Sustainability is a process of continuous, ongoing improvement, and a realignment of community goals and practices to grow in a more responsible and resilient manner.”

(“Embracing Sustainability in Community Plans,” Benjamin A. Herman, *Planning*, April 2010.)

As noted previously, there are a number of policies in the *Stamford Master Plan 2002* that relate to sustainability. In addition, the City has been involved in a number of sustainability initiatives, including the mayor’s Sustainable Stamford task force, energy efficiency programs, green roof initiatives, the Mill River Greenbelt, legislation on municipal green buildings, and a host of others. The private sector has greatly contributed with transit oriented development, LEED (Leadership in Energy and Environmental Design) certified projects, revitalization of brownfields, and numerous initiatives to reduce energy usage and single occupancy auto travel. [See LEED box, p. 3.]

In 2003, Stamford joined the Cities for Climate Protection Program, an initiative of an organization known as ICLEI (formerly the International Council for Local Environmental Initiatives, and now Local Governments for Sustainability, although they still use their original acronym). Under that program, Stamford developed the *Local Action Plan: Greenhouse Gas Emission Reductions* in 2005, which provides the overarching strategy for the City to reduce its greenhouse gas emissions by 20% by 2018, as compared with the 1998 baseline numbers.

This amendment to the *Stamford Master Plan 2002* supplements these initiatives and develops a coordinated set of objectives and policies to enhance Stamford’s progress in sustainability. It is a combination of existing objectives/policies now codified under one section plus new initiatives in this area. While some may appear to go beyond the strict

definition of land use and transportation, they are, in our opinion, necessary components of a coordinated program of sustainability. An important objective of this amendment is to promote interdisciplinary, coordinated action among the public, private and non-profit sectors. Although this amendment has been divided into sections, the policies are interrelated and must be ultimately addressed in a holistic manner. Finally, the City must leverage its actions by coordinating with other municipalities in the region and the State to address issues beyond Stamford's local control, such as regional transportation improvements and watershed management.

## **Measuring Progress (Metrics)**

As a departure from traditional master plans, metrics have been added. Metrics are a means for measuring progress toward given objectives and also a way to judge the efficacy of policies. There are three forms of metrics that are addressed:

1. **Benchmarks**, which are a reflection of existing conditions or a starting point;
2. **Targets**, which measure goals and objectives; and
3. **Progress**, which measures movement toward fulfilling a goal and objective.

By way of illustration, we can look at the City's recycling program. In 2008, the recycling rate was 9.7%, and the cost to the City to have recycling hauled away was \$150,000 (benchmark). The goal set by the City is 30% by 2012 (target). In 2010, the recycling rate increased to 20%, and the City generated \$100,000 in revenues from recyclables (progress).

As you will see in the following sections, we have included suggested metrics. It should be noted that not all goals and policies can be readily quantified, and the measurable data in some cases is not readily available or easily obtained. Also, for metrics to be useful, updates will need to occur on a regular basis; these cannot wait 10 or more years for a new master plan. Therefore, it is important that the City commit itself to a schedule of updating the metrics listed herein. This will enable Stamford to prepare a report card on how the City is doing, over time, with respect to its sustainability goals and policies.

*Note: Since this is the first time that metrics are being proposed in a comprehensive manner, some will of necessity be only partially complete and lacking in data. Charts or maps will help to clarify the metrics in the sections that follow.*

## (A) LAND USE AND TRANSPORTATION

### Overview

Location, density, connectivity, and diversity of land uses are critical components of sustainability. Where people live, work, and play affects their transportation choices. The ability to provide and encourage energy efficient transportation alternatives to single occupancy vehicle use such as public transit, walking, and biking can best occur in neighborhoods of compact, relatively dense, mixed use development. Beginning with Stamford's 1977 master plan, land use policies have stressed concentrating significant development in the urban core. The recent transit oriented developments in the Downtown and South End close to the Transportation Center have resulted in economic and social benefits to the City, along with environmental benefits. More recently, amendments to the master plan and zoning have added in-fill, compact, and diversity standards to Stamford's village centers (Springdale, Glenbrook, and West Side.)

However, much remains to be done. Currently the overwhelming majority (over 95%, based on US Census data and national travel surveys) of trips within Stamford are made by private car. This creates unsustainable levels of fossil fuel consumption, air pollution (including greenhouse gases), traffic safety issues, congestion, and excessive parking demand.

The sustainability amendment recognizes that no single mode or project offers a full solution to the broad range of issues that we face; there is no "magic bullet" which will somehow convince a majority of the population to give up the convenience of private automobile travel. The realistic alternative – and the key to a more sustainable transportation plan for the City – is to look for incremental changes that will encourage greater use of public transportation, walking, and bicycling as a routine alternative rather than a last resort.

### LEED

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a nationally accepted benchmark for the design, construction and operation of high performance and energy efficient buildings. Based on a point rating system with a rigorous third party review, buildings can be certified to different levels of performance: Certified, Silver, Gold, and Platinum. Stamford requires all new municipal buildings to be certified to LEED Silver.

Both the RBS Americas headquarters building and Metro Green's first of three residential buildings have been LEED Gold certified for new construction. The newly instituted LEED for Neighborhood Development Rating System (LEED ND) integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. Two developments in Stamford, Harbor Point and Metro Green, have had their plans pre-certified for LEED ND at the Gold level (2 of 33 developments in the entire country as of 2010).

**OBJECTIVE 1A — Direct growth toward areas with strong transit access to increase density, and encourage development that is mixed use, energy efficient, and pedestrian/bike friendly**

**STRATEGIES**

- (1.A.1.) Utilize master plan and zoning regulations to support transit oriented developments around existing/planned transit nodes with increased residential densities and pedestrian/bike access to shopping and services, while preserving a range of household income levels. Encourage the location of transit oriented developments within walking distance of the Stamford Transportation Center – and the present Glenbrook and Springdale stations, as well as the potential East Side station, should it prove feasible. [See “Affordable Housing” box below.]

**Affordable Housing**

Income diversity is an important element of a sustainable city, and current development in Stamford provides some outstanding examples of modern affordable housing. For example, in addition to receiving LEED Gold certification, 90% of the 100 dwelling units in Metro Green’s two apartment buildings are affordable – far exceeding the “below market rate” requirements of the Zoning Regulations. The Metro Green development is being jointly developed by the Jonathan Rose Companies and Malkin Properties, and serves as an overall model for smart growth development in the state.

- (1.A.2.) Require that developers of projects under site plan review work with Land Use Bureau staff to fill out a rating sheet similar to the LEED Neighborhood Development Project Scorecard. This “scorecard” will assist City staff and boards in making land use, planning, development, and other decisions. Land Use professionals such as landscape architects should play a key role in designing site plans that are environmentally sensitive, as opposed to being brought in after the buildings are designed.
- (1.A.3.) Require that developments under site plan review submit Parking and Transportation Demand Management plans (PTDM) in order to reduce single-occupant vehicle trips associated with the project. PTDM measures should include some or all of the following: easy access to transit, shuttle services, ride-sharing, bicycle and pedestrian facilities, flexible working hours, flexible parking strategies, and preferential parking for low-emission vehicles.
- (1.A.4.) Design street layouts that support/enhance access between neighborhoods and neighborhood-based commercial developments.

- (1.A.5.) Promote the redevelopment and enhancement of neighborhood centers as pedestrian/bike friendly urban villages (e.g. Glenbrook and Springdale) that are attractive places to live and work, with a rich mixture of land uses and housing types (including affordable housing), retail, recreation opportunities, and transportation alternatives.
- (1.A.6.) Encourage active ground floors for developments along pedestrian routes. Require through-block pedestrian connections for large sites, where appropriate. Replace shopping trips with walking trips by incorporating a complete suite of amenities near employment centers, preferably open after business hours.
- (1.A.7.) Promote development of vacant or underdeveloped sites between other developments (known as “infill” development and in the context of surrounding buildings). Ensure that higher density development around transit nodes transition well into surrounding lower density residential zones (outside of the Downtown) in order to preserve the character of interior neighborhoods.
- (1.A.8.) Adopt “Complete Streets” design standards in order to accommodate bicycle and pedestrian improvements in streets and sidewalks projects. Reclaim space in streets with an excessive number of overly wide lanes for bike access. *[See “Complete Streets” box below.]*
- (1.A.9) Encourage the coordination of existing and future bus and jitney services (i.e. hotels, corporations, Harbor Point, CT Transit, etc.)

### **Complete Streets**

The streets of cities and towns are an important part of the livability of communities. Complete streets are designed to balance safety and convenience for everyone using the road – drivers, pedestrians, bicyclists, transit riders, people with disabilities, the elderly, and children. Ingredients that may be found on a complete street include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more. Instituting a complete streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind. Pioneering cities in the implementation of complete streets programs include San Diego, Boulder, Seattle, Charlotte, and New Haven.

## **OBJECTIVE 2A — Promote a transportation program that reduces vehicle trips and encourages alternative modes of travel**

### **STRATEGIES**

- (2.A.1.) Encourage walking, bicycling, carpooling, car sharing, and public transit (i.e. bus, bus rapid transit, light rail, and commuter rail) as viable, attractive options for travel in Stamford and the region. Promote remote working options (i.e. telecommuting; video, web, and audio conferencing).
- (2.A.2.) Amplify the importance of the Transportation Center as a regional and local transit resource. Implement a master plan for future expansion/improvement to the Transportation Center, and bolster rail service. Anticipate a significant increase in rail ridership and ensure that Stamford has the station, road, and sidewalk access and parking necessary to meet it. Consider an additional station in the Eastside neighborhood to meet demand.
- (2.A.3.) Enhance bus service. Integrate bus routes into broader alternative transportation system; identify gaps in bus service routes and improve frequency and reliability of bus service; promote and enhance a downtown shuttle bus network centered on the Transportation Center; install real-time transit signage at bus stops and rail platforms (knowing when the bus/train will arrive significantly improves user-friendliness of the system); and install and improve bus shelters. Improve boarding area at Stamford Transportation Center, and coordinate bus departure times with the train schedules.
- (2.A.4.) Work with CT Transit to attract those who would not normally ride a bus, through marketing, branding, and scheduling. Provide clear information on public transportation options and bus routes.
- (2.A.5.) Continue timely review and assessment of opportunities for a trolley system along certain major transportation corridors, and further assess ferry service to connect Stamford with New York City and Bridgeport, and potentially Long Island.
- (2.A.6.) Develop a bikeway and pedestrian master plan. Provide short-term and/or long-term bicycle parking throughout the Downtown and neighborhood centers. Consider requirements for bike facilities in new developments.
- (2.A.7.) Where practical, provide sidewalks with buffering from auto traffic and parking areas, trees that shade sidewalks on hot days, sidewalks of adequate width to accommodate future pedestrian movements, convenient connections from sidewalks to parks and attractions, and pedestrian-scaled lighting. Ensure that the pedestrian circulation system is safe and accessible to children, seniors and the disabled (including the blind).

- (2.A.8.) Sustain and expand the *Safe Routes to School Program* as provided by the National Center for Safe Routes to School. The program promotes walking and cycling to school and improved traffic safety.
- (2.A.9.) Reduce required parking overall. Mandate lower parking requirements for office buildings near the Stamford Transportation Center, consider parking pricing strategies, and consider eliminating or reducing requirements for off-street parking in areas with existing or planned high-quality transit service and good pedestrian/bicycle access – without discriminating against the elderly or handicapped.
- (2.A.10.) Identify locations to inter-connect parking lots behind stores and provide shared parking among businesses.
- (2.A.11.) Evaluate opportunities to create parking and charging stations for electric and plug-in vehicles.
- (2.A.12.) Support and encourage the growth of car sharing (e.g. "Zip" cars) among City residents and businesses through actions that expand the supply of car sharing vehicles at convenient locations and actions that increase the demand for car sharing services.

# Annotated Graphics Index

Sustainability Amendment to the 2002 Stamford Master Plan

## LAND USE AND TRANSPORTATION

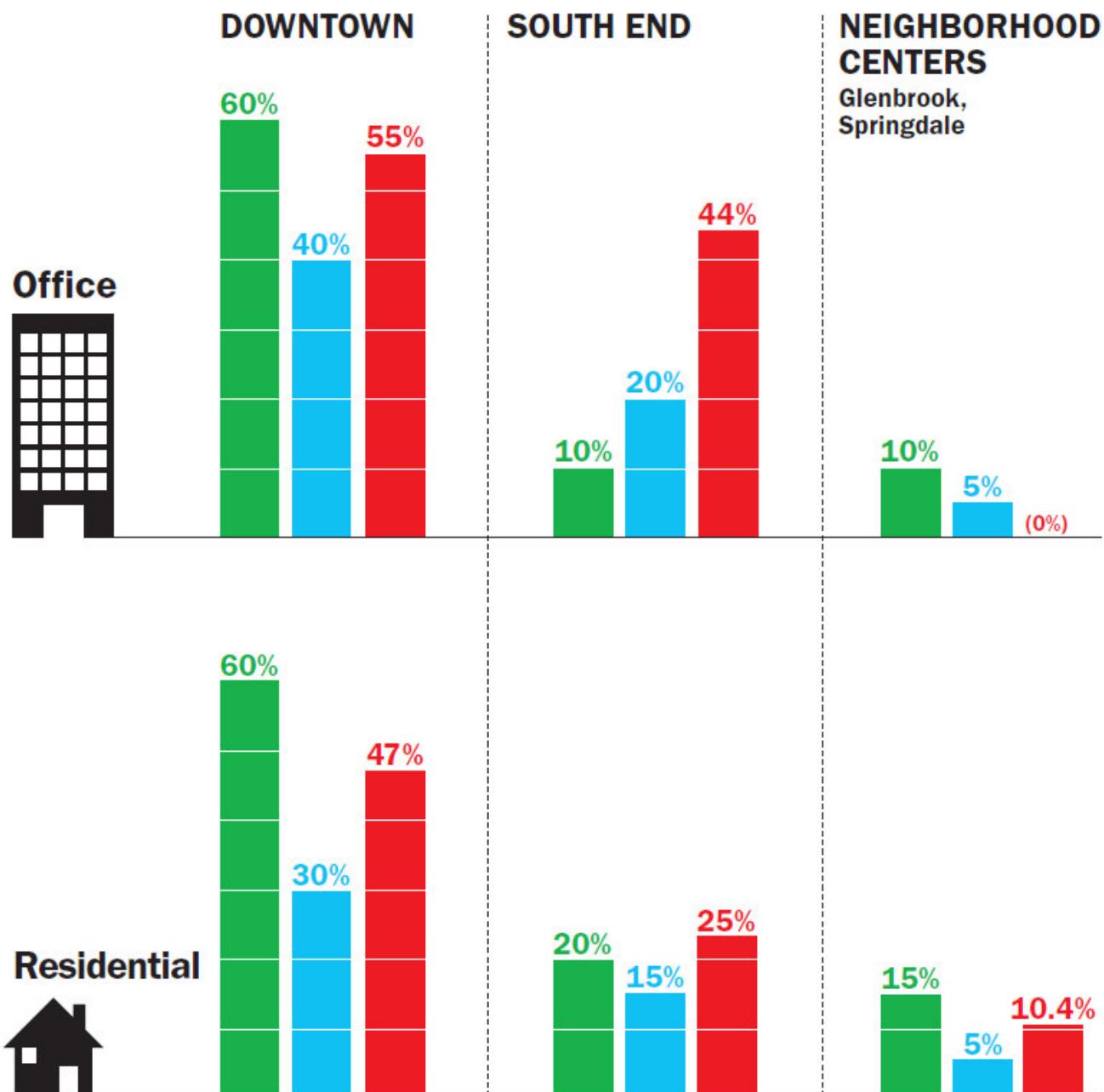
- ***Sustainable growth in Stamford*** – based on the *2002 Stamford Master Plan* “Economic Development Report,” which contains goals for “smart growth” throughout the City.
- ***Existing and Potential Transit Oriented Districts*** – shows the three existing train stations/transit centers and associated zoning districts, and the potential transit center and associated zoning district on East Main St.
- ***Housing diversity in Stamford*** – describes the “below market rate dwelling units” (BMR) program. Depending on the zoning classification, the BMR requirements vary with the average being 10%. Likewise, the affordability percentages ranges vary with the average at 50% of median income.
- ***Future Stamford Transportation Improvements with Sustainable Growth Context*** –includes a potential light rail from the South End to Bull’s Head, a potential ferry terminal, and the completed Urban Transit Way, and shows the breadth of projects within 5 and 10 minutes walking distance of the Stamford Transportation Center.
- ***Stamford Transportation Center Proposed Improvements*** – from the *Stamford Transportation Center Comprehensive Master Plan*, prepared by Stantec Consulting Services Inc for the City of Stamford, fall 2010.
- ***Potential Ferry Routes*** – derived from a ferry study prepared by Urbitran Associates for the City of Stamford, 2007.
- ***Bike Paths & Greenways*** – to date, there are very few existing bike paths and few future ones planned in Stamford. Similarly, the greenways system has the potential to expand considerably.
- ***Stamford Transportation Center*** – measures the progress of alternatives to car use in riders per day from 2006-9.
- ***Stamford Travel Time to Work Data*** - measures the progress of alternatives to car use among people traveling to work 2000 & 2008.

# Sustainable growth in Stamford

■ Goals are from the Stamford Master Plan, 2002

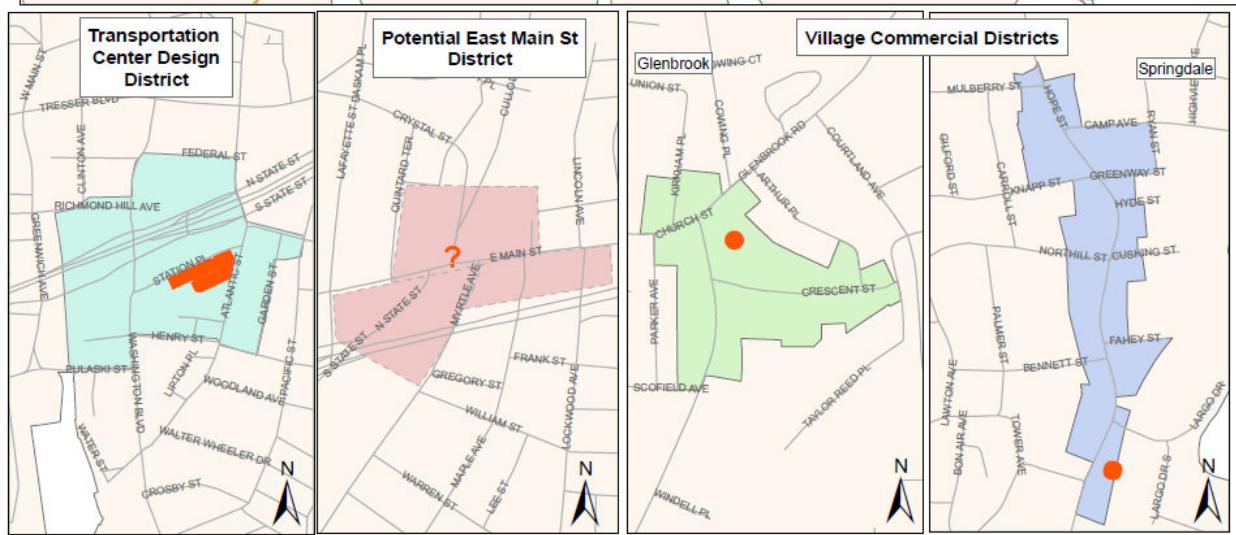
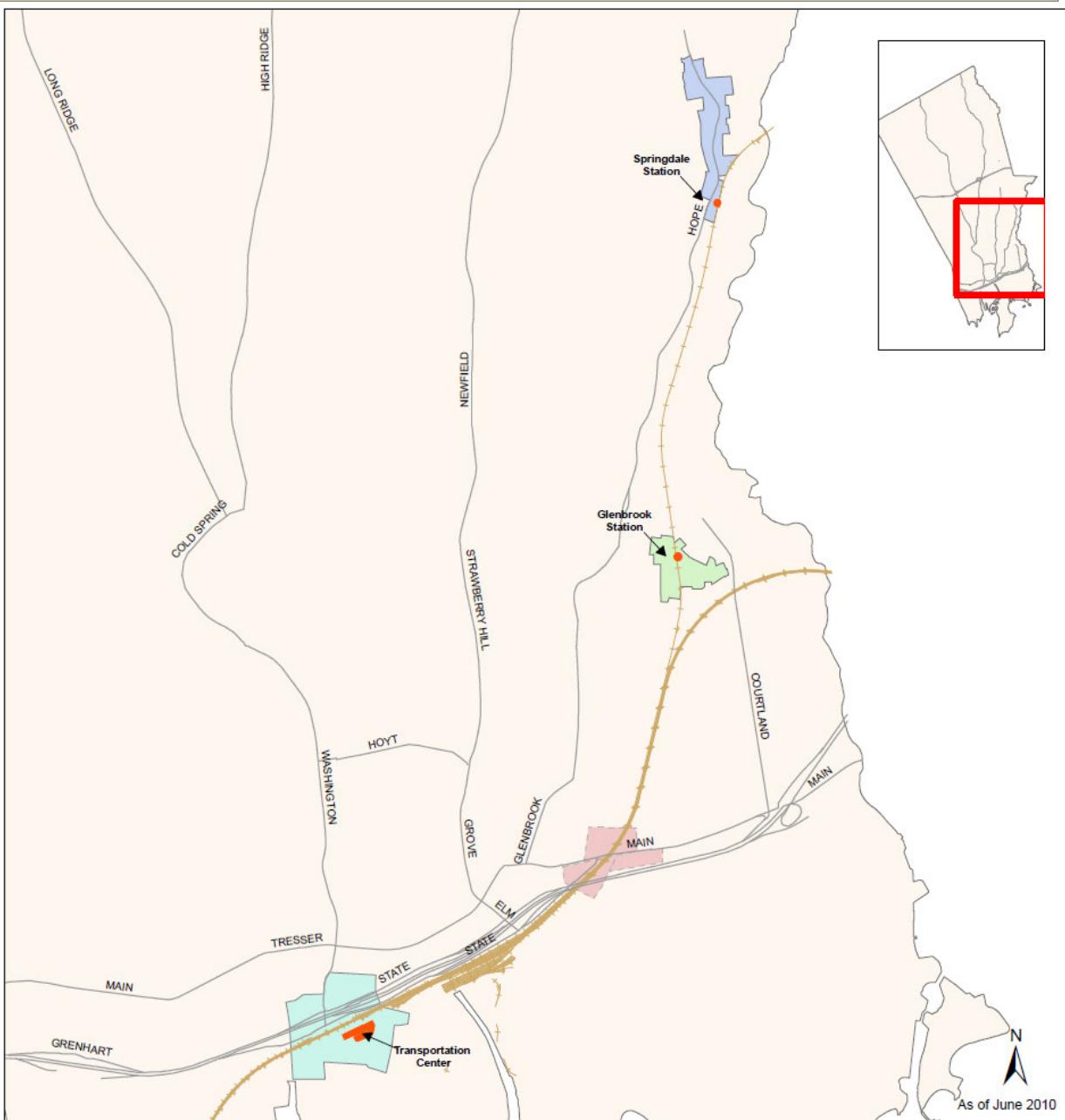
■ Numbers in blue are based on pre-2002 development trends

■ Numbers in red are based on projects approved by Stamford Zoning Board, 2002–10 that are either complete or under construction



**Sustainable growth** is environmentally sensitive land development with the goals of directing development to existing centers, minimizing public investment in new infrastructure, minimizing dependence on auto transportation, promoting economic diversity, and creating a unique sense of community and place.

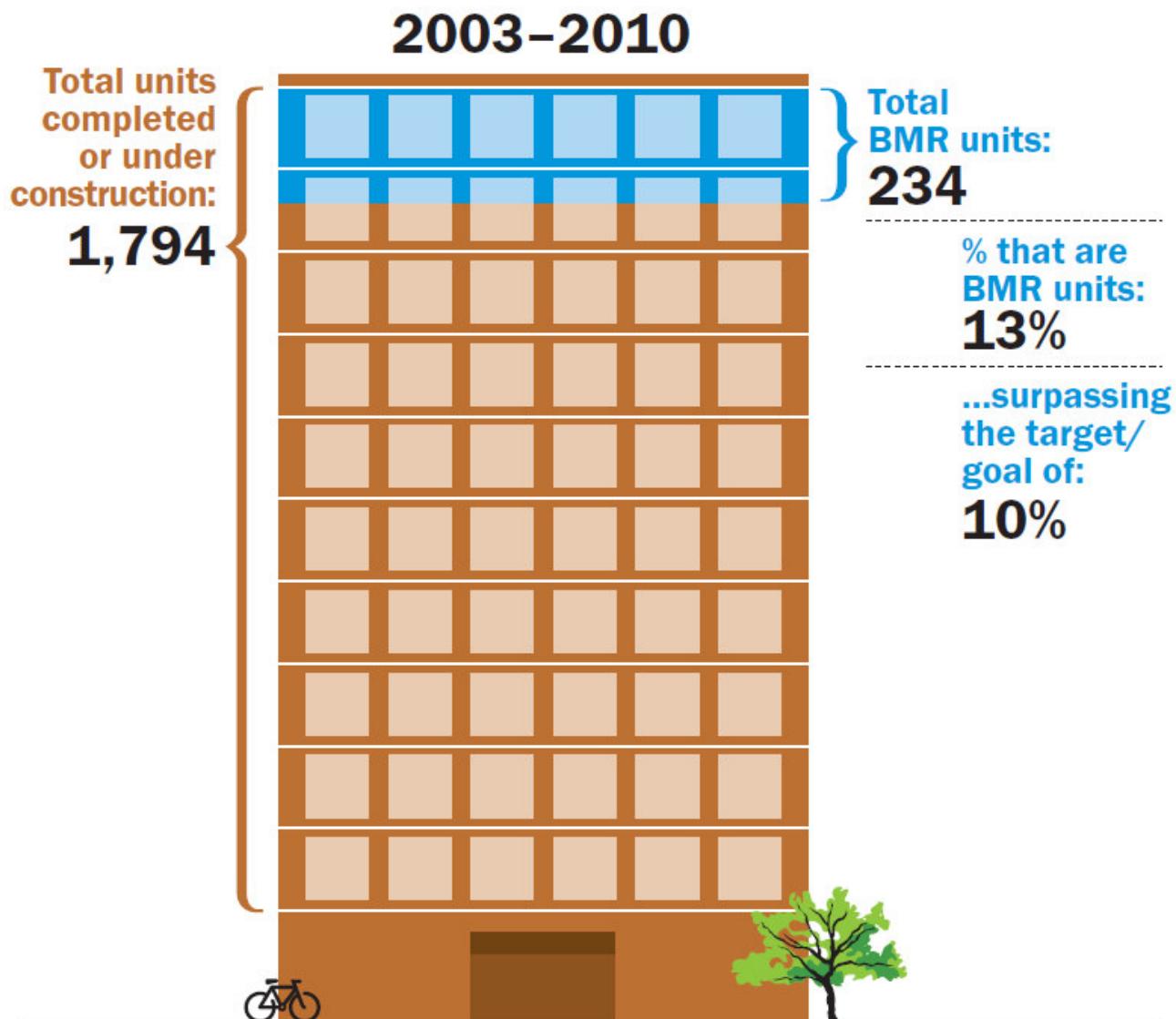
# Existing and Potential Transit Oriented Districts



# Housing diversity in Stamford

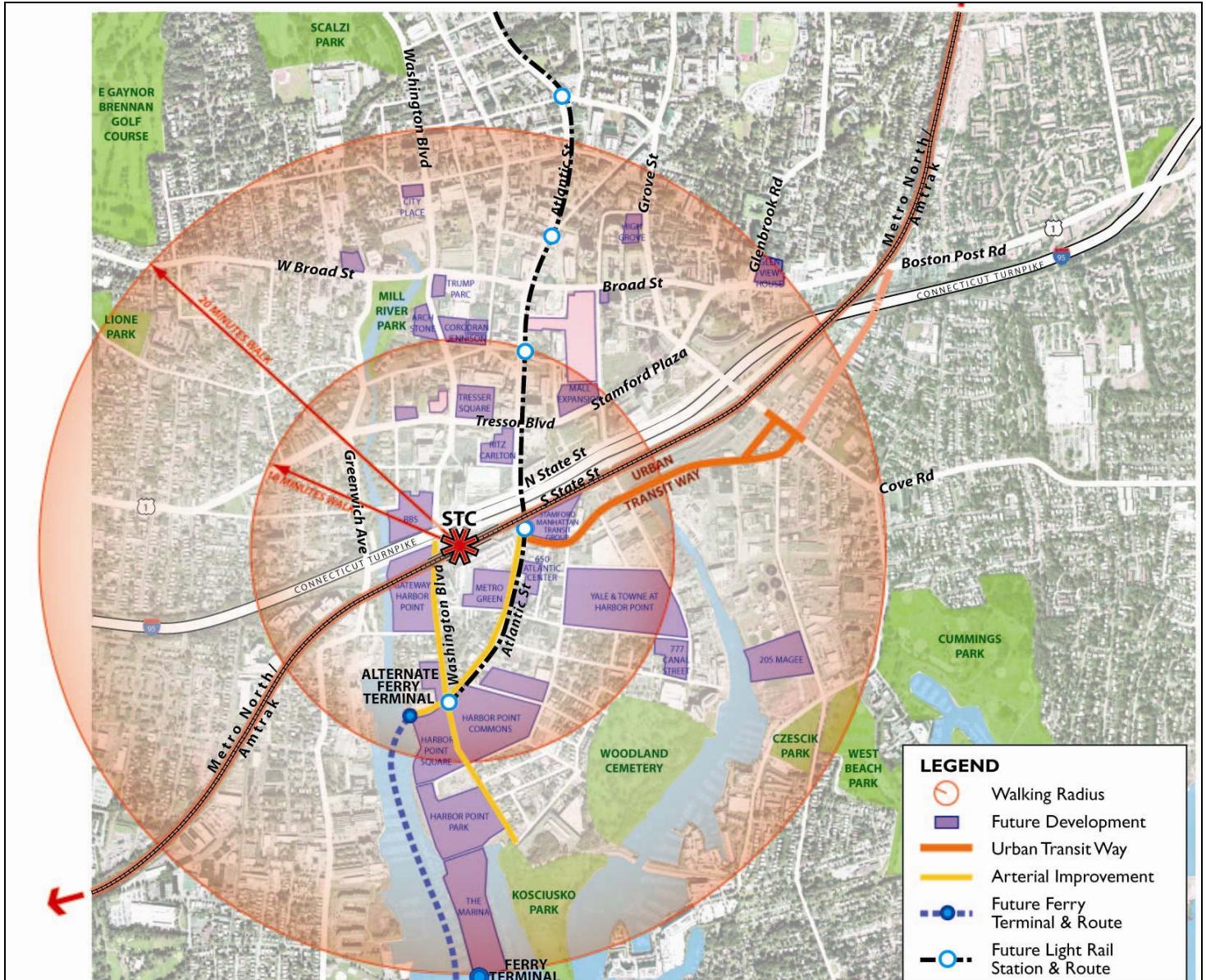
The **Stamford Master Plan 2002** documented a growing affordability gap between the supply of housing and the demand for housing. To achieve a diverse and balanced community with housing available for households of all income levels, the City's Zoning Regulations include the requirement that residential construction projects with 10 units or more designate a minimum of 10% of those units as "below market rate dwelling units" or "**BMRs**."<sup>\*</sup>

A BMR is defined as a dwelling unit restricted as to sale or rent, affordable to families with a household income not exceeding 50% of the current median family income in Stamford.



\*An alternative to building BMR units available at the discretion of the Zoning Board is payment to a City of Stamford fund, or other approved non-profit, dedicated to affordable housing initiatives. The total fees in lieu of building BMR units from 2003 to 2010 are \$3,314,000.

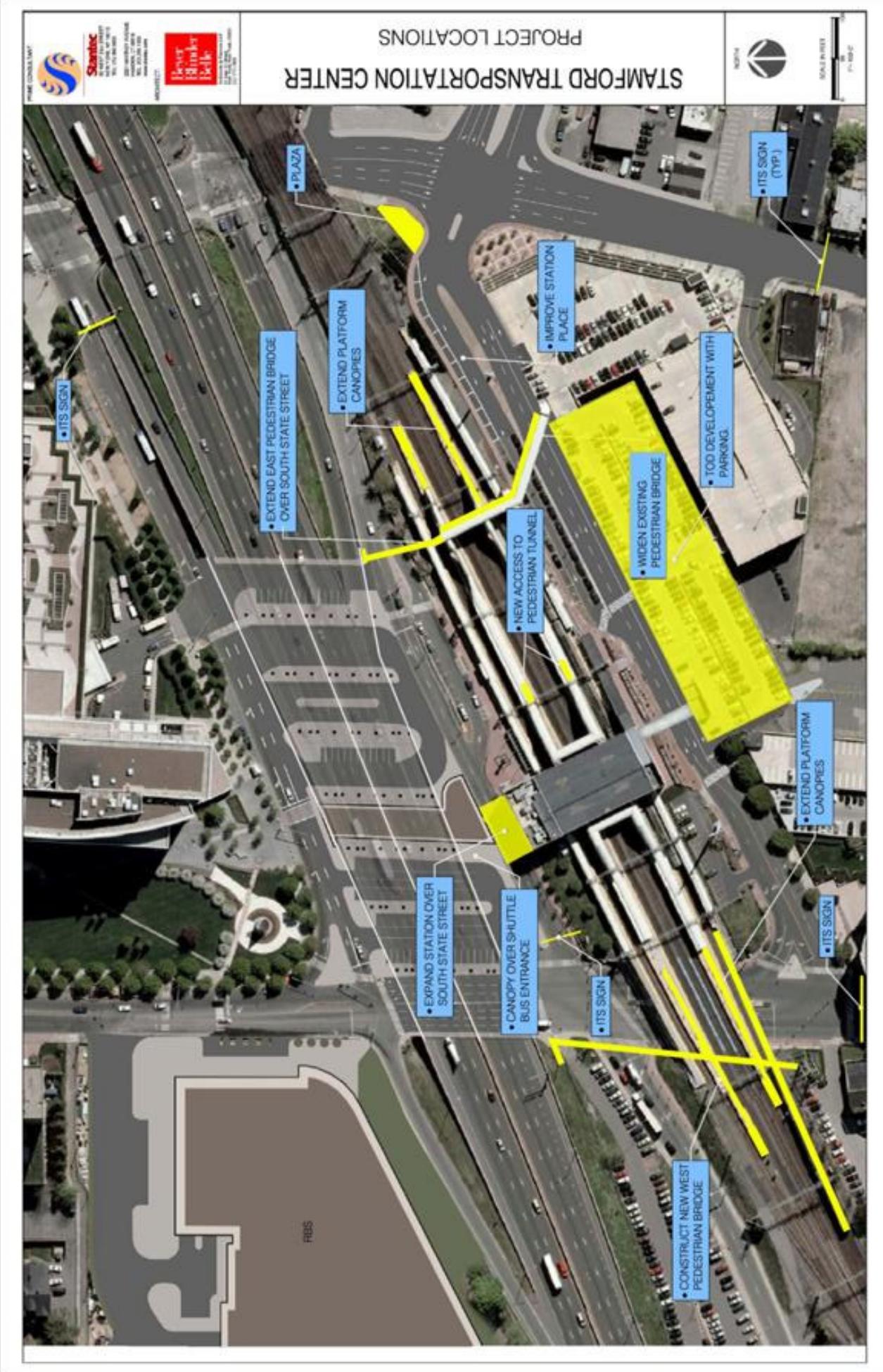
# Recent and Future Stamford Transportation Improvements with Sustainable Growth Context



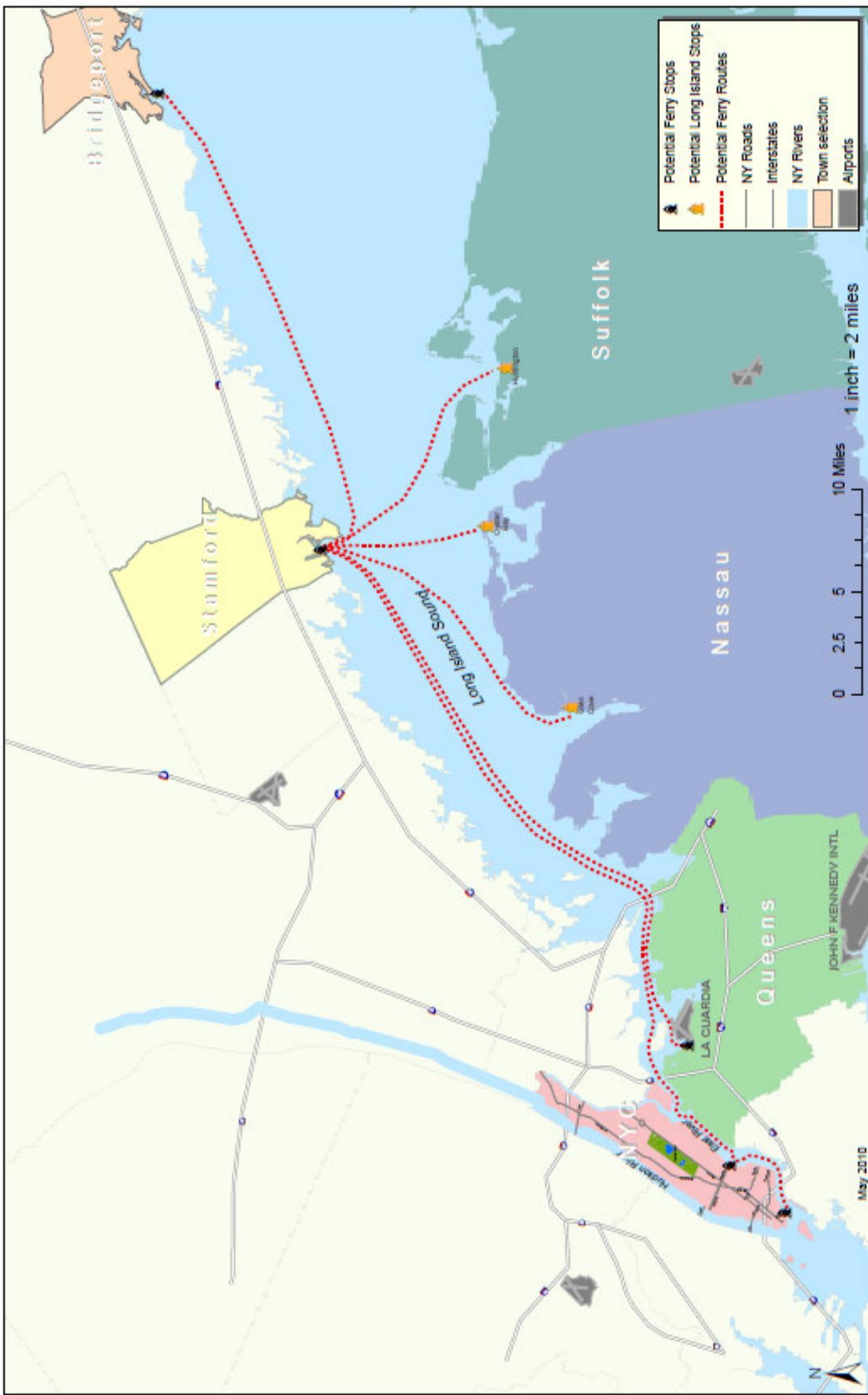
(as of 2009)

# Stamford Transportation Center Proposed Improvements

(as of July 2010)

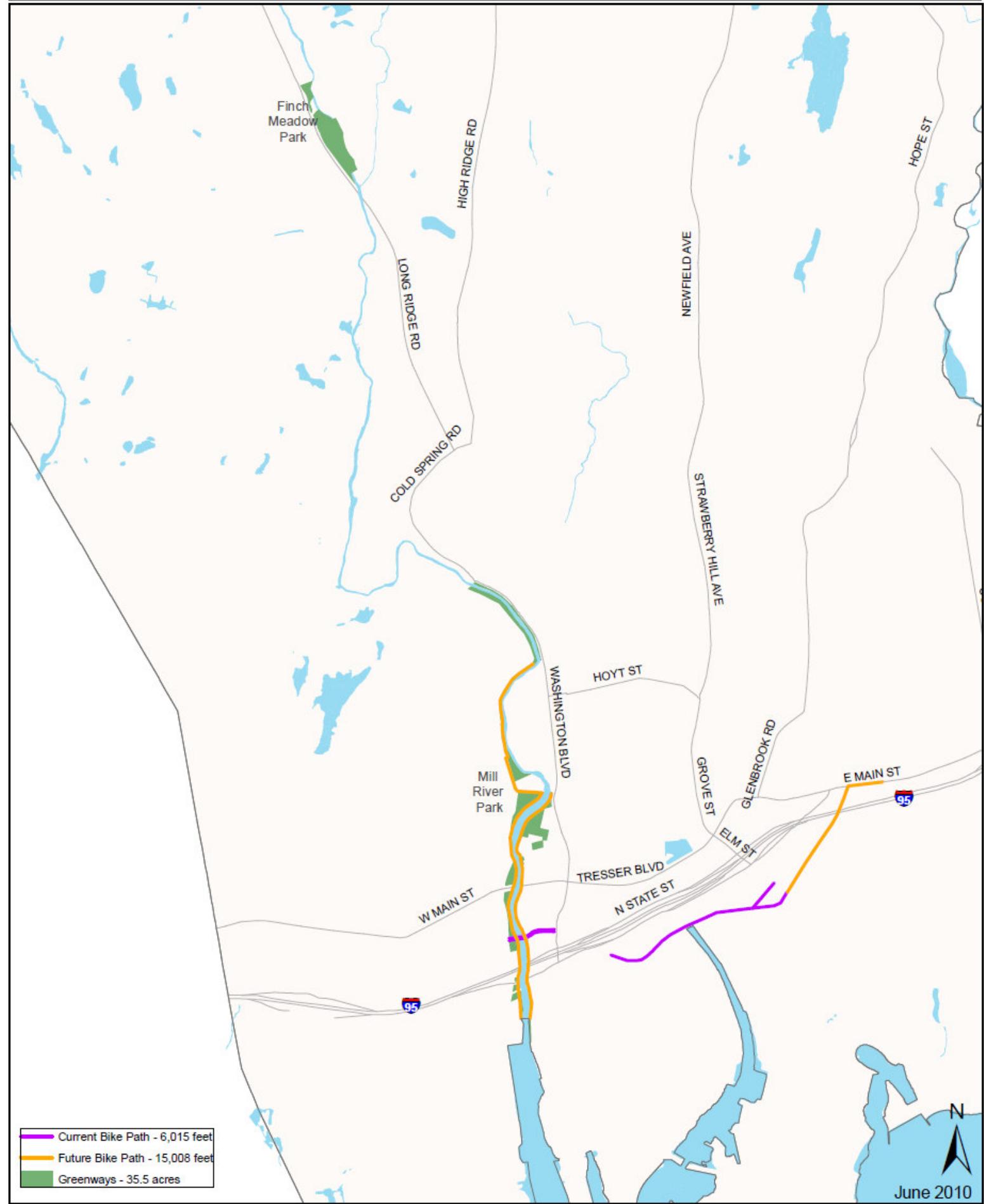


# POTENTIAL FERRY ROUTES



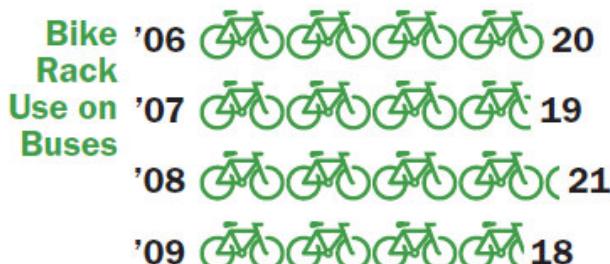
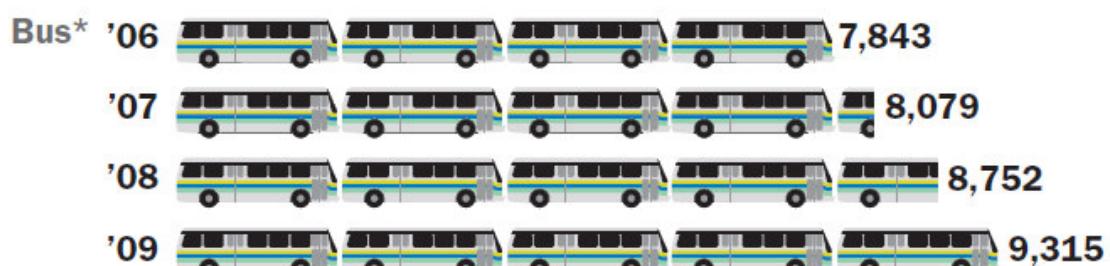
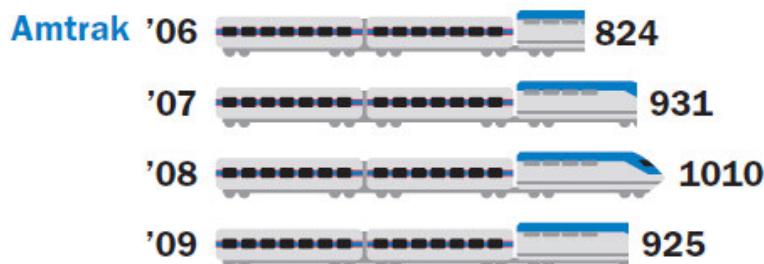
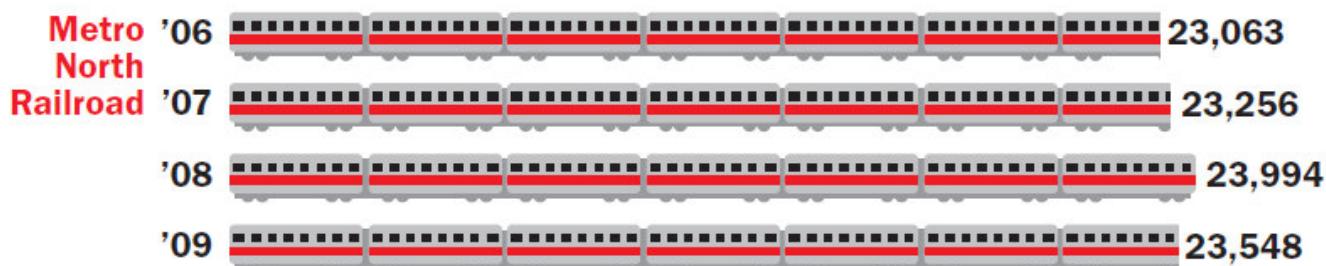
May 2010

# BIKE PATHS & GREENWAYS



# Stamford Transportation Center

Riders per day



## Information sources

For Metro North Railroad & Amtrak data: CT DOT; for bus & bikes on buses data: CT Transit

\*Does not include the I-Bus

## Stamford Travel Time to Work Data

	Workers 16 yrs+	Drove Alone (car, truck, van)	Carpooled (car, truck, van)	Public Transportation (incl. taxi)	Walked	Other Means	Worked at Home	Mean Travel Time to Work (minutes)
<b>2000 Census Data</b>	<b>59,868</b>	<b>41,951</b>	<b>6,372</b>	<b>6,414</b>	<b>2,216</b>	<b>620</b>	<b>2,295</b>	<b>24</b>
<b>2008 ACS Data*</b>	<b>63,757</b>	<b>41,581</b>	<b>7,443</b>	<b>7,790</b>	<b>3,900</b>	<b>488</b>	<b>2,555</b>	<b>25</b>

\* Data available at: [http://factfinder.census.gov/servlet/DTSubjectServlet?\\_ts=297074653573](http://factfinder.census.gov/servlet/DTSubjectServlet?_ts=297074653573)  
and based on the 2006-2008 American Community Survey 3-year estimates

## (B) ENERGY AND CLIMATE

### Overview

The challenge of reducing greenhouse gas emissions, meeting energy needs, and adapting to climate change has many implications for planning.

As previously noted, Stamford is a member of ICLEI and its Climate Protection campaign. The ultimate goal of this endeavor is to reduce emissions of pollutants that contribute to global warming, known as greenhouse gases (GHG), which primarily result from energy use. Stamford is following ICLEI's Five Milestones for Climate Mitigation, a process which includes:

- **Milestone One:** Conduct a baseline emissions inventory and forecast
- **Milestone Two:** Adopt an emissions reduction target
- **Milestone Three:** Develop a local climate action plan
- **Milestone Four:** Implement policies and measures
- **Milestone Five:** Monitor progress and report results

Stamford has completed Milestones One, Two, Three, and Four and is in the process of monitoring the local climate action plan. Released in 2005, the plan provides a comprehensive strategy for the City to reduce its emissions. A GHG emissions inventory and forecast for the City of Stamford was conducted in 2003 revealing that the most significant contributor in Stamford is the residential sector with 33% of total emissions, while the commercial and transportation sectors closely tracked it at 27% for each.

Energy use and GHG emissions go hand in hand. Reductions in energy use will lead to financial savings in both the public and private sectors, lessen reliance on foreign oil, and reduce GHG emissions and pollutants. [See "RBS" box below.]

#### RBS and the CTCleanEnergyOptions Program

In 2009, RBS Americas purchased 15,000,000 kilowatt hours of electricity through the CTCleanEnergyOptions Program. This purchase represents the largest single purchase of clean electricity from any business in the history of the program. For this commitment to clean energy, the RBS Americas headquarters building in Stamford was awarded the 2009 Connecticut Clean Energy Award by the Connecticut Clean Energy Fund.

According to calculations from Sterling Planet, a provider of renewal energy, RBS Americas' purchase of renewal energy represents an annual avoidance of 20,325,000 pounds of CO<sub>2</sub> or the equivalent of 1,996 cars not driven for a year.

As part of the RBS purchase, Stamford has received a new 15 kW solar panel system, installed, at no cost to the City, at the Rogers Environmental Magnet School.

**OBJECTIVE 1B — Reduce use of non-renewable energy sources through a combination of more efficient use of energy, conservation of energy, and expanded use of renewable sources of energy.**

**STRATEGIES**

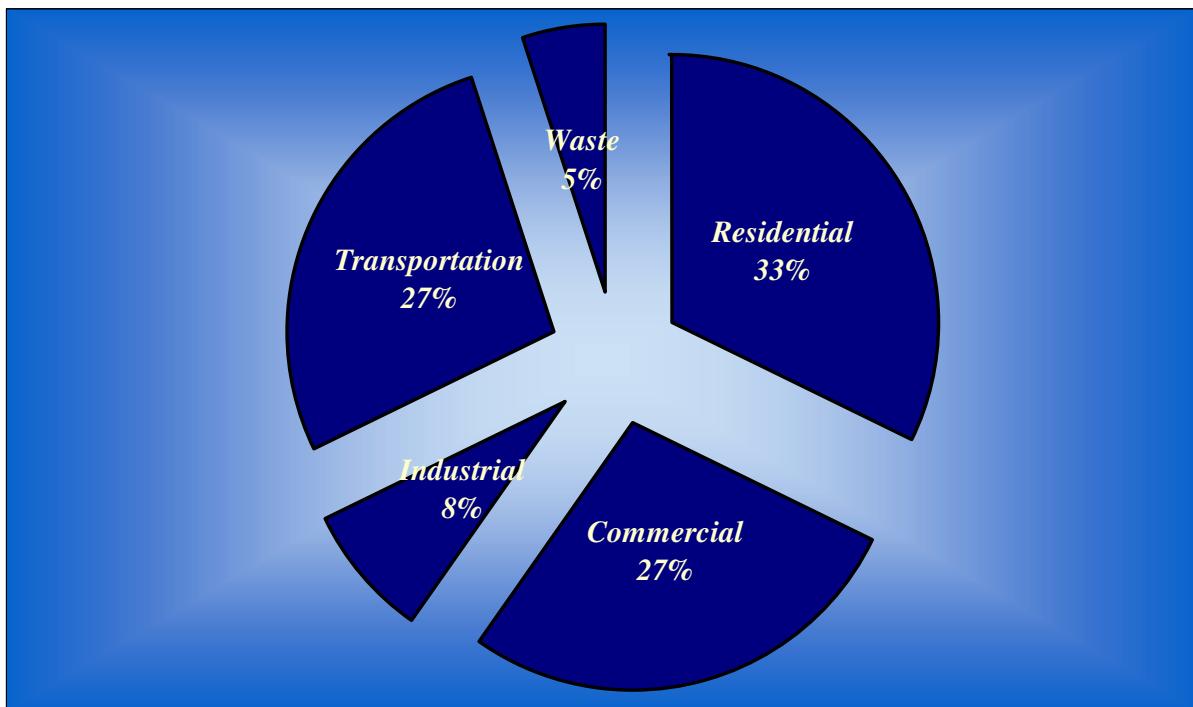
- (1.B.1.) Implement, monitor and update *Local Action Plan: Greenhouse Gas Emission Reductions (2004)*. The City completed an inventory of greenhouse gas emissions from both the municipal and community sectors in 2003. An emissions reduction target of 20% below 1998 levels by 2018 requires ongoing reduction measures and monitoring to verify progress.
- (1.B.2.) Ensure Stamford's continued commitment to purchase at least 20% of municipal energy from renewable sources, as it did by participating in SmartPower's 20% by 2010 Campaign. The City had planned to rely on the "Waste to Energy" program generated by the Water Pollution Control Authority to meet the goal, but this project is on hold. The City therefore purchased renewable energy to meet the goal, and should continue to do so in the future.
- (1.B.3.) Inventory all energy efficiency opportunities in municipal buildings. Pursue alternative energy options for City facilities to reduce dependence on fossil fuels.
- (1.B.4.) Promote the Energy Improvement District (EID) to provide distributive power to the core of the City to allow large power users, such as office and apartment buildings, to generate their own economical and energy efficient electricity. Where possible install mid-size and large scale power generation, using cogeneration, trigeneration, fuel cells, and biomass systems to increase Stamford's power reliability and reduce GHG emissions.
- (1.B.5.) Conduct a study to determine how to effectively expand and enhance energy services for low-income households. Combine the delivery of City and agency programs with other income-qualified assistance programs, such as Community Development Block grants. An integrated suite of low-income programs will provide increased potential for cost savings in energy and water, as well as health-related benefits.
- (1.B.6.) Encourage residents, commercial users and institutions to purchase renewable energy through the CTCleanEnergyOptions program. In addition to reducing GHG emissions, this program provides the City with a new 2 kW solar panel system for each 200 new purchasers of renewable energy.

## Annotated Graphics Index

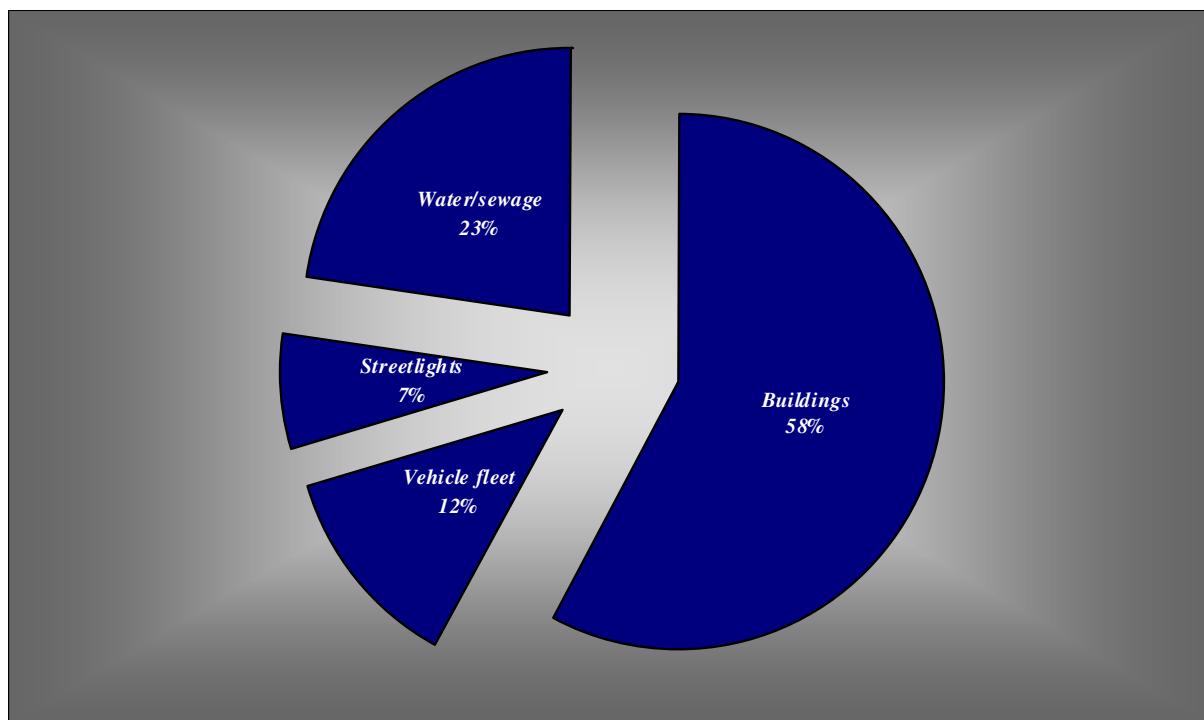
### ENERGY AND CLIMATE

- ***Community Greenhouse Gas Emissions in Stamford (1998)*** and ***Government Greenhouse Gas Emissions in Stamford (1998)*** – from the Stamford *Local Action Plan: Greenhouse Gas Emission Reductions* (2004). These two graphics show the sources of greenhouse gas emissions in the City.
- ***Energy Improvement District*** – shows the outline of the district established by ordinance in 2007.
- ***CTCleanEnergyOptions Program*** – the number of households and commercial entities signed up for renewable energy in Fairfield County, and Stamford's standing among them.

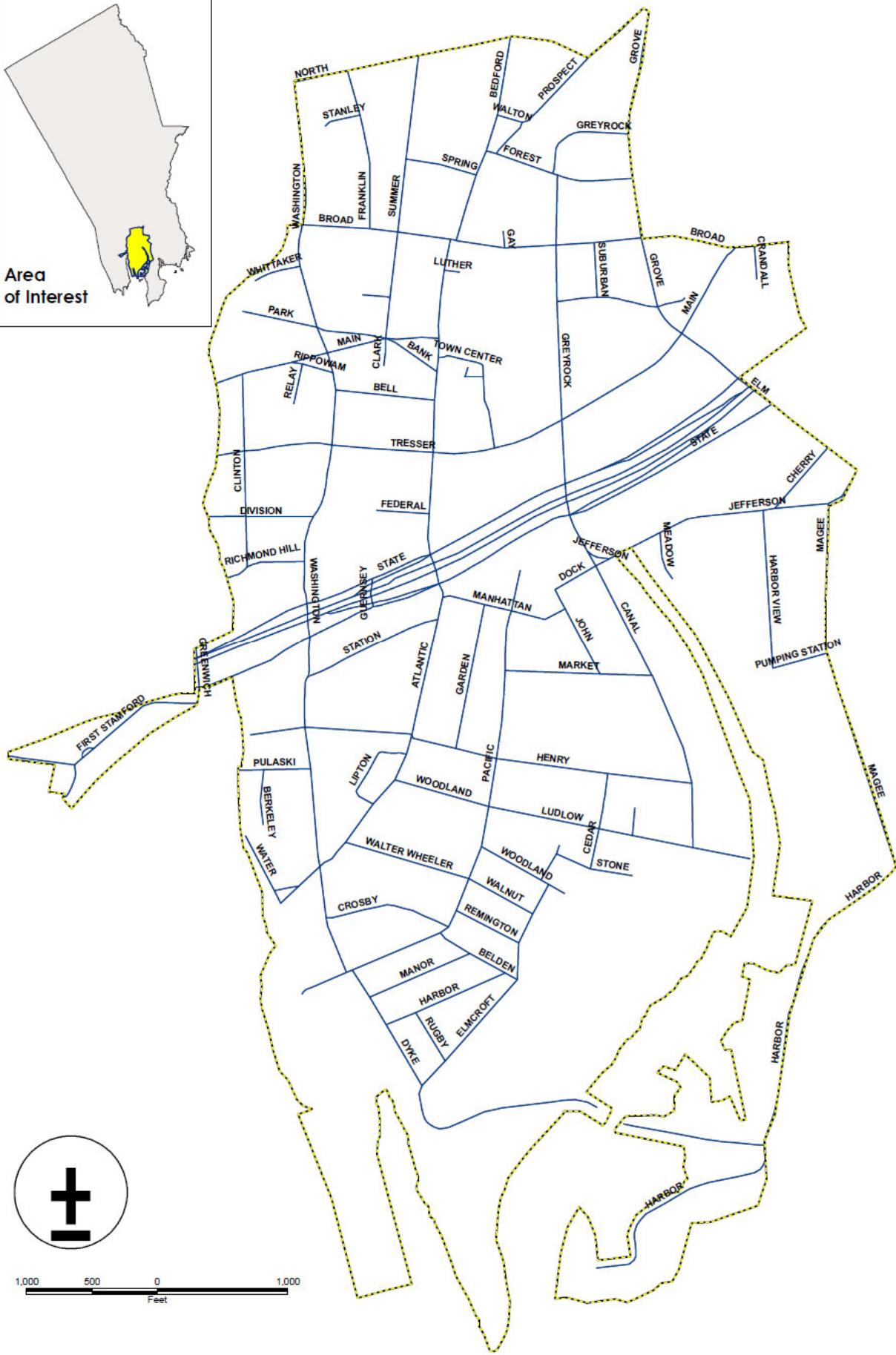
## Community Greenhouse Gas Emissions in Stamford (1998)



## Government Greenhouse Gas Emissions in Stamford (1998)



# Energy Improvement District





CONNECTICUT  
CLEAN ENERGY FUND

**CTCleanEnergyOptions:** This program, which was developed by the Department of Public Utilities Control (and is administered by the Connecticut Clean Energy Fund), allows any CL&P or UI customer the opportunity to support clean energy made from approved renewable resources such as wind and small hydro.

<u>City/Town</u>	<u>% of households</u>	<u>Sign-ups (7/10)</u>	<u>*Clean Energy Pts.</u>
(Fairfield County)			
Fairfield	4.2%	828	891
Ridgefield	6.3%	511	741
Westport	5.3%	493	568
<b>Stamford</b>	<b>1.0%</b>	<b>458</b>	<b>**2012</b>
Greenwich	1.5%	331	391
Norwalk	1.0%	306	324
Wilton	4.6%	280	307
Newtown	2.9%	251	414
Easton	7.9%	196	214
Stratford	1.0%	190	220
Weston	5.7%	186	210
Bridgeport	0.4%	184	193
Danbury	0.6%	181	229
Redding	5.1%	168	177
Trumbull	1.2%	147	162
New Canaan	1.9%	128	158
Bethel	1.6%	104	125
Darien	1.6%	104	125
Shelton	0.7%	99	138
Monroe	1.1%	73	85
Brookfield	1.1%	64	76
New Fairfield	1.1%	32	74
Sherman	2.3%	32	53

\*Each 100 MWh of clean energy purchased by a local commercial and industrial customer through the **CTCleanEnergyOptions** program counts as 10 points.

\*\*The Royal Bank of Scotland purchased 15,000,000 kilowatt hours in 2009.

## **(C) OPEN SPACE AND NATURAL RESOURCE MANAGEMENT**

### **Overview**

A holistic approach to community planning includes prudent and sustainable management of open space, parkland, fragile ecological resources, and the urban forest. Among the many benefits derived by making open space and resource management a priority are resistance to flooding via natural stormwater retention, exclusion of invasive species with the enhancement of biodiversity and native flora and fauna, and cleaner water and air supported by a healthy urban forest. Connecting people with nature, coupled with the health benefits for people walking and biking in attractive green spaces, bring a greater quality of life to local residents.

### **OBJECTIVE 1C — Conserve and protect open space, parkland, and the urban forest.**

#### **STRATEGIES**

- (1.C.1.) Prepare and maintain a long-range list of properties, in order of priority, desirable for public acquisition in order to ensure long term natural resource conservation. Priority should be given to properties that conserve drainage ways and wildlife corridors connecting parks, open spaces, and other large wildlife habitat areas to increase biodiversity throughout the City in a manner compatible with human development. Foster and develop ongoing partnerships between City staff and “Friends” groups in City parks.
- (1.C.2.) Improve public access to open space and greenways from residential neighborhoods with pedestrian/bike connections and transit.
- (1.C.3.) Consider future greenway projects, like a greenway along the coast extending from the Mill River/Rippowam, and a multiuse trail north to New Canaan.
- (1.C.4.) Increase the urban forest, and develop a street tree and urban forestry master plan that includes a City tree inventory. Comprehensive management of the City’s tree resource promotes optimal carbon dioxide sequestration, induces people to walk, and facilitates tree maintenance needed to maximize safety during storms.
- (1.C.5.) Institute “integrated pest management” (IPM) on City properties to reduce pesticide risk and exposure, particularly to children. IPM is a safer and usually less costly option for effective pest management, using common sense strategies to reduce sources of food, water and shelter for pests in buildings and grounds. An IPM program takes advantage of all pest management strategies, including the judicious and careful use of pesticides.

## **OBJECTIVE 2C — Manage natural resources and mitigate negative impacts**

### **STRATEGIES**

- (2.C.1.) Prepare a watershed management plan to maintain the quantity and quality of public water supplies and the quality of the receiving waters in balance with the ecological integrity of the watershed. Meet the existing and future needs of the community, on an equitable, efficient and self-sustaining basis.
- (2.C.2.) Adopt a City drainage manual in order to provide consistent drainage engineering in development that supports increased water quality and improved stormwater management.
- (2.C.3.) Develop a stormwater ordinance that better protects watershed and coastal resources from nonpoint source pollution (i.e. rainfall or snowmelt moving over and through the ground picking up and carrying away salt, sediments, fertilizers, toxic chemicals, etc.).
- (2.C.4.) Enhance catch basin and storm sewer maintenance by increasing frequency of cleaning. Identify and eliminate illicit discharges into the storm system. Ensure that all maintenance is well documented, up-to-date, and available to regulatory agencies.
- (2.C.5.) Low Impact Development (LID) site planning and design techniques shall be used to the maximum extent practicable to reduce the generation of stormwater runoff and accompanying pollutants. The LID approach integrates infrastructure, architecture, and landscape in order to create a balanced, hydrologically functional, and sustainable site. Ensure that the City's land use regulations are consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control (as amended) for construction activities and the Connecticut Stormwater Quality Management (as amended) for post-construction stormwater management.
- (2.C.6.) Incorporate permeable paving standards, and adopt minimum requirements for parking lot landscaping. As noted in the Transportation section, the utilization of environmental professionals (e.g. landscape architects) should be primary, and not an afterthought in site plan design.
- (2.C.7.) Encourage use of “green infrastructure.” Green infrastructure techniques use soils and vegetation to infiltrate, evapotranspire, and/or recycle stormwater runoff. In addition to reducing flooding, these techniques (e.g. green roofs, porous pavement, rainwater recovery systems, and vegetated swales) reduce energy demands, mitigate urban heat islands, sequester carbon, reduce pollution to Long Island Sound, and provide aesthetic benefits.

- (2.C.8.) Protect significant wetland and water body natural resources through designation of significant upland areas as a buffer between the resource and other urban development and activities.
- (2.C.9.) Maintain and improve coastal and embayment water quality.
- (2.C.10.) Encourage water conservation by the residential, business, and public sectors.

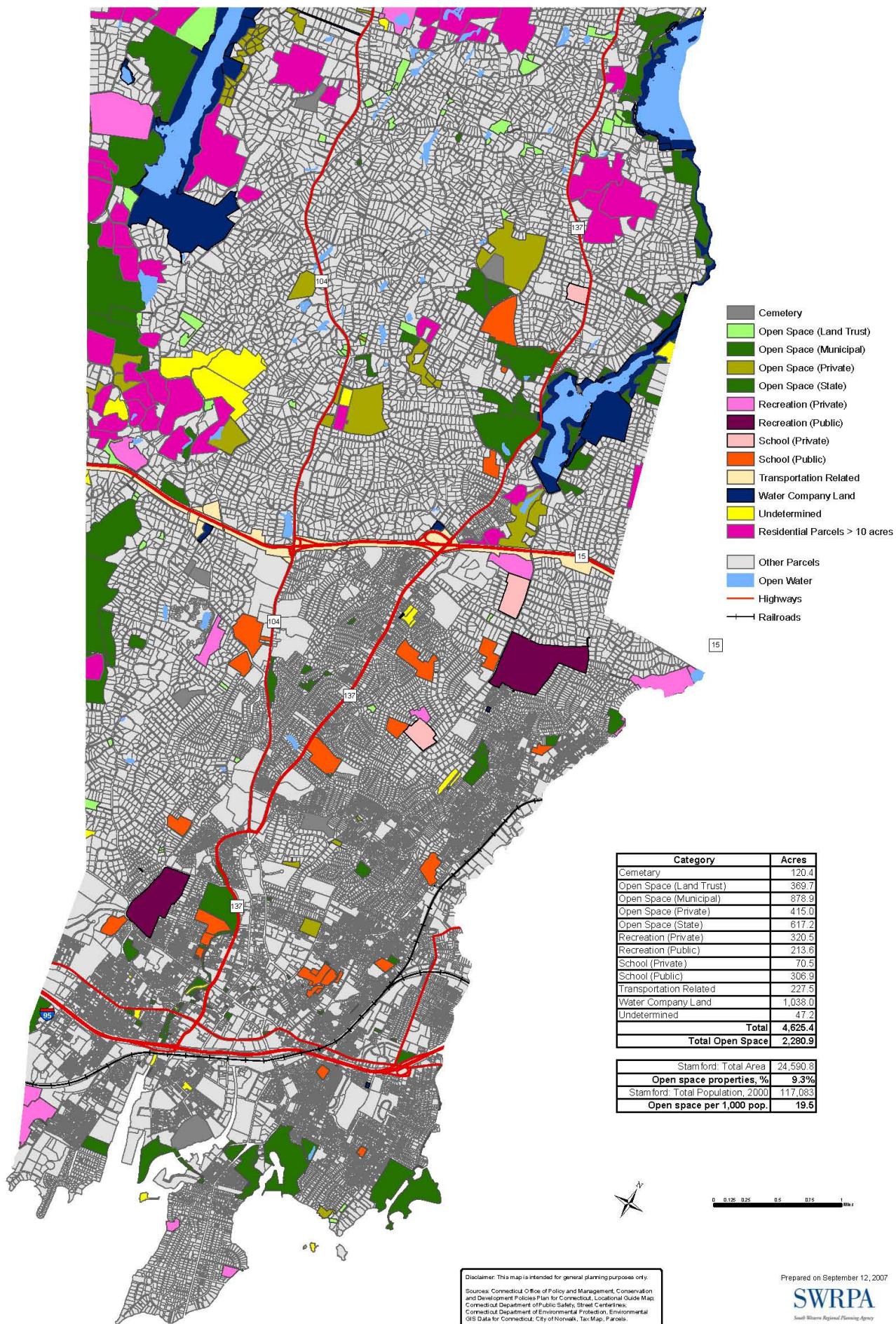
## **Annotated Graphics Index**

### **OPEN SPACE AND NATURAL RESOURCE MANAGEMENT**

- ***2007 South Western Region Open Space Inventory*** – based on the South Western Regional Planning Agency open space inventory of Stamford.

# 2007 South Western Region Open Space Inventory

## City of Stamford - Open Space by Category



## **(D) INFRASTRUCTURE AND CITY SERVICES**

### **Overview**

By adopting a comprehensive municipal sustainability program, the City provides an example to the community. We can already point to our commitment to use energy produced by alternative energy sources (SmartPower's 20% by 2010 Campaign), single stream recycling, habitat restoration (Mill River), and our many lighting and energy efficiencies in municipal buildings, street and traffic lights. Beside these initiatives, however, there are many more opportunities to expand on the foundation we have built. [See "Energy Efficiency of City Facilities" box, p. 30, and "Rogers International School" box, p. 46.]

### **OBJECTIVE 1D — Expand the rates of residential recycling to 30% by 2012, setting a long range goal of 50%; encourage businesses and schools to recycle; and mandate construction and demolition waste recycling**

#### **STRATEGIES**

- (1.D.1.) Expand education and conduct outreach and marketing to increase residential recycling rates. Provide additional electronics and hazardous waste drop-offs downtown, within walking distance of apartment buildings.
- (1.D.2.) Develop enforcement mechanisms such as "pay-as-you-throw," whereby residents are charged for the collection of household trash based on the amount they throw away, or a policy of not picking up trash from customers who do not put out recycling bins with the regular trash.
- (1.D.3.) Encourage property managers and landlords to increase recycling rates in multi-family buildings.
- (1.D.4.) Develop an expanded composting program that includes food waste.
- (1.D.5.) Encourage businesses to increase recycling rates.
- (1.D.6.) Encourage design that minimizes waste, and mandate construction and demolition waste recycling through City ordinance, or directive from the Operations Department.

### **OBJECTIVE 2D — Integrate sustainability strategies into City government**

#### **STRATEGIES**

- (2.D.1.) Monitor advancements in technology, and continue to refine existing City standards for energy/water conservation and best practices for stormwater

management for capital projects, as the City has done with the LEED ordinance for City buildings, oil and grit separators standard for parking lots, and two-foot sumps and bell traps standard for catch basins.

- (2.D.2.) Eliminate disproportionate environmental burdens and pollution experienced by historically disadvantaged communities. For instance, an asthma map of Stamford (2002-10) shows that the highest densities of asthma patients are located in the neighborhoods flanking I-95.
- (2.D.3.) Consider amending the City ordinance to require that new City buildings meet LEED Gold rather than the present Silver certification, or another equivalent nationally recognized rating system with third party review and verification.
- (2.D.4.) Select and implement energy efficiency projects with the overall goal of bringing all municipal facilities up to Energy Star levels by 2018.
- (2.D.5.) Create a sustainability coordinator position to manage and initiate sustainability projects, promote public awareness, manage the City sustainability website, and monitor the success of City efficiency efforts. The coordinator's duties should supplement the efforts of the City Energy/Utility Manager.
- (2.D.6.) Institute City of Stamford sustainable procurement standards by modifying purchasing protocol. Institute a green cleaning policy for all City and school buildings, including the use of non-toxic cleaning products and recycled paper goods. Reduce the mercury content of the mercury containing lamps acquired for use in City buildings.
- (2.D.7.) Explore purchase of new municipal fleet vehicles powered by renewable fuel sources, those with flexible fuel options, and gas-electric hybrids. Potentially utilize federal grant funds to eliminate the cost difference between these and conventional vehicles. Explore fleet vehicle-sharing between departments and/or reduction in vehicle use and fleet size.
- (2.D.8.) Phase out free parking assigned to City staff for privately owned vehicles, and increase alternative transportation options for employees. Use revenues for alternatives to private vehicle travel.

### **Energy Efficiency of City Facilities**

Stamford is one of the few cities in the country with an Energy/Utility Manager dedicated to the pursuit of energy and fuel efficiency. Since 1998, she has initiated or managed the implementation of nearly 80 energy efficiency projects involving schools, municipal buildings, traffic lights, and streetlights, with rebates and grants totaling \$3,788,292 and energy savings of 14,492,299 kilowatt-hours as of 2010. Using a combination of federal grants and City funds, she will manage the retrofit of school lighting, upgrade street lights to LED fixtures, install energy management systems in two City facilities, and purchase renewable energy for the City in fiscal year 2010-2011.

## Annotated Graphics Index

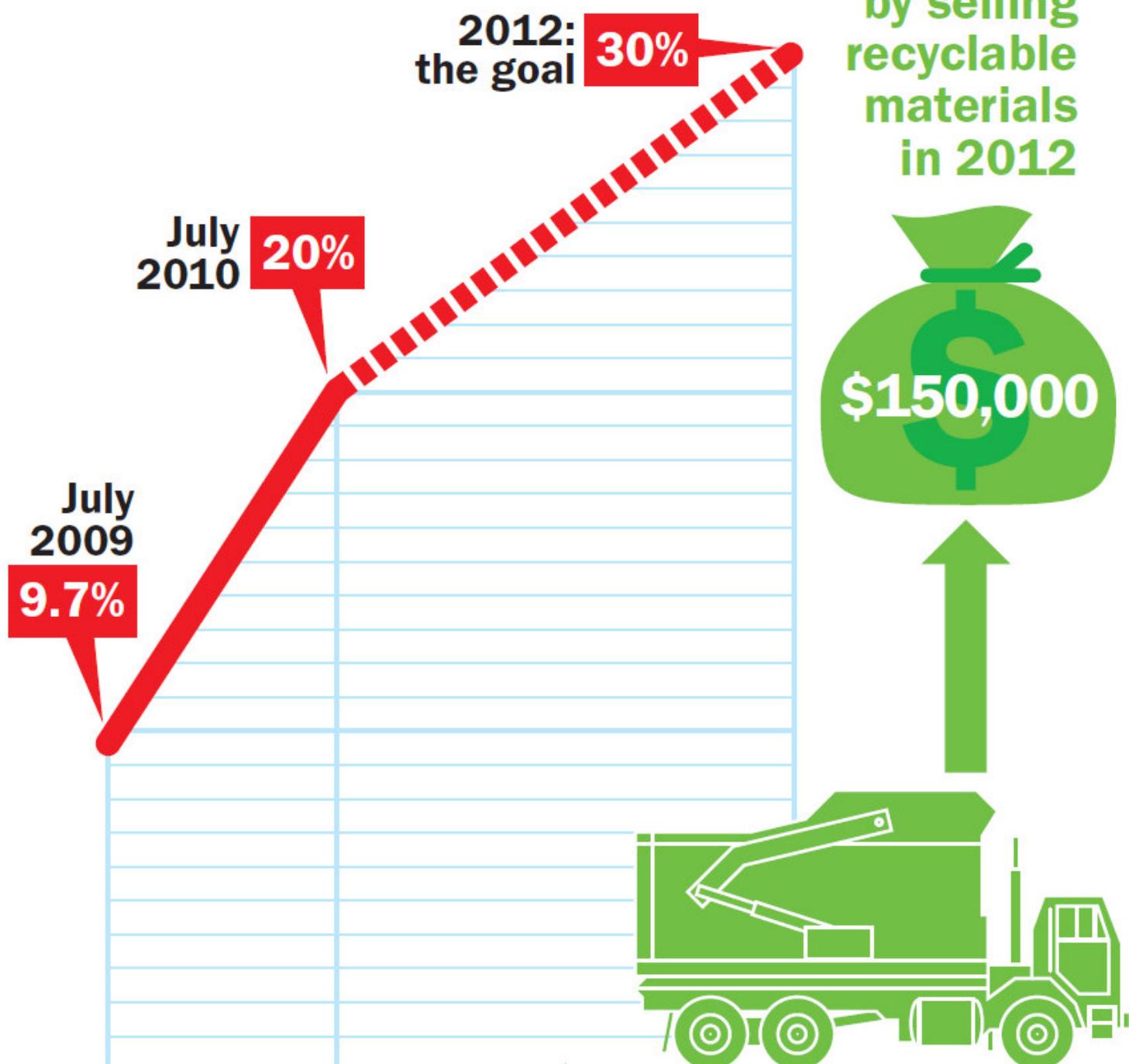
Sustainability Amendment to the 2002 Stamford Master Plan

### INFRASTRUCTURE AND CITY SERVICES

- ***% of Stamford's municipal waste that is recycled...*** – is a metric measuring the progress of our goals, including a benchmark, a snapshot of our progress in 2010, and our 2012 goal.
- ***Stamford Nitrogen Credits*** – is a metric monitoring the amount of nitrogen extracted by the Water Pollution Control Authority and the income earned through the Nitrogen Credit Exchange Program.
- ***Density of Asthma Families*** – shows the location of the 266 dwelling units enrolled in the City of Stamford Children's Asthma Program.

**% of Stamford's municipal waste\* that is recycled...**

**...and the projected REVENUE generated by selling recyclable materials in 2012**



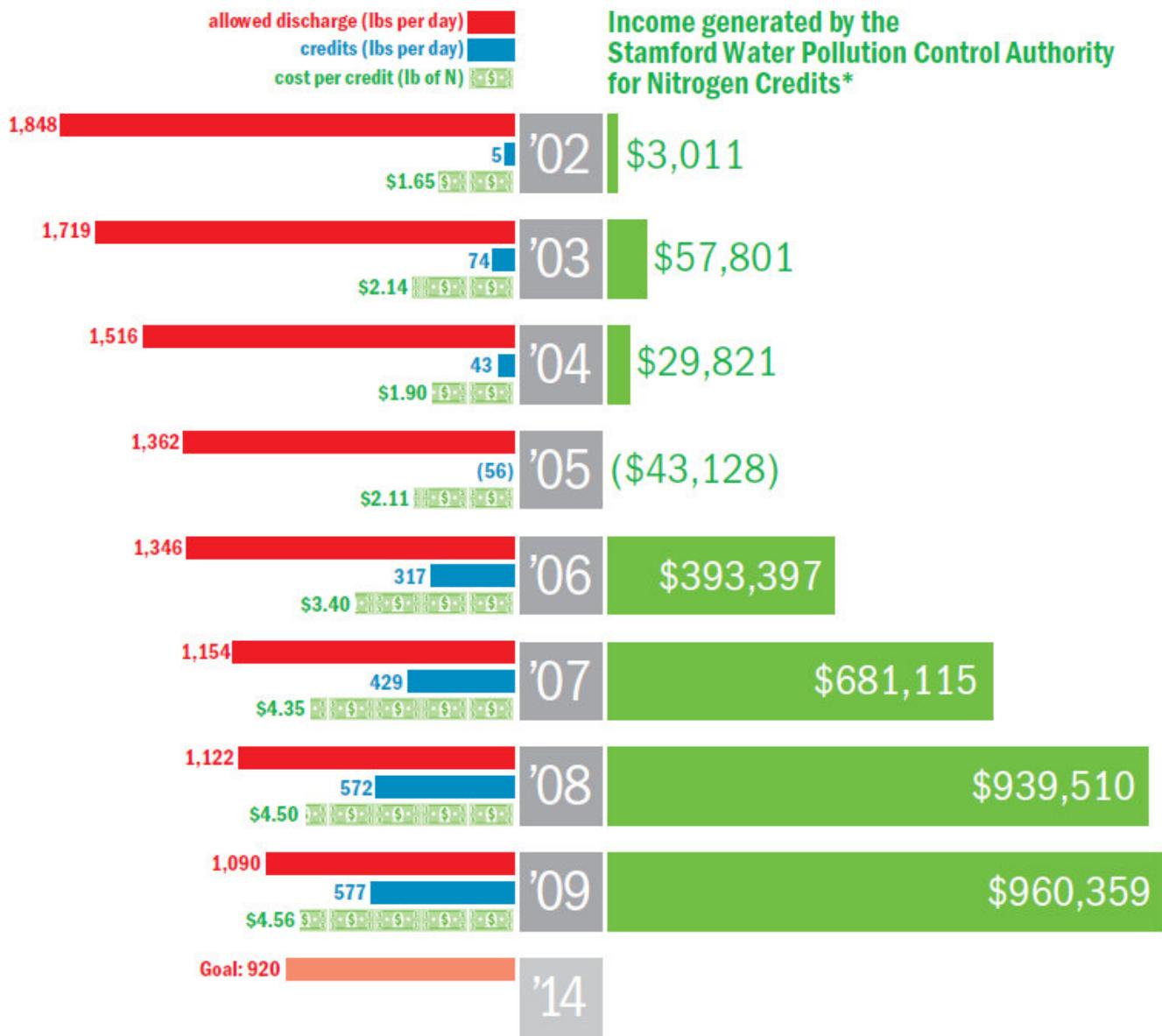
\* "Waste" is residential garbage picked up by the City, excluding leaves and other yard refuse.

# Stamford Nitrogen Credits

## What is a nitrogen credit?

The CT DEP has identified nitrogen as the primary pollutant in the Long Island Sound. Nitrogen fuels the growth of algae in the Sound, which deprives it of oxygen and disrupts the ecology of the system. As of 2001, the EPA mandated a limit to the amount of nitrogen that sewage treatment plants can return to the Sound, restricting it more each year in order to reach an acceptable level by 2014. Not all of the 79 sewage treatment plants in Connecticut are able to meet the requirements, and there is a Nitrogen Credit Exchange Program that allows them to buy credits from plants that exceed the requirement.

Because of its state-of-the-art sewage treatment system, **Stamford now generates nearly \$1 million a year by selling its credits to other plants.** The system employs a biological nitrogen treatment process in which the microbiology inherent in the incoming wastewater is used to convert inorganic and organic nitrogen into nitrogen gas. Ultraviolet light is used to disinfect the final effluent before it is discharged into Stamford Harbor.



\*The “income” is used to lower the bills of the taxpayers

## **(E) NEW CONSTRUCTION AND EXISTING BUILDINGS**

### **Overview**

The energy used to operate buildings accounts for 48% of all greenhouse gas (GHG) emissions in the U.S., which is greater than the next highest sector – transportation (<http://www.greenplaybook.org/buildings/index.htm>). New buildings, if constructed to the highest levels of energy efficiency, can provide significant energy and GHG emissions savings over the existing older stock of structures. However, since Stamford is largely built-out, existing buildings, which far outnumber new buildings, should be the primary target of sustainability efforts.

A variety of organizations have developed green building standards for both new and existing buildings. Examples included the LEED (Leadership in Energy and Environmental Design) green building rating system of the U.S. Green Building Council and the EPA's Energy Star program. Such standards provide a nationally recognized standard and serve to “raise the bar” on the efficiency for both new construction and renovation of existing buildings.

In 2010, Sustainable Stamford (the mayor’s task force on sustainability) partnered with the Building Owners and Managers Association (BOMA) to launch a “Corporate Sustainability Challenge” in Stamford. Participants benchmark their energy and water usage, install efficiencies, and adopt sustainability policies (e.g. green purchasing, waste reduction, use of green cleaning products, and more). This program may serve as an ongoing model for building owners and managers citywide. [See “*Corporate Challenge*” box, p. 45]

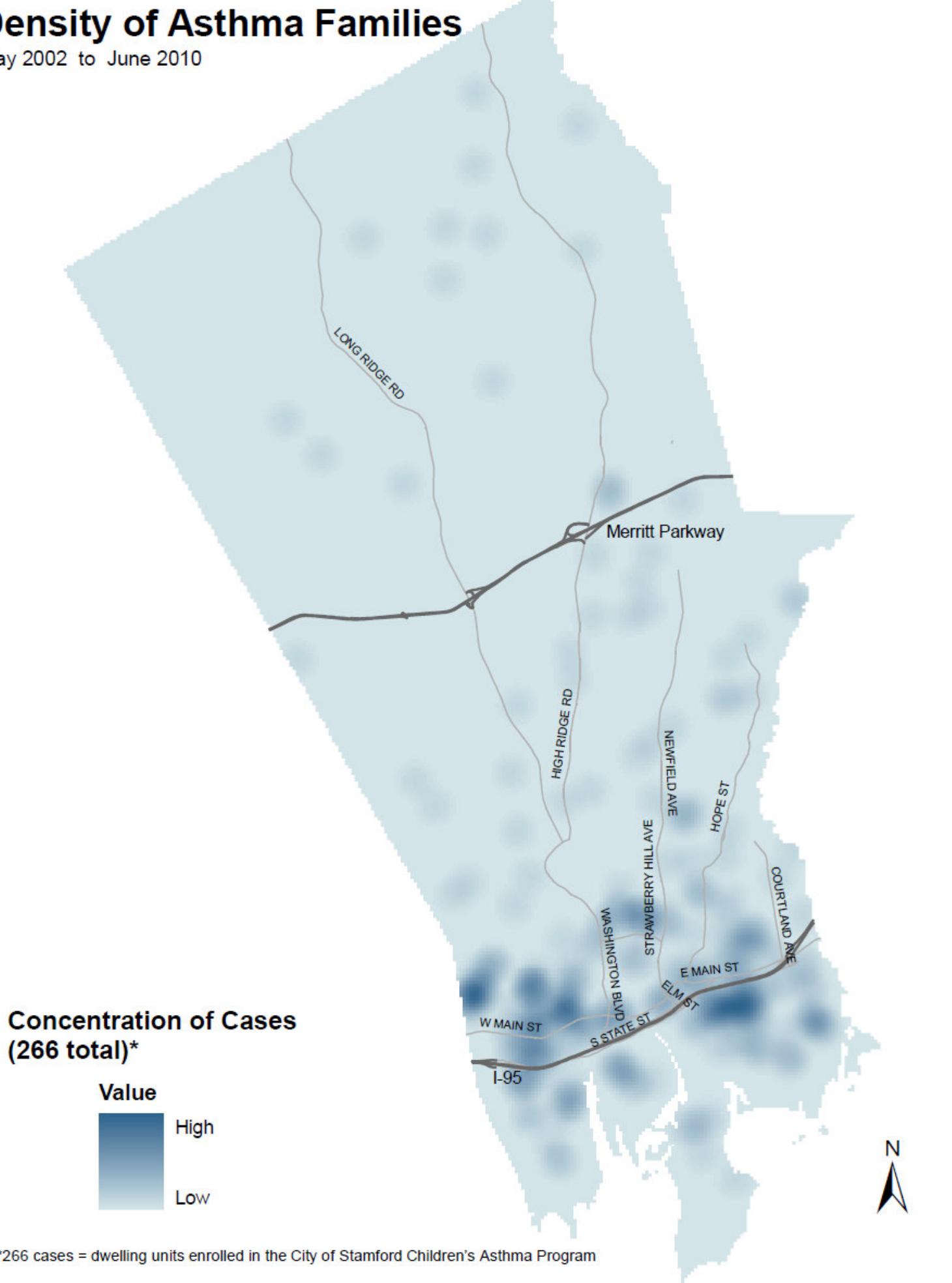
### **OBJECTIVE 1E — Assess and lessen the City of Stamford’s carbon footprint**

#### **STRATEGIES**

- (1.E.1.) Require that all new commercial and residential projects achieve a minimum point level on an appropriate green building checklist, or “scorecard,” and report on projected greenhouse gas emissions.
- (1.E.2.) Encourage retro-commissioning of all major buildings and facilities to optimize their energy usage. Building commissioning will generally increase the energy efficiency by 15%.
- (1.E.3.) As in the Corporate Sustainability Challenge, the City should promote the monitoring, testing and commissioning of residential and non-residential building systems to ensure that buildings are performing as efficiently as intended.
- (1.E.4.) Require that all new and substantially renovated multi-unit buildings be “sub-metered” to enable monitoring of energy and water consumption on a unit-by-unit basis.

# Density of Asthma Families

May 2002 to June 2010



## **OBJECTIVE 2E — Reduce heat island effect**

### **STRATEGIES**

- (2.E.1.) Provide incentives for the use of green and “cool” roofs. A cool roof is a roofing system that delivers high “solar reflectance” (the ability to reflect the visible, infrared and ultraviolet wavelengths of the sun, reducing heat transfer to the building) and high “thermal emittance” (the ability to radiate absorbed, or non-reflected solar energy). Most cool roofs are white or other light colors.
- (2.E.2.) Encourage the installation of a “cool roof” anytime a building is being constructed or re-roofed.
- (2.E.3.) Inventory and map all the buildings in downtown that have the potential for green and/or cool roofs, evaluating the cumulative benefit in thermal reduction.  
*[See “Green Roofs” box below.]*

#### **Green Roofs or Unexpected Consequences: The Stamford Saga**

In the late 1970s, Stamford approved two amendments to the *Zoning Regulations*, which inadvertently resulted in Stamford becoming an early pioneer in the provision of green roofs. These zoning amendments were approved to stimulate “quality development” in the Downtown as part of the City’s floor area (FAR) provisions. No consideration to the ecological benefits was considered at the time, since global warming, the heat island effect, and reduction in stormwater runoff were not part of our vocabulary in the 1970s. Yet the unintended results are impressive: fifteen (15) acres of green roofs on ten downtown buildings, plus the new Rogers School. Included in this list is the Stamford Government Center, which has a one-acre green roof.

## **OBJECTIVE 3E — Create incentives for sustainable development**

### **STRATEGIES**

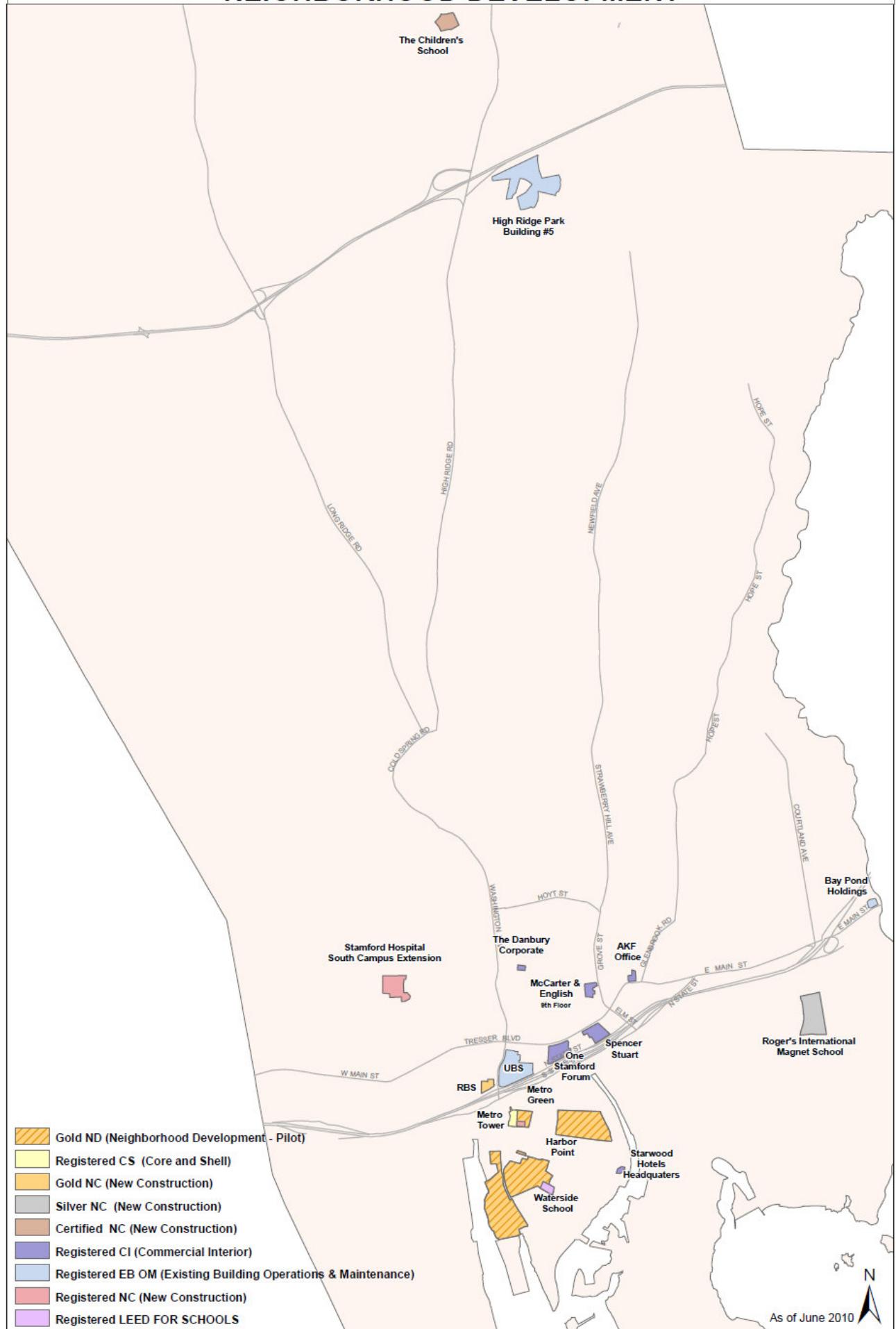
- (3.E.1.) Exclude from the assessed tax value any increased property value directly resulting from adopting sustainable practices.
- (3.E.2.) Expedite land use approval process and building permits for sustainable projects.

## Annotated Graphics Index

### NEW CONSTRUCTION AND EXISTING BUILDINGS

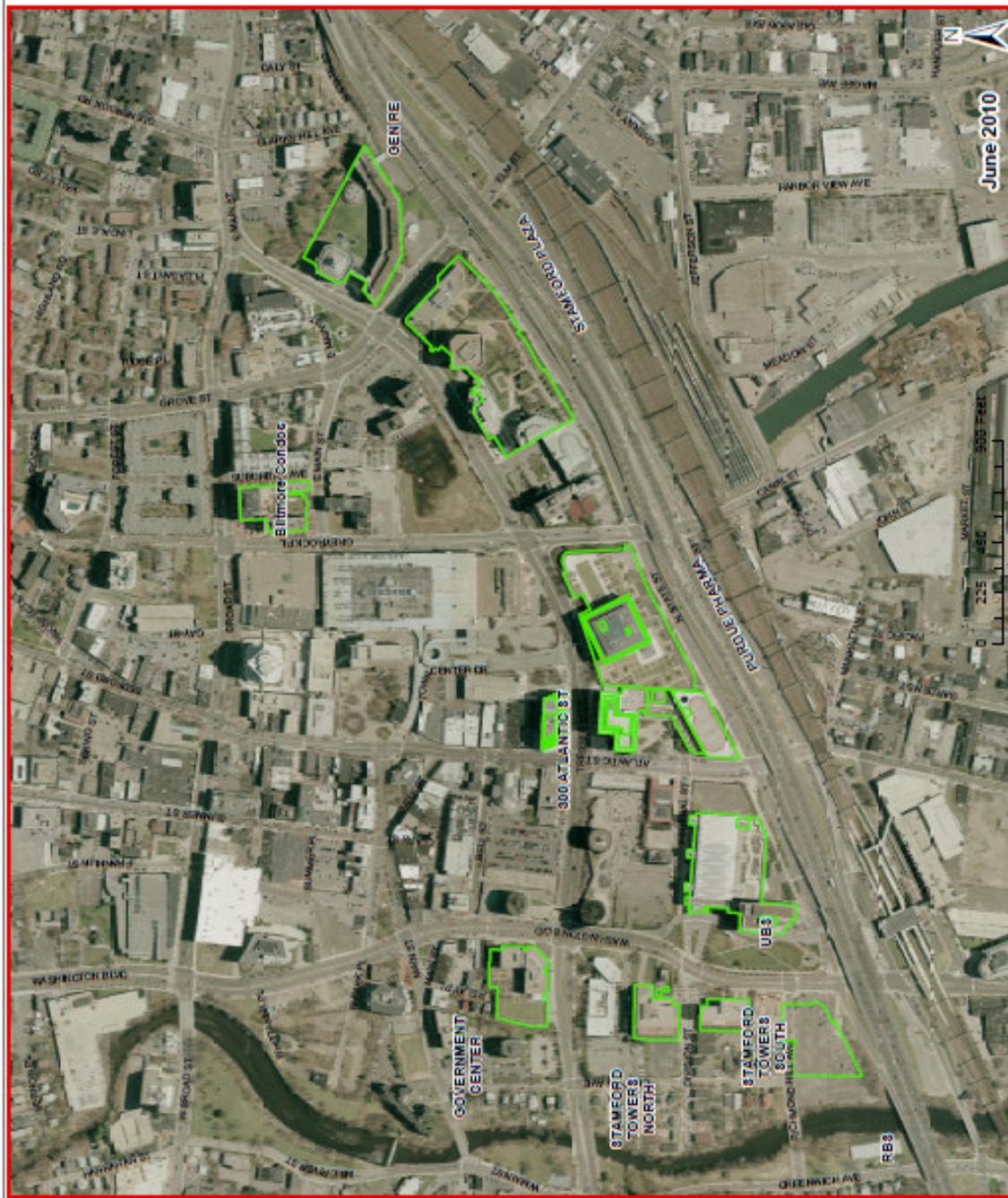
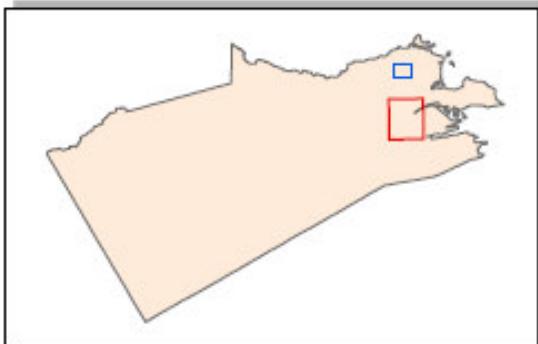
- ***LEED Certified & Registered Buildings & Neighborhood Development –*** buildings and developments that have the highest rating of sustainability from a third party as either registered or certified by the LEED program of the U.S. Green Building Council.
- ***Green Roofs*** – an aerial map showing the location of all the green roofs in Stamford as of June 2010.
- ***Asphalt roof vs. green roof*** – using a pyrometer (infrared, non-contacting device that intercepts and measures thermal radiation), the temperature of the green roof at the Stamford Government Center was measured on a hot summer day and found to be more than 30 degrees cooler than the asphalt roof on the same building.

# LEED CERTIFIED & REGISTERED BUILDINGS & NEIGHBORHOOD DEVELOPMENT



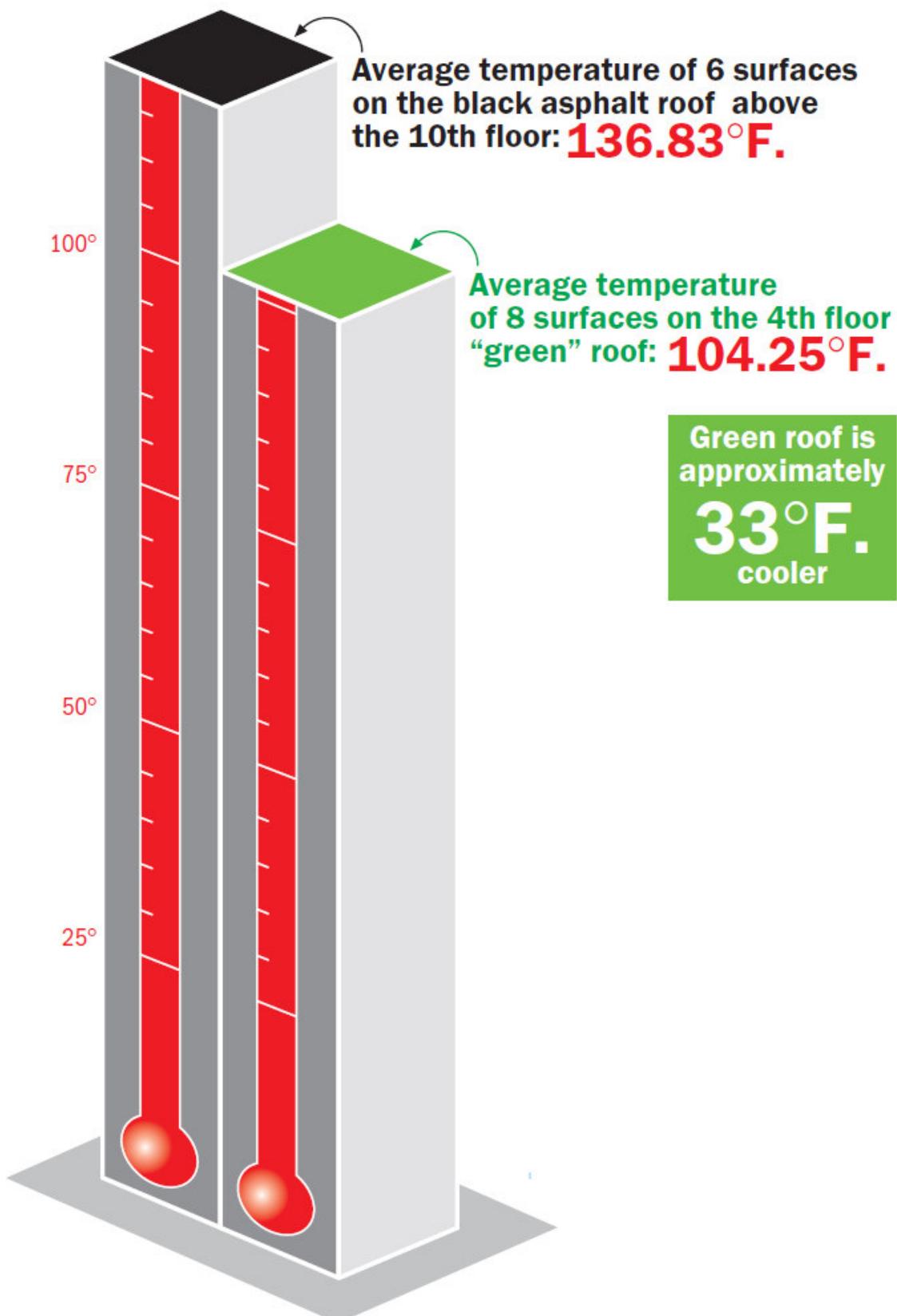
GREEN ROOFS

Approximate Green Roof Total = 15 acres



# Asphalt roof vs. green roof

At the Stamford Government Center, on July 9, 2008, at 2pm. Air temp: 88°F



## (F) ADAPTATION AND MITIGATION

### Overview

“Adaptation” refers to preparing for inevitable climate changes, with particular emphasis on sea level rise. Climate change “mitigation” actions decrease the effects of global warming, including the reduction of greenhouse gas emissions. Adaptation and mitigation often complement one another. For instance, keeping rainwater on site helps reduce flooding (adaptation) and reduces the need for pumping water, which saves energy (mitigation). A range of possible adaptation strategies should be considered with mitigation strategies for reducing greenhouse gas emissions.

Research based on global climate models suggests a possible range of sea level rise in the New York Metropolitan region of 2.5 to 7 inches in the next 25 years, 6 to 15 inches in the next 50 years, and 1 to 3 feet in the next 100 years. Rising seas in Long Island Sound will increase the intensity, duration, and frequency of high water levels associated with coastal storm flooding. Coastal flooding threatens natural ecosystems as well as commercial, civil, and residential infrastructure and assets. Flooding can also cause groundwater pollution.

According to the U.S. Environmental Protection Agency, as the environment changes, people will be at a higher risk for a range of threats to our health from extreme weather events, temperature effects, and climate sensitive diseases. As temperatures and sea levels rise, many health challenges are expected to increase and become more severe, and public health officials expect climate change to place an undue burden on children, the elderly, and low-income urban residents.

When considering climate change impacts, Stamford should first seek to avoid impacts, then minimize them and finally, adapt to the unavoidable impacts as much as possible.

### **OBJECTIVE 1F — Develop adaptation strategies to prepare for the effects of climate change**

#### **STRATEGIES**

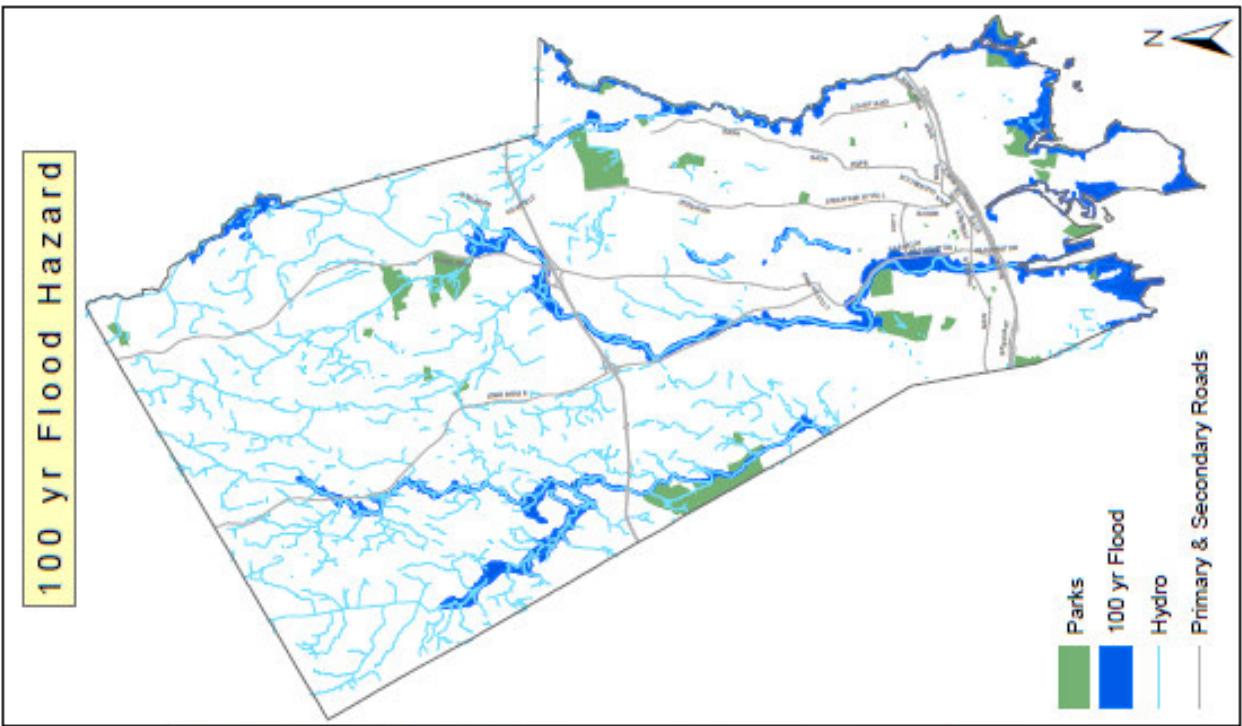
- (1.F.1.) Plan for the inevitable effects of sea level rise (see *Stamford Inundation Map*). Protect and minimize danger to life and property from coastal flooding and the effects of wave impact in Westcott Cove, Shippian, Dolphin Cove, and other potentially hazardous areas.
- (1.F.2.) Track developments in climate change science, improvements in global and regional climate models, emerging estimates in sea level rise and estimates of changes in the severity, duration and frequency of weather events. Utilize refined regional climate change models to update future sea level rise and flood data, and future weather event frequency and intensity.
- (1.F.3.) Control the intensity of development in natural hazard areas.

- (1.F.4.) Assess the needs of the City to account for more severe storms caused by climate change.
- (1.F.5.) Conduct a climate change needs assessment, and then develop a public education campaign regarding climate change and health. These campaigns must effectively target at-risk populations, including children and seniors.
- (1.F.6.) Encourage mitigation and/or adaptation to climate change in capital projects by including a sustainability component in the Capital Budget (CP1) form.
- (1.F.7.) Ensure sufficient capacity in the storm drain system to prevent localized flooding.
- (1.F.8.) Prepare an “extreme weather notification system” as part of pre-disaster mitigation planning that places automatic calls to warn at-risk individuals of impending extreme climate events (e.g. extreme high or low temperatures, unhealthy air quality, storms). The “at-risk” population should include daycare centers and elder care facilities. The City’s emergency evacuation plan should be strengthened and publicized.

## Annotated Graphics Index

### ADAPTATION AND MITIGATION

- ***100 yr Coastal Flood*** – the Federal Emergency Management Agency oversees the National Flood Insurance Program, which is mandated to map all of the floodplains in the U.S. They use historical records and modeling to determine the limits of a flood whose magnitude is expected statistically once every 100 years.



## **(G) COMMUNITY INVOLVEMENT AND EDUCATION**

### **Overview**

Public education and community engagement are critical to the success of most of the sustainability objectives stated in this amendment. For instance, the Solid Waste Department increased the recycling rate from 9% to 20% in the first year after switching to single stream recycling and employing a vigorous media campaign. Since many of the objectives and policies will not be mandated in the near future, if at all, community involvement and buy-in will be essential.

#### **Sustainable Stamford Launches Corporate Sustainability Challenge**

In 2010, Sustainable Stamford, the mayor's task force on sustainability, partnered with the Southern Connecticut Building Owners & Managers Association (BOMA) to create the "Corporate Sustainability Challenge" in southern Connecticut, with Stamford as the lead municipality. After the program was officially launched (October 2010) participating small, medium, and large corporate building owners and managers benchmarked their energy and water usages and adopted sustainability policies on carpooling and telecommuting, non-smoking, waste reduction, low mercury light bulbs, sustainable purchasing, "integrated pest management," stormwater quality management, "green" cleaning, and light pollution. The organizers held an awards ceremony to recognize achievements. This project will only be effective if it is ongoing, and therefore BOMA and Sustainable Stamford will continue to promote the program and to hold the awards ceremony annually.

### **OBJECTIVE 1G — Support work-day professional development for City staff and boards.**

#### **STRATEGIES**

- (1.G.1.) Schedule monthly "lunch and learn" programs on sustainable topics relevant to specific City departments.
- (1.G.2.) Designate time during City Board meetings for periodic presentations on sustainable topics.

## **OBJECTIVE 2G — Support activities aimed at enhancing the community's sustainability.**

### **STRATEGIES**

- (2.G.1.) Develop and promote education programs to encourage home-owners and developers to invest in energy efficiency improvements.
- (2.G.2.) Promote educational activities about reduction of consumption and waste generation at the household and community levels.
- (2.G.3.) Increase public awareness about stormwater pollution and actions that citizens and business entities can take to reduce the impact of stormwater pollution on water quality. Disseminate information regarding the proper handling and disposal of used motor vehicle fluids, household hazardous waste, food preparation waste, grass clippings, fertilizers, pesticides and herbicides.
- (2.G.4.) Conduct a public outreach and education program on watershed management strategies and tools, such as Low Impact Development (LID) practices.
- (2.G.5.) Encourage the Board of Education to create sustainable programs and activities in K through 12, and local universities to do the same.
- (2.G.6.) Maintain and enhance the existing Sustainable Stamford website as a resource for residents and businesses.
- (2.G.7.) Create a permanent facility, through a public-private partnership, to serve as a “show house” for sustainable construction and living. This facility would be used as an easily accessible and enduring resource for all stakeholders, including developers, City residents, government employees, and students.

#### **Rogers International School**

In 2009, the City completed the construction of a new K-8 school for 660 students on the former Clairol Property. The 105,850 square foot building contains the following environmental features: green roof with a garden and native meadow; stream bed and rain garden; bird and butterfly habitat space; solar photovoltaic panels; wind turbine and weather station; air conditioning system with ice storage; interior daylighting controls; and cedar siding with wood sunshades. The school building received a LEED Silver rating (and in fact just missed a Gold rating by two points).