UPPER WEST SIDE RECYCLING CENTER, INC.

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UWSR Eco Letter Commentaries

These Commentaries appeared in earlier editions of the ***UWSR Eco Letter***. Upper West Side Recycling produces this bi-monthly electronic newsletter as a public service at no charge. It is intended to provide substantive information about environmental activities, organizations and publications relevant to the Upper West Side of Manhattan. **We urge you to distribute this important information to appropriate people in your network.**

Click below to go to these topics to date:

- Climate Change & Global Warming
- DSNY Recycling Programs
- Electronic Waste
- Energy Conservation
- Organic Waste
- Recycling in Schools
- Recycling Updates
- Solar Energy Utilization
- Textile Recycling
- The Recycling Process
- Urban Greening & Neighborhood Beautification
- Waste Reduction / Zero Waste
- Water Quality

UWSR Eco Letter

January/February 2017

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY: The Recycling Process: Where Do Your Materials Go?

We want to do the right thing and recycle as much as possible. But what actually happens to all that stuff? And why can't we recycle everything?

The fact is that the recycling process is quite complicated and driven by the marketplace. It entails a number of steps, including the collection of materials, their separation and sorting, amassing sufficient quantities, re-processing of materials, and the final manufacture of new goods from these materials. Each of these steps is important and has its own complexities that result from both the physical nature of the materials and fluctuations in the marketplace.

Energy-efficient and economical transportation plays a key role in this process and is yet another variable.

In New York City, we separate paper and cardboard from plastic, metal and glass. These latter three materials are all mixed together and compacted on the Sanitation Department (DSNY) collection trucks. They are only separated from each other after arriving at the Sims Materials Recovery Facility (MRF) on the Brooklyn waterfront, where they are also bundled and transported to processors. This sorting facilitates the marketing of materials later on in the cycle.

This state-of-the art Brooklyn MRF facility opened in December 2013 on an 11-acre site in Sunset Park. More than 500 tons of glass fragments were mixed with crushed rock to elevate the pier on which the MRF sits to allow for sea-level rise. The land is owned by the City, and Sims has a 20-year contract to operate the facility and options to renew for two additional ten-year periods. A 100kW wind turbine and rooftop photovoltaic modules generate about 20% of their electricity and other ecological features include a bioswale for storm water drainage and small, artificial marine habitat reefs. Tours of the MRF and adjacent education center are available, including for schoolchildren.

DSNY delivers most of the recyclable materials to the MRF by barge. Using barges is highly energy-efficient because each barge can hold as much as 100 DSNY trucks. Once at the MRF, different types of glass, metal and plastic are sorted and separated from each other. This MRF acts only as a transfer station for paper and cardboard (see below).
The sorting process is quite efficient: To avoid shut-down during maintenance, the MRF employs two sets of parallel conveyor belts (two miles long in total) as well as multiple devices such as magnets, trommel cylinders, optical scanners and eddy-current separators (described below). Some manual sorting is also done at the end of the process.

GLASS:

When the mixed metal, glass and plastic arrive at the MRF, they go through a shredder that rips open any plastic and paper bags and further breaks up the glass (much of the glass has been broken during transport). Along with the other materials, it goes over a series of steel rotors and all the small pieces of glass fall through screens with 2½-inch gaps and are collected below. Please don't put your plastic, metal and glass in individual plastic bags before placing them in other recycling containers in your building, as these bags make this separation process much more difficult.

This broken glass, along with other items that are smaller than two inches, is shipped across the harbor by barge to the Sims Glass Plant in Jersey City, NJ, where any fragments of metal, paper and plastic are separated from the glass using air knives (that blow or vacuum small pieces of paper away), magnets and eddy-current separators (that create a magnetic field that repels non-ferrous objects). Optical sorters are next used to separate clear glass from green, brown and blue glass, as well as non-bottle glass. Any pieces of aluminum, steel or other metals pulled out of the glass are transferred to the Sims Glass Plant scrap yard and later marketed.

Clear glass, also called "flint", is sold to glass bottle manufacturers. Most of the colored glass is typically re-used as a sub-base aggregate in construction and infrastructure projects. Many of

the brown or green bottles we use originally contained beer and are subject to the NY State deposit law (how these are processed and recycled will be discussed in a later issue).

All the glass bottle manufacturers (such as Ardagh) are located in the NY metropolitan area because the weight of glass results in high transportation costs. At the manufacturer, this recycled flint can be combined with sand, soda ash and limestone, then heated in a furnace to about 2700 deg. F, turning the mixture into a molten liquid that is then molded to make new bottles.

METAL:

Metals can be recycled repeatedly without losing any of their basic qualities. For the sake of simplicity, we'll only consider steel and aluminum, which constitute most metal in the household waste stream.

Steel includes cans as well as other large and small objects. More than 80 million tons of steel are recycled each year in North America, including the steel used to build the Sims MRF. After the glass is separated out, a large rotating magnet and a vibrating conveyor are used to pull out metals containing steel or iron (called "ferrous metals"), which fall onto a second conveyor below.

The ferrous metals then pass through a contraption called a Trommel, which is essentially a very large cylinder with 8-inch circular holes in its sides. Steel cans and other smaller pieces of ferrous materials pass through these holes and are then compacted into large bales. Approximately 300 tons of baled tin cans are shipped out weekly by rail and barge from the Sunset Park MRF to Sims Glass Plant in Jersey City, from where the bales are transported by train directly to steel mills (such as Nucor), most of which are located in the Midwestern U.S. At the mills the bales are de-tinned, then fed into furnaces and heated to 2800 deg. F. At that temperature the metal becomes molten and can be molded into new products through casting, hot rolling or cold rolling.

Chunks of ferrous materials too big to fit through the Trommel's 8-inch holes, including large items like refrigerators or car parts, proceed on the MRF's conveyor line to be loaded later onto barges and shipped to Sims in New Jersey; here they're passed through a huge shredder that can actually shred an entire car in ten seconds! Much of this second stream of steel is transported by train to domestic markets or to Port Elizabeth, from where it's shipped overseas.

Aluminum (cans, foil, miscellaneous): After glass and ferrous metals have been removed from the mixed recyclables, non-ferrous metals and plastic proceed on the conveyor to other eddy-current separators, which induce a magnetic force in the non-ferrous metals and allow them to be pulled from the waste stream. Any other non-ferrous metals and large chunks of aluminum are later removed from the conveyor belt by hand, then loaded on barges along with iron and steel, and shipped to Sims Glass Plant scrap yard in New Jersey.

A baler compacts aluminum cans and foil, which are then picked up by trucks and brought to domestic smelters in states such as Indiana, Missouri and Tennessee, or sent to Port Elizabeth for shipping to overseas processors. At the smelters the aluminum is heated to 1350 deg. F, converting it to a liquid. (To do the same with bauxite, or aluminum ore, requires a much higher

temperature and thus uses much more energy -- a primary reason why recycling aluminum is so important. The molten aluminum is poured into molds to make aluminum bars called ingots, most of which are transported to a rolling mill, which produces sheets of aluminum that are ultimately re-manufactured into new cans and other objects.

PLASTIC:

Plastic can only be recycled a limited number of times since it tends to degrade or yellow over time. Plastic polymers have been classified into seven different types, with #7 being a miscellaneous category. The number of the polymer is usually found on the bottom of the container, bottle or jug. As noted in previous commentaries, recycling of film plastics in the NYC metro area remains problematic; check plasticbaglaws.org for updated information.

For the sake of simplicity, we'll only discuss recycling of the two most common container plastics: PET (#1, polyethylene terephthalate) and HDPE (#2, high-density polyethylene), although the MRF also recycles LDPE (#4, low-density polyethylene), which is manually sorted, polypropylene (#5, most yogurt containers), and some #7 plastics.

Regarding the other two types of plastic: PVC (#3, polyvinyl chloride) bottles are no longer manufactured because melting them during the recycling process released quantities of poisonous chlorine. Unfortunately, Sims doesn't have a current market for polystyrene (#6), although it constitutes only a small fraction of the residential plastic waste steam.

After being separated from the other materials the PET and HDPE containers are sorted by type of material using optical sorters, which scan the molecular structure of the plastic and then trigger a blast of air to send each of them onto the appropriate conveyor belt.

PET (#1): Post-consumer containers (most water, juice and soda bottles) are sorted at the MRF from other types of plastic. Clear and colored PET are then baled together to be shipped by truck to processors in the Eastern United States and Canada.

After breaking open the bales the PET processors shred the bottles into small flakes. The flakes are washed to remove labels and dirt, and a "float-sink" tank is next used to separate the caps (which float) from the PET flakes (which sink). These flakes are then melted and extruded into plastic pellets. If the pellets are going to be made into drink bottles, they must also be sterilized by being heated. The recycled PET flakes are also used to produce fiber-fill insulation or spun into thread and yard to produce fabric for outer clothing, shoes, bags, hats, strapping tape, injection-molded engineering components and building materials.

HDPE (#2) (colored or translucent) is another commonly recycled plastic, being the material of most milk jugs, detergent containers, and some yogurt containers or tubs. Natural (translucent) HDPE is more valuable for the MRF to recover, since it can be re-manufactured into either natural or colored containers, whereas colored HDPE can only be recycled into similarly colored or darker colored containers. The MRF separates HDPE containers from other plastic resins using the same type of optical sorter that removes PET from the recyclables flow. In addition, natural HDPE is separated from colored HDPE containers by the use of another optical scanner that reacts to the near-infrared light spectrum. Once separated and sorted by color, HDPE containers are checked by quality control workers, mixed with manually recovered LDPE and baled. The

bales are then transported by truck to plastic processors, primarily in Pennsylvania, North Carolina and Alabama.

The plastic processor breaks open the bales and washes the containers to remove labels. Bales containing colored HDPE are further sorted into individual colors. In the same manner as PET, the containers are next shredded to produce flakes, which are washed again to remove remaining labels and dirt, and then melted and extruded into pellets. These pellets are then manufactured into new containers which are again sterilized if they will be re-formed into bottles or jugs that contain drinks. Some HDPE is also down-cycled (wherein the recycled material is of lower quality on functionality than the original) into plastic lumber, benches, trash receptacles, and other products.

A different plastic-recycling process that's increasingly popular utilizes heat compression in large rotating drums. In this process all types of mixed cleaned plastic are accepted, from containers to soft plastic bags to hard industrial waste. The most obvious benefit to this method is the fact that all plastic can be recycled together. However, the resultant material is usually of a lower quality and only suitable for applications such as plastic lumber.

PAPER:

Paper is easily recycled, although the paper fibers shorten over time, so some virgin material must occasionally be added to improve the quality of the material, particularly if the paper mill is producing high-grade office paper or corrugated cardboard (box board egg cartons are typically made of recycled material with shorter fibers). In spite of the relative ease of recycling, a great many of NYC's newspapers are still thrown into the trash rather than recycled. Recycling just a single run of the Sunday New York Times would save about 75,000 trees.

DSNY barges about half of its recycled paper and cardboard directly to Visy/Pratt in Staten Island and half to the Sunset Park MRF or other Sims locations in the Bronx or Queens. Most of the paper products originating in Manhattan are shipped from a pier on West 59th Street. Sims acts only as a transfer station for paper products; about half of the paper it receives is also sent to Visy/Pratt, this time by truck (they don't have space to accumulate quantities sufficient to barge). The rest is sold to various vendors, all in the New York City Metro area, some of whom sort it out into various grades, including office paper, newsprint and cardboard.

At Visy/Pratt on Staten Island, the recycled paper they receive isn't sorted into various grades. Mixed grades of paper and cardboard are loaded into huge vats, where they're made into a slurry. This slurry is dried and converted into large rolls of paper known as container board. Some of this container board is re-sold to manufacturers, and some is folded and glued into corrugated cardboard at Visy/Pratt. Corrugated cardboard consists of a fluted corrugated sheet that lies between two flat linerboards, all made of container board. The fluted sheet is created on flute lamination machines, also called corrugators. The corrugated sheets are then re-formed into corrugated cardboard boxes and containers of all sizes.

For more Information:

- Eadaoin Quinn, Education & Outreach, Sims Municipal Recycling
- Ars Technica video and article on Sims

- Sims tours
- Pratt Industries; tel-718-370-1114.

(return to top of document)

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COMMENTARY: NYC Sanitation Department (DSNY) Recycling Programs

The New York City Department of Sanitation (DSNY) runs five separate programs for collecting and recycling materials or goods. Below is a brief review of these programs.

A. RESIDENTIAL COLLECTION (paper and cardboard, metal, plastic, glass):

All residential buildings and many non-profit organizations are eligible for pickup of paper, cardboard, plastic, metal and glass by DSNY. However, if a non-profit rents space in a commercially-owned building, a commercial carter will do the pickup. You can check your collection schedule on the DSNY site.

Containers and Signs
DSNY does not supply recycling bins (unless the building is part of a pilot organics program) and so buildings are responsible for providing their own bins. Blue bins should be used for plastic, metal and glass recycling; white bins for paper and cardboard recycling; and black bins for garbage.

Signs should be posted above or on top of the bins. These signs can be ordered from DSNY.

1. Plastic, Metal and Glass (in blue plastic containers)

Plastic *Accepted*:
- plastic bottles, jugs, and jars; caps and lids
- rigid plastic food containers (such as yogurt, clamshell and other plastic take-out containers)
- rigid plastic non-food containers
- rigid plastic packaging (such as " blister-pack " and " clamshell " consumer packaging, acetate boxes)

- rigid plastic housewares (such as flower pots, mixing bowls, and plastic appliances)
- bulk rigid plastic (like crates, buckets, pails, furniture, large toys, and large appliances)
- food and beverage cartons (such as milk cartons); drink boxes
- CDs, DVDs, vinyl records, disks, and CD and DVD cases

Plastic *Not Accepted*:

- batteries (remove before recycling toys and small appliances)
- plastic bags, wrappers, pouches, squeeze tubes, foam
- video and audio cassettes

Metal *Accepted* (must be at least 50% metal):

- metal cans, caps and lids
- aluminum foil wrap and trays
- wires and connectors
- small metal items (such as wire hangers, pots, tools, curtain rods, etc.)
- large metal items (such as furniture, cabinets, and appliances)

Metal *Not Accepted*:

- batteries

Glass *Accepted*:

- bottles and jars

Glass *Not Accepted*:

- window glass, light bulbs

2. <u>Paper and Cardboard</u> (in white plastic containers)

Paper *Accepted:*

- newspapers, magazines, catalogs, white and colored paper (including paper with staples), envelopes (including window envelopes), paper bags, cardboard, wrapping paper, paperback books (discard hard cover books in the container with your regular trash, unless you take off the cover and binding)

Cardboard *Accepted:*

- cardboard egg cartons and trays; smooth and corrugated cardboard (including boxes); pizza boxes, paper cups (waxy lining is acceptable if the cups are empty and clean; plastic lids go in the blue bin)

***Not Accepted*:**

- paper with heavy wax or plastic coating, soiled or soft paper (such as toilet paper)

B. ELECTRONICS COLLECTION

Apartment buildings with 10 or more residential units are eligible for a free DSNY pickup in a program called e-cycleNYC. The first step in this process is to schedule a site visit.

Materials for collection can be stored in a closet or in an indoor container that DSNY will supply. DSNY will not place the containers in outside areas unless they are covered and secure. For pickups, the building manager or staff member can call (212) 437-4647 or email e-cycleNYC@dsny.nyc.gov. DSNY guarantees pickup within five business days.

***Accepted*:**

- TVs; VCRs, DVRs, and DVD players
- cable and satellite boxes; video game consoles
- computers, including small servers; monitors, laptops and their peripherals, such as keyboards, hard drives, mice, cables, etc.
- printers and scanners; fax machines
- small electronics, including tablets, mobile phones and MP3 players

***Not Accepted*:**

- appliances, batteries, and light bulbs

C. TEXTILE COLLECTION

re-fashioNYC is a nonprofit partnership between DSNY and Housing Works. They provide free pick-up of textiles from residential buildings (with 10 or more units), commercial businesses and non-profit organizations. Clothing and accessories donated through re-fashioNYC are sorted at the Housing Works warehouse in Queens. All proceeds from donations support the charitable mission of Housing Works to end the dual crises of homelessness and AIDS.

To request textile recycling in your building, click here.

DSNY will visit your building to discuss how many bins you need, what sizes are best, and where they should be placed. When your bin is full, call (212)-437-4678 for pickup (guaranteed within five business days). Tax receipts (for up to $250) are available.

***Accepted*:**

- clothing, including shoes, purses, gloves, scarves, hats and belts; towels, curtains, bedding and linens.

***Not Accepted*:**

- rags and scraps, pillows, comforters, luggage or carpeting

D. ORGANICS/FOOD WASTE COLLECTION

Food scraps, spoiled food, food-soiled paper, and yard trimmings and plants - collectively known as "organics" or "organic waste" - comprise almost one-third of the waste that the DSNY collects. New Yorkers can recycle organic waste by being part of the Organics Collection Pilot Program (which applies to only certain districts of New York City) or by applying to DSNY for collection from your individual building. You can also take your food scraps to a residential drop-off site such as your local Greenmarket (see the attached Hard-to-Recycle List) or even compost in your own backyard or at a community garden site (see Urban Greening Commentary).

There are currently no organics pilot collection programs in Northern Manhattan, but individual

buildings (consisting of ten or more units) or building complexes are eligible for organics pick-up. Morningside Gardens, a six-building, 980-unit coop just south of 125th Street, was one of the first high rise complexes to join the organics program. In this program, organic waste is dropped off by residents at a single collection point on the coop's property outside one of the buildings, and subsequently picked up by DSNY. After implementation of this program in 2013, GrowNYC and DSNY both performed waste audits at this complex and found significant rates of diversion from the NYC waste stream. Click here for more information.

E. OTHER DSNY PROGRAMS

1. SAFE Disposal Events and Sites:

SAFE Disposal Events usually occur once a year in each borough. At these events DSNY accepts all potentially harmful products including paint, oil, pharmaceuticals, pesticides, light bulbs, cleaners and other related materials and goods. Events are held, rain or shine, from 10 a.m. to 4 p.m. Only NYC residential waste is accepted at SAFE Disposal Events, and no commercial vehicles are allowed. Residents must provide proof of NYC residency, such as a NYS driver's license or utility bill (for more specific information check the website below).

The Special Waste Site in Manhattan at 74 Pike Slip (between Cherry and South Sts. under the Manhattan Bridge) accepts latex paint, motor oil and filters, fluorescent bulbs, batteries, thermostats and mercury-containing devices on a weekly basis. The site is open from 10 a.m. to 5 p.m. every Saturday, except on the last weekend of the month when it is only open on Friday. It is closed during legal holidays. There is also another special waste drop-off site in the South Bronx.

2. NYC Stuff Exchange

This program, called donateNYC, helps New Yorkers give or find various goods. Residents can use donateNYC to give or find second-hand goods; businesses and nonprofits can exchange used goods; and local reuse organizations can join the donateNYC Partnership. This program also provides support for New York City's reuse community, including nonprofit organizations and local reuse businesses.

Additional Information:

- DSNY Zero Waste, or call 311
- DSNY donateNYC
- DSNY re-fashioNYC
- DSNY Electronics for Residents
- DSNY SAFE Disposal Events

(return to top of document)

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COMMENTARY:
WATER QUALITY

Our Drinking Water

The New York City Water Supply System is quite extraordinary: Every day it provides one billion gallons of safe drinking water to more than 8.5 million residents of New York City as well as another 110 million gallons a day to about one million people living in outlying counties. In all, the New York City Water Supply System provides nearly half the population of New York State with high-quality drinking water.

Ninety percent of that water supply comes from six large reservoirs in the Catskill/Delaware watershed, which extends 125 miles northwest of the city and covers over one million acres; the rest comes from the Croton watershed in Westchester County. Two main water tunnels (or aqueducts) from the Catskill/Delaware system plunge far underneath the Hudson River in what is essentially a huge siphon, then join the Croton system at the Kensico Reservoir.

Because these tunnels were built a century ago, the City is now constructing a third water supply tunnel; when this is completed maintenance can be done on the first two. The City plans to spend $3.4 billion over the next five years for this as well as hundreds of other projects to fix water infrastructure.

The city's water main system is a 6,800-mile-long network of pipes, some of which are large enough for a man to stand inside. There is at least one water main underneath almost every street in New York City. Buildings in the City are then connected to the municipal system through smaller pipes called service lines.

As water travels over the surface of the land or through the ground, it can pick up a variety of potential contaminants, including dissolved naturally occurring minerals, microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants. Therefore, the NYC Department of Environmental Protection (DEP) carefully tests the water in the distribution system, in upstate feeder streams, and in reservoirs and wells. Certain water quality parameters are monitored continuously as the water enters the distribution system, and the DEP regularly tests drinking water quality at nearly 1,000 water quality sampling stations throughout New York City.

At the Kensico Reservoir robotic buoys transmit information about water quality. Chlorine, which kills bacteria, and fluoride, for dental health, are added at that point. The DEP also conducts analyses for a broad spectrum of microbiological, chemical, and physical measures of quality, including organic compounds, bacteria, heavy metals, chlorine, Florine, temperature, alkalinity, and a variety of other parameters. According to the City's annual water quality report for 2015, New York City complied with all state and federal chemical limits.

The City also regularly tests for lead in its water mains. It is estimated that 45,000 of the more than 836,000 service lines were made of lead; other service lines may have pipes that were joined using lead soldering. Piping in older buildings is also suspect. According to the DEP, all known lead service lines to City-owned properties -- including schools, libraries and parks -- were replaced from 2008 to 2010. The DEP continues to work to identify and replace any lead that remains in NYC buildings. If you're concerned about lead or other contaminants in your drinking water, get information from the DEP's site or call the Safe Drinking Water Hotline at 1-800-426-4791.

The Hudson River and Other NYC Waters

As we all know, the Hudson River has historically been quite polluted, although the situation on the West Side of Manhattan has improved since the construction of North River Sewage Treatment Plant. However, the situation is somewhat complex, and some sewage still enters the Hudson. Rainfall is channeled into a combined sewer system that also includes food waste, greywater and sewage, all of which is then treated along with raw sewage before being discharged into the river. When the system becomes overwhelmed with storm water, it triggers Combined Sewer Overflow (CSO) events. Concentrations of bacteria such as E. coli and Enterococcus, which are indicators of fecal contamination, have been shown to increase dramatically following storm events. Reducing the volume of CSO events is part of the long-term Mayoral plan and is critical to improving the environmental quality of City rivers and bays and to expanding their future recreational use.

Hudson River water is tested by government agencies, non-profit organizations, colleges and universities, and citizen volunteers. Testing sites on the Upper West Side include: Pier 1 at 70th Street; 79th Street (mid-channel), 100th Street; 125th Street Pier; 133rd Street Kayak Dock; North River Sewage Treatment Plant (145th Street), George Washington Bridge (mid-channel), and the Dyckman Street Beach/Inwood Kayak Club. The NYC Water Trail Association publishes water testing results every Friday evening throughout the boating season.

Riverkeeper, an organization dedicated to defending the Hudson River and its tributaries and protecting our drinking water supply, oversees the largest number of water testing sites in the New York City area. Working with Columbia and Sarah Lawrence Universities, as well as a network of volunteers, they test for Enterococcus, the leading indicator of fecal contamination, as well as dissolved oxygen content. To volunteer to test Hudson River water quality, contact Jen Benson at Riverkeeper (914-478-4501 x234; jbenson@riverkeeper.org) or e-mail water-quality@nycwatertrails.org. Sampling is generally done from May to October.

Fresh Water Watch is another organization that investigates the health of NYC waterways as well as others around the world. They have worked with Dr. Wade McGillis of Lamont-Doherty Earth Observatory and corporate partners such as HSBC to monitor the quality New York City

waterways, including the Hudson River. For more information see the Fresh Water Watch site or call 800-776-0188.

Because the Hudson River is a tidal estuary -- meaning it ebbs and flows with the ocean tide as well as running downstream from upstate -- it supports a biologically rich environment, making it an important ecosystem for a variety of aquatic species. For many key species it provides critical habitats and essential spawning and breeding grounds. The sea-level rise caused by global warming impacts this rich Hudson estuary. Sea level in the New York harbor is already 15 inches higher now than it was in 1850 and it is expected to rise another 11-21 inches by 2050, causing the potential for more flooding and habitat destruction.

The Hudson River's annual average water temperature has also increased by more than 2 degrees F since the late 1940's. This affects aquatic biodiversity and at times causes local species extinctions and may have other consequences as well. For example, it can alter stream metabolism and rates of nutrient cycling, reduce dissolved oxygen concentrations, and result in increased toxicity of certain environmental contaminants.

Another threat to water quality as well as the species that inhabit it is the proliferation of plastic waste, particularly bags, straws and Styrofoam. There are tens of millions of tons of plastic waste in and on our lakes, rivers and oceans. On average each of us discards about 20 single-use plastic bags every week, which totals about *9 billion bags a year in New York City alone* -- the majority of which are not recycled and are not biodegradable. Because they are so lightweight, discarded plastic bags, straws and Styrofoam are easily blown about by the wind and often washed to the shores of our waterways and then out to sea. This and other waste ends up both on top of and under the water and is time consuming and often expensive to clean up. To help alleviate this situation, there will be a volunteer shoreline cleanup on Saturday, September 17, from 10:30 a.m. to 3:30 p.m. (see Events, Other Environmental). For further information see New York Restoration Project, 254 West 31st Street, 212-333-2552.

Most of this plastic waste contamination could be avoided if people recycled more and used straws, Styrofoam and disposable plastic bags as little as possible. As mentioned in the *UWSR May/June Eco Letter* "Commentary", a bill mandating a 5-cent surcharge on single-use plastic bags was passed this spring by the NYC City Council, but unfortunately it's currently stalled at the state level.

Rainfall

Most rainfall is naturally somewhat acidic because of the carbon dioxide in the atmosphere, having an average pH of 5.6-5.7 (neutral water has a pH of 7). The rain that falls on Manhattan is actually even more acidic, with a pH of between 4 and 5. However, current Columbia University research demonstrates that water filtered through green-roof systems ends up being considerably less acidic. This is also true of water filtered by parks, community gardens and trees -- all these having the added benefits of improving air quality, absorbing the greenhouse gas CO2 and reducing summer temperatures. The soil itself reduces acidity (buffers it) because of the limestone and other alkaline rock particles in it. Plants growing in these natural systems provide further benefit by absorbing water and hence lessening the storm water drainage problem, particularly the above-mentioned Combined Sewer Overflow (CSO) events.

The Gaia Institute in the Bronx has been developing urban storm-water capture systems that utilize soil buffers and street-side plantings that are directly connected to the standard storm drains on city streets. Because of this direct connection, road and sidewalk drainage infrastructure moves storm water into contact with natural biological and geochemical filters and also adds to the water for plantings and keep it out of the combined storm/sewer system.

A guiding principle behind this and similar systems is to intercept and utilize water as close as possible to where it falls. This is particularly important during thunderstorms, which occur primarily during summer months. Various other strategies have been conceived to accomplish this. For example, one local community garden uses a collection system that captures and stores water that falls on the roof of an adjoining building. Also, as in the Gaia system, sidewalks could be designed to intercept rainfall and funnel water into tree pits, rather than around them and into drains. And dog barriers around these pits could be constructed from perforated or permeable materials.

What You Can Do

- Test your own drinking water. Both the Cornell Cooperative Extension and the New York State Department of Health (bpwsp@health.state.ny.us; 646-632-6403) can give advice or refer you to approved testing labs. Also, water testing kits are available from companies such as Hach Chemical.
- Report rust, or other discoloration in your water to the DEP at 718-595-7000.
- Report water pollution to Riverkeeper or call 1-800-21-RIVER, ext. 231.
- Minimize your use of plastic bags, straws and Styrofoam.
- Help the New York Restoration Project clean up our shoreline on September 17th.
- Volunteer with Riverkeeper or NYC Water Trail.

Additional Information:

- The State of the Hudson 2015
- Ground and drinking water (EPA)
- Fresh Water Watch
- New York City 2015 Drinking Water Supply and Quality Report
- New York City Watersheds: An Overview with Activities
- New York City Water Trail Association
- Riverkeeper Hudson River Data
- The River Project NYC
- Safe Drinking Water Hotline, 800-426-4791.
- Ocean Conservancy

(return to top of document)

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COMMENTARY
SOLAR ENERGY UTILIZATION

Introduction:

The same solar heat that can burn your skin at the beach radiates a daily average of four to five kilowatts of energy on each square meter of the earth's surface. Taken as a whole, our planet's surface receives quadrillions of kilowatts of solar energy each day, far more than we need for all our energy needs. It's impractical to capture all this energy, and there are conversion inefficiencies that reduce the amount available, but there's still plenty left. This solar energy can be used directly to heat water or building spaces, but today it's most commonly converted into electricity via photovoltaic (PV) cells. It can also be utilized indirectly in the form of wind or water power since both of these result from solar thermal processes. In this commentary we'll discuss only the direct uses of solar energy.

Because they were initially quite expensive, PV cells were first used in remote locations - where other sources of electricity were not readily available - for applications such as water pumping, highway lighting or signs, weather stations, maritime signals, and forest lookouts. As their cost decreased, these cells proved to be practical in small scale applications, such as powering watches, calculators, radios and other electronic devices. PV cells can also be assembled into modules or arrays of modules to produce domestic electricity or charge electric automobiles. Over the last 30 years or so, the cost has steadily declined while the efficiency of solar cells has risen. These days large PV power plants (composed of arrays of dozens or even hundreds of modules) are now cost-competitive with fossil fuel or nuclear generation of electric power.

Solar energy has been utilized to heat water primarily in residences or commercial buildings in more southerly regions. However, even in New York's relatively cold climate, solar water heaters can help provide hot water year-round. The economics of solar water heaters depends largely on the available incentives and on the type of fuel being replaced. Also, passive solar design has been increasingly employed around the country. Passive solar architecture includes placement of buildings to take the greatest advantage of solar energy, advanced window systems, use of thermal mass for heat storage, strategically located overhangs or setbacks, as well as other construction methods that increase or decrease the absorption or blocking of solar heat, depending on the season. These methods are intended to minimize outside energy usage for heating, cooling or lighting.

As solar energy has grown in popularity, it's had an increasing effect on our economy. Last year, the number of U.S. jobs in solar energy overtook those in oil and natural gas extraction for the first time. According to the International Renewable Energy Agency, employment in the U.S. solar business has recently risen 12 times faster than overall job creation.

On a Local Level

Through Governor Andrew Cuomo's NY-Sun initiative, New York State has already conducted several successful campaigns for community solarization. Almost 500 megawatts of photovoltaic panels have already been installed statewide, and three or four times that amount is in the works. The Governor plans to have half the state's power produced by renewable energy in 2030 (this would also include wind and hydro power).

The New York Solar Energy Society, based in the Bronx with membership across NY State, educates children and families about energy efficiency and renewable energy and also distributes *Green Energy Times* throughout NYC. Articles in this newsletter cover solar hot water, solar homes, retrofitting existing buildings and saving energy.

Although much of the installed photovoltaic power currently exists in upstate New York, there's a lot of horizontal (as well as vertical) space that could be used to capture solar energy in New York City. This include roof tops, vacant lots, landfills, industrial or commercial sites, public plazas, parking lots, piers and waterways, building walls, lampposts, signs, and so on. However, utilization of solar heat for energy production was minimal before the early 2000s. This was a result of barriers created by technical difficulties. inadequate policy initiatives, lack of coordination among City agencies and utilities, limited financial incentives, and insufficient standardization.

With this is mind, City University of New York (CUNY) developed a strategic solar plan for NYC in 2006. In creating the NYC Solar Partnership, they collaborated with the U.S. Department of Energy as well as with more than 30 other organizations and agencies, and conducted numerous workshops on these topics. Their work includes multiple reports, new tools such as the world's largest interactive solar map for NYC's one million rooftops and development of uniform permitting procedures for installing photovoltaics. They also provide information on financing, incentives, and zoning and net metering (net metering allows residential and commercial customers who generate their own electricity from solar power to feed electricity they do not use back into the grid and get credit for it).

Their NYC Solar Map estimates rooftop solar potential using a computer model that calculates the incoming direct and diffuse solar radiation for every square meter of the City of New York. This model is based on the position of the sun, overall atmospheric conditions, latitude and shading. This strategic solar plan also created Solar Empowerment Zones (now known as Strategic Zones) where solar power generation would provide the greatest benefits to utility electric distribution systems. In addition, CUNY worked with the NYC Solar Thermal Roundtable to produce "The NYC Solar Water Heating Roadmap," a report that creates a strategic plan for the future growth of a solar thermal market in the city. The result to date has been an exponential increase in solar production and solar jobs.

In April 2016 Mayor de Blasio introduced the Solarize NYC plan to help make solar energy more affordable. This new program allows communities to purchase solar power in blocs, saving up to 20 percent of the cost. Solarize NYC also plans to lend financial support, marketing advice and technical assistance to interested communities. The City has set a target of 250 solar panel installations on private property by 2025. The initiative is also intended to encourage developers to sell PV panels to community groups, as individual property owners often face difficulties when they try to install them on their own. This will apply to new construction as well as retrofitting existing buildings. The City has also been working with both solar developers and local utilities to resolve difficulties concerning pricing issues such as net metering (current net metering policies require utilities to buy surplus power from rooftop solar systems at retail rates).

City agencies are also getting on the solar bandwagon. The New York City Housing Authority, which provides apartments for over 400,000 low-income residents, announced that it would place PV panels on its roofs as early as next year. By 2025, the agency hopes to have added a sufficient number of solar panels to power 6,600 apartments. The Department of Education (DOE) plans to collaborate with the Department of Citywide Administrative Services to install solar panels on DOE buildings across the City. They'll also be partnering with Solar One (a local environmental education organization - see below) to instruct teachers, students and other community members about solar installations through workshops and training sessions.

As of 2016, hundreds of sites in NYC had utilized some form of solar energy; the cumulative capacity for installed photovoltaic projects was about 50 megawatts. Most of these installations are in the outer boroughs; there is currently only one in Manhattan, a 1.59 megawatt PV facility at NYC Lab Middle School For Collaborative Studies, 333 West 17th Street.

A sample of other nearby installations includes:

- Jetro Cash and Carry Restaurant Depot, Hunts Point section of the Bronx (1.56 megawatt rooftop solar PV project)
- Anheuser-Busch Warehouse, Hunts Point section of the Bronx (711 kilowatt rooftop solar PV project)
- Cornell Tech Campus on Roosevelt Island, scheduled to open in 2017, will include a 26-story passive solar residential tower as well as PV panels on the roofs of academic buildings.
- 951 Pacific Street, Brooklyn is the first passive-solar residence in NYC to be certified Net-Zero-Energy capable. It includes a rooftop PV system and many energy-efficient features, such as triple-glazed 'tilt and turn' windows and doors (more commonly used in Europe).

Click here for a list and map of NY State photovoltaic facilities currently in NYSERDA's database.

Some solar organizations based in Manhattan:

- Alt.Technica, 242 East 19th Street, New York, NY 10003; tel: (212) 260-0806;AAmon@alt-technica.com. Solar designer with an aesthetic approach to integrating sustainable energy into our built environment.

- Green Map System, 220A East 4th Street, New York, NY 10009; tel: (212) 674-1631. Mobile maps designed for smart phones or computers used to identify nearby renewable energy or environmental sites.
- Green Power Solutions, 121 East 24th Street, New York, NY 10010; tel: (718) 744-7625. Coordinates photovoltaic and solar thermal projects throughout the Northeast.
- Mpowered, 221 West 29th Street, #1105, New York, NY 10001; tel: 844-MPOWERD. Produces portable PV-powered lights that are inflatable.
- Solar One, 111 Eighth Avenue, New York, NY 10011; tel: (212) 505-6050. Clean energy and other environmental education.
- Urban Green Energy, 330 West 38th Street & 160 West End Avenue, New York, NY; tel: (917) 720-5685; info@urbangreenenergy.com. Full-service renewable energy systems, PV and wind-powered products, site assessment and design).

A list of other solar energy companies in the NYC area can be obtained athttp://www.yellowpages.com/new-york-ny/solar-power-companies.

What You Can Do

- Support any renewable energy legislation
- Buy PV-powered small electronics, e.g., calculators, watches, radios, lights
- Buy insulated window shades or drapes to control solar radiation and reduce both heating and air-conditioning loads. For more information, see our Energy Conservation Commentary.
- Get your electricity from a supplier that uses wind or hydro power (e.g., Con Ed Solutions, Green Mountain Power). For more information, see our Energy Conservation Commentary.
- Join the New York Solar Energy Society or the Northeast Sustainable Energy Association (NESEA) to learn about and support solar energy.

Further Information:

- City University of New York/Sustainable CUNY.
- Database of State Incentives for Renewables & Efficiency (DSIRE).
- Environmental Defense Fund, 257 Park Avenue South, New York, NY 10010; tel: (212) 505-2100; fax: (212) 505-2375.
- Natural Resources Defense Council, 40 West 20th Street, New York, NY 10011; tel: (212) 727- 2700; fax: (212) 727-1773; nrdcinfo@nrdc.org.
- NREL's PVWatts® Calculator.
- New York Solar Energy Society, 5270 Sycamore Avenue, Bronx, NY 10471.
- Northeast Sustainable Energy Association.
- Sane Energy Project; contact@saneenergyproject.org.
- Solar One, tel: (212) 505-6050.
- Solarize LES.

(return to top of document)

UWSR Eco Letter

May/June 2016

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY:
WASTE REDUCTION / ZERO WASTE

On Earth Day 2015, Mayor de Blasio announced the city's first Zero Waste plan, an effort to rein in the costs and risks associated with disposing of the more than 10,000 tons of discards generated each day in New York that are exported -- at great expense -- to out-of-state landfills and incinerators. Since about 40% of all fossil fuel usage and its climate impact result from the production of goods in the first place, we need to fundamentally change our consumption, re-use and repair habits so we reduce the volume and toxicity of the waste we generate. Reducing waste should be our first course of action - it's simpler and less expensive than the overall process of recycling, and it also gives us significant environmental and health benefits.

FOOD WASTE

Retailers and consumers discard about 140 billion pounds of food waste each year in the United States. Locally, about one-third (by weight) of the New York City residential waste stream is composed of organic material, mostly food waste. As this waste food rots in our landfills, it releases methane, a powerful greenhouse gas. But, even before food reaches our tables, its current production and distribution require consumption of large amounts of fossil fuel; animal manure lying in fields releases a significant amount of methane gas. These and other related factors contribute even more greenhouse gas to our atmosphere. *If we consider the whole farm-to-landfill cycle, the food waste generated on our planet releases more greenhouse gas to the atmosphere than any single country other than the U.S. and China.*

This cycle also creates additional air and water pollution and depletes nutrients from our soils. Furthermore, it's an economic issue: On average, a family of four in this country spends about $1,500 a year on food that they don't eat. Thus we have a sobering scenario in which 40% of our food is wasted at the same time that millions of poor people are going hungry in our own wealthy country.

Instead of being thrown away and becoming a source of global warming and pollution, this "waste" can be put to good use. In order to do this, we need to create incentives to reduce food waste and to utilize it for other purposes, such as animal feed or compost. We should also make sure that landfill owners capture the emitted gas and utilize it for energy, rather than just allowing it to be released into the atmosphere.

What can you do in the meantime?

- When buying fresh food, buy only what you can use - or pass it along to friends and neighbors - before it goes bad.
- Use the 'first-in-first-out' principle when stocking your refrigerator to minimize spoilage.
- Use leftovers to create new meals or soup stock.
- If food does go bad, compost food scraps in your local community garden or in your own backyard. If there is no convenient back yard or community garden (see our March/April Eco Letter for locations on the Upper West Side), it's likely you're now in walking distance from a local greenmarket where you can drop off scraps for compost.

For more information on local composting or greenmarkets contact:

- Grow NYC (http://www.grownyc.org/compost), 212-788-7964);
- Lower East Side Ecology (http://www.lesecologycenter.org/; 212-477-4022);
- NYC Compost Project (www.nyc.gov/wasteless/compost).

PACKAGING

Styrofoam

As we mentioned in our January/February *Eco Letter*, single-use, expanded polystyrene (also known as Styrofoam) will *not* be banned in New York City in the near future after a December third decision from the New York State Supreme Court's Appellate Division. Fierce resistance to the ban by the polystyrene industry probably doomed it to failure. NYC Sanitation Commissioner, Kathryn Garcia, is now required to reconsider the city's Styrofoam policy in conformity with the decision and issue a new determination. The New York City Council also has the option of taking up legislation once again.

Since they are very durable (a reason to keep them out of the garbage), Styrofoam peanuts can be re-used for packaging. Most Mail Boxes Etc. and UPS Stores (800-789-4623) accept Styrofoam peanuts and other packaging materials such as bubble wrap and plastic foam. This might also be true for other local businesses that do a lot of shipping. Cornstarch peanuts, which are dissolvable in water, are becoming more common, but they have yet to gain much of a toehold -- probably again due to the influence of the polystyrene industry.

It can be difficult to recycle larger, rigid pieces of Styrofoam packaging. There is no local Styrofoam recycling facility, but it's possible to ship them back to the Alliance of Foam Packaging Recyclers at 1298 Cronson Blvd, Suite 201, Crofton, MD 21114;http://www.epspackaging.org/; 410- 451-8340). Egg cartons are another big offender when it comes to non-recyclable Styrofoam. Whenever possible, buy eggs packed in recyclable paper cartons. If you must buy egg in Styrofoam cartons, try to donate them to local farmers either directly or via your local greenmarket.

Ecovative Design, an innovative company in upstate New York, has recently developed a mushroom-based product that can be grown to fit any space, much like Styrofoam, but with completely biodegradable materials (http://www.ecovativedesign.com/; 518-273-3753). This

material is just as lightweight and customizable as Styrofoam, but with much less negative environmental impact.

Plastic film

Whenever possible, avoid using plastic film (such as Saran Wrap) to cover or wrap food. Instead, store food in containers with covers or reusable zip-lock bags or wrap it in aluminum foil, which can then be washed and recycled. If you must use plastic film, you can recycle it along with plastic bags at most supermarkets. If your local supermarket is 5,000 or more square feet in size but doesn't display receptacles for plastic bags and film recycling, you can email recycling@dec.ny.gov or call (518) 402-8706; be sure to give the store name and location. For more information, seehttp://www.plasticfilmrecycling.org/ or http://www.dec.ny.gov/chemical/50042.html.

PLASTIC BAGS

Each of us discards an average of about twenty single-use plastic bags every week, which adds up to about *9 billion bags a year in New York City alone* - the majority of which are not recycled and are not biodegradable. Because they're so lightweight, discarded plastic bags are easily blown about by the wind -- we've all seen plastic bags stuck in trees or clogging storm and sewage drains, but they're also washed to the shores of our waterways and often out to sea and thus can cause harm to animals, fish and other marine-life. Supermarket plastic bags represent 2% of the city's waste stream and cost us millions of dollars each year to dispose of. Fortunately (as stated above), large NYC supermarkets are required by law to display recycling bins for bags and other plastic film in a prominent place in the store. (When you bring them, please remove any strings). Unfortunately, there's currently a very small market for recycled bags, and they can clog up the equipment used to process recyclable materials, so some plastic bags probably end up in the trash anyway.

After reviewing various legal and other challenges to getting rid of plastic bags, New York City recycling advocates and Council members drafted legislation for a per-bag fee at markets (in lieu of imposing an outright ban) to encourage shoppers to bring their own reusable bags. In the City Council, a plastic bag bill was sponsored by Councilmembers Brad Lander and Margaret Chin. The bill, *Intro 209A*, has been awaiting a vote by the New York City Council since 2014. In its current version, it would place a five-cent fee on the most common plastic and paper bags. The fee would be kept by the stores who sell the bags, not the city (so it's therefore not legally a tax, which would require state legislative approval). Other cities that have enacted a per-bag fee have found that it works well. This legislation has been held up in the City Council but will likely be considered again in early May.

Unfortunately, the plastic bag industry and their supporters have increasingly used poor people as a line of defense against the plastic bag bill, claiming that a fee on plastic bags would be a regressive, burdensome tax on them. I believe this is just a red herring. First of all, Councilman Lander, a former anti-poverty advocate, included an exemption for people who make purchases either with SNAP (food stamps) or WIC. Thus, most low-income New Yorkers would be exempt from the 5-cent fee. Also, low-income New Yorkers would likely adapt more quickly to a plastic bag fee than wealthier city residents (who might consider it an inconvenience); they're far more likely to bring their own shopping cart to the store since they can't afford a car or taxi, and

adding a few reusable bags would not be a major change. If a per-bag fee truly became a burden for some low-income residents, then local churches, political offices and other community organizations could distribute re-usable cloth bags for free; these cloth bags could even have the names of companies that want to advertise on them.

With a bit of imagination, this could be quite an easy transition. Even now, it's simple to save plastic bags after unloading groceries, then bring them along to re-use them again and again at the market. The plastic bag was only invented about 50 years ago; for thousands of years prior to that, people carried food items around in cloth bags and other containers. With climate change heralding an end to the era of fossil fuels, it might also be time to send most plastic bags the way of the dinosaurs. If you must use plastic bags, try to minimize the number you take out of the market; if the check-out person gives you too many, request fewer or simply return them. At home re-use the plastic bags for future shopping, as trash bin liners, as compost containers, for dog or cat poop, and so on.

WASTE REDUCTION IN SCHOOLS

It's also important to reduce the waste in our schools, while simultaneously educating future generations to do the same. This September, over 100 New York City public schools will help launch the Zero Waste Schools Initiative, a partnership between the NYC Department of Education (DOE), the NYC Department of Sanitation, and GrowNYC's Recycling Champions Program. In the first phase of the initiative's zero waste goals, the DOE's Office of Sustainability will work with these district schools to improve their recycling and organics separation, which is already required by New York City law. The schools chosen for the first round of the Zero Waste Schools initiative are already part of the Department of Sanitation's NYC Organics Collection program (for more information, look at past Commentaries on "Organic Waste" and "Recycling in Schools".

Students in the first group of Zero Waste Schools will receive lessons and instructional materials about the environment and the importance of maintaining environmentally sustainable lifestyles. The initiative will later focus on energy conservation, renewable energy and urban greening. For more information about the DOE's Sustainability Initiative, visit: http://schools.nyc.gov/community/facilities/sustainability/home/DOEHome/.

REPAIR, DONATE OR SWAP

Repair You can also reduce waste by repairing tools, kitchen utensils, small appliances, audio-video equipment and other items rather than discarding or recycling them.

- The itinerant Pop-Up Repair is situated from time to time in greenmarkets on the Upper West Side and Inwood. For more details contact them atfixit@popuprepair.com, http://popuprepair.com/**.**
- Local retail repair stores, such as Crown Services (2792 Broadway, 212-663-8968;http://www.crownsalesandservice.com/) can fix electronics, appliances and a variety of other goods.
- For those who like to repair things themselves, IFixit provides advice, components and repair manuals for almost anything, including computers and other electronic devices. Info: (866) 613-4948; https://www.ifixit.com/Info.

Donate used goods whenever possible. At least two organizations will pick-up from your home:

- The Salvation Army (https://satruck.org/; 212-757-2311)
- United War Veterans Council (http://www.uwvcrecycling.org/: 212-838-8982).

Big Reuse (http://www.bigreuse.org/) is a non-profit retail outlet for salvaged or surplus building materials, lighting and appliances. Their re-use centers, located in Brooklyn and Queens, accept donations seven days a week as well offering free pick up and deconstruction services for large donations. Computers and other electronic devices can also be donated.

nycRecycleMe.com accepts electronic goods for re-use or recycling (http://www.nycrecycleme.com/), including flat screen monitors or TVs, CD/DVD (audio/video/software) media and portable electronics such as phones or tablets (no CRT monitors or TV's please). Call or e-mail to schedule a pickup or get more information, 347-690-5670; nycrecycleme@gmail.com.

See our Hard-to-Recycle List for more information about thrifts stores, recyclers, and other organizations that accept used textiles, electronic items, small appliances and other goods for donation.

Swap or Loan

- GrowNYC hosts free Stop 'N' Swap events-at local greenmarkets and schools-where people can drop off unwanted clothes, books, shoes, toys and housewares, and others can grab them on a first come, first served basis.
- Check out The NYC Stuff Exchange (www.nyc.gov/stuffexchange) to find out where to get durable items sold, donated or repaired.
- Lincoln Square on the Upper West Side has a "Buy Nothing" Facebook page, a project of the Buy Nothing Project, (www.buynothingproject.org) that promotes the free exchange of items.
- You can also borrow and share tools, party supplies, board games and more from neighbors at Peerby.com or Neighborgoods.net (see below for links) or directly exchange goods among residents in your building or on your block.

OTHER IDEAS

- Avoid unnecessary purchasing of plastic items, as they're generally harder to recycle or discard than metal or glass, and plastic also decomposes very slowly. A recent local study found that there are at least 165 million particles of plastic floating in the waters surrounding NYC at any given time.
- If you have to buy plastic cups, plates or utensils, wash and then re-use them.
- Pass on children's plastic toys and clothing to relatives and friends or donate them to an organization that will assure their re-use.
- Bring any hazardous waste or otherwise non-recyclable items to the annual Safe Disposal Eventin your borough. The next one in Manhattan is on Sunday, June 26, 2016, 10 a.m.-4 p.m. at Columbia University Teachers College, 120th Street between Broadway & Amsterdam Avenue.

Info:http://www1.nyc.gov/assets/dsny/zerowaste/residents/safe-disposal-events.shtml.

For Additional Information

- www.buynothingproject.org
- http://citylimits.org/2016/02/09/cityviewshow-new-yorkers-can-reach-towards-zero-waste-this-year/
- www.grownyc.org
- http://www.newyorker.com/magazine/2016/05/02/saving-america-from-plastic-bags
- www.nyc.gov/stuffexchange
- www.peerby.com

(return to top of document)

UWSR Eco Letter
March/April 2016

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COMMENTARY:
URBAN GREENING & NEIGHBORHOOD BEAUTIFICATION

Sections: Tree planting & Maintenance | Neighborhood Beautification | Community Gardens
Green Roofs | Urban Agriculture & Vertical Gardens

Introduction
Urban greening and neighborhood beautification are beneficial to our community in many ways. Growing trees and other plants absorb carbon dioxide (CO2) and water and thus help mitigate the effects of climate change and flooding. They also absorb solar radiation and, in the case of trees, provide shade, both of which tend to lower the temperature in our city during hot summer days. Vegetation can provide aerial cooling through the plant-specific process of evapotranspiration (water loss through leaf pores); it also improves air quality and thereby enhances public health. Gardens add color to otherwise drab urban neighborhoods and can also be a source of locally grown food (again mitigating the effects of climate change by reducing the use of fuels to transport produce from distant locations). Beautification also discourages littering, as people are less likely to toss their refuse onto a clean street than one that's messy,

and increases property values. Following is an overview of these topics as well as providing ways you can contribute to the greening and beautification of your neighborhood.

1. Tree Planting and Maintenance

There are currently over five million trees growing in NYC (almost one for each person). In addition to the above benefits, planting trees makes the city more livable and is one of the most cost-effective ways to support and advance our infrastructure. Growing trees are a net absorber of CO2 (although dead trees, when composted or burned, return CO2to the atmosphere). They cool by evaporation, transpiration (the "breathing" of the leaves of the plant) and shading, and their roots aerate compacted soil.

The MillionTreesNYC initiative was conceived with the goal of planting new street trees wherever possible on the public right-of-way. Any property owner can request a free street tree by submitting a service request to the New York City Department of Parks. For more questions about Tree Giveaways, please contact NYRP at info@nyrp.org, visit the New York Restoration Project's site at https://www.nyrp.org/ or call (212) 333-2552. You can also plant a tree on your own by obtaining a tree planting permit and hiring a landscape contractor. Street trees are required to be planted at new building and major enlargement projects. Make sure you water regularly during the growing season and add some protective fencing to discourage dogs form urinating on the soil around the tree. Add mulch to your local street tree during winter to help protect roots from harm from de-icing salt. You can learn more about how to care for your tree(s) athttp://www.milliontreesnyc.org.

The NYC Parks Department will clean up all or part of a curbside tree that is damaged as a result of weather related activity or other causes. Call 311 to report a damaged tree, to request the removal of wood debris or to request tree pruning. Alternatively, visithttp://www.nycgovparks.org/services/forestry.

According to New York City law, property owners are responsible for maintaining the sidewalks adjacent to their properties. The Parks Department will provide advice on how to construct a sidewalk to prevent buckling caused by tree roots.

Aside from the Parks Department, at least two other organizations offer tree services for Upper Manhattan:

- Trees New York (100 Gold Street, www.treesny.org) offers (for a one-time fee) a Citizen Tree Pruning Course that teaches New York City residents how to maintain their own trees. This type of stewardship can greatly reduce a tree's vulnerability to pervasive urban threats such as pedestrian and vehicular traffic, drought and storms. They also provide information about tree grates and storm water runoff.
- Green Keepers (577 Columbus Avenue, greenkeepers@goddard.org) is Goddard Riverside's social purpose business, which works with local residential and block associations in the beautification of the New York urban landscape. Green Keepers are the primary providers of tree pit renovation and reconditioning in the city, as well as improving our local environment. They also provide horticultural, sanitation and non-toxic pest control services for a list of clients that includes the Broadway Malls and Riverside Park.

2. Neighborhood Beautification
Founded in 1980, the Broadway Mall Association (www.broadwaymall.org) became a not-for-profit organization in 1987. For over 30 years it has worked with community members, other nonprofits, and the NYC Department of Parks to beautify the malls and make Broadway a healthier, greener, and more beautiful place. The malls they maintain run from 70th to 168th Streets and, taken together, essentially create a 10.6-acre parkland. BMA contracts with landscape professionals and community partners to plant annuals in the Spring, bulbs in the Fall, and provides bimonthly maintenance for trees and other plants, supplementing services provided by the NYC Department of Parks & Recreation.

The West 80s Neighborhood Association (www.west80s.org), along with other environmental and political groups, sponsors an annual Neighborhood Cleanup and Tree Bed Beautification Event where you can get mulch and a tree-care tools gift bag (one per family) that includes a beautiful double-sided "curb your dog" tree bed sign. See the Events Listing below under Urban Greening for details about the time and location of this year's event.

3. Community Gardens
Community gardens control urban temperatures, protecting us from extreme heat and cold, and help prevent flooding since the porous soil in gardens absorbs run-off rainwater. They also provide urban biodiversity and habitats for wildlife, and improve human health both psychologically and physically. Most of the gardens are located on vacant lots formerly occupied by brownstones and other smaller buildings. Two major organizations are involved in developing and maintaining local community gardens, Green Thumb and GrowNYC.

1. Green Thumb (http://www.greenthumbnyc.org/) is part of the NYC Parks Department and has been providing programming and material support to community gardens in New York City since 1970. The majority of the 600 Green Thumb gardens, once derelict vacant lots, have been renovated by volunteers. Workshops covering gardening basics as well as advanced farming techniques are held monthly throughout the year.

2. GrowNYC (http://www.grownyc.org/openspace) builds and sustains community gardens, urban farms, school gardens, and rainwater harvesting systems across New York City. To date, GrowNYC has built over 80 gardens and supported many more through tool loans, volunteers days, fact sheets, technical assistance and an annual plant sale (in late April 2016 in the Bronx and Brooklyn; see the GrowNYC website for details). GrowNYC's Green Infrastructure Toolkit is designed to educate homeowners, community gardeners and others interested in storm water management techniques that can help minimize the effects of rainfall on our combined storm/sewage system and other places that experience flooding and storm water problems. The Grow Truck Program loans out both specialized and common manual garden tools and delivers them along with plants, soil, or other garden supplies.

Grow to Learn is GrowNYC's citywide school garden initiative that was established in partnership with The Mayor's Fund to Advance NYC in 2010. Working alongside partners from NYC Parks Department's Green Thumb division and the Department of Education's Office of School Food, Grow to Learn inspires, facilitates and promotes the creation of a sustainable school garden in every public school across New York City.

Community Gardens on the Upper West Side include:

- West 87th Street Community Garden was founded in 1997 and occupies over 4,000 square feet at 55-57 West 87th Street. This flower garden, located between Central Park West and Columbus Avenue, has a toolshed, round tables, benches and a play area for children; movies are shown in warmer months. It's hosted by Green Thumb, http://www.greenthumbnyc.org/.
- West Side Community Garden, 142 West 89th Street, was founded in 1976 on a formerly trash-strewn 89,000-square-foot vacant lot on Columbus Avenue that had been slated for an urban renewal project. Groundbreaking took place in October 1987, and the land for the current site was deeded to the garden in 1989. The current design incorporates a floral amphitheater and public seating area, as well as individual plots cared for by local residents. Vegetables, herbs and flowers are grown here. Info: (212) 316-5490; http://www.westsidecommunitygarden.org.
- 91st Street Community Garden is located in Riverside Park at the north end of the Promenade (below the Soldiers and Sailors Monument). This 7,000-square-foot garden was started in 1981 by many of the same people involved in the Lotus Garden (see below). A variety of perennial and annul flowering plants grow here, as well as some herbs and shrubs. There is an open house each Saturday during the warmer months from 10 a.m. until noon, and toilet facilities are located nearby. Since 1984 this garden has been maintained by a group called the Garden People, who assign plots to people who are willing to cultivate and water them regularly. For information, see http://www.thegardenpeople.org/. To volunteer, send a note with your phone number to The Garden People, PO Box 367, New York, NY 10024 or email them at thegardenpeople@hotmail.org.
- Lotus Garden, about 7,000 square feet, is now located on the roof of a parking garage just west of Broadway on 97th Street. The garage occupies the former of the Broadway Community Garden (started in 1977). When local residents learned that this garden was slated for development, they joined with block associations to form a committee, led by community activists Carrie Maher and Mark Greenwald. They worked with would-be real estate developer William Zeckendorf, Jr. and persuaded him to transform this neighborhood green space into a rooftop garden. The Lotus Garden is open to the public every Sunday afternoon, from the second week in April through the first week November, between 1 and 4 p.m., weather permitting. However, volunteer members have keys and access to the garden during daylight hours, seven days a week. For information seehttp://www.thelotusgarden.org.
- West 104th Street Garden, founded in 1993, is located between Manhattan Avenue and Central Park West. It is composed of two lots, both about 70 feet wide and 100 feet deep. In addition to flower and vegetable beds, the garden offers a shady gazebo, two productive peach trees, and open space for meetings, social events and performances. There's also a large communal herb garden, a patio for barbecuing and a rose arbor dedicated to the memory of Jesse Crawford, one of the chief organizers of the garden. Some of the communal beds are cooperatively tended by members, and some are assigned to individual members. The garden is overseen by Green Thumb. For information, see http://west104garden.org andhttp://www.greenthumbnyc.org/.
- La Perla Garden, named after a ghetto in San Juan, Puerto Rico, is located on a lotat 76-80 West 105th Street. Flowers, vegetables and trees are grown on a space of roughly 5,000 square feet. It contains personal gardening plots, tables and benches, as well as a stage for musical performance and an outdoor gallery. For information, see www.laperlagarden.org or email info@laperlagarden.org.

- Mobilization for Change Garden, founded in 1995 at 955 Columbus Avenue on the southeast corner at 107th Street, occupies a vacant lot about 75 feet wide and 25 feet deep. Vegetables, herbs and flowers are grown in this space, which also offers concerts during the summer. Hosted by Green Thumbhttp://www.greenthumbnyc.org/.
- West 111th Street People's Garden, founded in 1988, is on the northwest corner of 111th Street and Amsterdam Avenue. This garden, which grows flowers and shrubs, is hosted by Green Thumb, http://www.greenthumbnyc.org/.
- 227 West 115th Street Garden specializes in vegetables and herbs. A 1,900- square foot community garden in the heart of West Harlem, it was founded in 2015 with the help of GrowNYC (http://www.grownyc.org/openspace). The garden is used by neighbors, children, and community groups for growing food, celebrating holiday events and other communal gatherings.
- PS 76 Garden at 203 West 120th Street has vegetables, herbs, and flower beds in the front of the garden, an arbor with storage bins, perennials along the fences, picnic tables and a mural, and a small stage and lawn in the back. School teachers bring students into the garden as often as possible. The garden, supported by GrowNYC (http://www.grownyc.org/openspace), was built in 2002 as a replacement for the Garden of Love, formerly on 119th Street, which was bulldozed by the City in 1998.

4. Green Roofs

Green roofs are defined as vegetation-covered roof surfaces. Rooftops constitute about 20% of NYC's horizontal surface area - a surface area roughly equivalent to the total area of all of our city parks. Utilizing this surface to create green roofs has many advantages: Green roofs

- absorb carbon dioxide;
- hold water that would otherwise run off and, during periods of heavy precipitation, can overload our storm/sewer system;
- reduce the heat load on buildings during the summer and provide insulation to keep them warmer during the winter; and
- enhance biodiversity by providing a habitat for creatures such as birds, insects and worms.

Stuart Gaffin, a scientist at the Columbia University Earth Institute, has been developing green roofs in NYC for the past 10 years as well as conducting research on their effects on the ambient climate and their potential mitigation of global warming. These green roofs are in many NYC locations, including one at Lincoln Center and on local schools. For more information or advice in this area, contact Stuart at srg43@columbia.edu.

The Green Roof Tax Abatement Program (part of the NYC Department of Buildings) provides a one-time property tax abatement for properties in NYC that have green roofs. The tax abatement is equal to $4.50 per square foot of green roof space-capped at whichever is less: $100,000 or the amount of property taxes due for the building that tax year. Construction must have begun on or after August 5, 2008, and at least 50% of the roof space must be covered by green roof. For further information seehttp://www.nyc.gov/html/gbee/html/incentives/roof.shtml.

If you're thinking about starting a green roof, be sure to take into consideration building codes, the potential for leakage, and the weight loads of garden beds, soil and water. Some research

has been done in which the inert component of the soil (about 95% of its weight) is composed of lightweight materials such as pulverized Styrofoam, rather than clay or sand. Paul Mankiewicz of The Gaia Institute (www.thegaiainstitute.org) has been working on lightweight soils for over twenty years, and these lightweight soils have been incorporated into green roofs on Albert Einstein Medical College and on St. Simon Stock School, both in the Bronx.

5. Urban Agriculture/Vertical Gardens

In our opinion, it's time to break our habit of purchasing fruits, vegetables and herbs that are grown thousands of miles away when many of them can be raised just as well in our own city. The benefits of moving in this direction are huge: air pollution reduction, CO2 mitigation, fresher and more nutritious produce, as well as a boost to our local economy. With this in mind, GrowNYC's FARMroots program conducts a training course for aspiring as well as experienced farmers. Students learn the skills and business acumen necessary to start their own farm businesses. You can get more information atwww.grownyc.org/farmroots.

Grow NYC's Governors Island Teaching Garden (8,000 sq. ft.) is open to students in the warmer months and gives them the opportunity to plant, water, harvest and cook the garden's wide array of vegetables, herbs and fruit. It's also open to the general public when Governors Island is. It features over 20 vegetable beds made from recycled plastic lumber, an outdoor kitchen, a large solar oven, a high tunnel greenhouse, fruit trees and rainwater harvesting systems.

Citywide, a fledgling urban agriculture infrastructure already exists. There are several urban, vegetable- and/or herb-growing gardens or greenhouses in NYC, some of which are on roof tops. For example, Brooklyn Grange (http://brooklyngrangefarm.com/), the leading rooftop farming and intensive green roofing business in the US, grows over 50,000 pounds of organically-cultivated produce each year. Another large rooftop grower is Gotham Greens (www.gothamgreens.com), which has built large, 100- percent-clean-energy-powered greenhouses that produce vegetables and herbs in Brooklyn and Queens.

Vertical farming - the growing of crops up rather than out in a closed stacked system- is another promising solution to the drawbacks of traditional agriculture in NYC. Compared to traditional agriculture, vertical farming uses less water and much less land, while harvesting up to 80% more per unit of land area. It allows farmers to produce crops year-round because environmental factors are more controlled, including the change of seasons. This is a new technology, however, so some questions remain unanswered; e.g., how much additional energy is required; how does using lightweight soils compare to using hydroponics; does it produce additional water or soil pollution?

Trees New York (see below) has started a FruitTrees New York program, whose purpose is to plant urban orchards. They've created one at the Pleasant Village Community Garden in East Harlem. But this doesn't need to be limited to fruit trees; for example, nuts such as Hazel or Black Walnut grow perfectly well in this climate and are rich in protein. Whether they are in an orchard or nut-tree grove, these trees utilize space efficiently, provide shade and help to mitigate the rise in CO2.

Sources of Information

- Broadway Malls Association, 2095 Broadway, 212-491-6470;www.broadwaymall.org; info@broadwaymall.org
- Gaia Institute, Bronx NY, www.thegaiainstitute.org, 718-885-1906
- Green Guerillas, 232 East 11th Street, 212-594-2115;http://www.greenguerillas.org; info@nycgreens.org
- Green Keepers, 577 Columbus Avenue, 646-505-1088; greenkeepers@goddard.org
- Green Thumb, 100 Gold Street, 212-602-5300; http://www.greenthumbnyc.org/;greenthumbinfo@parks.nyc.gov
- Grow NYC, 51 Chambers Street, 212-788-7900; www.grownyc.org;http://www.grownyc.org/openspace
- Lower East Side Ecology, PO Box 20488, New York, NY 10009; 212-477-4022;http://www.lesecologycenter.org/
- New York City Department of Parks & Recreation, The Arsenal, Central Park, 830 Fifth Avenue; 311; http://www.nycgovparks.org/
- Riverside Park Conservancy, 475 Riverside Drive, 212-870-3070;https://riversideparknyc.org; mail@riversideparknyc.org
- Trees New York, 100 Gold Street, Suite 3100, 212-227-1887; www.treesny.org;info@treesny.org
- Urban Green Council, 20 Broad Street, (212) 514-9385;http://urbangreencouncil.org/; info@urbangreencouncil.org

(return to top of document)

UWSR Eco Letter

January/February 2016

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COMMENTARY: RECYCLING UPDATES

Recycling in New York City continues to progress, and the following summary is intended to help you stay abreast of what's happened in the past year and to remind you of some other important developments we've mentioned previously.

Electronics

Although they constitute a small portion of the waste stream by volume, computers and electronics contribute about 70% of the heavy metals added to landfills. Since April 1, 2015, residential buildings can be fined $100 every time electronic goods are put into the building's

trash. According to New York State Law (see http://www.dec.ny.gov/), the following items are specifically banned from disposal in trash in New York State:

- Televisions, including cathode ray tubes
- TV peripherals, including any permanently attached cable or wiring
- Computer peripherals, including any permanently attached cable or wiring
- Monitors
- Laptops
- Electronic keyboards
- Mice and other pointing devices
- Fax machines, document scanners, and printers that are meant for use with a computer and weigh less than 100 lbs.
- VCRs
- Digital video recorders, DVD players, digital converter boxes
- Cable or satellite receivers
- Electronic or video game consoles
- Small-scale servers
- Portable devices, including any permanently attached cable or wiring
- Portable digital music players

Fortunately, you have several options for recycling or donating used electronic goods.

- *Lower East Side Ecology*, (212-477-4022; www.lesecologycenter.org) hosts community E-waste recycling events during the year throughout Manhattan. They also operate a permanent E-waste collection center at 469 President Street in Brooklyn on Tuesdays through Saturdays. Call the collection center at (718) 858-8777 in advance for hours, materials accepted and other relevant information. All told, they collected over one million pounds of used electronic goods in 2015.
- Residential buildings with ten or more units are eligible for a free pickup of E-waste as part of the *Department of Sanitation's (DSNY) e-cycle NYC program*, which is now accessible to one million city residents. Electronic goods (including batteries) can also be dropped off at the Manhattan hazardous waste site at 74 Pike Slip between Cherry Street and South Street under the Manhattan Bridge. This site is open from 10 a.m. to 5 p.m. every Saturday and the last Friday of the month. Sites are closed on legal holidays. (tel) 311; www.nyc.gov/ecycle.)
- Some *retail stores* accept computers and other electronic goods for recycling, including Best Buy, Staples, Goodwill and Salvation Army. For example, Best Buy (www.bestbuy.com/recycling) takes a wide variety of electronic equipment. This includes computers and peripherals, video and audio equipment, ink and toner cartridges, rechargeable batteries, cameras, audio and visual equipment, as well as some appliances such as fans, vacuum cleaners and hairdryers. Call your local store before you bring in any items to find out specifically what they accept.
- *Electronic recycling options online* are www.amazon.com/trade-in (where you can get a store credit) and www.gazelle.com (which both buys and sells electronic equipment).

For more information and other options, see our attached Hard-to-Recycle List or visitwww.nyc.gov/zerowaste.

In addition, New York State law requires all stores selling cell phones to accept up to 10 cell phones from any person. You can also support a cause by recycling or refurbishing your old phone through many charitable organizations.

Rechargeable batteries are also prohibited from being put in household garbage. Instead, return them to any local store that sells the same type of battery. For information on how to recycle CFLs, non-rechargeable batteries, and other household hazardous waste, see our attached Hard-to-Recycle List.

Textiles

Every year NYC residents throw out approximately 200,000 tons of clothing, towels, blankets, curtains, shoes, handbags, belts, and other textiles. Although more and more of these materials are gradually being recycled, they still only constitute about 15% of post-consumer textile waste. The remaining 85% continues to go into the trash, so there's still a lot of work to be done.

The two major textile pick-up services in NYC are Wearable Collections (www.wearablecollections.com) and re-fashion NYC (www.nyc.gov/refashion). Wearable Collections picks up textiles from over 200 residential buildings, 31 Greenmarket sites, as well as collection drives at street fairs, schools, churches and other community organizations. They have collected over nine million pounds of clothing from Greenmarket sites alone since 2009. Clothing and accessories donated through re-fashion NYC's building recycling program are sorted at the Housing Works warehouse in Queens and help to support this non-profit organization's mission. More information about options for textile recycling (such as thrift stores and web-based services) is listed in the attached Hard-to-Recycle List.

Organics

DSNY's annual Christmas tree curbside collection begins Monday, January 4th, and runs through Friday, January 15th. City residents should remove all tree stands, tinsel, lights and ornaments from trees before putting them out for collection. Clean, non-bagged Christmas trees left on the curb will be chipped, mixed with leaves, and recycled into rich compost for the City's parks, institutions, and community gardens.

There has been a dramatic increase in the amount of NYC's organic waste that's recycled (usually composted) in recent years, although most of it is still put out with our garbage. The organics generated include food waste and yard waste, as well as Christmas trees. Three primary organizations recycle organic waste in NYC:

- Lower East Side Ecology has been involved in composting since 1990. In addition to some compost collection, they run programs that educate New Yorkers of all ages about composting through workshops, site tours, and classes, information tables, and speaking opportunities. This includes the Master Composter Certificate program, which trains a core group of ambassadors every year to develop, maintain, and revitalize community composting projects. For more information, see www.lesecologycenter.org.

- Grow NYC (http://www.grownyc.org) collects 20 tons of food scraps each week at its Greenmarket drop-off sites (see the attached Hard-to-Recycle List for nearby locations. Much of this is picked up by the Department of Sanitation.
- DSNY now picks up organic waste in residential buildings that have 10 or more units in Upper Manhattan and throughout NYC. In addition to the materials listed above collected at the Greenmarkets, DSNY will accept eggs, dairy products, meat, fish, bones, food-soiled paper, and yard waste (leaves, grass clippings, etc.) (http://www1.nyc.gov/assets/dsny/zerowaste/residents/food-scraps-and-yard-waste.shtml).
- The de Blasio administration has announced a proposal to require large-scale commercial food establishments to separate organic waste. Materials diverted from landfills will be composted or used to create methane for fuel through anaerobic digestion. Businesses required to participate in this program will include:
    - All food service establishments in hotels with 150 or more rooms;
    - All food service vendors in arenas and stadiums with seating capacity of at least 15,000 people;
    - Food manufacturers with a floor area of at least 25,000 square feet; and
    - Food wholesalers with a floor area of at least 20,000 square feet.

The proposed rules will be subject to a public hearing and comment period and would take effect six months after they are adopted. From that point, there will be a six-month grace period before any fines can be imposed.

Paper, Plastic, Metal and Glass

The Morningside Heights /West Harlem Sanitation Coalition will work with supers, tenants or community groups to give a short, hands-on recycling workshop based on what DSNY currently accepts. Contact Joan Levine: jslevine100@msn.com.

In September 2015 the NYC Department of Education replaced styrofoam cafeteria trays with compostable paper trays in all of its schools. However, there will be no ban on expanded polystyrene foam (EPS) in New York City for the foreseeable future after a December 3rd decision from the New York State Supreme Court's Appellate Division. New York City Sanitation Commissioner, Kathryn Garcia, is now required to reconsider the city's EPS policy in conformity with the decision and issue a new determination. The New York City Council also has the option of taking up legislation once again.

We urge you to support City Council Bill, Intro. 209-2014, which would place 10-cent fees on single-use paper and plastic bags (with certain exemptions). More information is available at www.bagitnyc.org.

Miscellaneous

- Roughly speaking, the New York City residential waste stream (by weight) is composed of one-third paper goods; one-third organic material; 10% textiles, furniture and electronic goods; and the remainder construction, hazardous and miscellaneous waste. Thus it is theoretically possible to recycle well over half of the waste we produce, but factors such as a lack of individual participation or sufficient infrastructure have limited actual recycling and reuse to a far lower percentage. Our diversity of residential

building types presents a particular challenge. In order to make the necessary changes we need more legislation, more collective and individual involvement, and more money spent by the City on recycling and re-use.

DSNY is the world's largest sanitation department, collecting more than 10,500 tons of residential and institutional garbage and 1,760 tons of recyclables every day. NYC businesses generate another 13,000 tons of garbage daily, which is collected by private carting companies. This amounts to a staggering total of about nine million tons per year, about half of which is collected by DSNY. Since waste and recyclables originate from buildings ranging from single-family homes to huge residential towers, the collection of waste and recyclables is not only a huge job but a very complex one. In addition, DSNY is responsible for clearing litter, snow and ice from some 6,000 miles of our streets, as well as removing debris from vacant lots and clearing abandoned vehicles.

New York City now spends about $350 million per year on waste disposal, much of which is exported to landfills outside the city. To lessen this expense and keep our city cleaner, Mayor de Blasio has announced a goal of sending zero waste to any landfills by 2030. To achieve this, DSNY is expanding programs, enhancing outreach, and exploring new diversion strategies. NYC Recycles is now called NYC Zero Waste. More information will be released later. To find out more, see http://www1.nyc.gov/assets/dsny/zerowaste/residents.shtml.

- An article entitled :"How and Why to Get to Zero Waste," by Lisa DiCaprio and Melissa Elstein" was published in the November 24th issue of the *West Side Spirit*. This article summarizes the proceedings of a November 10th forum and can be read at www.west80s.org and clicking on the In The News tab.

- All NYC schools are mandated to recycle by Local Law 19 (passed in 1989). For the fiscal year from July 2014 to June 2015, about 13,260 tons of school waste were recycled. 53% of that total consisted of paper products, 37% of organic waste (mainly food), and the remaining 10% of plastic metal and glass. Organic waste is the fastest-growing component of this recycling program.

- Pop-up-Repair can fix, shine, polish, alter, sharpen almost anything-knives, chairs, necklaces, gloves, etc. For more information see www.popuprepair.com or e-mail them at fixit@popuprepair.com.

Other Resources (see also links in text above)
www.nyc.gov/zerowaste
http://www.grownyc.org/
www.lesecologycenter.org

(return to top of document)

UWSR Eco Letter

November/December 2015

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COMMENTARY: RECYCLING IN SCHOOLS

Since residential and school recycling are at times co-mingled in NYC Sanitation (DSNY) collection trucks, it's possible to only estimate the amount of waste produced in our schools. But that amount is considerable. A recent DSNY waste composition study reported the following distribution in the NYC school waste stream: 40% paper, 40% food waste and soiled paper; 10% metal-glass-plastic, and 10% garbage. Unfortunately, electronics, fluorescent bulbs, rechargeable batteries, and other hazardous waste items require special handling and disposal, and can't go into regular recycling or trash (see our Hard-to-Recycle List for more information on this). The good news is that an increasing amount of that school garbage is being diverted from the NYC waste stream and subsequently recycled. For the fiscal year from July 2014 to June 2015 about 13,260 tons of school waste were recycled. 53% of that total consisted of paper products, 37% of organic waste (mainly food), and the remaining 10% of plastic, metal and glass. This commentary focuses on how the DSNY and other groups are working to increase the amount of school waste diverted for recycling as well as how you might participate in this effort.

The D3 Green Schools Group was formed in late 2009 by like-minded parents who meet regularly to share ideas about sustainability issues in Upper West Side schools including recycling, energy reduction, gardens and other environmental areas. D3 Green Schools Group was responsible for developing the school organic waste pilot program described below ("D3" stands for "District 3," the school district that runs from West 59th to West 121st Street). They also conduct tours of environmental facilities, which have included the Sims/DSNY plant in Sunset Park, Brooklyn, the DEP Digester Eggs in Greenpoint, Brooklyn, as well as green roofs and photovoltaic installations on top of schools. For more information or to learn about meetings, tours and other resources, contact co-chairs Megan Nordgren (megnor72@yahoo.com) or Lisa Maller (lmaller.nyc@gmail.com). If you'd like to join the group's list-serve, send an email to d3greenschools-subscribe@yahoogroups.com.

At the initiation of the D3 Green Schools Group, eight New York City public schools housed in four buildings in District 3 on Manhattan's Upper West Side launched a four-month composting pilot program on February 27, 2012 to divert food waste (including meat and dairy), kitchen scraps, and sugar cane (bagasse) food service trays from their cafeterias and separate the organic waste from other recyclables such as plastic utensils and cups. The eight schools, with a total of 3,628 students, included:

- PS 199 (270 West 70th Street);
- PS 166 (132 West 89 Street);
- PS 334, PS 452, and MS 245 (all located at 100 West 77 Street); and
- PS 333, MS 256, and MS 258 (on the Joan of Arc campus, 154 West 93 Street).

Edward A. Reynolds West Side High School (140 West 102nd Street), which had been composting food waste and paper plates since November 2011, was not officially part of the pilot.

IESI, a private waste hauler, agreed to collect the materials daily and deliver the organic waste to the Peninsula industrial composting facility in Delaware at no cost during the four-month pilot program. By switching to compostable sugar cane trays, the schools eliminated more than 1,900 styrofoam trays from the waste stream daily. From February 27 to June 27, 2012, the diversion of trays and food waste resulted in an 85% overall reduction of cafeteria garbage by volume. Through intensive education, the schools also dramatically increased the capture of recyclables in the cafeteria. After this pilot program was completed, the D3 group convinced the DSNY to collect organics from schools. The following school year the DSNY expanded the number of schools in the organics collection program and sent DSNY trucks to collect the organic waste.

For more information on the original D3 organics pilot program, please seewww.greenschoolsny.com .

All Manhattan public schools and about 40% of public schools citywide now receive organics collection. Private schools are also eligible if they are in a current organics collection area, currently receive DSNY pickup, are non-profit, are not located in a commercial building, and don't use a private food vendor. For more information, visit the DSNY websites listed below.

In 2014 and 2015, the **DSNY Organic Waste Program** conducted three separate audits of 26 NYC schools, nine of which are in Manhattan**.** Since this program was initiated, the fraction of organics recycled (as a percentage of total recycling tonnage) has increased rapidly and will likely soon comprise the largest portion of school recycling. As a matter of fact, organics already constituted about 51% of the material recycled from the nine Manhattan schools in the latest audit. This program received a boost in September 2015 when the NYC Department of Education replaced styrofoam cafeteria trays with compostable paper trays in all of its NYC schools. In schools that receive NYC organics collection, the trays go right in the organics bin, along with food scraps. Custodial and kitchen-staff tip sheets and checklists for organic waste are included in the school recycling guide discussed below.

To work correctly, this program requires strong backing from the school principals and custodians. It also necessarily involves vigilant supervision of students as they separate organics from garbage or other recyclables (e.g., plastic utensils - sadly, most schools no longer have dishwashers so utensils can't be washed). Outside help from parents or other adults is very important to supplement the efforts of a busy staff. You can make a difference here in ensuring

that this program continues and expands. To volunteer contact the principal at your local school.

DSNY School Recycling Guide: The Sanitation Department also offers collection of other recyclable material for all NYC schools and colleges (public or private). Materials picked up are plastic, metal, glass and paper. The School Recycling Guide can be seen online at the address below. It provides information about what schools are required to recycle; how to set up a school for recycling; who needs to be involved; how to communicate and educate the school's administration, custodial staff, teachers, parents and students; ideas for student activities; setting up a "green team"; and other relevant topics.

The following gives a brief summary of what is contained in the recycling guide:
All NYC schools are mandated to recycle by Local Law 19 (passed in 1989), Local Law 41 (2010), DSNY Recycling Rules, and the NYC Department of Education Chancellor's Regulation A-850 (2013). Schools must recycle in cafeterias, classrooms, offices, entrance ways, common areas, and anywhere else waste is discarded. Recyclables must be sorted into separate bins that are clearly labeled and principals are required to appoint a school Sustainability Coordinator responsible for promoting correct recycling procedures among staff and students. These requirements took a long time to be put into practice, but recycling in schools seems to have accelerated in recent years.

Setting up recycling at your school starts with planning meetings that address (among other issues) legal requirements, materials to be recycled, recycling bins and storage areas, establishment of a sustainability plan, staff responsibilities, and the integration of recycling onto the school's curriculum. Recycling areas should be set up wherever waste is discarded in your school. This includes all classrooms, offices, and common areas (hallways, auditorium, gym, library, lobbies, and outdoor areas). All classrooms need a trash bin and a clean paper/cardboard recycling bin. Some schools also set up a labeled recycling bin for metal, glass, plastic, and cartons in classrooms, or arrange to bring these materials daily to a hallway recycling bin. Schools are responsible for purchasing their own bins; public schools can purchase bins through the SDI catalog. Always place recycling and trash bins directly next to one another.

Paper and cardboard are collected by DSNY from schools on Mondays, Wednesdays and Fridays; plastic, metal and glass are collected on Tuesdays and Thursdays. Food waste is collected every school day. The percentage of a given school's waste that is actually recycled depends on the commitment of its staff, students and parents. Here again you can have an impact. One incentive for schools to recycle is the DSNY Golden Apple awards program. This program offers substantial cash prizes in three contests for NYC DOE schools: Super Recyclers, Reduce & Reuse, and Team Up to Clean Up. Several Upper West Side (D3) schools have won Golden Apple awards in the past. For information on how to enter and to look at prior winners' projects, visit www.nyc.gov/goldenapple.

GrowNYC's Recycling Champions Program (RCP) develops model recycling programs at over 100 NYC public schools each year, educating 100,000 students, staff, and, custodians about recycling. Innovative outreach developed specifically for the K-12 community includes inquiry-based, experiential student programs aligned with the Common Core, and professional development workshops for faculty and staff. Via partnerships with the NYC Department of

Education Sustainability Initiative and the NYC Department of Sanitation, RCP is able to spread best practices to schools throughout the City. To learn more e-mail to the address given below or visit http://www.grownyc.org/recyclingchampions.

For more information, see:

- http://greenschoolsny.com
- http://www1.nyc.gov/site/dsny/resources/reports/organics-collection-pilot-reports-2014-2015.page
- http://www1.nyc.gov/assets/dsny/downloads/pdf/promotional-materials/school-recycling-guide-k-srg.pdf
- http://www1.nyc.gov/site/dsny/resources/initiatives/golden-apple-awards.page
- schoolrecycling@grownyc.org

(return to top of document)

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COMMENTARY: ENERGY CONSERVATION

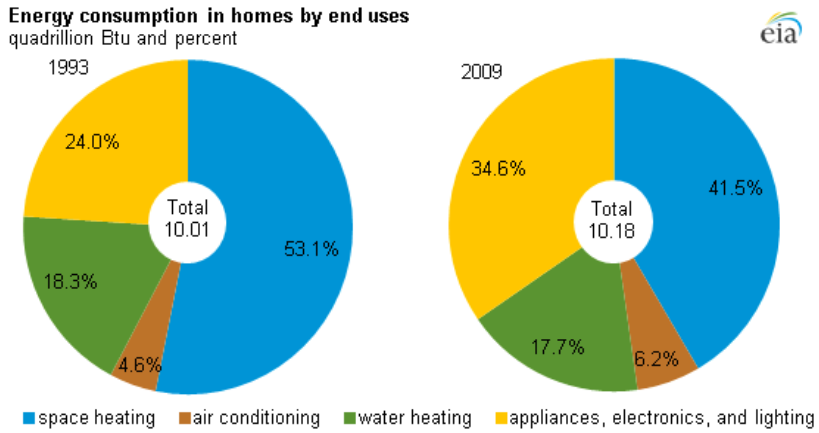
1. Introduction

An important way we can mitigate climate change is to reduce our use of energy in our homes, offices and travel. The United States is one the most profligate energy consumers among large countries on a per-capita basis. As a country, we're responsible for about one-quarter of the total carbon dioxide (CO_2) released into the Earth's atmosphere -- emitting about 7 billion tons of this greenhouse gas each year.

Much of the wasted energy stems from patterns established long before global warming became an issue: For example, shipping food and other products thousands of miles instead of relying on more locally based production; using cars with one passenger rather that public transportation; living in energy gobbling "McMansions," etc. A lot of this behavior is based on habit and perception; it doesn't require a huge effort or change in our lifestyles to gradually make a significant contribution to lowering our energy usage.

This is crunch time; it's very important that we take significant steps to reduce fossil-fuel energy consumption in the next decade to prevent the climate change scenario from becoming dire.

2. Average Energy Usage Chart in the 16 Largest States, including New York
(Source: US Energy Information Administration; www.eia.gov/consumption/residential)



Energy used for space conditioning (space and water heating, air conditioning) has declined, but *energy consumption for appliances and electronics continues to rise*. Most appliances have become more efficient, but the increased number of these devices has offset the efficiency gains. Non-weather-related energy use for appliances, electronics, water heating, and lighting now accounts for 52% of total consumption, up from 42% in 1993. The average U.S. household consumed 11,320 kilowatt hours (kWh) of electricity in 2009.

New York City is more energy efficient than most of the rest of the country in terms of per capita use. As a rule, New Yorkers consume less energy driving and consume more energy in buildings than Americans on average. Most of the electricity used in NYC is generated by the burning of fossil fuels. Since the cost of electricity per kWh is nearly 50% higher in NYC than the average for the United States, it's quite cost effective to reduce your consumption of electricity. Every kWh of electricity that you avoid using prevents about two pounds of CO_2 from being emitted into our atmosphere. This might not sound like much but, if each New Yorker used 10 kWh less electricity a year, the total of CO_2 prevented from going into the atmosphere would be about 160 million pounds.

The good news is that energy consumption in New York City declined by 7.9 percent from 2005 to 2011 (latest data available) and that our electricity is becoming somewhat cleaner. Its per capita greenhouse gas emissions level is the second lowest among major U.S. cities and is about one-third of the U.S. average. The bad news is that there is still an enormous amount of excess energy usage in NYC, resulting in a vast quantity of CO_2 being spewed into the atmosphere (48 million tons of carbon in 2013). About 70% of our NYC greenhouse gas emissions come from in-building activities such as lighting, heating, cooling, appliances, etc.

3. What You Can Do to Help in Your Home or Transportation

Year-round options:
Electrical usage

- Opt to have your electricity produced by wind power or hydroelectricity via suppliers such as Con Ed Solutions (www.conedsolutions.com, 914-286-7000) or Green Mountain Power (www.greenmountainenergy.com, 855-991-9416). This will cost you a few cents more per kWh, but it will prevent a considerable amount of CO_2 from being released into the atmosphere each year.
- Turn off lights in empty rooms and buy energy efficient light bulbs (e.g., LEDs); LEDs might be more expensive now, but they last a lot longer than either incandescent or fluorescent bulbs (including CFLs) and use a lot less energy.
- Minimize the use of small appliances based on electrical resistance heating (e.g., toasters).
- Minimize the use of TVs and computer devices, and turn them off when not in use.
- When possible, upgrade to a flat screen TV; it will use only about one-third as much electricity as your old cathode-ray-tube TV.
- Don't hold your refrigerator door open for longer than necessary; if possible, buy a new, energy-efficient refrigerator (it will pay for itself in a few years).

Heating/Hot Water

- Check the temperature of the hot water in your building with your super; if it's set at 140 degrees F, have the super reduce the setting to 120 degrees F (still plenty hot for showering or washing dishes and less likely to burn you).
- Make sure your building has insulated steam and water pipes.
- Make sure your building has its boiler tuned up or cleaned once a year. If the existing boiler is old, encourage your landlord or co-op board to buy a newer, more-efficient one; it will gradually pay for itself as it uses less heating oil.
- Make sure your building has energy-efficient clothes washers and dryers.
- Consider an energy audit of your house or apartment. You can also encourage your landlord or co-op board to have an energy audit of your whole apartment building.
- Detect leaks in your own windows by carefully using a candle on a windy day. These leaks can be inexpensively caulked or weather-stripped. If there are numerous leaks, encourage your landlord to replace the windows with new double-paned, metal-framed ones, which can significantly reduce the fuel bill every year.

Transportation

- Walk and use bikes or mass transit as much as you can.
- If you drive your own car, don't automatically turn on the air-conditioner. When you need to buy a new vehicle, make sure it gets good gas mileage.
- Share rides whenever possible.
- Buy locally-grown food and locally manufactured products as often as possible.

Summer months primarily:

- Minimize the use of your air conditioner(s) and keep it/them on a moderate setting (excessive use of air conditioners set at low temperatures can hamper your body's ability to adjust its metabolic rate). Turn your air conditioner(s) off when you're not home.
- Use fans instead of air conditioners whenever possible.

- Use insulated drapes or blinds during the day on windows exposed to direct sunlight to avoid extra heat gain.
- Open your windows at the top at night to allow heat to escape and permit cross ventilation.
- Drink water frequently; your body will feel cooler if fully hydrated.

Winter months primarily:

- Use insulated drapes or blinds during the night on all windows to reduce heat loss; open them during the day on windows exposed to the sun for extra heat gain.
- If the radiators in your apartment produce too much heat, turn down the valves rather than open windows.
- Encourage your landlord or co-op board to install thermostatic heating controls in each apartment; if that's not feasible, ask them to install multipoint-averaging thermostats.

4. Some Ideas for Reducing Energy Usage City-Wide (some may be more feasible than others)

- Require that tour buses sharply curtail idling their engines at tourist stops; mandate use of hybrids for tour buses.
- Install regenerative braking systems on NYC buses and subway cars (these recapture some of the energy expended when braking and are now available in some autos).
- Replace many of our single-passenger taxis and car services with ride-sharing and destination minibuses.
- Require that all new commercial buildings meet strict energy conservation standards; gradually implement these standards in existing buildings.
- In commercial buildings, replace windows that don't open with those that do; make sure lights operate in different areas of a floor space, rather than lighting or darkening the entire floor.
- Encourage the use of PV arrays on the roofs of residential and commercial buildings to reduce the electrical load.
- Encourage the use of green or white roofs on residential and commercial buildings to reduce the air conditioning and heating loads.
- Require Con Edison to install energy storage devices -- such as those based on very large batteries or flywheels -- to enable them to provide more energy during peak load times without having to burn extra fossil fuels.

Additional Sources of Information or Products

1. Alliance to Save Energy, Washington DC, http://www.ase.org; 202-857-0666
2. American Council for an Energy-Efficient Economy, Washington DC,www.acee.org; 202-507-4000
3. Center for Energy and Environment, Minneapolis, MN, http://www.mncee.org; (612) 335-5858
4. www.coned.com/energyefficiency
5. Home Depot (sells custom-made, plastic honeycomb insulated drapes, LED lightbulbs, etc.), www.homedepot.com
6. New York City Economic Development Corporation, www.nycedc.com

7. US Energy Information Administration, Washington DC, Residential Energy Consumption Survey, www.eia.gov/consumption/residential

(return to top of document)

UWSR Eco Letter

July/August 2015

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY: CLIMATE CHANGE AND GLOBAL WARMING

1. Introduction

Climate change is like the elephant in the room that many people avoid looking at or, if they do, feel it's so large that little can be done about it. But that elephant is real - regardless of whether some extremists vociferously deny its existence - and it will have profound effects on our planet if we continue on our current course of action, particularly in regard to the burning of fossil fuels. The Earth's climate has been relatively stable for the past 12,000 years; this stability has been crucial for the development of our modern civilization and life as we know it. Our stability is now threatened, and the faster the climate changes, the harder it could be to adapt to the new conditions.

At the root of the current global warming trend is the "greenhouse effect" - warming that results when the Earth's atmosphere traps heat radiating back out from the Earth's surface toward space. The heat-trapping nature of carbon dioxide, methane and other gases was demonstrated long ago in the mid-19th century. More recently, ice cores drawn from Greenland, Antarctica, and tropical mountain glaciers confirm that the Earth's climate is responding to changes in greenhouse gas levels. Over the last century the burning of fossil fuels like coal and oil has resulted in an increase in atmospheric greenhouse gases such as carbon dioxide (CO2) and methane (CH4). For example, measured CO2 levels have risen from about 280 parts per million (ppm) in pre-industrial times to about 400 ppm now. To underscore the significance of this rise it is important to note that scientific evidence indicates that CO2 has not been above about 300 ppm at any other time in the past 600.000 years.

There is now no doubt that increased levels of greenhouse gases cause the Earth to warm in response, and additional effects seem likely in the future:

- On average, the Earth will become warmer, even if some regions do not. Since 1880 the mean global temperature has increased by 1.4 degrees Fahrenheit. This might not seem

like much, but the rise in temperature is already having a number of adverse effects, some of which might become irreversible.

- A greater greenhouse effect will warm the oceans and melt glaciers and ice sheets, thereby increasing sea levels. Ocean water will also expand as it warms, contributing further to sea level rise.
- Warmer conditions may lead to increased evaporation and subsequently more precipitation overall. Thus, it is likely there will be more extreme precipitation events. However, individual regions will vary, some becoming wetter and others drier.
- While some crops and other plants may respond favorably to increased atmospheric CO2, plants in other areas will be adversely affected. Of particular concern in the United States are the large food-producing regions in the Southwest and in California, which climate models predict will become hotter and drier.

2. Evidence for Climate Change

- Most of the above-mentioned global warming has occurred since the 1970s, during a period of greatly increased global usage of fossil fuels. The 20 warmest years in recorded history have all occurred since 1981, with the 10 warmest taking place within just the last 12 years.
- Global sea level rose about 17 centimeters (6.7 inches) during the past century. This rate, however, has nearly doubled in only the last decade.
- The Greenland and Antarctic ice sheets have decreased in mass, recently losing about 15 to 20 cubic miles of ice per year. The future rate of this melting is uncertain, but there is significant evidence that it is happening at a faster rate than was previously predicted.
- Glaciers are also disappearing at an alarming rate. The glaciers and snowpack in the Himalayas are of particular concern, since they, along with the annual monsoons, supply almost all of the water in South-Central and Southeast Asia, home to about one-third of the world's population. The high Himalayas receive relatively little precipitation, meaning that the ice will regenerate at a slow rate.

Ninety-seven percent of climate scientists now agree that climate-warming trends over the past century are very likely the result of human activities. It seems useful to apply a benefit/loss analysis to this situation. Who benefits most from continuing to burn fossil fuels at the current rate, instead of accelerating a transition to renewable energy and energy conservation? Primarily the tycoons of the oil and coal industries. Who loses? All of us, particularly the billions of people living in low-lying coastal areas or those dependent on spring snow or glacial run-off for much of their water supply. And we will all suffer to a greater or lesser degree because of the probable effects on agriculture.

3. How Climate Change Will Likely Affect NYC

While climate change is a global issue, it is felt on a local scale. Heat waves, heavy downpours, and sea level rise pose growing challenges to many aspects of life in the Northeast. Infrastructure, agriculture, fisheries, and ecosystems will be increasingly compromised.

The climate of the New York City metropolitan region is changing as well - average annual temperatures are hotter, heavy downpours are increasingly frequent, and the sea is rising. For example, mean annual air temperature has increased at a rate of 0.3°F per decade (a total of

3.4°F) from 1900 to 2013 in Central Park, although the trend has varied substantially over shorter periods. Mean annual precipitation has increased at a rate of approximately 0.8 inches per decade (a total of 8 inches) from 1900 to 2013 in Central Park. Year-to-year (and multi-year) variability of precipitation has also become more pronounced, especially since the 1970s.

These trends are projected to continue and even worsen in the coming decades, increasing the risks for the people, economy, and infrastructure of New York City:

- Current mean annual temperatures are projected to increase by 4.1-5.7 °F in the 2050s; and by 5.3-8.8°F in the 2080s. Heat waves are also very likely to increase in intensity.
- Total annual precipitation will likely increase.
- The frequency of extreme precipitation events is also projected to increase.

A vivid example of an extreme weather event in our area was Hurricane Sandy in October 2012. In the last 100 years no hurricane-strength storm has come into the NYC area on a track from east to west. Although it cannot be said with certainty that global warming was a cause of Sandy, it may have created circumstances where events like this are more likely to occur. At the very least, Sandy was a dramatic reminder of the extreme vulnerability of populations living in coastal and low-lying areas.

4. Solutions (Mitigation or Adaptation)

Because we have already experienced some degree of climate change, responding to future climate change involves a two-pronged approach, utilizing both *mitigation* and *adaptation*:

The first, and most desirable, is mitigation, which consists of reducing the amount of heat-trapping greenhouse gases streaming into the atmosphere, either by limiting the production of these gases at their sources (primarily the burning of fossil fuels to generate electricity or produce heat; or the use of gasoline for transportation). We can also mitigate climate change by accelerating our usage of renewable energy sources and energy conservation measures. A third course of action is to facilitate greenhouse gas absorption by "sinks" that accumulate and store these gases (such as the oceans, forests and soil). Mitigation also includes schemes such as carbon sequestration, which some regard as a primarily stop-gap measure and at least a partial capitulation to the fossil fuel industry

Adaptation involves adjusting to actual or expected future climate. The goal is to reduce our vulnerability to the harmful effects of climate change (like sea-level encroachment, more intense extreme weather events or food insecurity) rather than trying to reduce the emissions of the greenhouse gases themselves.

Many states and cities are beginning to incorporate climate change issues into their planning. In response to these climate challenges, New York City itself is developing a broad range of climate resiliency policies and programs as well as the knowledge base to support them.

5. What You Can Do to Help

Each of us, by making small changes in our daily lives, can have an impact. Taken collectively,

these small changes can have a significant difference. Much of what you can do revolves around your personal consumption of energy from fossil fuels. Steps you can take include:

- Energy conservation options include the following: Turn off lights in empty rooms; buy energy-efficient appliances and light bulbs (e.g., LEDs); minimize the use of your air conditioner (don't leave it on when you're not home and use fans instead when possible); don't hold your refrigerator door open for longer than necessary; keep your thermostat down during the winter; and walk, use bikes or mass transit as much as you can. More information is available atwww.coned.com/energyefficiency.
- Use renewable energy such as solar, wind or hydropower. You can opt to use electricity produced by wind power or hydroelectricity via suppliers such as Con Ed Solutions (www.conedsolutions.com, 914-286-7000) or Green Mountain Power (www.greenmountainenergy.com, 855-991-9416). For a complete list of energy suppliers in New York State see www.chooseenergy.com/NewYork. If possible, have photovoltaic panels or solar water heating installed in your building (contact Urban Grown Energy, www.ugei.com).
- You can also help reduce atmospheric CO2 and CH4 by planting trees or gardens (which absorb CO2), installing a green roof, or eating less beef (cows are a major methane source)

Additional Sources of Information

- National Research Council (2006). *Surface Temperature Reconstructions for the Last 2,000 Years*. National Academy Press, Washington, DC.
- Rosenzweig et al. (2015). Building the Knowledge Base for Climate Resiliency: New York City Panel on Climate Change 2015 Report. *Annals of the New York Academy of Sciences*, Jan 2015, New York, Wiley, 150 pp. Available online athttp://onlinelibrary.wiley.com/doi/10.1111/nyas.2015.1336.issue-1/issuetoc.
- Sobel, Adam (2014). *Storm Surge: Hurricane Sandy, Our Changing Climate, and Extreme Weather of the Past and Future*. New York, Harper, 314 pp.

(return to top of document)

UWSR Eco Letter

May/June 2015

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY: TEXTILE RECYCLING

According to the Council for Textile Recycling, the clothing recycling industry diverts 3.8 billion pounds of post-consumer textile waste from the solid waste stream each year, primarily through wearable clothing dropped off at charities such as Goodwill Industries, Housing Works or The Salvation Army (see our attached Hard-to Recycle List for nearby locations).

However, an increasing number of organizations -- such as Wearable Collections and re-fashioNYC in New York City (see below) -- collect textiles from residential buildings or organizations. These textiles are distributed to various vendors in the NYC metropolitan area, sorted by the vendors into wearable or unwearable categories, and then resold for further use or recycled. Wearable or re-useable clothing (about 50%) is then distributed to markets where there is a demand for secondhand clothing; much of it goes overseas. Textiles that are not wearable are sorted by fabric type and then recycled either for industrial use (e. g., wiping rags) or scrap that will be shredded and re-constituted into lower grade fiber products such as car door panels and insulation.

Despite all this, only 15% of post-consumer textile waste is actually recycled; the remaining 85% goes into the trash. The U.S. EPA estimates that textile waste occupies nearly 5% of all landfill space in this country. The average New Yorker tosses 46 pounds of clothing and other textiles into the trash each year. All told, every year NYC residents alone discard about 200,000 tons of textiles (400 million pounds)**.** So there's still a lot of work to be done here, and you can help make a difference.

HOW TO RECYCLE YOUR TEXTILES

In Your Building

(1) ***Wearable Collections***(a for-profit organization); (646) 515-4387; www.wearablecollections.com.Free pick-up of all clothing, shoes and textiles from residences and non-profit organizations, which are then marketed to different vendors. To date they've recycled over 5,000 tons (10 million pounds) of textiles that would have otherwise gone into landfills.

If you are in a building with 75 units or more and there is sufficient space, Wearable Collections can site a container in your building and pick it up when it's full. They can also help organize periodic textile recycling drives. Community organizations can receive a per-pound donation in return for collecting the textiles. If your building has a textile recycling drive, it's best to limit the collection to a specific time period (e. g., two weeks) so people don't procrastinate. Call or email them at info@wearablecollections.com for a quick pickup when the drive is over.

Minimum pickup: 5 large black garbage bags full of textiles.

Accepted: all clean clothing including shoes, pocketbooks, curtains, sheets, blankets, comforters, and towels.
Not Accepted: scraps, pillows, comforters, luggage or carpeting.

Types of bins or bags:
(a) *Permanent containers*: 2 types, both with a footprint of about 2 x 4 ft.

- plastic bins on wheels, about 5 ft. high, with an open top.
- stationary metal bins with a chute for depositing textiles (cannot be opened on premises once textiles have been deposited)

(b) *For textile recycling drives*: Wearable Collections will provide a metal rack and bags for textile collection (large, black plastic garbage bags can also be used).

(2) ***re-fashioNYC*** (a non-profit partnership between the NYC Department of Sanitation [DSNY] and Housing Works - see below); call 311; www.nyc.gov/refashion. Free pick-up of textiles from residential buildings, commercial businesses and non-profit organizations with 10 or more units. Clothing and accessories donated through re-fashioNYC are sorted at the Housing Works warehouse in Queens. All proceeds from donations support the charitable mission of Housing Works to end the dual crises of homelessness and AIDS.

Accepted: clothing, including shoes, purses, gloves, scarves, hats and belts; towels, curtains, bedding and linens; clean rags and clothing scraps.
Not Accepted: pillows, comforters, luggage or carpeting.

Types of bins:
DSNY will visit your building to discuss how many bins you need, what sizes are best, and where they should be placed. The re-fashioNYC donation bin is available in two sizes:
- small (2 ft. deep x 4 ft. wide x 6 ft. high) or
- large (3.5 ft. deep x 4 ft. wide x 6 ft. high).

When the bin is full, call 212-437-4678 or email re-fashionNYC@dsny.nyc.gov for a pickup (guaranteed within five business days). Tax receipts (for up to $250) are available on the bin.

Outside Your Building

(1) ***Grow NYC Greenmarkets***; (212) 788-7964, (212) 788-7476; www.grownyc.org; works with Wearable Collections, which manages the collections. Over 3 million pounds have been collected since 2007. Receipts for donated material are available upon request.

Accepted: clean and dry clothing, paired shoes, linens, handbags, belts, and other reusable textiles.
Not Accepted: scraps, rugs, carpeting, pillows, comforters, or luggage.

Take textiles to the following Greenmarkets year-round:

- 79th Street Greenmarket [79th & Columbus Avenue], 9 a.m.-1 p.m. Sundays
- 97th Street Greenmarket [97th & Columbus Avenue], 8 a.m.-2 p.m., Fridays
- Columbia University Greenmarket [Broadway between 114th-115th Sts.], 8 a.m.-3 p.m., Thursdays and Sundays
- There are also collection sites in Inwood and other Manhattan locations; check the *Grow NYC* website for locations and hours.

(2) ***Local Thrift Shops, including***:

- *Goodwill*, 217 West 79th Street, New York, NY 10024, (212) 874-5050; www.goodwill.org. (wearable clothing only)
- *Housing Works*, 306 Columbus Avenue between 74th & 75th Streets, (212) 579-7566; and 2569 Broadway between 96th & 97th Streets, (212) 222-3550; www.housingworks.org (accepts any of the items re-fashioNYC does, including non-wearable items)
- *Salvation Army*, 268 West 96th Street, New York, NY 10025; (212) 663-2258; (212) 337-7200; www.salvationarmy-newyork.org (wearable clothing only)

Other Resources

(1) Buffalo Exchange, 114 West 26th Street, New York, NY 10001. (212) 675-3535; contact@bufex.com (buys, sells and trades good used clothing and shoes; call first)

(2) Council for Textile Recycling, 3465 Box Hill Corporate Center Drive, Suite H, Abingdon, MD 21009; Phone: (443) 640-1050; Fax: (443) 640-1086; http://www.weardonaterecycle.org

(return to top of document)

UWSR Eco Letter

March/April 2015

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY: ORGANIC WASTE

The amount of organic waste that's recycled (usually composted) in NYC has increased dramatically in recent years, though most of it is still put out with our garbage. The organics collected include food waste and chipped trees, as well as yard waste such as grass clippings or fallen leaves (mostly done in the outer boroughs). Here we'll primarily discuss options for food waste recycling, which is most pertinent to Upper Manhattan.

Why is Organic-Waste Recycling Important?

It might seem that recycling of food waste is not particularly important since it's biodegradable and will, in theory, be turned back into soil someday. However, there are at least three very good reasons to recycle organics:

1. Any soil that's eventually produced in a landfill will be contaminated, especially by materials such as plastics and toxic heavy metals from e-waste.

2. Food waste packed into a landfill biodegrades extremely slowly since it's not exposed to the oxygen that's necessary for aerobic bacteria to break it down. An apple in this condition can remain intact for hundreds of years.
3. Organics account for almost a third of the waste produced by NYC residents. Recycling them would reduce the amount of garbage the City has to export to other municipalities around the country (and which will sit dormant in their own landfills)

If you decide to recycle food scraps, they can be collected in large yogurt containers or other covered plastic containers, plastic bags, milk cartons or in commercially-available compost pails. To reduce odors at home, store items in your freezer or refrigerator. A layer of shredded newspaper at the bottom of your storage container helps absorb moisture.

Options for Recycling Organic Waste Outside Your Building

A small number of buildings in Upper Manhattan have signed up to have their food waste collected by the Department of Sanitation (DSNY), but most of us now bring it to local Greenmarkets, from whence it's later composted by Grow NYC or DSNY. Year-round Greenmarkets operated by Grow NYC in Upper Manhattan that accept food waste include locations at: 79th Street and Columbus Avenue; 82nd Street and York Avenue; 97th Street and Columbus Avenue; 115th Street and Broadway; 175th Street and Wadsworth Avenue; and Isham Street between Seaman Avenue and Cooper Street (see www.grownyc.org/ or our Hard-to-Recycle List for more information).

Materials accepted by Grow NYC include: fruit and vegetable scraps, non-greasy food scraps (rice, pasta, bread, cereal, etc.), coffee grounds and filters, tea bags, egg and nut shells, pits, cut or dried flowers, houseplants and potting soil. (Grow NYC discourages people from bringing meat, fish, or other animal waste. Check with your local Greenmarket before bringing any animal waste to see what their policy is). Please don't put plastic or paper bags in the compost bin. Also, commercial businesses are not allowed to bring food scraps to these sites.

Since 1990, Lower East Side Ecology (see our Hard-to-Recycle List) has been a pioneer in recycling organic waste in NYC. They now collect food scraps (no animal waste) at the Union Square Greenmarket four times a week and conduct composting workshops, primarily in Lower Manhattan. See below for a March composting workshop on West 30th Street. (For information, call 212-477-4022 or go to www.lesecologycenter.org.)

How You Can Recycle Organic Waste in Your Own Building

As previously mentioned, DSNY now picks up organic waste in a few residential buildings having 10 or more units in Upper Manhattan and throughout NYC. In addition to the materials listed above collected at the Greenmarkets, DSNY will accept eggs, dairy products, meat, fish, bones, food-soiled paper, and yard waste (leaves, grass clippings, etc.). Please separate organics from your plastic, glass, and paper recycling. To enroll your building, contact DSNY at http://www1.nyc.gov/site/dsny/recycling-and-garbage/residents.page or call 311.

Residential buildings of fewer than 10 units are also eligible for DSNY pickup if they're within certain pilot districts, but none of these districts are currently in Upper Manhattan.

Organic Waste Recycling in Schools and Other Non-Profits

A pilot program for composting in public schools took place recently in Manhattan School District 3. That program was such a success that it has been expanded to all Manhattan public elementary and middle schools. Private schools and other non-profits that meet certain requirements also qualify for organic waste collection by DSNY. Participating schools are eligible for cash prizes in DSNY's Golden Apple Awards Program. For information, go to http://www1.nyc.gov/site/dsny/recycling-and-garbage/schools.page. In addition, composting grants of $100-$750 are available to local community groups through The Citizens Committee of New York (proposals must be submitted by March 27, 2015). For information, go to http://www.citizensnyc.org/grants/composting-grant.

Councilmember Helen Rosenthal is an ardent supporter of composting, and she is working with the Department of Sanitation to increase organic waste recycling opportunities on the Upper West Side. Another source of help concerning organic waste recycling is the District 3 Green Schools Committee, a coalition of parents who focus on composting and other recycling as well as on various other environmental issues. For information, go to www.greenschoolsny.com.

(return to top of document)

UWSR Eco Letter

January/February 2015

To receive the UWSR Eco Letter, which includes commentaries about recycling and other environmental issues, as well as listings of local environmental events, please email us at jtwine@synerjy.com.

COMMENTARY: ELECTRONIC WASTE

Although this is a relatively quiet time for environmental activities, we want to bring your attention to one very important change that is effective January 1, 2015: According to NY State Law, **all computers and other electronic waste from all NYC residential buildings must now be recycled**. You are now no longer permitted to throw E-Waste into the trash. To implement this law, the NYC Sanitation Department (DSNY) will no longer collect electronics left at the curb.

There is a four-month grace period before fines will be levied, but it's important to start the process now, particularly if your building is eligible for DSNY E-Waste pickup (it must have 10 or more units; see below for details).

How Can You Recycle E-Waste in Your Own Building?

This depends on the size of the building:

(1) *Apartment buildings with 10 or more residential units* are eligible for a free DSNY pickup. The first step in this process is to schedule a site visit. Check with your building management or super to confirm who will initiate the process. More information can be found and site visits scheduled via the DSNY's website; click on http://www.nyc.gov/html/nycwasteless/html/contact/enrollmentform.shtml.
There is a waiting time of several weeks before your building will receive the site visit, so it's prudent to begin as soon as possible. Materials for collection can be stored in a closet or in a container that DSNY will supply. DSNY will not place the containers in outside areas unless they are covered and secure.

Another organization that picks up E-Waste is the The Fourth Bin, but they charge a small fee to do this (tel: 646-747-5985; www.4thbin.com; ecyclenow@4thbin.com).

(2) *Apartment buildings with fewer than 10 residential units*, including single-family houses, are a bit more difficult:
- Your building might be eligible for a pickup from The Fourth Bin; contact them directly (tel: 646-747-5985; www.4thbin.com; ecyclenow@4thbin.com).
- You can use one of the options listed below for recycling electronics outside your building.
- You can work with block associations, churches or other local community groups in order to amass a sufficient quantity of E-Waste to qualify for a pick-up. UWSR will be investigating this during the spring of 2015.

Options for Recycling Electronics Outside your Building

- Electronics Recycling Events:
As most of you already know, Lower East Side Ecology operates community E-Waste collection events throughout NYC. These are always listed in our *Eco Letter*, or you can contact them directly (tel: 212-477-4022; http://lesecologycenter.org/.
- Retail Drop-Off Programs:
You can drop off used electronics (no purchase necessary) at Goodwill, Salvation Army, Best Buy, and Staples (no TVs), or at the Lower East Side Ecology Warehouse in Brooklyn. See our Hard-to-Recycle List or the Google map of NYC electronics drop-off locations https://www.google.com/maps/search/nyc+electronics+drop-off+locations/@40.7056258,-73.97968,10z/data=!3m1!4b1.
- Mail-Back Programs:
Many manufacturers of electronic goods offer these programs. Check your specific brand's website for details.
- Donate or Sell Electronics:
If they still work, you can donate or sell electronic goods. See our Hard-to-Recycle Listor click on www.nyc.gov/stuffexchange for options in your neighborhood.

Why is E-Waste Recycling Important?

Electronic waste comprises a relatively small percentage of NYC's waste stream, but it's the fastest growing part; all this new stuff is inexorably clogging landfills around the country. These materials do not biodegrade quickly; many of them will still be in the ground hundreds of years from now. Perhaps most importantly, electronic devices contain small amounts of heavy

metals, some of them quite toxic (e.g., lead, cadmium). Small quantities added bit by bit over time produce a net effect that can be cumulatively destructive to our soil and water.

Please obey the new NY State law to the best of your ability. For more information on its specifics see http://www.dec.ny.gov/

(return to top of document)