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ARCHIVE OF
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 people in your network.

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UWSR Eco Letter November/December 2020
COMMENTARY:
Minimizing Plastic Waste

In 2018, about 359 million metric tons of plastics were produced worldwide. Plastics are useful, of course, and we need them for medicine, food safety and technology. But do we really need plastic lawn (or door) decorations for every holiday? Or so much plastic packaging?

Plastic waste in our oceans has become a very serious problem: In addition to the estimated 150 million metric tons that currently circulate in marine environments, about 8 million metric tons of plastics enter our ocean *each year*. If this trend continues, it's estimated that our oceans will soon contain a greater amount of plastic than fish.

During the pandemic, NYC and the world have seen a huge uptick in plastic use, especially single-use disposables (e.g., increased medical supplies and food service/take-out adhering to health safety modifications). Recent data is harder to come by in the U.S. but, according to the *Los Angeles Times*, Singapore saw an increase of 1,470 tons of plastic waste from takeout and food packaging alone during their 8-week shutdown (information courtesy of Think Zero).

Minimizing our use of plastic, and re-using or recycling plastic items whenever possible, reduces energy consumption and overall levels of the greenhouse gas carbon dioxide.

It can take up to 1,000 years for plastics to fully decompose in landfills, and the process of decomposition can produce harmful microplastic particles. Plastics that are carelessly strewn around our landscape can clog water systems, pollute our soil and waterways, and often end up being washed out to the ocean. The Great North Pacific Garbage Gyre now covers an estimated surface area of 1.6 million square kilometers, an area twice the size of Texas, and there are similar garbage patches on all our oceans. These patches are made up almost entirely of plastic.

Airborne microparticles (pieces under five millimeters in length) can harm humans, fish and any other creatures that ingest or inhale them. They come from clothing, straws, food and drink containers, utensils or other plastic goods as well as packaging that's used briefly and then thrown away, sometimes decades ago. Those microparticles don't care what ZIP code you live in, and they're continually inhaled or ingested by all of us, especially city dwellers. Previous studies have shown that people breathe in or eat tens of thousands of microparticles each year. Inhaled plastics can produce inflammation and lesions in lungs, and repeated exposure is suspected of leading to respiratory problems like asthma and cancer. Inhaling microplastics may also increase exposure to other toxic substances and coatings associated with plastics and their manufacture.

To learn more about how to reduce your household impact on plastic waste, Think Zero is now offering individual coaching on waste reduction and improved sustainability practices in the home (email home@thinkzero.com for a consultation). Other suggestions are included in the sections below on Solid Plastics, Styrofoam and Plastic Bags & Other Film.

SOLID PLASTICS

(accepted for recycling by NYC Department of Sanitation [DSNY])

Food Utensils – It's best to avoid them, even though they're accepted by DSNY. When you can't, try at least to re-use them. We routinely carry around phones, credit cards, water… why not cutlery? People used to bring their own. In fact, hosts and hostesses generally didn't provide cutlery and flatware until the 19th century (information courtesy of wehatetowaste.com). Do a quick computer search for "portable camping flatware" and you'll see a number of options of flatware sets (some even include straws) made of bamboo or stainless steel that tuck into a carrying case you can put in your purse, pocket or backpack.

Clamshell Containers, except those made from Styrofoam, are recycled by DSNY. If you're ordering catering at home or work, ask the restaurant or caterer to bring food in reusable metal catering trays. To avoid single-use containers, order takeout from DeliverZero, which is now serving the Upper West Side. Reusables are safe to use and hygienic, provided they are properly sanitized, (information courtesy of Think Zero). If you're interested in learning more about the safety of reusables during COVID-19, Upstream Solutions has valuable information on their website.

Other Food and Drink Containers – Containers for milk, juice, water, soda, yogurt, detergent, etc., are recycled by DSNY, but it's still best to minimize their usage.

- Drink tap water rather than buying water in plastic bottles. (NYC water is continuously monitored for safety and our tap water is still ranked one of the best in cities around the world). If you need to purchase something in a plastic bottle, buy one larger drink container rather than two or more smaller ones.
- Buy a juicer and make your own lemonade or other fruit juice.
- Make your own yogurt.
- Reuse larger yogurt and similar containers to store leftovers or collect food scraps for composting.
- If possible, buy milk in glass bottles. Some local sources are Manhattan Milk, Maxdelivery, Rustic Roots, or Drink Milk in Glass Bottles.

Here are some sources of other alternative containers, plates and trays:

- **Sustainable Produce Containers** (888-883-7259) sells compostable cardboard containers that have vents to prevent condensation and are easy to recycle.
- **Ecovative Design** (518-273-3753) sells containers made from mushroom mycelium (the filamentous roots of mushrooms). These are hydrophobic, meaning they repel water.
- **Footprint** (480-640-9401) sells plant-based food containers that are biodegradable, microwavable and ovenproof.
- For a list of Bagasse and other Biodegradable products see **Biodegradable Products Institute** or **GreenGood**.

Plastic Straws are strewn all over the world. About 500 million plastic straws (primarily composed of polypropylene) are used in the United States alone each year. Because there's no secondary market, DSNY can't collect and recycle them. Aside from littering our city, they're another source of hazardous microplastic particles; many end up in our oceans, contributing to the vast vortices of plastic waste and interfere with or endanger aquatic life.

Cities such as Seattle and Fort Myers have already banned single-use plastic straws. Here in NYC Assembly member Linda Rosenthal's legislation (**Assembly Bill A.90A**) requires that restaurants only provide single-use plastic straws to customers when explicitly requested by the customer. The bill advanced out of the Assembly Environmental Conservation Committee last session. Unfortunately, due to the abbreviated session as a result of COVID, it remains in the Codes Committee and was not placed on an agenda this session. They're looking forward to pushing this legislation forward next year.

Whenever possible use paper straws or, better yet, don't use straws at all. It's perfectly easy for most of us to drink directly out of a glass or cup. When you're drinking something outside your home, just ask that a straw not be included with your drink or bring your own reusable straw.

E-Waste – Most electronic products contain some plastic, and some are primarily made of plastic. The law prohibits your disposing of electronics such as TVs and computers with your regular trash or recycling because they may contain hazardous materials, including lead, mercury, arsenic, and cadmium. Unfortunately, because of budgetary restrictions resulting from COVID, the City has suspended the NYC E-Waste Appointment Program and no new collection locations are currently being added to the ecycleNYC program. Additionally, Safe Disposal events are canceled through June 2021, and the Special Waste Sites are closed through June 2021.

However, there are some alternatives:

- Bring electronic goods to a drop-off site (*call first*). These include:

    - Best Buy, (888-237-8289)
    - Goodwill, (212-799-2723)
    - The Salvation Army (800-728-7825)
    - Staples. (800-333-3330)
- Lower East Side Ecology (212-477-4022) has resumed its E-Waste Collection Events. One is planned for November on the Upper West Side (see Events listings).
- Cell phones can be dropped off at any store that sells service plans. Assemblyman Danny O'Donnell's office also accepts cell phones (212-866-3970).
- See our Hard-to-Recycle List for other places you can donate them.
- Return electronic goods to the manufacturer.
- Contact ecycleNYC recycling program (o*nly for apartment buildings already enrolled in the program*).

Toys can be donated to a relative or friend or to a thrift shop (*call first*). Local thrift shops and other charitable organizations include Goodwill (212-799-2723); The Salvation Army (212-757-2311); St. Francis on West 96th (212-932-8040); see also our Hard-to-Recycle List, or DonateNYC.

Personal Protective Equipment (PPE). We're all wearing face masks right now and disposable masks have begun to litter the streets. If possible, wear fabric masks that can be washed regularly. If you need to wear other items of PPE, wherever possible avoid disposables and purchase reusable items that can be cleaned regularly.

STYROFOAM or EXPANDED POLYSTYRENE (EPS)

(*not* accepted for recycling by DSNY)

These products are used all over the world since they're lightweight and can be adapted to many uses—such as packing peanuts, coffee cups or insulation. But there are serious problems with the use of this material:

- Because it's lightweight, EPS can break down into small particles that clog our rivers and oceans.
- It can further break down into the dangerous microparticles mentioned above.
- EPS is considered a potential human carcinogen and has also proven to be very harmful to aquatic life.

EPS cannot economically be recycled and so New York City banned single-use foam products on January 1, 2019. This law became enforceable as of July 1, 2019, and DSNY now issues tickets to businesses who continue to use EPS foam products.

Banned products include single-service items, such as cups, bowls, plates, takeout containers, trays, and coolers. Additionally, manufacturers, distributors, and stores may no longer sell or offer for sale loose fill foam packaging ("packing peanuts") in the City. Exceptions include foam containers used to package or store raw meat, seafood, poultry, or eggs sold from a butcher case or similar food retailer. Also exempt are foam blocks used as protective packaging in shipping goods such as electronic devices or appliances.

Despite the ban, you might still receive Styrofoam peanuts in products shipped from outside New York State. These 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 may also be true for other local businesses that do a lot of shipping.

Alternative Packaging Materials

- Cornstarch peanuts, which are dissolvable in water, are becoming more common. They're now available from a few vendors, including Uline and Amazon.
- Ecovative Design (518-273-3753) has developed a mushroom-based product that can be grown to fit any space, much like Styrofoam, but with completely biodegradable materials.

Here are a few tips for avoiding Styrofoam use:

- Ask your local coffee shop if it will accept a reusable container and bring your own container when purchasing coffee. You can add the shop's name to the tracker created by Zero Waste Workshops.
- Whenever possible, buy eggs packed in recyclable paper cartons.
- Avoid buying meat, fish or produce that has been pre-packaged in EPS.
- To avoid single-use takeout containers, order takeout from DeliverZero, which is now servicing the Upper West Side.

PLASTIC BAGS and OTHER PLASTIC FILM

(*not* accepted for recycling by DSNY)

Plastic bags were only invented about 50 years ago; for thousands of years, people carried food items in cloth bags, baskets, and other containers. But plastic bags have become so ubiquitous that each of us now discards an average of 20 single-use plastic bags every week, which adds up to about 10 billion bags a year just in New York City.

These bags aren't recycled in NYC, and nearly all of them are not biodegradable. They can clog up the equipment DSNY uses to process recyclable materials. 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 where they cause harm to fish and other marine-life.

Plastic bags and film are another primary source of microplastic particles and they become more toxic once they break down in a marine environment. Fish that ingest bag fragments accumulate chemicals that can cause liver toxicity and other pathology. As noted above, microparticles are also ingested or inhaled by humans.

The NYS Bag Waste Reduction Law, which passed March 1, 2020, stipulates that no vendor required to collect tax can distribute any plastic carryout bags to its customers except for exempt bags, and that re-usable checkout bags provided to customers in stores cannot be made out of plastic. Certain exemptions are stated in the law (see the January/February 2020 Eco Letter "Commentary: Shopping Bags"). This law wasn't enforced at the time because of an agreement between the parties in a lawsuit brought by Poly-Pak Industries, Inc., et al., in New York State Supreme Court. However, the NY State Department of Environmental Conservation did start to enforce its ban on **October 19, 2020**.

Alternatives to plastic bags

- Bring your own reusable shopping bag (keep one in your purse, coat pocket or backpack, or hang one on your front doorknob to grab as you go out). DSNY distributes free reusable shopping bags across the City. These bags fold into a built-in pouch with a carabiner clip so they're always handy – and are made of 90% recycled materials.
- Substitute paper bags as much as possible for shopping, as trash or compost containers, for dog or cat poop, and anything else for which you might have used plastic. If you must use some plastic bags, wash them and re-use them for future shopping.
- Avoid using plastic film (such as Saran Wrap) to cover or wrap food. Instead, store food in paper bags, re-usable containers with covers (such as glass jars, Tupperware, or reusable yogurt or other product containers), reusable zip-lock bags, or wrap items in recyclable aluminum foil.
- aNYbag, 115 West 29th Street, Suite 500. You can also bring your used bags to aNYbag where they're made into new, re-useable bags (please call first). Each aNYbag saves 95 plastic bags from reaching New York City's landfills and waterways. This durable, reusable tote is constructed from various types of

discarded plastic bags that are cut into thin strips and woven together with cotton cord, resulting in a truly unique textile.

More Information

- "You're Probably Inhaling Microplastics Right Now," *New York Times*, OP-ED, June 25, 2020.
- Alliance to End Plastic Waste
- Bag It NYC
- Plastic Film Recycling
- Think Zero LLC
- We Hate to Waste

UWSR Eco Letter September/October 2020
COMMENTARY:
Health and Our Environment

The relationship between our local environment and our health is complex and often not obvious at first glance. There are a number of relevant issues that affect this relationship, including air pollution, individual susceptibility to COVID-19 and other diseases, water pollution, heavy metals, solid waste/vermin (including sewage), and climate change. Each of these can impact your health in different ways, and the effects are often interrelated.

AIR POLLUTION

Nothing is more precious to us than the air we breathe. We can go without food or water for days, but we can only be deprived of oxygen for a few minutes. Breathing in and out has a close relationship to our physical and emotional well-being. In places where air pollution is a routine problem, we have to pay particular attention to individuals who may be more exposed or vulnerable than others to polluted air, such as the homeless, those who don't have air filtration in their homes, or those whose health is already compromised. These individuals may need even more attention and support in extraordinary circumstances like the current COVID-19 pandemic.

Pollutants in the air include fine particulate matter and black carbon, microplastics, oxides of nitrogen and sulfur, and ozone. All of these can affect people's health adversely, causing maladies such as asthma, chronic obstructive pulmonary disease, stroke and other cardiovascular and neurological problems, especially in the elderly and

those with pre-existing conditions. Research suggests that long term exposure to some pollutants increases the risk of emphysema even more than smoking a pack of cigarettes a day and can also impact mental health and worker productivity. Inhaling microplastics can produce inflammation and lesions in your lungs, and repeated exposure is suspected of leading to respiratory problems like asthma and cancer. (These will be covered further in a future *Eco Letter*.)

Air pollution impacts the land around us as well: It can cause acid rain that makes lakes sterile, kills trees and leaches essential plant nutrients out of the soil. Whatever affects the land ultimately affects human health by changing the water we drink and the foods we eat.

Disturbingly, air pollution levels seem to be rising in many areas around the world. But the good news is that it has *not* been rising recently in New York City because of local and federal environmental regulations. In fact, according to data from the NYC Health Department and the NYC Community Air Survey, air pollution in the City is at or near the lowest levels ever recorded. Sulfur dioxide saw the biggest drop – 84% over seven years – after the City tightened heating oil rules.

Although overall air quality in New York City has improved over the past several decades, concentrations of multiple air pollutants remain at harmful levels, particularly for seniors, children, and those with pre-existing health conditions. A recent study of more than 60 million Medicare recipients found that even pollution levels below those generally considered safe, especially from particulate matter, increase the risk for premature death by 7.3%.

Ways you can help:

Increased energy usage produces more air pollution since the energy is usually produced by burning coal, oil or natural gas. Here are some of the ways you can reduce your energy use:

- Install LED light bulbs and smart-energy controls, as well as taking other energy conservation measures. (For more information, *click on the "Archive of Past Commentaries"* in the Eco Letter email, then select *LEDs and Smart Lighting and Energy Conservation*.**)**
- Avoid excessive use of air conditioners or other energy-gobbling devices (such as toaster ovens or electric blankets). Also, set your air conditioner thermostat to mid- to upper- 70's or low cool.
- If you own a car, be aware that a City law restricts engine idling time. You can also report other vehicles that have been idling more than three minutes (or one minute if parked in front of a school).
- Eat and/or grow local produce.
- Plant trees and shrubs. They improve air quality, reduce asthma rates and enhance public health and well-being in other ways. Property owners can

request a free street tree by submitting a service request to the NYC Department of Parks or by calling 311.

COVID-19

Does air pollution increase the risk of getting the coronavirus? Does it make symptoms worse? Recent research from Rachel Nethery, Xiauo Wu, Francesca Dominici and other colleagues at Harvard indicates that people who live in places with poor air quality are more likely to die from COVID-19 even when accounting for other factors that may influence risk of death, such as pre-existing medical conditions, socioeconomic status, and access to healthcare. This finding is consistent with prior research that has shown that people who are exposed to more air pollution and who smoke fare worse with respiratory infections than those who are breathing cleaner air and who don't smoke.

WATER POLLUTION

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 (NYC 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 NYC DEP regularly tests drinking water quality at nearly 1,000 sampling stations throughout the City. Thus, New York City's water is healthy and safe to drink, and delivered virtually lead-free from our upstate reservoir system to more than nine million New Yorkers. However, some older residences may have plumbing pipes that release small amounts of lead into the water (see the Heavy Metals Section below).

Brown or discolored water is often related to plumbing corrosion problems inside buildings and from rusting water heaters. If you have an ongoing problem with brownish water, it may be due to rusty pipes in or outside your building. You can usually eliminate the brown color by running your cold water for 2-3 minutes to flush the line. On its own, rust in water is not a sign of harmful bacteria or lead, which are hazards. In fact, the limits set by the Environmental Protection Agency for iron in drinking water are based on aesthetics (taste, odor, color), not safety concerns.

Discoloration is a temporary condition that can also come from iron and manganese particles that have settled to the bottom of the water pipes buried under the roadways. Any sudden change in the flow of water within the pipes or external vibration may loosen or resuspend the brown/red/orange particles of iron into the water. This temporary problem is generally resolved or reduced when the DEP flushes water from a

nearby hydrant. For questions contact: Safe Drinking Water Hotline (1-800-426-4791) or see the New York City 2018 Drinking Water Supply and Quality Report put out by the NYC DEP.

Another potential health problem exists in our sewage system, which is combined with our stormwater run-off system. When it rains hard the system can become overwhelmed; instead of being diverted to a wastewater treatment plant, some of what goes down your toilet can then end up flowing in rivers and on to the shores of our beaches and waterfront parks. Even with the installation of sewage treatment plants (such as the North River Plant in West Harlem), more than 20 billion gallons of feces-polluted water is flushed out onto the City's coastline each year. Disease such as salmonella, typhoid fever and cholera have historically been associated with exposure to raw sewage. Ingestion of sewage infested water has also been linked to other forms of diarrhea, encephalitis, hepatitis, and several other maladies. Therefore, people should still avoid swimming in or eating fish caught in NYC Hudson River waters.

HEAVY METALS

Lead:

Aside from drinking water there are many sources of lead in the environment, most notably peeling paint, and it is important to reduce exposure to lead as much as possible. Lead can be harmful, especially to young children and pregnant women. It's a neurotoxin that can impact a young child's development, behavior, and ability to learn. Lead exposure during pregnancy may contribute to low birth weight and developmental delays in infants.

To monitor drinking water for lead, in 1991 the US EPA published the Federal Lead and Copper Rule that required all municipalities to regularly test drinking water for these two metals, and to take protective measures if standards are not met. The DEP analyzes the drinking water from hundreds of homes each year to confirm these samples meet the federal standards.

What you can do about lead toxicity:

The DEP Lead Unit (718-595-5364, DEPLeadUnit@dep.nyc.gov) recommends you take the following steps when using drinking water for drinking or cooking to reduce lead exposure:

- Run your water for at least 30 seconds or until it gets cold. Once the water is cold, run it for 15 seconds more.
- Use cold water for cooking, drinking, or preparing infant formula, since hot water is more likely to contain lead and other metals.
- Remove and clean the faucet screen (also called an aerator) monthly, where small particles can get trapped.

If you are concerned about lead in your drinking water, you can have your home's water tested at no cost. The DEP offers free testing kits, with prepaid postage, to all New York City residents. Call 311 or going to the 311 website. Additional information is available from the US Environmental Protection Agency.

Other heavy metals, such as mercury, cadmium, and arsenic, can enter the body via food, water, and air. **Frequent** exposure to any number of them can lead to toxicity. Unfortunately, sources of heavy metal can be found in such things as dental fillings, fumes, and some items in your home. Symptoms of **heavy metal poisoning** include a metallic taste in your mouth, fatigue, anemia, mood swings, muscle tremors, gastrointestinal disorders, osteoporosis, thyroid problems, and respiratory issues.

Mercury:

Mercury toxicity, even in small amounts, can cause serious nervous, immune, and digestive problems. Symptoms include anxiety, depression, irritability, memory problems, and tremors. Mercury is usually accumulated through fish or shellfish consumption, but it is also present in thermometers and CFL lightbulbs. There's currently no cure for mercury poisoning, so the best way to treat it is to stop your exposure to the metal.

Cadmium:

When addressing cadmium toxicity, prevention is key since there is little agreement regarding treatment. Most of the cadmium that builds up in individuals' bodies comes from smoking cigarettes, but nutritional deficiencies and contaminated food can affect overall levels. Chronic exposure to cadmium negatively impacts the kidneys and bones, and is also associated with anemia and insulin resistance, as well as decreased attention level and memory.

Arsenic:

While arsenic is naturally occurring, it also comes in inorganic chemicals used in agriculture (such as pesticides), mining, and manufacturing. Overexposure to arsenic causes skin, lung, and internal cancers, anemia, and skin lesions. In regard to gastrointestinal health, arsenic toxicity causes the loss of vitamins, elevated liver enzymes, and bloody diarrhea. Symptoms of arsenic poisoning may include red or swollen skin that has lesions or warts, abdominal pain or nausea, abnormal heart rhythm, muscle cramps or tingling of fingers and toes. As with mercury, there's no specific treatment for arsenic poisoning and the best way to treat the condition is to eliminate arsenic exposure.

What you can do to prevent heavy metal toxicity:

- Eat organic, unrefined, low sugar foods. Normalizing insulin levels is an important step in healthy detoxification.
- Get lots of rest and establish healthy sleeping patterns.
- Avoid smoking, alcohol, and illegal drug use.
- Limit dust exposure in the home.
- If you eat fish, make sure you are aware of local advisories regarding mercury levels.
- Read all food and product labels for items you bring into your home, which can determine how toxic they are.

SOLID WASTE

Some portions of our waste stream are potentially hazardous to our health, especially rotting food and discarded electronics goods. Electronic devices contain small amounts of heavy metals, some of them quite toxic (e.g., lead or cadmium). Small quantities added bit by bit over time to the soil and water in landfills produce a net effect that can be cumulatively destructive to healthy living. This is why it's so important to recycle electronics whenever possible so their components can be handled responsibly. Budget cuts necessitated by the pandemic resulted in DSNY suspending its E-Waste Recycling until June 2021, but you can check from time to time with Lower East Side Ecology to find out when they'll resume their e-waste collection events (212-477-4022). Other options are listed in our UWSR Hard-to-Recycle List in the Computer and Batteries & Lighting sections.

At first glance, it might seem that recycling of food waste isn't particularly important. After all, it's biodegradable and will, in theory, eventually be turned back into soil (though that soil will likely be contaminated). But decomposing food waste in garbage bags that DSNY trucks and deposits in landfills is a vector for diseases. It also attracts rats and other vermin, which carry diseases themselves. In addition, any organic waste buried deep in landfills decomposes anaerobically (without oxygen) and thus produces methane, a potent greenhouse gas.

However, collecting food waste for composting in latched, rigid containers sharply reduces detrimental health effects. And when organics are composted, they're periodically turned over, and organics decompose primarily in an aerobic process (in the presence of oxygen), which significantly reduces methane production and the resultant health effects of climate change.

CLIMATE CHANGE

Climate change has already made conditions more favorable to the spread of some infectious diseases, including Lyme disease, waterborne diseases such as Vibrio

parahaemolyticus which causes vomiting and diarrhea, and mosquito-borne diseases such as malaria and dengue fever. Rising temperatures raise health risks for people with existing physical or mental illness, children and older adults, those who work outdoors, and those living along the coast or in areas prone to flooding. Warmer temperatures, which can expand ranges for disease-carrying insects, can also increase pollen production and air pollution. Pollen and pollution raise risks for people who suffer from asthma; infectious diseases transmitted by mosquito and tick bites (such as Lyme disease or West Nile Virus) may appear in previously unaffected locations when the insects' range expands.

For information on mitigating climate change *click on the "Archive of Past Commentaries"* in the Eco Letter email, then select *Climate Change;* or see the NYS Department of Environmental Conservation website.

More information:

- Environmental Defense Fund
- NYC Health Department – Healthy Homes at (646) 632-6023
- US Environmental Protection Agency

UWSR Eco Letter August 2020
COMMENTARY:
Organics (Composting) Update

Although we promise to send only six emails to you a year, we feel this update of the July/August Eco Letter Commentary will at least help with one of the many uncertainties resulting from the pandemic.

As you probably already know the NYC Department of Sanitation (DSNY) has suspended collection of food scraps from residential buildings until late June 2021. In addition, funding for members of the Compost Project was sharply reduced. As a result, Grow NYC has been forced to temporarily halt its Greenmarket food-scrap collection while they seek other sources of income.

The good news is that there are still some ways to compost your food scraps in Manhattan. These include a few drop-off sites and companies that will pick up from your building for a fee.

Drop-Off Sites

- Reclaimed Organics now has a food-scrap drop-off location each Wednesday, from 4:00 to 6:00 p.m. at West 107th and Columbus Ave [southeast corner] near the CitiBike dock at the Mobilization for Change Community Garden. Look for the green compost trike called Sunshine. *For more information*: Reclaimed Organics; info@ReclaimedOrganics.org, 347.395.6377

- Lower East Side Ecology, Union Square West and 17th Street, accepts food scraps on Monday, Wednesday, Friday, and Saturday from 8:00 a.m. to 5 p.m. They also operate two other sites further down on the Lower East Side: East River Park Compost Yard, open; 24/7; and East 7th Street Community Garden, Sundays from 8:00 a.m. to 5:00 p.m. No animal products (such as fish, meat or bones) since these will attract rats and other vermin. *For more information*: Lower East Side Ecology, info@lesecologycenter.org, 212.477.4022

- Community Gardens: You might ask at your local community garden to see if they'll accept your food scraps. *No animal products* (such as fish, meat or bones) because they attract rats and other vermin. A few that accept organics on a limited basis include the following: (please call first):
  - *Harlem Grown*, 127 West 127th Street. *Info*: Harlem Grown; info@harlemgrown.org; 212-870-0113
  - *Jenny's Garden*, West 138th Street & 12th Avenue. *Info*: Jenny's Garden, 212-870-3070
  - *The Ring Garden*, between Broadway & Seaman Avenue on Dyckman Street; will accept your food scraps if you become a member for $10 ($5 for students and seniors). *Info*: The Ring Garden; (212) 639-9675)

For more possibilities see our May/June 2018 commentary, Growing and Eating Local Produce in Upper Manhattan or check with Green Thumb, (212-602-5300) for a list of Community Garden locations.

Food-Scrap Collection from Residential Buildings in Upper Manhattan
(see also the July/August 2020 Eco Letter)

- Avid Waste, 718-991-9700, jokun@avidwaste.com. Provides food-scrap pickups up to three times per week for a fee.
- Mr. T Carting, 718-821-9706 x 122. Provides food-scrap pickups up to 59th Street for a fee.
- Vokashi Kitchen Waste Solutions, 718-623-2515, vokashi@gmail.com. A micro-hauler that picks up food scraps from residential buildings in NYC and Westchester County for a fee.

To keep up with future developments in food-scrap collection and composting check with these organizations:

- Big Re-Use, 718-725-8925, ext 2 (Composting site under the Queensborough Bridge - *currently inactive*)
- Commit-to-Green, Shien-ru Tsao, 335 Madison Avenue; (646) 490-6330; srt@committogreen.com (Mapping of NYC composting sites, compostable bags)
- Earth Matter NY; Governors Island; (646) 734-6151; contact@earthmatter.org (Compost learning site on Governors Island)
- Green Thumb, 100 Gold Street, New York, NY 10038; 212-602-5300 (Community Garden locations)
- GrowNYC, 100 Gold Street, New York, NY 10007; (212) 788-7900; fax: (212) 788-7913 (Green market food-scrap drop-off sites - *currently inactive*)
- Lower East Side Ecology, PO Box 20488, New York, NY 10009; 212-477-4022 (Food-scrap drop-off sites in Lower Manhattan)
- Reclaimed Organics, (347) 395-6377, info@ReclaimedOrganics.org (Food-scrap drop-off site at 107th and Columbus Avenue; see above under Drop-Off Sites)

UWSR Eco Letter July/August 2020
COMMENTARY:
RECYCLING UPDATE
Organics, Electronics and Textiles

As most of you probably know, the NYC Sanitation Department (DSNY) has suspended collection of organics, electronics, and textiles until June 2021 due to the City's financial crisis resulting from COVID19. *Please note that DSNY will continue to collect plastic, metal, glass and paper products from residential buildings and non-profit organizations.*

In this commentary, we'll briefly review the situation in regard to organics, electronics and textiles as well as explore existing alternatives. A more thorough review of alternatives for organics collection (composting) will appear in a Fall *Eco Letter*, when the situation has been further clarified.

COMPOST: LEGISLATION AND BROWN BINS

- Compost Project members (including GrowNYC, Lower East Side Ecology, and five other organizations) have ardently lobbied for restoration of their $7 million funding. Many thanks to all of you who sent e-mails or called City Council members indicating your support on this issue. Maintaining this tiny expenditure (relative to the $95 billion NYC budget) would enable Project members to maintain the necessary infrastructure and momentum. It would also be a signal

that the City is willing to be responsive to the needs of its environmentally conscious residents. As of today, June 30th, the budget hasn't yet been approved, so we don't yet know the short-term future of organics collection at Greenmarkets. To check the status of Greenmarket Food Scrap Collection after this week check with GrowNYC or call 212-788-7900. The limited alternatives for composting food-scraps are discussed below.

- The Core Act consists of two separate pieces of legislation:
    1. *Intro. 1942*, sponsored by Council Member Powers of Manhattan, would require three drop-off composting sites in each community district.
    2. *Intro. 1943*, sponsored by Council Member Reynoso of Brooklyn, would establish three recycling centers in each district. Among the materials these centers would accept would be electronic goods, which by State law cannot be disposed of into our general waste stream. Funding for this act is unlikely for FY 2021 (starting July 2020), but it has good intermediate- to long-term prospects.

- DSNY guidance on what to do with brown bins: If you already have brown bins intended for collecting food scraps, during the suspension you may use them for garbage to be put out for collection.

COMPOST ALTERNATIVES (see here also for more information)

- Residential Pickup (carters or haulers that charge a fee for pickup). Following are two we're aware of that service Northern Manhattan:
    1. Avid Waste, (718) 991-9700, jokun@avidwaste.com. Provides food-scrap pickups up to three times per week. There can be no contamination with items such as plastic utensils. plates, bags packaging, etc. Bins have to be either unlined or use certified compostable ASTM#D6400 bags, and buildings are responsible for cleaning out their own containers. There's a small per-bin fee and a minimum pickup charge of $75.
    2. Vokashi Kitchen Waste Solutions, 718-623-2515, vokashi@gmail.com. A micro-hauler that picks up food scraps from residential buildings in NYC and Westchester County for a fee. Vokashi uses the Japanese method of fermentation called "bokashi" and provides an airtight bucket and bran containing microbes to start the fermentation. Every month they swap and collect your full bucket of fermented food scraps and leave a fresh bucket(s) and bran.
    3. For a longer list of potential carters who will pick up food scraps from residential building, see here.

- Making Compost at Home or on Your Block - NOTE that food scraps must be covered and properly managed - especially important in an urban environment. Use plant matter only (veggies, fruits, bread, etc.), Meats, fish, poop, etc. will

attract rats and other vermin and will not decompose properly except in an official composting facility (such as the ones DSNY uses). You can get more tips on making compost yourself from the DEC, from this Outdoor Composting Guide, and from this guide on worm bins.

1. *Outdoor Composting* - This is an option for you if you have access to a private outdoor space (such as a rooftop, backyard, or alleyway). Once you obtain an outdoor compost bin, all you'll need to get started are some leaves or grass and food scraps and worms. You can use this guide from the NYC Compost Project. If you live on a block of brownstone-type buildings, you might consider doing this communally. The backyards of one or two buildings on the block (perhaps rotating areas) could contain compost piles or bins and the resulting compost used for soil to grow vegetables. Crops such as herbs. lettuce, kale, summer squash, tomatoes, bush or pole beans, and root crops such as carrots and radishes are relatively easy and quick to grow. You can think of these gardens as similar to the numerous Victory Gardens that popped up during World War II.
2. *Indoor Composting* - If you have a lidded plastic bin and a drill, this can be a very inexpensive DIY project for just the cost of some red wiggler worms, which you can purchase online. If you'd rather buy a ready-to-use worm bin, search online for a bin that suits you. For more information see Indoor Composting with a Worm Bin (from the Compost Project) and "How to Start a No-Smell, No-Hassle Compost Box in Your Living Room" (from the NY Times).
3. *Uses for the Compost You Create*
    - Flowerpots, vegetable gardens paired with outdoor compost sites.
    - Community gardens. Some community gardens collect food scraps and process compost locally. Community gardens are currently closed to the public but hope to reopen, at least for a short time each week, as stay-at-home orders are lifted. Check here to find the location of your closest community garden.
    - Homes you or friends might have in the country.

- Waste Less Food (see also information from the DEC)
    1. Learn how to better store produce.
    2. Check the shelf life for fruits and veggies.
    3. Preserve what you can't use right away.
    4. Get creative with your cooking and/or re-use leftover portions.

TEXTILES AND E-WASTE

- Textiles – *Wearable Collections*, (646) 515-4387, still provides pick-up of all textiles from residential buildings, either by siting of a permanent bin or periodic clothing drives, but they've now been forced to charge a small fee. Other

organizations also provide pickups. (See the attached Hard-to-Recycle List for more details). Call first to be sure

- E-Waste – *Lower East Side Ecology*, (212) 477-4022, has temporarily suspended all E-Waste collection events because of the COVID pandemic. Call them in late July or August to check the status then. Best Buy has also suspended recycling services at its stores. Click here for a status update.

Check the attached Hard-to-Recycle List for more possible options. *Always call first*.

UWSR Eco Letter May/June 2020
COMMENTARY:
Climate Change Update

Since we wrote the original Climate Change Commentary in the July 2015 *UWSR Eco Letter*, carbon dioxide (CO2) levels in our atmosphere have risen from about 400 to 415 parts per million (ppm). This may not seem like a big jump, but the level was about 325 ppm in 1970 (a level already higher than at any other time in the last 800,000 years), and the steady rise is already having dire consequences.
During the last five years, the world has experienced a continued elevation of temperatures – the five warmest years on record globally have all occurred since 2014 – as well as a multitude of other consequences resulting, at least in part, to this warming. These include:

- More extreme heat waves;
- Devastating wildfires;
- Accelerating melting of icecaps and glaciers in Greenland, Antarctica and the Himalayas;
- More frequent flooding and droughts;
- Disruption of ecosystems;
- Unpredictable weather for farmers; and
- Economic hardship for millions of people displaced by the hot and dry weather, particularly in Africa and the Middle East.

Many of these changes occur slowly, almost imperceptibly, so it's easy for people not to notice them, attribute them to other causes, or even to deny that they exist. Coupled with the willful ignorance of the White House, a lack of action has resulted in a potentially very dangerous situation, one that must be addressed soon, before the effects of climate change really snowball and are almost impossible to reverse.

But there is hope. Renewable energy usage is growing rapidly and, according to the American Council for an Energy-Efficient Economy, *increased* energy efficiency alone can take us halfway to our climate-change goals.

We need to consider global warming on both a local and a worldwide basis. If the U.S. Government is not acting, action must be taken locally. In this Commentary, we'll consider how global warming will likely affect us in the NYC Metro Region, what steps we can take to avert it, and what local organizations are doing to address it.

Climate change *will* have local effects – more extreme heat waves, more frequent heavy downpours, and continued sea level rise are predicted. The mean annual air temperature in Central Park has already increased over 3.5 degrees Fahrenheit from 1900, although the trend has varied substantially over shorter periods of time. Mean annual precipitation increased more than 8 inches from 1900 to 2020. Both year-to-year and multi-year variability of precipitation has also become more pronounced, especially since the 1970s. Today, global sea level is 5 to 8 inches higher than it was in 1900. The situation is even worse in NYC, which has experienced at least 12 inches of sea-level rise since 1900, mostly due to expansion of warming ocean water. Scientists project that by 2100 sea levels will be 18 to 50 inches higher than today along New York's coastlines and estuaries: if it occurs, this rise will be locked in for centuries by heat-trapping greenhouse gases already in the atmosphere.

If these effects aren't compensated for they'll have a significant impact on our local economy, infrastructure, food supply, agriculture, fisheries, and ecosystems.

- Houses, commercial buildings and vehicles in low lying areas will suffer significant damage.
- Insurance rates and taxes will rise.
- Higher electric bills and more blackouts are likely.
- Outdoor work recreation and exercise may at times become almost unbearable.
- Allergies and other health concerns will increase.
- Water and air quality will likely become worse.
- Disruptions in travel caused by power outages, flooding, or other weather-induced changes will become more frequent.

Because we've already experienced rises in greenhouse gases and the resultant warming, 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 source (e.g., electrical generation, heating and cooling of buildings, or cars and trucks) or else by accelerating our usage of renewable energy sources and energy conservation measures. In the short term, methane gases are the biggest problem. Although methane remains in the atmosphere for a much shorter time

than carbon dioxide (CO2), within the first two decades after being emitted, it traps 80 times more heat than an equivalent amount of CO2. However, in the long term, carbon dioxide is the primary pollutant driving climate change; the CO2 we emit now will warm the planet for centuries.

We can also mitigate climate change by facilitating greenhouse gas absorption by "sinks" that absorb and store these gases – such as water, forests and soil. This type of mitigation includes methods such as carbon sequestration, which some regard as a primarily stop-gap measure and at least a partial capitulation to the fossil fuel industry. Since cow manure is also a significant source of methane, cutting down on the amount of beef we eat helps as well.

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 scarcity) rather than only trying to reduce the emissions of the greenhouse gases themselves. New York City has been investigating a broad range of climate resiliency policies and programs. One example that's been hotly debated is the construction of a 120-billion-dollar tidal barrier to protect the New York-New Jersey Harbor Estuary from storm surges. Other proposed solutions include:

- Flood-proofing or elevating existing structures;
- Elevating existing streets and highways;
- Amphibious building;
- Creating smaller barriers or walls around subway entrances and certain low-lying district;
- Restoring marshes and seaside dunes;
- Constructing living breakwaters that include oyster beds; and
- Building elevated park-like islands around lower Manhattan and other low-elevation districts.

What You Can Do to Help Locally

You can have an impact by making small changes in your daily life. Taken collectively, these small changes can add up and make 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:
    - Turn off lights in empty rooms;
    - Buy energy-efficient appliances and light bulbs (e.g., LEDs);
    - Use smart controls for lighting and air conditioning;

- Minimize the use of your air conditioner (don't leave it running when you're not home and use fans instead when you can);
- Don't hold your refrigerator door open for longer than necessary;
- Keep your thermostat down during the winter;
- Walk, use bikes or mass transit as much as you can;
- Don't idle your car when sitting in a parking space, and report busses and other vehicles that are idling;
- If you're replacing your car, consider buying a hybrid or all-electric vehicle; and
- Try to interest your building management in investing in energy conservation measures, such as energy-efficient windows, replacing or upgrading an old inefficient boiler, installing smart controls and thermostats for space and water heating, and using LED bulbs in the building's public spaces.

More information is available from Con Ed and Citizens Air-Complaint Program.

- *Use renewable energy* such as solar, wind or hydropower as much as possible instead of fossil fuels. For instance,
  - You can opt to use electricity produced primarily by wind power, solar energy or hydroelectricity via suppliers such as Con Ed Solutions (914-286-7000) or Green Mountain Power (800-636-5690).
  - If possible, have photovoltaic panels or solar water heating installed on your building rooftop (contact Urban Green Energy).
  - You can also try (along with fellow alumni) to convince the college or university you attended to divest its investment portfolio from fossil fuels (*see* 350 NYC Divestment Campaign).
- *Help reduce atmospheric CO_2 and methane* by
  - planting trees or gardens (which absorb CO_2);
  - installing a green roof; or
  - eating less meat, especially beef.

Local Organizations Doing Climate-Change Work

- *350NYC*, a local affiliate of 350.org, is a community of local activists mobilizing for climate solutions. They've taken action to oppose natural gas and oil pipelines, divest from fossil fuels, and support renewable energy. Various committees of 350NYC meet regularly to discuss these issues (*see Events listing under Climate Change and Energy*).

- *Climate Works 4 All*, formed in 2014, is a coalition of local unions, environmental organizations, civic groups, and local community development groups all working to promote climate action in NYC that is equitable and just for all New Yorkers (contact: Phoebe Flaherty, phoebe@alignny.org). To further the understanding of climate change, they hold periodic meetings and forums and also gather pertinent information. Their report, Climate Works for All: A Platform for Reducing Emissions, Protecting Our Communities, and Creating Good Jobs for New Yorkers, details ten proposals to make our city more resilient, create nearly 40,000 jobs each year, and to cut our annual greenhouse gas emissions by nearly 12 million metric tons of carbon equivalent. One of their principal members, The Alliance for a Greater New York (AlignNY), is a longstanding coalition of labor and community organizations united for a just and sustainable New York.

- The *Columbia Earth Institute* (2910 Broadway, 212-845-3830) is composed of more than two dozen research centers and several hundred people who collaborate across many disciplines and schools at Columbia University. The study of climate science and policy is at the core of the Earth Institute's research. More than a dozen Earth Institute centers and affiliates combine research and knowledge from many disciplines to address these issues. Foremost among these are the renowned Lamont-Doherty Earth Observatory in Palisades, NY and its Center for Climate and Life. They sponsor frequent lectures and workshops about climate change, many of which have been listed in the events section of this newsletter.

- The Consortium for Climate Risk in the Urban Northeast (CCRUN) is a NOAA Regional Integrated Sciences and Assessments (RISA) project based at Columbia University and Goddard Institute for Space Studies. CCRUN assesses risks from climate variability and how they can be managed. They are currently the only RISA team with a principal focus on climate change adaptation in urban settings. Key projects in the NYC metropolitan region that CCRUN has recently participated in include the third New York City Panel on Climate Change, the Climate Resiliency Design Guidelines, Con Ed's Climate Change Vulnerability Study, and the Coastal Flood Hazard Mapping Tool.

- *The Environmental Defense Fund* (EDF, 257 Park Avenue South, 800-694-3322), headquartered in New York City, is a non-profit group of scientists, litigators and administrators working on local, state, corporate and international levels. They investigate and promote climate change in the following areas:
    - Cutting emissions of short-lived and long-lived climate pollutants.
    - Supporting climate resilience to withstand the impacts of global warming that are here and unavoidable.
    - Removing pollution already emitted (research on removing carbon dioxide from the atmosphere).
    - Lobbying for increased wind and solar energy usage.

- Protecting tropical and other forests (which act as a carbon sink)

Their December 2019 report, *Stabilizing the Climate and Averting Catastrophe*, is available.

EDF is developing policies to deploy more electric trucks and buses in New York as part of their goal to achieve at least a 30% market share for such vehicles worldwide by 2030. They've also helped pass landmark congestion pricing legislation in the city. See their annual report for more information.

- *Goddard Institute for Space Studies* (*NASA-GISS,* 2880 Broadway, 212-678-5528) is a laboratory in the Earth Sciences Division of the National Aeronautics and Space Administration's Goddard Space Flight Center. A key objective of GISS research is prediction of atmospheric and climate changes in the 21st century. Program areas are roughly divided into the categories of climate forcings (e.g., levels of solar radiation or greenhouse gases); climate model development; Earth observations; atmospheric radiation; atmospheric chemistry; climate impacts; planetary atmospheres; and paleoclimatology.

  GISS holds frequent seminars and workshops but, because of security regulations, these aren't open to the general public. They publish numerous reports that discuss their research on climate change issues. Many of these are technical in nature and published in scientific journals; some are more general in nature and can be downloaded via the NASA-GISS website. Cynthia Rosenzweig of GISS was one of the lead authors of a 2015 review report, *Building the Knowledge Base for Climate Resiliency: New York City Panel on Climate Change.* This seminal report is still available online here.

  GISS works cooperatively with area universities and research organizations, most notably with Columbia University. Many of their personnel are members of Columbia's Earth Institute (see above), the Center for Climate Systems Research, the Department of Earth and Environmental Sciences, or the Department of Applied Physics and Applied Mathematics. GISS is a key member of the New York Panel on Climate Change.

- *It's Easy Being Green* (itseasybeinggreen.uws@gmail.com) is a neighborhood climate education and action group under the sponsorship of Bloomingdale Aging in Place and the West 102,103 and 104 Block Associations. Their projects include:

  - reducing the amount of single-use plastics at restaurants and local supermarkets;
  - aiding participation in the DSNY organics curbside pick-up program; and
  - encouraging readers to consider energy conservation projects such as changing to LED lightbulbs.

They also host speaker events, partner with environmental science students at Barnard and Columbia University, and take field trips to places such as Sims Recycling Sorting Center and the Green Roof on Javits Center. They produce and distribute a monthly newsletter.

- The *Natural Resources Defense Council* (40 West 20th Street, 212-727-2700) is a non-profit international environmental advocacy group headquartered in New York City. It was founded in 1970, partially an outgrowth of the Scenic Hudson Preservation Conference v. Federal Power Commission— the Storm King environmental case.

  NRDC has over 3 million members and a staff of about 700 lawyers, scientists and other policy experts and has litigated many important cases involving climate change and energy. For instance, they have advocated for and provided research for the *Regional Greenhouse Gas Initiative*, a cooperative effort among the northeastern states (including New York) to reduce greenhouse-gas emissions in those states. Staff members also sometimes give lectures on environmental topics.

  NRDC's New York Council is a volunteer group comprised of New Yorkers from a wide variety of backgrounds and professions who share a strong commitment to the environment and are dedicated to furthering NRDC's mission.

  NRDC'S Climate and Clean Energy Program aims to reduce global CO2 emissions to at least 35% below 1990 levels by 2030. They've recently focused on countering the federal government's pro-polluter agenda and urging it to take climate change seriously. In 2019 they published their report, *Clean Energy Opportunities and Dirty Energy Challenges*.

  Their real-time, energy efficiency software (Noveda) enables them to pinpoint opportunities for improvement and potential cost savings and report on the effectiveness of energy conservation measures (ECMs) once implemented. This analysis evaluates the aggregate benefits of four measures: set points and timing adjustments; boiler controls; air sealing; and electric heating. It can produce energy savings in both heating (up to 30%) and cooling (up to 76%).

More Information:

- American Council for an Energy-Efficient Economy
- The Big U Project
- The Blue Dunes Project
- The Intergovernmental Panel on Climate Change
- Coastal Protection, NYC.gov

- NASA, *Climate Change: How Do We Know?*
- New York City Panel on Climate Change
- New York City Panel on Climate Change 2019 Report
- New York State Department of Environmental Conservation, *Impacts of Climate Change in New York*

UWSR Eco Letter March/April 2020
COMMENTARY:
Religious Organizations and Our Environment

In recent years religious organizations have increasingly turned their attention to environmental stewardship as both a spiritual and a practical issue. For instance, the Cathedral of St. John the Divine, with the full support of the then Dean James Parks Morton, was home to Upper West Side Recycling's community drop-off center and our materials-collection and job-training project from the early 1980s through the early 2000s. It also hosted the Urban Bioshelter Project (which aimed to construct a prototype rooftop greenhouse for growing vegetables) and the Gaia Institute (which explored James Lovelock's concept of the Earth as a living organism). Later, in September 2014, Union Theological Seminary hosted the *Religions for the Earth Conference,* during which religious leaders from around the world convened in an effort to address climate change.

All New York City non-profit religious organizations are entitled to receive free pick-ups of paper, plastics, metal and glass for recycling. In this Commentary we'll discuss other current environmental initiatives or programs hosted or conducted by local religious organizations that address areas such as e-waste recycling, organics (composting), climate change, energy efficiency, urban greening, environmental justice, and food systems.

Let's start with religious organizations that don't have congregations per se.

Union Theological Seminary (UTS), 3041 Broadway, NYC 10027; tel: (212) 662-7100. In addition to DSNY's collection of plastic, metal, glass and paper, UTS recycles both e-waste and organics. They use a mix of compostable plastic dishes and cutlery as well as metal and china dishes and cutlery; they have facilities to wash the kitchenware. In addition, UTS hosts both a clothing closet and a food pantry. Environmental topics are discussed in their sermons. And last semester there was an entire class-led chapel series on preaching about "Extractivism" (the extraction of minerals from the earth and its subsequent environmental effects).

They are also home to two separate environmental organizations: The Center for Earth Ethics and The Eco-Justice Caucus.

- ***The Center for Earth Ethics*** *(CEE),* tel: (212) 280-1425; info@centerforearthethics.org; https://centerforearthethics.org/#**.** Founded by Karenna Gore, CEE grew out of the groundbreaking *Religions for the Earth Conference* held at UTS in September 2014, which convened religious leaders from around the world to address climate change as both a spiritual and a practical issue. They operate on the local, national, and international levels, with an emphasis on climate change, education, sustainability, ecology and environmental justice. To fulfill their mission, they work to cultivate the public consciousness needed to make changes in policy and culture that will establish a new value system where value is measured according to the sustained well-being of all people and our planet. For example, they publish periodic blogs with a focus on climate-change issues (https://centerforearthethics.org/blog/).

  CEE administers four core programs that complement and connect to each other:

  1. The *Eco Ministry* fosters educational opportunities and dialogue about humanity's relationship to the rest of the natural world for seminary students, faith leaders and local communities. They offer an annual Minister's Training to educate and empower faith leaders as they respond to climate impacts in their communities.
  2. The *Environmental Justice & Civic Engagement Program* works at the intersection of social inequity and injustice and the ecological crisis.
  3. The *Original Caretakers Program* honors, supports and learns from indigenous knowledge and traditions, especially regarding the spiritual dimensions of our ecological crisis.
  4. The *Sustainability & Global Affairs Program* engages policy makers and civil society in order to bring faith, wisdom and indigenous traditions to bear on the establishment of a new economic development paradigm.

- ***The Eco-Justice Caucus*** (EJC) at UTS (Ryan Felder, rf2682@utsnyc.edu) is a student organization that focuses on climate change, energy issues and recycling. It currently has three areas of concern and programming:
  1. campaigning for UTS to declare a climate emergency and become a certified green seminary;
  2. encouraging the growth of a more socially just and ecological UTS (some of the results of these efforts can be seen above in the first paragraph about UTS); and

3. building ecological partnerships with neighboring institutions and groups that promote social and ecological justice. They are currently planning community gardens with an area church for the Spring and Summer.

Hazon, 25 Broadway, NYC 20004; https://hazon.org/; info@hazon.org; tel: 212.644.2332. Hazon is the largest faith-based environmental organization in the U.S. and is building a movement that strengthens Jewish life and contributes to a more environmentally sustainable world for all. As the Jewish lab for sustainability, Hazon effects change through immersive experiences and inspires individuals and communities to make specific commitments to change with a particular focus on food systems. Their Hazon Seal of Sustainability program provides guidance and support to Jewish institutions to advance sustainability-related education, action, and advocacy. They have a full range of educational materials and resources available on their website.

Marlene Meyerson JCC Manhattan (Jewish Community Center), 334 Amsterdam Avenue (between 75th-76th Streets), NYC 10023; tel: 646-505-4444; https://jccmanhattan.org/. JCC provides a sidewalk space for yearly e-waste collection events, as well as recycling their own electronic waste. They also host occasional talks on environmental topics.

Plaza Jewish Community Chapel (a funeral home), 630 Amsterdam Avenue, NYC 10024 (https://www.plazajewishcommunitychapel.org/; tel: 212-769-4400) accepts usable medical equipment and supplies, including items used in hospice care – with the exception of bedding. The Chapel works with the Afya Foundation in Yonkers (https://afyafoundation.org/). *Please call the Chapel before bringing any items.*

We've also found a number of local religious organizations with congregations that host or conduct specific environmental activities. These include:

Ansche Chesed Synagogue, 251 West 100th Street, NYC 10025; https://www.anschechesed.org/; tel: 212-865-0600. In addition to plastic, metal, glass and paper, DSNY picks up food scraps from their building. They utilize china or plastic compostable dishes, as well as metal cutlery and have facilities to wash the cutlery and dishware for regular re-use. Ansche Chesed also hosts occasional speakers on environmental topics and has plans to participate in a local tree-planting program.

B'nai Jeshurun, 270 West 89th Street, NYC 10024; https://www.bj.org/; tel: (212) 787-7600. Overseen by Larissa Wohl, Assistant Director of Community Engagement, B'nai Jeshurun has instituted a varied environmental program, including community organizing and advocacy. Their BJ Environmental Advocates Group recently signed onto Climate Works for All, a platform for reducing emissions, protecting our communities, and creating good jobs for New Yorkers (https://alignny.org/campaign/climate-works-for-all/). They even have a site where local residents can drop off food scraps for pick-up by the DSNY compost program (in addition to organic waste generated by the synagogue itself). B'nai Jeshurun also has a variety of sustainability projects within their

building. For instance, they utilize compostable plastic cups and plates for their meals and have installed LED lighting in their facility. They've conducted an energy audit and have plans to increase energy efficiency in other ways in their building. Environmental topics that relate to the Torah are at times discussed in sermons, and their calendar does list some environmental events.

Church of the Holy Name of Jesus, 207 West 96th Street, NYC 10025 ; tel: 212-749-0276 x112; Jackie Espinal; https://www.holynamenyc.org/. In collaboration with their lay Justice, Peace, and Integrity of Creation Committee, they have an active environmental program: they host a yearly E-Waste Collection event on the sidewalk in front of their building on Amsterdam Avenue just north of 96th Street; St. Francis Thrift Shop is located in their basement; and they also have a food pantry. The Church has hosted a film series on Climate Change (they encourage all event attendees to bring their own bowls and cutlery). They're looking into organics collection by DSNY as well. Environmental topics pertinent to the teachings of Saint Francis are occasionally discussed in sermons.

Riverside Church, 490 Riverside Drive, NYC 10027 (next to Union theological Seminary); https://www.trcnyc.org/; tel: 212-870-6700. The Riverside Church works in concert with the Beloved Earth Community, (tel: 646-216-9809; https://www.trcnyc.org/ministries/belovedearth/), a group of climate change activists who strive to fulfill the church's mission to care for the Earth. The Beloved Earth Community is involved primarily with projects in environmental education, greening the church, and environmental justice and political actions such as divestment from fossil fuels. In order to implement their goals, they host forums and films and act to influence church environmental policy.

The church started a food scrap program in February 2020 and is also looking into e-waste and textile recycling. They primarily use china or plastic-compostable dishes as well as metal cutlery, and also encourage caterers at their events to avoid using plastic. The Church operates both a clothing closet and a food pantry. They are installing LED lighting and storm windows and also have an efficient, computerized water heating system.

Rutgers Presbyterian Church, 236 West 73rd Street, NYC 10023; tel: 212-877-8227. In addition to DSNY pickup of plastic, metal, glass and paper, Rutgers Presbyterian Church recycles their electronic waste. They use bagasse (sugarcane) cutlery as well as china plates and bowls and have washing facilities for these. They're gradually converting their office spaces to LED lighting. In addition, Rutgers hosts environmental meetings and talks on topics such as recycling, climate change and water pollution, and environmental topics are frequently discussed in sermons.

For more information related to environmental activities in religious organizations

Green Faith; tel: 732-565-7740

Interfaith Power and Light

UWSR Eco Letter January/February 2020
COMMENTARY:
Shopping Bags

Film and rigid plastic items biodegrade extremely slowly, which means that just about every piece of plastic ever manufactured is still in existence today. Much of that discarded plastic ultimately ends up in our oceans, causing major problems for sea life. And the processes of its manufacture and transport regularly spew large quantities of carbon dioxide into our atmosphere.

But there's actually some good news locally. As you know, in January 2019 the City banned Styrofoam. And now a new *Bag Waste Reduction Law will go into effect March 1, 2020* that will ban most single-use plastic shopping bags in New York State, and paper carry-out bags will be subject to a five-cent fee in New York City.

Plastic bags were only invented about 50 years ago; for thousands of years, people carried food items in cloth bags, baskets and other containers. But plastic bags have become so ubiquitous that each of us now discards an average of 20 single-use plastic bags *every week*, which adds up to about 10 billion bags a year just in New York City. The majority of these bags aren't recycled and are not biodegradable. Plastic bags and other plastic film comprise about 7.5% of the City's residential waste stream, and these materials clog the processing equipment at the Sims recycling facility in Red Hook. It now costs the City over $12 million a year to separate these bags from other waste and dispose of them.

Plastic bags are not recycled by the NYC Department of Sanitation (DSNY) – they simply end up in the trash. Because they're so lightweight, discarded plastic bags are easily blown about by the wind – we've all seen plastic bags stuck in trees and clogging storm and sewage drains – and they're also washed or blown out to sea where all kinds of sea life encounter them, often ingesting or becoming tangled in them. Plastic bags and film become more toxic once they break down in a marine environment and fish that ingest bag fragments accumulate chemicals that can cause liver toxicity and other pathology.

Avoid using **plastic film** (such as Saran Wrap) to cover or wrap food as much as possible (plastic film is also not recycled by DSNY). Instead, store food in containers with covers (such as glass jars or Tupperware), reusable zip-lock bags or wrap it in recyclable aluminum foil. Zip-lock bags can be washed and re-used many times. If you have to use plastic film, you can recycle it along with plastic bags at most large supermarkets. Stores covered under the NYS Bag Waste Reduction Law will still be required to collect plastic bags and other film plastics from consumers for recycling. Exempted are chain-stores with less than 5,000 sq. ft or non-chain stores with less than 10,000 sq. ft.

The NYS Bag Waste Reduction Law

The NYS Bag Waste Reduction Law, which goes into effect March 1, 2020, stipulates that no vendor required to collect tax can distribute any plastic carryout bags to its customers except for exempt bags, and that re-usable checkout bags provided to customers in stores cannot be made out of plastic.

Exempt bags include:

- Bags used solely to contain or wrap uncooked meat, fish or poultry;
- Bags used by a customer solely to package bulk items such as fruits, vegetables, grains or candy;
- Bags used solely to contain food that is sliced or prepared to order;
- Bags used solely to contain a newspaper for delivery to a subscriber;
- Bags sold in bulk to a consumer at the point of sale;
- Trash bags;
- Food storage bags;
- Garment bags;
- Bags prepackaged for sale to a customer;
- Plastic carryout bags provided by a restaurant, tavern or similar food service; or
- Bags provided by a pharmacy to carry prescription drugs.

Any person or store in violation of this law will receive a warning for the first violation, a $250 fine for the second violation, and a $500 fine for each subsequent violation. (For more detailed information see the link to the law at the end of the Commentary.)

The NYS Bag Waste Reduction Law also gives localities the option of charging a fee for paper carry-out bags. New York City has opted to do just that, imposing a fee of five cents per bag. Three cents of that fee will go to the NY State Environmental Protection Fund, and the other two cents will go toward the production of reusable bags. Exempt from this fee are customers using the Supplemental Nutritional Assistance Program (SNAP) or any successor programs used as full or partial payment for the purchased items.

How You Can Make a Difference

- Say “no” to plastic bags that may be legally exempt but you don’t really need.
- Keep reusable bags in your pocket or with your shopping cart or in your car; clip folding reusable bags onto your coat, backpack or purse so you always have them handy. If you store them near the door or coat closet, you'll be more likely to remember them on the way out. Every time you use a reusable bag, you’re helping prevent litter and waste – and you can also save yourself the 5-cent paper bag fee.

- Remind your family, friends, and neighbors to bring reusable bags with them when they shop.

Cloth and Other Non-Plastic Bags

Re-usable shopping bags are made of cloth or other materials that can be cleaned and are often compostable or biodegradable. You can get free *cloth bags* from the Department of Sanitation by calling 311 or clicking here. The DSNY bags fold into a built-in pouch with a carabiner clip so they're always handy - and the bags are made of 90% recycled material. Also, some greenmarkets sell mesh-cloth bags, and cloth bags are often distributed for free by local politicians and community groups (see DSNY Events for a listing of these community events). Low-cost, reuseable cloth bags are also easily purchased through the internet.

Other alternatives are certified *biodegradable or compostable bags* made of other materials. One common plant-based material used is polylactide plastic (PLA). PLA is typically manufactured using fermented plant starch
from corn, cassava, sugarcane or sugar beet pulp. You can buy biodegradable or compostable bags at some local grocery and home improvement stores or through online vendors.

The Biodegradable Products Institute provides certification services for these products, assuring they meet ASTM (American Society for Testing and Materials) testing standards and that they will biodegrade in a managed compost facility. BPI also provides a list of companies that manufacture these products. The BPI logo identifies products that will perform satisfactorily in facilities that achieve temperatures needed to assure rapid biodegradation; *This is usually not true of home composting units*.

It's important to note that the terms "biodegradable" and "compostable" are not the same, and their use should be carefully considered.

- A *biodegradable* item, given the right conditions and presence of microorganisms, fungi, or bacteria, will eventually break down to its basic components and blend back in with the earth. The best biodegradable materials will break down quickly rather than taking years. These include items such as paper and food waste (except bones). Other materials, including some plastics will biodegrade eventually, but it may take many years for this to happen. Most plastics essentially last forever. Also, some materials degrade only aerobically (in the presence of oxygen) so they won't break down in most landfills, where the conditions are primarily anaerobic (no oxygen).

- *Compostable* products are capable of disintegrating into natural elements in a compost facility, or other environment having the necessary temperature and certain other conditions This typically should occur within about 90 days. But just

because a product is "bio-based" doesn't necessarily mean it will biodegrade in a composting facility. For example, the lignin and cellulose in wood products can take years to break down.

Garbage and Recycling Containers

Garbage bags must be impermeable to liquids, so paper alone is not the solution. But they can be made of BPI-certified bags, as well as plastic. The same is true of bags used to collect organic waste in residential buildings. The bags themselves can be put out for DSNY organics or garbage collection but are not accepted at GrowNYC Greenmarkets food scrap collection sites.

Another interesting idea is to use a *two-bag garbage or organics system.* The reuseable outer bag (placed in a rigid container) would be impermeable to liquids and made of something like wax coated cloth, bagasse from sugar cane, or even re-useable plastic. The disposable inner bag would be made of a compostable material, such as brown kraft paper. Used paper towels or napkins can be placed in the bottom of the disposable inner bag to absorb moisture. Both bags would be taken to the larger collection receptacle where garbage is assembled for DSNY pickup. Both the inner bag and its contents would be put into the larger receptacle and the outer bag taken back to your apartment to be rinsed out (if necessary) and re-used. If you recycle and compost all the items DSNY accepts—including food scraps, electronics, textiles, paper, glass, metal and glass—you'll find you accumulate surprisingly little garbage.

Recycling. Whenever possible, collect your paper, glass, metal and glass recycling into a rigid container (which can be periodically washed out) — *not* into a plastic bag – and empty it into the larger container put out for DSNY pickup. If you must use plastic bags to collect or transport recyclable items, empty them into the larger collection container and be sure to wash them out and re-use them.

For more information:

- bag it nyc
- Biodegradable Products Institute
- Department of Environmental Conservation Information for Consumers
- NY State Bag Waste Reduction Law
- PlasticBagLaws.org
- PlasticFilmRecycling

UWSR Eco Letter November/December 2019
COMMENTARY:
Organics Collection in Residential Buildings

The NYC Department of Sanitation (DSNY) program for organics collection from residential buildings has resulted in a dramatic increase in the amount of organic waste that's being recycled (mostly composted) in NYC. This organic waste includes both food and yard waste and it now comprises over one quarter of residential waste by weight. As encouraging as this is, however, most of our organic waste is still being put out with our garbage.

At first glance, it might seem that recycling of food waste isn't particularly important. After all, it's biodegradable and will, in theory, be turned back into soil someday. But there are at least four very good reasons to recycle organics:

1) Organic waste accounts for almost a third of the waste produced by NYC residents. Recycling them reduces the total volume of garbage the City must export to other municipalities around the country, where it will sit dormant in their respective landfills.
2) Any organic waste buried deep in landfills decomposes anaerobically (without oxygen) and thus produces methane, a potent greenhouse gas. When DSNY processes organics, they periodically turn them over, meaning that these organics primarily decompose aerobically (in the presence of oxygen), which significantly reduces methane production.
3) Because food waste packed into a landfill decomposes anaerobically, it biodegrades extremely slowly since it's not exposed to the oxygen needed for aerobic bacteria to break it down completely. Thus, an apple in this condition can remain intact for hundreds of years
4) Any soil that's eventually produced from the organics in a landfill is contaminated by materials such as plastics and toxic heavy metals from e-waste.

DSNY Organics Collection Program

DSNY offers free pick-up of organic waste from all residential buildings in all the City's boroughs. Their Organics Collection Program accepts:

- all food items, including bread, vegetables, fruit, fish, meat, bones, eggshells, dairy, and leftovers;
- food-soiled paper like tea bags, coffee filters, napkins, and paper plates; and
- leaves and yard waste.

Conditions at NYC's industrial composting facilities allow for the breakdown of all these materials, as well as paper and certified compostable plastic bin liners, which small-scale and backyard systems cannot typically process.

So, what happens to the organic waste after Sanitation collects it? Most of the organic waste collected from residents is taken to local and regional composting facilities, where it is composted on a large scale. Finished compost is used in NYC parks and gardens. Additionally, a portion of the organic waste collected is converted to renewable energy. Buildings interested in participating in this program can apply here. Following the submission of an inquiry form, DSNY will contact the building's management to confirm interest and organize a site visit, during which DSNY will assist the building in developing an implementation and education plan and answer any questions or concerns. Once a building plan is submitted to DSNY, the building will need to educate and train residents and staff. DSNY will supply posters and labels to clarify and publicize the building's organics program and, at the building's request, DSNY will also attend resident information or education events. Finally, DSNY will conduct a site visit to confirm the building is ready to begin collection.

Having proactive residents and the support of building management can make the enrollment process easier and faster. Interested residents should notify their building management as soon as possible and supply them with relevant information and, after submitting the inquiry form, make an effort to build support for the program among the building's residents and management. Once the organics program is in effect, it can sometimes be helpful to have a different person to check on how the organics collection is doing on each floor.

DSNY supplies brown bins to all buildings participating in their organics collection program for storage of residents' compostable organics. These brown bins are specially designed with latches and other features that keep pests out, so it's important to keep the bins latched at all times. If they're placed outside, it's also best to store them in a shaded area, especially during warm weather. The containers may or may not be lined. Certified compostable bags are available at grocery and home improvement stores and through major online retailers. But there are many options that don't require a special product: For instance, you can collect organic scraps in newspaper or in a paper bag and discard them together in the brown bin. Unlined bins must be washed out regularly after each DSNY collection.

As for temporary storage of food scraps in your apartment before bringing them down to the brown bins, these can be placed in large yogurt containers or other covered plastic containers, plastic bags, milk cartons or in commercially available compost pails. Storing items in the refrigerator or freezer reduces odors. A layer of used napkins or shredded newspaper at the bottom of the storage containers helps absorb excess moisture.

If a building's bin is lost or stolen it may qualify to receive a replacement bin or - repair an old one, which can be **picked up** from one of DSNY's Borough Offices from 8 a.m. to 4 p.m. every Friday and Saturday. You can find more information here.

Examples of Buildings with Successful Organics Collection

Very Large Co-op:

Schwab House, between 73rd and 74th Streets, fills the entire square city block between West End Avenue and Riverside Drive that was formerly occupied by the Charles Schwab Mansion. The current structure was completed in 1951. It has 17 floors plus garden and solarium levels. A self-managed co-op, it contains approximately 650 units, with 10 to 20 apartments on each floor. Divided into an East Wing (285 West End Avenue) and a West Wing (11 Riverside Drive), Schwab House is essentially two separate buildings with two separate elevator banks that are connected via the lobby.
The DSNY Organics Pilot Program is overseen by Rick Schulman, a building resident. The brown pest-proof bins are located in the basements of both wings of the building, and residents bring their food scraps and organics down to the bins in their own collection containers that may be lined with newspaper to help absorb any excess liquid. Porters put the filled, vermin-proof bins out for collection by DSNY on Mondays, Wednesdays, and Fridays.

Although the Schwab House Board of Directors was initially reluctant to allow the building to be a part of the pilot program, Rick explained that when organics were thrown down trash chutes, food residue inside the chute attracted insects. By separating organics and placing them in DSNY's impenetrable hard plastic compost bins residents could prevent insect and rat infestations, keep the garbage chutes cleaner, and reduce the number of black plastic bags containing food waste. Many residents have reported that they're happy they no longer have to bring their organics to weekend Greenmarkets or store their decomposing organics until the weekend.

Condominium:

Strivers Gardens, at 300 West 135th Street, is a 12-story building that was constructed in 2006. Its 170 condominium units are managed by New Bedford Management; Martin Robertson, the building superintendent, has been the driving force in developing and maintaining the building's environmental programs.

DSNY's brown bins are stored in the building's garage. Residents bring their organics to the garage in a number of ways: some in recyclable bags, some in paper bags; some bring it down frozen after they've stored it in their freezer. Newspaper is provided to reduce smell, as is a bin for the plastic bags residents used to carry their organics.

Strivers Garden residents may empty their organics storage containers themselves directly into the DSNY bins or they may participate in the building's Composting VIP Program whereby residents bring their food scrap containers to the concierge desk in the lobby, from where porters take it to the brown bins in the garage. Residents wishing

to use this service must purchase the food scrap container from the building, but there are no additional charges or recurring fees.

Medium-Sized Co-op:

717 West End Avenue is a 92-unit co-op building located between 94th and 95 Streets. Their organics program was initiated by resident Doris Solomon. Apartment owners take their compostable materials down to the building's basement, where they can deposit them in three DSNY brown bins. In turn, porters bring any full bins out to the curb for collection on Mondays, Wednesdays. and Fridays.

Brownstones:

West 107th Street, between Riverside Drive and West End Avenue
The brownstones on this block work together in a program organized by superintendent Ron Fields. DSNY's brown bins are chained to the garbage collection areas in front of four buildings on the block. Block residents can put food waste—as well as plants or yard waste—in the latched bins at any time. The brown bins are put out for collection each Monday, Wednesday, and Friday (except holidays) at about 4 pm and are usually emptied be DSNY by 8 p.m. Because the containers are latched, there has been a significant decrease in the rat population on the block.

Other Options If Your Building Doesn't Currently Receive DSNY Organics Pickup

- *Compost On-The-Go* (GrowNYC), (212) 788-7900. Operates nine compost collection sites in Northern Manhattan. These include a total of three on the Upper West Side and the Upper East Side
    - 110th Street and Central Park West
    - 110th Street and St. Nicholas Avenue
    - 96th Street and Lexington Avenue.

  For a full list of locations and times, see their website.

- *Greenmarkets* (GrowNYC), (212) 788-7964. Their food scrap compost program is available at various year-round greenmarket locations on the Upper West Side; see their website for times.
    - Tucker Square Greenmarket [66th and Columbus Avenue], 8 a.m.-1:00 p.m., Saturdays
    - 79th Street Greenmarket [79th & Columbus Avenue], 8 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 Streets.], 8 a.m.-1 p.m. Sundays and 8 a.m.-3 p.m. Thursdays

- *Lower East Side Ecology* (LESEC), (212) 477-4022. Year-round food scraps and plant matter drop-off sites in Manhattan include:
    - 23rd Street west of 8th Avenue, open Tuesday and Thursday, 8:00-11:00 a.m.
    - 127th Street & Malcolm X Boulevard, open Wednesday, 8:00-11:00 a.m.

GrowNYC and LESEC accept fruit and vegetable scraps, beans, nuts and nutshells, non-greasy food scraps (rice, pasta, bread, flour, cereal etc.), coffee grounds and filters, tea bags, spices, egg shells, pits, cut or dried flowers, houseplants, non-contaminated potting soil, and soiled napkins and brown paper products. They do not take fish, meat, bones, cheese and dairy products, fat or oil, animal waste, litter or bedding, coal or charcoal, coconuts, or metal, glass, and plastic (including biodegradable/compostable plastics).

For more information:

- DSNY or call 311 for general organics collection information.
- Neighborhoods receiving DSNY organics collection service
- How New York Is Turning Food Waste Into Compost and Gas (NY Times article)
- The Big Apple Takes on Composting (Our Town article)

UWSR Eco Letter September/October 2019
COMMENTARY:
Styrofoam

Overview

Plastic foam products, including Styrofoam, are used all over the world since they're lightweight and can be adapted to many uses—such as packing peanuts, coffee cups or insulation. But there are a number of serious problems with the use of this material:

- because it's lightweight and can break down into small particles that drift into our rivers and oceans, it has proven to be very harmful to aquatic life;
- it's considered a potential human carcinogen;
- its manufacture and distribution increase the emission of carbon dioxide, which exacerbates global warming; and
- it clogs up municipal landfills and biodegrades very slowly.

For these and other reasons, New York City banned most single-use foam products as of January 1, 2019.

"Styrofoam" is a trademarked brand of closed-cell extruded polystyrene foam or EPS foam. This material is light blue in color and is primarily manufactured for use as foam building insulation board for use in walls, roofs, and foundations or as a water

barrier. However, the colloquial use of the word Styrofoam often refers to another material that is usually white in color and made of expanded (not extruded) polystyrene foam. In this case, correctly referred to as EPS foam instead of Styrofoam, it's used in disposable coffee cups, plates and coolers, or as cushioning material in packaging (e.g., packing peanuts).

As mentioned above, EPS foam usage is accompanied by several serious problems. Polystyrene creates air pollution when it's manufactured and transported, the latter also consuming fossil fuels that increase the effect of climate change. After it's used and discarded, it often winds up in landfills or in our seas. Also, since polystyrene isn't biodegradable, it can remain in our environment for hundreds or thousands of years.

Since EPS foam is composed of 98% air, it's lightweight and buoyant and thus can easily drift into our waterways and ultimately the ocean. Plastic waste in our oceans is becoming a very serious problem. Every year, about 8 million metric tons of plastics enter our ocean on top of the estimated 150 million metric tons that currently circulate in marine environments. If this trend continues, it's estimated that the ocean will soon contain a greater amount of plastic than fish.

EPS foam can break down into micro-particles (pieces under five millimeters in length). Fish, sea birds, sea turtles and other ocean creatures often ingest these micro-particles, with adverse and often fatal effects. A recent Food and Agriculture Organization study found that more than 100 commercial seafood species had ingested them; all-in all, close to 700 species have been impacted. These micro-particles can also work their way into the food chain and thus result in human health problems. In fact, the EPA and International Agency for Research on Cancer consider styrene a possible human carcinogen. Toxic polystyrene can also leach from containers (such as coffee cups) into beverages or food.

If you receive packages containing EPS foam peanuts, avoid throwing them in the trash. Most Mail Boxes Etc. and UPS Stores (tel: 800-789-4623) accept EPS foam peanuts and other packaging materials such as bubble wrap and plastic foam for reuse in shipping. (This is also often true of other local businesses that do a lot of shipping.)

NYC Ban

The New York City Department of Sanitation concluded that EPS foam could not be recycled in an economically efficient and environmentally feasible manner and thus decided that most uses of this material should be banned. It took a few years for this legislation to pass, but it finally happened. New York City's ban on single-use foam products (such as EPS foam) went into effect January 1, 2019. This law became enforceable as of July 1, 2019, and DSNY is currently issuing tickets to businesses who continue to use EPS foam products. Establishments found in violation of the foam ban will receive fines for each violation starting at $250; repeat violators will incur higher fines.

Banned products include single-service items, such as cups, bowls, plates, takeout containers, trays, and coolers. Additionally, manufacturers, distributors, and

stores may no longer sell or offer for sale loose fill foam packaging ("packing peanuts") in the City.

Exceptions include foam containers used to package or store raw meat, pork, fish, seafood, poultry, or eggs sold from a butcher case or similar food retailer. Also exempt are foam blocks used as protective packaging in shipping goods such as electronic devices or appliances.

Any business or store that is located in or operates in New York City, such as retail stores, food service establishments, mobile food commissaries (e.g., food trucks and food carts) and manufacturers must comply with the ban. Small businesses (with less than $500,000 in gross income) and non-profits may apply for temporary hardship exemption from the Department of Small Business Services.

Reporting a violation:

- Citizens can call 311 to report a violation. When calling 311 let them know this is a Department of Health violation and that you are reporting a business using EPS foam or Styrofoam containers that have been banned from use.
- You can also use the 311 app to report a violation.
    - Click on 'New Request'.
    - Scroll down to 311 Online Shortcuts. Click on 'Food Complaint'.
    - Scroll down and select the type of food service establishment in violation of the Foam Ban.
    - Once this selection has been made, click on the blue link to 'Report unsanitary conditions or unsafe food practices'.
    - Under Problem Detail select 'Food Protection'.
    - Under Additional Details select 'Food Display/Storage Improper'.
    - In the Description, describe the EPS foam products being used. Click on the data observed and hit 'Next'.
    - Enter the 'Location type' and business name and address in as much detail as possible.
    - Continue filling out the form and make sure you click on 'Submit' to complete the form and send it in.

Non-plastic alternatives to EPS foam (*see also* Manhattan SWAB)

For packing peanuts used in shipping:

- *Cornstarch-based peanuts*. These are available from several vendors online – or when you receive packages containing them you can save them for future use. (Test to see if they're cornstarch by dissolving them in water—EPS foam peanuts don't dissolve.)
- Ecovative Design's *Mushroom® Packaging Material* is made from mushroom mycelium (mushrooms' intricate root structure) and is a high performing packaging solution, cost competitive with conventional foams, and 100% home compostable. This material is just as lightweight as EPS foam, but with much less negative environmental impact. Info: Ecovative Design, tel: 518-273-3753.

- Crumpled newspaper, shredded office paper, junk mail, cut strips of cardboard
- Rags or unusable textiles, yarn
- Choose a box that fits the item to be shipped as closely as possible. You might want to stockpile a few of these when you receive small packages containing vitamins, drugs, cosmetics, etc.

For other EPS foam products—including cups, bowls, plates, clam-shell containers, egg cartons: If your host a party at your home or a restaurant or other venues the best environmental option is to use reusable, dish-washable cups, bowls, containers, and/or plates.
Here are a few more tips to avoiding EPS foam containers and packaging:

- Bring your own reusable cup when purchasing coffee.
- Bring your own "doggie bag" to restaurants for leftovers.
- When ordering catering at home or work, ask the restaurant or caterer to bring the food in reusable metal catering trays.
- Whenever possible, buy eggs packed in recyclable paper cartons.

For more information:

- NYC Department of Sanitation (DSNY)
- Cafeteria Culture

The Manhattan Solid Waste Advisory Board is a voluntary citizens organization dedicated to helping the City meet its zero waste goals. The Board meets monthly except during July and August, and meetings are open to the public.

UWSR Eco Letter July/August 2019
COMMENTARY:
Recycling and Waste Reduction Updates

• DSNY Curbside Organics Collection

Apartment buildings in Manhattan (and the rest of the City) with 10 or more units are now eligible for free DSNY Curbside Organics Collection. Enrollment requires the approval of the building's management or co-op board. For an online application click here. DSNY supplies brown bins for food scraps, plant trimmings and food-soiled paper. Before bringing these items to the brown bins, you can re-use plastic containers to store them in your refrigerator or freezer to minimize odors. DSNY collects three times weekly.

DSNY will also be expanding organics collection to all schools (about half of public schools have it now). Click here for an excellent article on composting that appeared recently in the West Side Spirit.

• ***donateNYC Food Portal***
Organizations and businesses can donate excess food via donateNYC's Food Portal instead of discarding it. donateNYC passes on these goods to organizations that can use or redistribute the food to those in need. Individual residents wishing to donate their own excess food can search donateNYC's online map, which lists dozens of greenmarkets, food pantries, thrift stores and other organizations. For more information email donateNYC at donate@dsny.nyc.gov.

• ***Funding for Food Waste Diversion***
The Foundation for New York's Strongest Microgrant Program provides local businesses with funding and technical support to begin or expand food waste diversion. Through the Food Waste Creative Solutions Grant, the Foundation will award up to $2,000 plus technical support to small businesses based in New York City. Click here for an application and more information.

• ***Electronics Recycling***
New York City appears to be doing much better with electronics recycling. According to the DSNY Waste Characterization Study, the volume of electronics in the trash dropped 60% from 2012-2017. Buildings with 10 or more units are eligible for pickup, and you can find an online application here. If your building isn't enrolled or eligible to be enrolled in the program, you can check with Lower East Side Ecology or look at the *Electronic & Textile Recycling* section in the Events listed below.

• ***Ban on Single-Use Foam Products***
New York City's ban on single-use foam products (such as Styrofoam) went into effect January 1, 2019. Banned products include single-service items such as cups, bowls, plates, takeout containers, trays, and coolers. Additionally, manufacturers, distributors, and stores may no longer sell or offer for sale loose fill foam packaging ("packing peanuts") in the City.

Any businesses or stores located or operating in New York City, such as retail stores, food service establishments, mobile food commissaries (e.g., food trucks and food carts) and manufacturers must comply with the ban. Small businesses (with less than $500,000 in gross income) and non-profits may apply for temporary hardship exemption from the Department of Small Business Services.

Exceptions to the single-use foam products ban include foam containers used to package or store raw meat, seafood or eggs sold from a butcher case or similar food retailer. Also exempt are foam blocks used as protective packaging in shipping goods such as electronic devices or appliances.

Beginning July 1, 2019, establishments found in violation of the foam ban will receive fines for each violation starting at $250; repeat violators will incur higher fines. Citizens can call 311 to report a violation.

More information on the ban is available on the nyc.gov website here, as well as from the Manhattan Solid Waste Advisory Board (SWAB). The Manhattan SWAB is a voluntary citizens organization dedicated to helping the City meet its zero waste goals. It meets monthly (except during July and August), and meetings are open to the public. See here for more information on the Manhattan SWAB.

• ***Plastic and Paper Bags***

Earlier this year, New York State lawmakers approved a statewide ban on single-use plastic carryout bags. At the same time, they gave local governments the option to charge extra for paper-bag alternatives. The New York City Council did just that, voting to tack on a nickel fee for each paper carryout bag a customer uses at retail and grocery stores. Under New York City's plan, 2 cents from every paper-bag fee would go toward boosting an existing initiative that has already provided close to 475,000 free reusable bags to city residents.

This bill was signed by the Mayor, with an effective date March 1, 2020, the same as the statewide bag ban. All retailers must comply, but there are exemptions for restaurants and for SNAP/WIC transactions. The goal of the two bills is to encourage people to bring reusable bags to markets (the City's Sanitation Department collects nearly 30,000 tons of paper bags every year). More information is available here.

• ***Drugs and other Medical Supplies***

The New York State Drug Take Back Act mandates that manufacturers establish, fund, and manage a New York State approved drug take back program(s) for the safe collection and disposal of unused covered drugs. Collection and disposal are free of charge to both the consumer and pharmacy. Check with your local pharmacy to see if they participate (some Walgreens and CVS stores do).

The Afya Foundation in Yonkers sponsors a donation program to re-source usable medical equipment and supplies, including items used in hospice care, with the exception of bedding. You can drop off these items at the Plaza Jewish Community Chapel, 630 Amsterdam Avenue (91st Street). Please call first at 212-769-4400.

UWSR Eco Letter May/June 2019
COMMENTARY:
GrowNYC

GrowNYC, an organization we've been working with for a long time, was originally founded in 1970 by Mayor John Lindsay and Marian Sulzberger Heiskell as the Council on the Environment for New York City (CENYC). Born out of the spirit of the first Earth Day that same year, CENYC was initially a policy-based organization, writing comprehensive reports about quality of life issues like air quality, traffic, and noise. In 2010 they started doing business as GrowNYC and, as the City changed, so did they. Expanding their activities over the years, they became the City's largest and most established local environmental organization, providing millions of New Yorkers with resources that enable healthy and sustainable living. Their work is focused on three primary environmental areas: Urban Greening & Food Production; Recycling & Re-Use (including Composting); and Environmental Education.

We discussed their Environmental Education program in our November/December Eco Letter Commentary, so here we'll review their programs in urban greening, food production, recycling, re-use and composting.

URBAN GREENING & FOOD PRODUCTION

1. **Greenmarket Farmers Markets:** Greenmarket Farmers Markets was founded in 1976 with a two-fold mission: to promote regional agriculture by providing small family farms the opportunity to sell their locally grown products directly to consumers, and to ensure that all New Yorkers have access to the freshest, most nutritious locally grown food the region has to offer. Each Greenmarket sells locally grown produce, meat, baked goods, preserves and other goods produced in our region. Unsold produce feeds the hungry: In 2017 Greenmarket farmers and bakers donated nearly 1 million pounds of food to City Harvest, Food Bank of New York City, and neighborhood soup kitchens and food pantries.

GrowNYC operates about 50 Greenmarkets throughout NYC, some on a seasonal basis. Year-round Greenmarkets on the Upper West Side include:

- Tucker Square Greenmarket [66th & Broadway], open Thursdays and Saturdays;
- 79th Street Greenmarket [79th & Columbus Avenue], open Sundays;
- 97th Street Greenmarket [97th & Columbus Avenue], open Fridays; and
- Columbia University Greenmarket [Broadway between 114th & 115th Streets], open Thursdays and Sundays.

See here for hours of operation and other Manhattan locations. Many of these Greenmarkets also collect textiles and/or food scraps (see below under **Recycling and Re-Use**).

Other Greenmarket programs include Greenmarket Co., Youthmarket, Fresh Food Box, and the Wholesale Greenmarket (located in the Bronx; seasonal)

- Greenmarket Co. was launched in 2012 and is New York City's first and only "food hub" dedicated to supporting regional food producers by making their products available to wholesale buyers throughout the city. Their clients range from Michelin-rated restaurants and specialty retailers to bodegas, senior centers, and soup kitchens. Greenmarket Co. sources from small and mid-sized farms in the Northeast region – most products come from New York State, but they also purchase from farms in New Jersey, Pennsylvania, and Maine. Greenmarket Co. helps each of their customers maintain a connection to the farms where their food is produced and provides them with high-quality, locally-produced farm products.

- Youthmarket is a network of urban farm stands operated by neighborhood youth, supplied by local farmers, and designed to bring fresh fruits and vegetables to communities throughout New York City. GrowNYC purchases produce from local farmers and trains young people to operate a farm stand in their neighborhood as their own small business. Many neighborhoods in the City are experiencing epidemic rates of diet-related disease like obesity and diabetes at the same time that supermarkets are closing in these neighborhoods, thus making fresh fruits and vegetables less accessible to communities. In working to overcome this problem, Youthmarket benefits both community and farmer: the community, by providing fresh and healthy food, and the farmers, by giving them access to new markets.

- Fresh Food Box is a food access initiative that enables under-served communities to purchase fresh, healthy, and primarily regionally-grown produce well below traditional retail prices. Through the power of collaborative purchasing, Fresh Food Box customers purchase for $14-$15 what would cost $20-$30 in a store. To make their shares even more affordable, all Fresh Food Box sites accept SNAP/EBT and Health Bucks. Each Fresh Food Box contains the best of what's seasonally available. For locations click here.

2. **Healthy Exchange** provides the framework for making healthy, regionally-produced food accessible to all New Yorkers by overseeing GrowNYC's work to promote and accept nutrition benefit programs, incentive coupons, and debit/credit cards. Healthy Exchange also collaborates with City government and community-based organizations to implement special projects and nutrition education to enhance food access in New York City.

3. **Project Farmhouse** is a state-of-the-art event space and sustainability center located just steps from Union Square Park. With 3,500 square feet of flexible-use space and featuring the Con Edison Green Wall, Project Farmhouse is ideal for cocktail parties, seated dinners, workshops, panel discussions, meetings, and everything in between.

RECYCLING & RE-USE

Food-Scrap Collection/Composting: Grow NYC has collected over thirteen million pounds of food scraps since this program was established in 2011. NYC residents can easily compost household food waste by dropping kitchen scraps at dozens of GrowNYC Food Scrap Drop-off sites Citywide, including 59 Greenmarket, Youthmarket, Fresh Food Box and other locations. For a location near you, see here.
Food comprises about 21% of NYC's waste stream. If this material is sent to a landfill it contributes to our city's disposal costs and can also create greenhouse gas emissions (such as methane). When composted, however, food scraps and other organic waste become a useful product that adds nutrients and improves the quality of soil for street trees, gardens and more. The household food scraps you've dropped off at collection sites will be transported to one of several NYC compost sites and transformed into a fertile soil amendment for use on local urban farming and gardening projects.

Accepted materials 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, potting soil, and soiled brown paper products. [NO meat, chicken, fish, greasy food scraps, fat, oil, dairy, animal waste, cat litter or animal bedding, coal or charcoal, coconuts, diseased and/or insect-infested houseplants/soil, biodegradable/compostable plastics, or receipts.]. Food scraps can be collected in covered plastic containers (such as yogurt tubs), paper bags, milk cartons or in commercially-available compost pails. Paper bags can be put in with the compost, but containers made of other materials should be re-used or recycled. To reduce odors while collecting and storing compostables at home, you can place food-scrap containers in the freezer or refrigerator. A layer of newspaper at the bottom of your storage container also helps.

Clothing & Textiles are collected at many GrowNYC greenmarkets, including eight locations in Upper Manhattan. For more detailed information about locations and hours, click here. Grow NYC has collected about five and one-half million pounds of clothing, footwear and other textiles since 2007. Any contribution you make to the GrowNYC program is tax deductible.

They accept clean and dry clothing, paired shoes, bed linens and towels, handbags, belts, and other textiles. They do ***not*** accept rolls of fabric or fabric scraps of any size, rugs, carpeting, pillows, comforters, or luggage. Textiles are, in turn, picked up by Wearable Collections (a for-profit company) and sold to processing facilities where they are sorted into different grades. An effort is made to recover as much usable clothing as possible for distribution to second-hand markets, mainly overseas. Items that are not suitable for reuse will go to recycling markets to be used as wiping rags or shredded for low grade fiber products such as insulation.

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 created 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. In partnerships with the NYC Department of Education Sustainability Initiative and the NYC Department of Sanitation, RCP helps establish best practices in schools throughout the City.

This program was also discussed in the November/December 2015 Commentary on School Recycling. (You'll find a link to an Archive of Past Commentaries in the *UWSR Eco Letter* under the current Commentary.)
Their **Stop 'N' Swap** program hosts free community re-use events throughout the city.

You can bring clean, reusable, portable items such as clothing, housewares, games, books, and toys that you no longer need, and take home something new-to-you, at no charge. You don't even have to bring something to take something. But p*lease do NOT bring furniture, large items, tube televisions, expired or open food, unsealed personal care products, medicine, dirty or ripped clothing, fabric scraps, incomplete toys and games, non-working electronics, magazines, or sharp objects.*

Drop off items you want to give away in the Sorting Area and select items you want to take from the Swap Area. Be sure to leave plenty for others. Participants may attend only six Swaps events per year, to ensure equitable access to goods.

UWSR Eco Letter March/April 2019
COMMENTARY:
Recycling Programs in Mid-Size and Large Residential Buildings

With recycling now pretty much the norm, most residential buildings are set up to collect and process residents' materials. However, various circumstances – and sometimes just human nature – can impact the overall effectiveness of the set-up. In order to maximize the volume of materials recycled it's helpful to look at residential buildings in Upper Manhattan that have well-functioning programs and see exactly how they accomplish this.

We've selected three buildings with successful recycling operations: a very large building in the west 70's that contains about 650 co-op units; a building in the West 100's with about 50 units that are either co-op or rental; and a building on West 135th Street with 117 condo units.

Successful recycling programs in these and other buildings require having a knowledgeable superintendent, a supportive and understanding board, and a caring management company, all of whom work in close cooperation with porters and other building staff. Among these three buildings there's some variation in the materials recycled as well as the respective procedures and containers used. Most of the recycling is collected by or for the Department of Sanitation (DSNY), but some materials or goods are recycled separately. This Commentary provides a detailed review of how each of these programs is carried out.

If you're looking for ways to improve your building's recycling program, we encourage you to forward this to your super or building management so they can use ideas from it to implement more effective recycling or re-use programs and perhaps also suggest they sign up to get our Eco Letter.

Before we discuss each of these three buildings, here are some additional valuable resources:

- The Manhattan Solid Waste Advisory Board has created two free recycling guides for multi-family residential buildings:
    - "Creating a Culture of Recycling and Re-Use on Your NYC Multi-Family Building"
    - "Engaging Residents of Your NYC Multi-Family Building in Organics Collection"

  Click here to download free copies of these guides.

- The Department of Sanitation's website explains Residential Recycling here.
- Grow NYC's website tells how you can increase the percentage of materials recycled in your building here.

THE SCHWAB HOUSE

The Schwab House is located between 73rd and 74th Streets, filling the entire square city block between West End Avenue and Riverside Drive that was formerly occupied by the Charles Schwab Mansion. The current structure, completed in 1951, has 17 floors plus garden and solarium levels. It contains approximately 650 co-op units, with 10 to 20 apartments on each floor. It's divided into an East Wing (285 West End Avenue) and a West Wing (11 Riverside Drive): The Schwab House is essentially two separate buildings with two separate elevator banks that are connected via the lobby.

It is a self-managed co-op. Located on the premises, management has tried to make the building as environmentally friendly as possible. Over the past 10 years it has implemented numerous environmentally proactive projects that have not only benefitted the environment but have also reduced costs. Board packages for new

residents include an “Environmental Wayfinder” so they’re aware that it’s an environmentally friendly building. This Wayfinder shows residents the locations of the building’s recycling facilities, outlines procedures and informs them that they’re expected to comply with recycling rules.

The Schwab House Environmental Committee (SHEC), chaired by Rick Schulman, oversees recycling. The SHEC meets monthly, sends out meeting minutes to residents, and compiles names for an in-house mailing list. A Co-op Board liaison is present at every meeting. The Committee has initiated numerous environmentally favorable programs that have been adopted by the building. Committee members make every effort to stay on good terms with the building staff who are involved in the recycling process, particularly the super and porters.

The SHEC communicates with residents regarding the building’s environmental initiatives via BuildingLink, an in-house intranet web portal where ads, information and announcements can be shared and accessed via email. Rick is the point person to whom residents reach out if they have questions about recycling or other environmental concerns within the building. If issues require changes to current procedures, the SHEC gives details to the Co-op Board and also consults with the building superintendent and property manager. If a new initiative is starting, Rick posts information on BuildingLink, sets up a table in the lobby, recruits SHEC members and also shares information in person. Notices are also posted on building bulletin boards, stanchions and in laundry rooms, and publicized at environmental meetings.

A trash room is located behind the service elevator on each floor of each wing (a total of 34 trash rooms). In addition to a garbage chute that empties into a bag in the basement, each of these trash rooms has recycling stations for paper, plastic, metal and glass—with a separate 30inch high plastic container for paper and another one for plastic, metal and glass. These containers are each lined with a large plastic bag. Recycling signs are posted by the containers, both those provided by DSNY and others printed by Rick with additional information.

Building porters empty these containers a few times a day, floor by floor, then also break down and bundle paper and cardboard—all to be transported down for storage in the basement. The plastic/metal/glass and mixed paper recyclables in plastic bags are placed in large rolling bins in the basement prior to the porters taking these materials to the curb for recycling collection by DSNY each Saturday. Both the porters and concerned SHEC members keep an eye on whether the proper items are placed in the correct receptacles. However, there is currently no punitive program in place for individuals and apartments who are not in proper compliance.

As with any community the Schwab House recycling program faces certain challenges. Some residents are cynical, some are too busy, and some just aren’t aware of programs or laws that are in place. To help alleviate these problems, Rick keeps in touch with the

co-op board and maintains a column in their monthly in-house "Update" publication. He also notifies residents via BuildingLink of any changes or infractions being committed within the building regarding recycling programs. Rick encourages the Board's support of recycling programs, pointing out that the vast majority of building residents are in favor of the project and highlighting the cost benefits to the whole building. He prompts more residents to participate in recycling programs by showing them how simple the procedures are to carry out and how their efforts benefit our society, our environment and their building.

Textiles & E-Waste

A large Wearable Collections textile bin is located outside one of the laundry rooms in the Schwab House. This is an ongoing program and the bin is frequently overflowing with used clothing and acceptable textiles for pick up. Wearable Collections picks up these textiles after being notified by Rick, SHEC members or building staff.

There are also two DSNY E-cycle cages (for recycling computers and other electronic goods), one in each of the sub-basements of each wing of the building. People with electronics to recycle notify Rick or building staff, who bring the electronics down to the bins. When the bins are full, they are picked up by DSNY.

Food Scraps/Compost

The Schwab House is part of the DSNY Organics Pilot program, which provides the locking pestproof bins located in the basements of both wings of the building. Residents bring their own food scraps and organics down to the bin using either their own collection bins or bags. Once in the basement they either deposit their organics along with a compostable bag or empty their bins which have been lined with newspaper which helps to soak up any liquid in their bin. Porters put the filled bins out for collection by DSNY on Mondays, Wednesdays, and Fridays.

Initially, the Schwab House Board of Directors was reluctant to allow the building to be a part of the pilot organics program, but Rick explained that when organics are thrown down the trash chute, food residue remaining inside the chute attracts insects. By separating organics and placing them in the plastic compost bins, insect and rat infestations would be prevented. Convincing both residents and management to participate was a huge success for Rick and for the building. Many residents have reported that they're happy they no longer have to bring
their organics to weekend greenmarkets and store their decomposing organics until the weekend.

Other Schwab House Building-Wide Green Initiatives

- Recycling collection stations for materials not picked up by DSNY (batteries, corks, ink, Brita filters, eyeglasses, light bulbs, plastic bags)

- Periodic specialty re-use and recycling collections (e. g., pill bottles, coats, yarn)
- LED lighting in common spaces
- Motion sensor smart lighting in small trash rooms
- Highly energy-efficient washing machines
- Building-wide zoned heating system
- Cogeneration of lobby heating
- Upgrade to insulated windows
- Low-flow toilets
- Scheduled green lectures and local tours
- Community Supported Agriculture (CSA) program
- Internal lending library (over 8,000 books)

325 RIVERSIDE DRIVE

325 Riverside Drive is located at the farthest west end of 105th Street. Constructed about 1917, it has 13 floors and 52 units, four on each floor. About three-quarters of the units are co-ops and the rest remain rentals. The building is managed by Tudor Realty Services and has a live-in superintendent; a porter and three doormen have rotated shifts but live elsewhere. Both the staff and Tudor Realty are supportive of the building's recycling program. Since 325 Riverside is much smaller than the Schwab House, recycling procedures are fairly simple and practicality dictates that fewer types of materials can be recycled.

Recycling is overseen by the super, the porter, and Jeff Twine, and questions or requests are referred to the co-op board or to Tudor. Although there is no environmental committee, the building has generally been receptive to recycling and other green initiatives. Notices of special environmental projects, such as textile collection drives, are posted on bulletin boards in the mailroom and outside the laundry room in the basement; Jeff also puts fliers under the doors of apartments and to publicize special collections. On request, Tudor Realty will also send out recycling notices for distribution throughout the building.

Three rigid plastic containers about 30 inches high, each lined with a clear plastic bag, are located in the small room adjacent to the service elevator door on each floor. A black top indicates the container is for garbage; the one with a white top is for paper; and the one with the blue top is for plastic, metal and glass. Appropriate signage is posted above them. Both the porter and Jeff monitor these containers for contamination.

The porter removes the large plastic bags of recyclables or garbage from their containers daily and transfers the materials to an outside courtyard storage area, where they're combined with any partly full bags. The porter also breaks down and bundles cardboard boxes, then brings them down to the same storage area along with any

bundled newspapers. Each week he moves these materials to the curb for recycling collection on Tuesday by DSNY. As with the Schwab House, there is currently no penalty in place for individuals and apartments who are not in proper compliance.

The recycling program also faces some of the same challenges—cynicism, general lack of interest or a need for correct information. To help alleviate these, Jeff keeps in touch with the super, the porter, the co-op board and Tudor Management.

Textiles, E-Waste & Compost

Wearable Collections has periodic textiles collection drives in the building and bags are kept in the basement in which residents can place their items. Jeff initiates and publicizes these drives, putting a notice under each apartment door and posting it on bulletin boards in the mail room and by the laundry in the basement. DSNY has visited the building with the aim of setting up a food scrap/composting program, but the super hasn't heard back from them yet. Due to space limitations, the building has no DSNY E-waste collection.

Other 325 Riverside Drive Building-Wide Green Initiatives

- LED lighting is in place in all common spaces; residents will also be urged to switch to LEDs.
- Energy-efficient washing machines and dryers are available in the basement.
- The building's masonry was thoroughly repointed to minimize air leakage.
- Leaky old windows were replaced and upgraded.
- A new boiler was installed.
- Low-flow toilets were installed.
- Building staff uses environmentally friendly cleaning fluids.
- The super and Jeff are looking into collecting materials not picked up by DSNY (e.g., batteries).
- Residents will be notified they should avoid putting plastic shopping bags and Styrofoam in recycling containers (although plastic bags are currently still necessary for bagged garbage) and urged to bring extra single-use plastic shopping bags to supermarkets to be recycled.

STRIVERS GARDENS

Strivers Gardens, at 300 West 135th Street, is a 12-story building that was constructed in 2006. Its 170 condominium units are managed by New Bedford Management, and Martin Robertson, the building superintendent, has been the driving force in developing and maintaining the building's environmental programs. Working in cooperation with the condo board and New Bedford, Martin communicates with residents regarding various environmental initiatives in the building via BuildingLink, an in-house intranet

web portal where ads, information and announcements can be shared and accessed via email. He also posts information on recycling, re-use and other environmental initiatives on a shelf and a bulletin board in the lobby, next to the mailroom. Martin encourages the building's porters to participate in the free recycling trainings that DSNY offers, and five of the six porters on staff have completed this training.

Each floor has a refuse room with a chute for garbage and two blue containers lined with clear plastic bags, one for paper and the other for plastic, metal and glass. The paper container is about two feet high and the one for plastic, metal and glass is a bit taller. Custom signage, along with signs provided by DSNY, is used to indicate what should be placed in each of the containers, to provide recycling instructions, and to establish a friendly tone for recycling in the building. Two similar recycling containers have been placed in the laundry room and at the entrance to the building, and a recycling container for mixed-paper is situated in the mailroom, across from the lobby.

Porters remove the contents of the large plastic bags of recyclables from their containers three to five times a day, then transfer them to a storage area in the basement, where they're combined with any partly full bags. The porters also break down and bundle cardboard boxes, then bring them and any bundled newspapers to the same storage area. Once a week the porters bring these materials to the curb for recycling collection by DSNY on Wednesday.

Martin and the porters inspect the receptacles to make sure the correct items have been placed in them and there is no contamination. They sort the trash to ensure that the most efficient recycling practices are followed, focusing on this rather than policing residents. Newspapers, magazines, books, and all cardboard are removed from the large clear bags to reduce plastic bag usage. They next bundle as many materials as possible with twine and use paper shopping bags from supermarkets to package smaller items like toothpaste boxes. This has allowed Martin to cut plastic bag orders by 25 percent, both reducing costs and helping to alleviate the problems caused by plastic bags at the Sims Recycling Facility.

There's a strict enforcement policy within the building: A recycling notice is sent to the respective resident with a photo of the offense. An escalating system of fines starts with $50 per offense; records are kept on BuildingLink and unpaid fines are collected at move-out. Fines are only issued after obvious violations continue after the issuance of a written notice and a conversation with the tenant – typically on the third or fourth offence.

Expanding the recycling program, Martin has added textiles, electronic waste and organics to the materials collected by or for DSNY.

Textiles

A re-fashion NYC bin for textile recycling is located in the laundry room, where residents can place their used items. Strivers Gardens is on automatic biweekly textile pickup with Housing Works, who call the day before to notify Martin when they're coming. On the pickup day they come into the laundry room, empty the bin, and take the textiles for recycling.

E-Waste

An E-cycle container for electronics recycling is located in the garage. Residents bring e-waste to the lower level, from where porters move electronic goods down to the garage. Martin calls DSNY for pickup when the container is full; the DSNY contractor comes into the garage, removes the full e-waste container, and replaces it with an empty one.

Food Scraps/Compost

Brown containers for food scraps and other organics are also located in the garage. Residents bring their organics to the garage in recyclable bags, in paper bags, or in a bin; some store it in their freezer prior to emptying it. Newspaper is provided to reduce smell, as is a bin for the plastic bags residents used to carry their organics.

Strivers Gardens also has a composting VIP Program, in which residents can bring their food scrap bins to the concierge desk in the lobby, from where porters take it to the garage. Residents wishing to use this service must purchase an inexpensive but fashionable bin from the building, but there are no additional charges or fees.

Other Strivers Gardens Building-Wide Green Initiatives (many of the energy-efficient features were installed when the building was constructed in 2005)

- Used light bulbs are removed from the recycling containers and taken to Home Depot for recycling.
- LED lighting in common spaces is gradually being installed.
- Motion-sensor smart lighting has been installed by Martin in trash rooms (lighting in these rooms that was originally on for 24 hours is now on for less than 20 minutes a day)
- Energy-efficient windows
- Energy-efficient washing machines and dryers
- New boiler
- Low-flow toilets

UWSR Eco Letter January/February 2019
COMMENTARY:
Re-Use and Repair

(Editor's Note: Our thanks to Jacquie Ottman: Much of the material in this commentary has been taken from her article, *What Comes After Shopping?,* and from her website. To read the original article and find out more about waste reduction, visit http://www.wehatetowaste.com/.)

We New Yorkers generate an astounding 25,000 tons of waste *every day*—more than any other city in the world. About half of this is residential waste, of which three-quarters is potentially re-usable, recyclable or compostable. However, City budget limits, lack of markets for materials and poor participation by residents means that less than one-fifth of residential waste is actually recycled or composted at this time. Discarding all this recyclable material both squanders our natural resources and costs the City a great deal to collect the resulting garbage. On a broader scale, it also creates pollution and exacerbates global warming throughout the products' entire cycle, from the mining of raw materials to their manufacture, sale and eventual disposal.

There are potential legislative solutions to some these problems. For instance, the State electronics law that went into effect in early 2015 has resulted in the diversion of many electronic goods from landfills, to be either re-used, repaired or recycled. A significant section of this bill dealt with manufacturers' responsibility to take back the electronic goods they originally produced, a concept that could to applied to other types of consumable products and packaging materials.

Another legislative approach is the introduction of outright bans or similar approaches that sharply curtail the use of materials hazardous to our environment (including plastic goods, which generally don't biodegrade). To encourage re-use, small fees could be charged for certain items; e.g., a five-cent fee on single-use plastic bags passed the New York City Council in 2017, only to be repealed by the Republican-controlled State Senate. Now that both the New York State Senate and Assembly have Democratic majorities, this bill may have a greater chance of passage. In the meantime, you can make a difference by using cloth or other reusable bags for all your shopping.

The best option for decreasing this staggering quantity of waste would be to sharply reduce the amount we buy in the first place. Sadly, purchasing large quantities of consumer goods seems to be ingrained in our culture – and even in our identity as Americans. Since about 70% of the U.S. economy is based on consumer consumption, it's unlikely any significant reduction in purchasing will occur soon. But right now, as we try to limit future purchases, we *can* focus on re-using, donating, swapping or repairing the goods we already own.

Re-use, Donate or Swap

Each year, the Manhattan Solid Waste Advisory Board, in partnership with the Citizens Committee for New York City, awards small grants to organizations conducting reuse or repair projects, research on those projects, or other activities that will help lead to replicable reuse or repair models in New York City. For more information click here or contact kgrassle@citizensnyc.org; (212) 822-9567.

Nextdoor.com can help you re-use or swap goods in your neighborhood. You can also find ideas for re-using items or information on helpful local organizations detailed below.

Some Ideas and General Information

- Avoid using plastic straws.
- Carry reusable water bottles or coffee cups with you.
- Bring your own reusable shopping bag to the market and say no to disposable plastic bags whenever possible. If the cashier tries to load you up with plastic bags, remind them how harmful these can be for ocean creatures.
- If the sheet of paper you no longer need has printing on only one side, use the blank side for scrap paper. Do the same for the junk mail you receive.
- Some apartment buildings already have a bookcase or shelf of books for all residents to share or swap. Why not do the same for other goods as well; for instance, a Free Stuff box or a shelf in your apartment building or office space?
- Share or swap CDs, household appliances, tools, printers or other electronic items with your neighbors. Requests to borrow or receive can be posted manually on designated bulletin boards in the laundry room, mailroom, or other community areas.
- If you have an intranet, you can do the posting electronically. Intranets are hosted—for your building or building complex only—by services such as Building Link or Verizon Concierge. For a fee, these services provide access to property-specific news, calendars, amenities and services.
- Community refrigerators are becoming more popular in Europe and could be utilized in buildings here. How about a community food shelf for just dry goods as well?
- There are informal exchanges for books, furniture, and other goods on many blocks on the Upper West Side. Just put what you want to give away on balustrades, next to stoops, or elsewhere on your street. The goods are usually picked up quite quickly.
- Also, some block associations (such as the West 102nd & 103rd Streets Block Association host block parties or street fairs where used goods can be donated, swapped or sold. For a calendar of these events, see the nyc.gov or the newyorkled.com sites.

- Some churches and other community organizations sell used goods to raise funds.
- Sacramento, California now has a Library of Things. Residents can borrow guitars, sewing machines, cookie cutters, and many other objects. Why not here in NYC?

Where to Donate Specific Types of Goods

Toys

Pass toys on to relatives, friends, or neighbors with younger children; if you can't do that, most plastic or metal toys can be donated or recycled in your building along with other plastic, metal and glass.

These organizations accept donations of toys:

- Good+ Foundation, 306 West 37th Street, 8th floor, NYC; (212) 736-1777; info@goodplusfoundation.org; (toys are given to antipoverty programs)
- Goodwill Industries, (212) 874-5050 (vintage toys and clean stuffed animals only)
- Grow NYC, at their Stop 'n Shop events, (212) 788-7900 (see listing below)
- NYC Mammas Give Back (supports agencies and shelters in the NYC area serving homeless pregnant woman and families and young children at or below the poverty line)
- United War Veterans Council, (212) 838-8982 (toys, baby items)

Furniture

- Goodwill Industries, (212) 874-5050
- Housing Works, (212) 579-7566; (212) 222-3550
- The Salvation Army, (212) 757-2311
- United War Veterans Council, (212) 838-8982

Textiles (see also our *Hard-to-Recycle List*)

- Grow NYC, (212) 788-7900 (accepts cleans textiles at local greenmarkets)
- NYC Mammas Give Back (accepts gently used clothing and other textiles for infants and young children in poor families)
- re-fashionNYC, call 311 (will set up containers and pick up textiles from apartment buildings with 10 or more units; *no fabric scraps, pillows, comforters, luggage or carpeting*)
- Thrift Shops such as Goodwill Industries, Housing Works and The Salvation Army (see below and our *Hard-To-Recycle List*)
- United War Veterans Council, (212) 838-8982 (will pick up clothing and other textiles)
- Wearable Collections, (646) 515-4387 (picks up most textiles and footwear from larger buildings and non-profits; *they don't accept fabric scraps, pillows, comforters, luggage or carpeting* (see below for ideas on re-use of these items)

- *Fabric Scraps* can be re-sewn into book covers, wall hangings. snack bags, shopping bags, quilts, children's blankets or incorporated into art.

- *Pillows and Comforters*

- The Humane Society of New York, (212) 752-4840 (used for animal bedding)
- New York City Rescue Mission, (646) 362-3157 (gives to homeless shelters; also accepts clothing, footwear and towels)

- *Luggage*

- Goodwill Industries, (212) 874-5050
- The Salvation Army, (212) 757-2311

- *Carpeting*

- Carpet Cycle, 360 W 1st Ave, Roselle, NJ 07203; (973) 732-4858 (removes and recycles old carpet tiles and padding from commercial buildings for a fee)

Electronic Goods (see also our *Hard-to-Recycle List*)

- Computers and other electronics are accepted at periodic collection events hosted by Lower East Ecology, (212) 477-4022, as well as at their Brooklyn warehouse. See the Electronic & Textile Recycling Section of our Events Listing or our *Hard-to Recycle List*
- Assemblyman Daniel O'Donnell, 245 West 104th Street; (212) 866-3970. (Office accepts used cell phones for re-use or recycling on an on-going basis.)
- United War Veterans Council (will pick up)

Organizations Accepting Other Goods or Materials

- Big Reuse, in Brooklyn, (718) 725-8925, is a non-profit retail outlet for salvaged or surplus building materials, lighting and appliances
- Goodwill Industries, (212) 874-5050
- Housing Works, (212) 579-7566; (212) 222-3550
- Materials for the Arts, Long Island City, (718) 729-3001
- The Salvation Army, (212) 757-2311
- United War Veterans Council, (212) 838-8982
- Swap.com is an online consignment and thrift store

Also check our *Hard-to-Recycle List*.

Swap or Loan – Organizations

- Grow NYC, (212) 788-7900 (hosts free Stop 'N' Swap events—at local greenmarkets and schools—where people can drop off unwanted clothes, books, shoes, toys and housewares; others can grab them on a first come, first served basis)

- FreeCycle.org (online materials exchange)
- Next Door.com (a private social network that helps you keep informed about what's going on in your neighborhood)
- ReUse NYC Donations Exchange, (212) 650-5832; donations@reusenyc.info (materials exchange service for businesses and non-profits)

Repair

Another good option is to repair damaged goods rather than buying new replacement items. By extending the life cycle of an object you help create jobs for communities and individuals. When you invest in repair, you also operate within a circular economy, which creates value beyond the point of sale, in addition to the environmental benefits of reducing pollution and greenhouse gases.

Each year, the Manhattan Solid Waste Advisory Board, in partnership with the Citizens Committee for New York City, awards small grants for organizations conducting reuse or repair projects, research on those projects, or other activities which will help lead to replicable reuse or repair models in NYC. For more information click here or contact kgrassle@citizensnyc.org; (212) 822-9567.

You can learn to repair items yourself, join an existing repair group, or use one of the services listed below.

- Crown Sales & Services, (212) 663-8968, 2792 Broadway (at 108th Street), repairs a variety of electronics goods at their store. These include sewing machines, vacuum cleaners, other small appliances, electric tools (saws, drills, etc.), computer equipment, televisions, stereo equipment, video cameras, and more. They charge a diagnostic fee for most goods, but this fee is applied to the final repair cost when they fix it.
- Pop-up Repair; Drop off your goods at a partner location (see their website) and pick it up at that same location one month later. Goods repaired include lamps, jewelry, appliances, furniture, toys, clothing and textiles, and more. They charge a diagnostic fee for appliances and other electronic goods, which is applied to the repair cost if they can fix it. See their website for a list of what they don't fix. All payment is online.
- iPhone Repair Café, 38 West 32nd Street, Room 505; (347) 781-5757; (over 30,000 iPhone & Macbook devices repaired in last eight years).
- IFixit provides advice, components and repair manuals for almost anything, including computers and other electronic devices.

Fixers Collective; info@fixerscollective.org (creating and publishing a best practices guide to starting a repair group)

UWSR Eco Letter November/December 2018
COMMENTARY:
Environmental Education

Since 2009, New York City has been the only major municipality in the country to require each of its public schools to appoint a sustainability coordinator – part of the city's broader sustainability plan to send zero waste to landfills by the year 2030. In a city of 1.1 million students and more than 1,700 public schools, this creates a large team that can and does influence environmental awareness throughout the five boroughs. Several organizations, including governmental offices and non-profits, are concurrently working in the area of environmental education. In this commentary we'll provide a synopsis of number of these organizations who do at least some of their work in Manhattan.

The following groups are discussed:

- Columbia Earth Institute
- Columbia University Teachers College: Working Group on Environmental and Sustainability Education
- Department of Education (DOE) Office of Sustainability
- Department of Environmental Protection (DEP)
- District 3 Green Schools Group
- Environmental Education Advisory Council of New York City
- Green Schools Alliance
- GrowNYC
- Lower East Side Ecology's Education Program
- NY Sun Works
- The National Wildlife Federation Eco-Schools

NYC OFFICES & SCHOOLS

Department of Education (DOE) Office of Sustainability

The DOE Office of Sustainability aims to help New York City public schools become more sustainable by making school buildings eco-friendly and efficient; inspiring students, teachers, parents, and school communities to take part in environmental programs; and promoting everyday practices that benefit the environment. Flagship programs include Zero Waste Schools and NYC Solar Schools. The office also runs a number of energy conservation programs, leads sustainability trainings for all DOE employees, and supports school garden and green infrastructure projects across the city.

DOE Chancellor's Regulations require each public school to have a designated Sustainability Coordinator on staff. Any school faculty person may serve in this capacity, except for the Principal or Custodian Engineer. Sustainability Coordinators must be

designated by the Principal and registered annually with the Office of Sustainability by the last Friday in September. They work with the Principal, food and custodial staff, parents, and students to develop and implement all the sustainability initiatives in the school. The responsibilities of the Sustainability Coordinator are to:

- Develop and implement a site-specific sustainability plan which shall, at a minimum, include a recycling and waste reduction plan that follows DSNY recycling rules. Reporting of the plan to the Office of Sustainability is due annually the last Friday of October.
- Utilize the U.S. EPA Energy Star Portfolio Manager provided by the DOE in assisting with energy conservation programs.
- Complete the Office of Sustainability's annual survey by the second Friday of June.
- Work collaboratively with Sustainability Coordinators from other campus schools. If their school is located on a campus (a building with multiple schools under one roof), Sustainability Coordinators on that campus are to hold periodic campus-wide sustainability meetings to coordinate their conservation efforts (e.g. turn off the lights and equipment that are not in use).
- Create a student and staff Green Team to lead school sustainability projects.

The office has ten outreach coordinators that work with all schools citywide to provide direct support to Sustainability Coordinators and key DOE staff. For more information please read the 2016-17 annual report or visit the Office of Sustainability website. Email: sustainability@schools.nyc.gov.

The Department of Environmental Protection (DEP); educationoffice@dep.nyc.gov; (718) 595-3506

DEP's Education Office provides pre-Kindergarten–12th grade students and teachers, college students, and non-formal educators with a wide range of free programs, publications, and other resources about New York City's drinking water supply, wastewater treatment system, harbor water quality, climate change, and stewardship opportunities.

ORGANIZATIONS DEVOTED PRIMARILY TO ENVIRONMENTAL EDUCATION

The **Columbia Earth Institute,** (212) 854-3830

The Earth Institute (EI) is composed of numerous scholars spread out across dozens of research centers and programs at Columbia University. These researchers, appointed by the Provost, are refining our understanding of how the planet works and how humans are affecting natural systems. The Lamont-Doherty Earth Observatory in Rockland County, which has been seeking fundamental knowledge about the natural world since 1949, is the scientific heart of EI. Their research includes subjects such as climate change, geology, pollution, water supply, and urban greening.

They've also created a number of education programs that require students to learn environmental science and social science along with applied policy and management analysis. EI uses data analytics, social impact assessments, economic models, legal evaluations and mobile applications. They also host many seminars, workshops, panel discussions and conferences, most of which are open to the public and many of these are listed in each *UWSR Eco Letter*

Columbia University Teachers College: Working Group on Environmental and Sustainability Education; Oren Pizmony-Levy; 212-678-3180; Pizmony-Levy@tc.columbia.edu

Launched in 2015 and directed by Dr. Oren Pizmony-Levy, the Teachers College Working Group on Environmental and Sustainability Education brings together faculty, students, and staff from across the College to promote sustainability. To do so, the Working Group supports innovative research, teaching and training, Faculty and students conduct research on different aspects of environmental and sustainability education. Teachers College also offers courses on environmental health, nutritional ecology, teaching environmental science, and environmental and sustainability education. Finally, the College engages educators and parents through professional development and training.

In October 2018 Teacher's College held the first annual *Parents Making Sustainable Change in NYC Schools Conference.* Hosted with the New York City Department of Education's Office of Sustainability and the District 3 Green Schools Group, the conference included a panel discussion with parents/activists, and mini-workshops intended to promote environmental and sustainability initiatives in schools.

Past research by the Working Group examined the work of Sustainability Coordinators in NYC public schools. Dr. Pizmony-Levy and his team explored the professional background of these coordinators (whether they are teachers, Assistant Principals, etc.) and the ways in which they define – or make sense of – the term "sustainability." Although official definitions of the term address the three pillars of sustainability – environment, social justice and economics – Sustainability Coordinators tend to focus only on the environment, specifically on resource management (recycle, reuse, reduce). The research team has also investigated which schools are more likely to establish partnerships with non-profit organizations. They found that about one-third of NYC schools have at least one partnership and that schools located in Manhattan are more likely to have such a partnership, as are those schools whose students have a higher socio-economic status. In addition, partnerships appear to be more common in high schools than in elementary and middle schools.

For further info**:** Sustainability in the Schools: It Starts with Cleaning Up the Data and TC Working With NYC, Parents to Promote Sustainability in Schools

The **District 3 Green Schools Group**, founded in 2009, brings together parents and school staff on the Upper West Side to improve sustainability in our area schools. Many of their schools have model programs in the areas of waste reduction and recycling, schoolyard gardens, energy conservation and environmental education.

Members of the D3 Green Schools Group started the D3 composting pilot in five school buildings in 2011. This program was a huge success, achieving 85% overall reduction of garbage by volume. Through intensive education, the schools also dramatically increased the capture of recyclables in the cafeteria. This D3 program became a prototype for New York City, and the Department of Sanitation has since expanded it to 725 schools. The D3 Green Schools Group continues to work closely with the Department of Education and Department of Sanitation to refine the program for continued success as it expands throughout the City.

The group meets six times a year to assist one another and learn from each other's successes and failures in the D3 community. They also gain advice from expert panels, government representatives, and tour facilities such as the SIMS recycling plant. D3 Green Schools encourages District 3 parents to join their listserve and come to their meetings. They're striving to get representation from every district school in order to ensure that the district continues to lead the way in greening efforts.

For more information contact Megan Nordgren (megan.nordgren@gmail.com)
To subscribe to the group email: d3greenschools-subscribe@yahoogroups.com

The **Environmental Education Advisory Council of New York City**, eeac.info@gmail.com)

The Environmental Education Advisory Council (EEAC) was founded in 1974. A non-profit organization made up of dedicated educators, youth leaders, environmental professionals and students, EEAC members work together to stimulate and encourage environmental education in New York City and the surrounding region. They provide environmental education information for classroom teachers; advise the New York City Department of Education; hold workshops, and publish an electronic newsletter (back issues of which are available online).

The **Green Schools Alliance** (The Alliance); Contact: Arlae Castellanos acastellanos@greenschoolsalliance.org

The Green Schools Alliance was founded in October 2007 as a result of the UN Foundation Report on Climate Change and former Mayer Bloomberg's PlaNYC. A 501(c)(3) nonprofit organization, The Alliance unites and empowers primary and secondary schools worldwide to address climate change and conservation challenges and lead the transformation to a sustainable future. Representing more than 5 million students in 48 U.S. states, and more than 90 countries, The Alliance has created a peer-to-peer network of more than 9,000 schools, including 25 of the largest U.S. school districts, with the intention of reducing their greenhouse gas emissions and accelerating

the implementation of sustainable solutions. The Alliance envisions a world where every person is aware of and accountable for the impact they have in creating an environmentally, economically, and equitably sustainable future.

The Alliance's signature programs include the student-driven Green Cup Challenge(™) and Student Climate & Conservation Congress that connects youth to nature, as well as the District Collaborative, Purchasing Consortium, and soon to be launched Sustainable Tracking And Roadmap Tool (START), a sophisticated metrics roadmap tool to help schools benchmark and analyze their sustainability efforts and impact. Through The Alliance's online community, school Sustainability Champions -- including faculty, staff, students, administrators, and other school decision-makers -- can share best practices that promote connections between schools, communities, and the environments that sustain them. Signatory Schools/Districts join the Alliance through a Climate and Sustainability Leadership Commitment addressing operations, education and culture shift that recognizes the importance of connecting youth to nature. Individual members and like-minded organizations can also participate by joining the Alliance online at www.greenschoolsalliance.org.

NY Sun Works; Contact: Sidsel Robards; srobards@nysunworks.org; (212) 757-7650

NY Sun Works is a nonprofit organization that builds innovative science labs in urban schools, provides curriculum and training for teachers to teach science and sustainability, and engages the communities in which they work. The labs are located either in converted classrooms or in rooftop greenhouses.

Their greenhouse classrooms offer students the opportunity to grow food while providing hands-on learning about science, biology, chemistry, engineering, physics, earth sciences, and the living environment. NY Sun Works' science curriculum is aligned to science standards and is particularly effective for exploring modern-day issues of global concern, sustainability, health and nutrition, climate change, as well as water, waste, energy issues and other resource management.

Every Spring NY Sun Works hosts their Annual Youth Conference called *Discovering Sustainability Science*. A live stream event, the conference is for students and by students; it offers a platform to share their scientific creativity and research projects developed in their greenhouse classrooms. They also host three annual teacher training seminars through DOE's ASPDP program, offering a 36-hour workshop that focuses on a range of current topics in urban sustainability. These seminars were created to support teachers in their efforts to provide engaging STEM + sustainability education to their students. To find out about their school partners click here.

OTHER ORGANIZATIONS THAT HAVE ENVIRONMENTAL EDUCATION PROGRAMS

GrowNYC offers three programs dealing with environmental education:

- The *Education Initiative* (212-788-7900) aims to foster environmental and community stewardship and provide meaningful interaction with the natural environment. They offer programming to tens of thousands of youth through recycling and sustainability programs, school garden initiatives and support, Greenmarket school tours, and in-school curricula. GrowNYC prioritizes neighborhoods with high poverty rates, low consumption of and/or limited access to fresh produce, as well as those lacking green spaces.

- *Grow to Learn NYC / School Gardens* (212-788-7918), established in 2010, is a Citywide School Gardens Initiative with a mission to inspire, promote and facilitate the creation of sustainable gardens in public schools throughout New York City. They also offer mini-grant funding to start or expand school gardens; provide technical garden assistance; and host workshops and other educational opportunities. To accomplish this, they collaborate with government agencies, non-profits, private corporations, teachers, schools, parents, youth and other individuals who support public school gardens.

- The *School Recycling Champions Program (RCP)* (212-341-0169) has helped NYC public schools create effective recycling programs since 2010. In that time they've worked with over 400 schools and seen first hand the real change that can be effected when all members of the school community work together. 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. Currently, RCP is working with the first 100 Zero Waste Schools, a partnership between the NYC Department of Education Office of Sustainability, the NYC Department of Sanitation. RCP shares its own waste education resources, as well as materials created in direct response to the needs of the NYC K-12 community.

Lower East Side Ecology's Education Program (212-477-4022)

LESE's Education Program works to increase development, awareness, and access to interactive urban environmental education to all ages. The Ecology Center brings an immersive education approach to learning about the environment around us to schools (K-12), higher learning and cultural institutions annually across the city. Classes and workshops include: Seed balls; Animal Adaptations; East River Ecology; Urban Biodiversity; Our Sewer System & the Urban Water Cycle; and Water Quality Testing.

The Education Program uses the **C.O.R.E** values (**C**onservation, **O**bservation, **R**estoration, and **E**ducation) as part of the immersive learning approach to confront modern day environmental issues and make connections to other Ecology Center programs. Their educational workshops—offered to schools and community groups—emphasize the urban setting and its unique circumstances in order to help participants

apply more sustainable living practices in their lives and communities. To make environmental science more accessible to students, in 2018 the Ecology Center is piloting an Urban Ecology immersive series in neighborhood schools in the Lower East Side, with the goal of engaging middle school students, while at the same time enhancing their knowledge and interactions with their surrounding environment.

The National Wildlife Federation Eco-Schools; Contant: Emily Fano fanoe@nwf.org, (646) 502-7096.

The National Wildlife Federation (NWF) is the U.S. host of the international Eco-Schools program. There are currently close to 6,000 Eco-Schools in the U.S., including 635 in New York City. NWF's Eco-Schools program provides a seven-step framework to help K-12 educators integrate sustainability principles throughout their schools and curriculum.

NWF's educational programs—including NWF Eco-Schools and Schoolyard Habitats, as well as publications like *Ranger Rick*—aim to connect students to nature where they live. In New York City, thousands of students have participated in NWF programs that take them outdoors to learn, engage in wildlife, gardening and habitat restoration for pollinators. In school, the Eco-Schools program engages student leaders in energy and water conservation, water and air quality, and waste reduction projects using a Pathways to Sustainability of their choice. Schools can become certified and win Bronze, Silver and Green Flag awards.

NWF is working with partners like the National Science Teachers Association, filmmakers, and policy makers to counter misinformation campaigns designed to confuse teachers about the science of climate change. It also provides climate and resiliency programming in schools. The NOAA-funded Resilient Schools Consortium (RiSC) program, launched in October 2017 in partnership with Brooklyn College and others, is giving middle and high school students a voice in resiliency planning. Teachers interested in the RiSC curriculum can fill out a pre-survey here.

UWSR Eco Letter September/October 2018
COMMENTARY:
LEDs and Smart Lighting

According to a recent NY Times article, 17 of the 18 warmest years on the Earth have occurred since 2001. Global warming is real, it's here now, and it's primarily caused by the burning of fossil fuels, including those used to produce electricity. A significant portion of this electricity is used to illuminate our homes and businesses. If you look at a nighttime photo of the Earth taken from space, you'll see that major metropolitan areas shine bright as a result of intense concentrations of lighting.

Lighting loads represent the third-largest energy use in New York City buildings, accounting for 13% of overall consumption. In commercial office buildings this figure rises to about 20%. Each day we consume about 1.5 million kilowatt hours of electricity for lighting alone, which (if generated by the burning of fossil fuels) produces a daily emission of roughly *2,000 tons* of the greenhouse gas carbon dioxide.

Many buildings in the City have very inefficient lighting. In 2016, the Urban Green Council determined that 40% of multifamily buildings and 25% of office buildings above 50,000 square feet in area are illuminated primarily by incandescent bulbs and first-generation fluorescent lamps. In addition to being inefficient themselves, these lighting systems are characterized by a high heat output, which burdens air conditioning equipment and thus increases the cost to cool these spaces.

But the good news is that reducing our lighting energy load is one of the simplest, most effective things we can do, the sort of low-hanging fruit of energy efficiency. Two technologies that have greatly improved recently -- LED Light Bulbs and Smart Lighting Systems -- can help us to significantly reduce the amount of electricity needed to light our city. Coupling LED lighting with fully integrated smart lighting systems can save up to 90% of the electricity consumed.

LED Lighting

LED lighting technology is based on the use of Light-Emitting Diodes (LEDs), which illuminate solely by the movement of electrons in a semiconductor material. LEDs have been around for some time in many familiar items: Early LEDs were primarily used as indicator lamps on electronic device displays; they form numbers on digital clocks, transmit information from remote controls, light up watches and tell you when your appliances are turned on. But recent developments have produced LEDs suitable for environmental and task lighting -- the focus of this Commentary.

In most applications multiple LEDs are used to form a single light bulb. LED lamps have many advantages over incandescent light sources, including much lower energy consumption, significantly longer lifetime, and improved physical robustness. In addition, LEDs come to full brightness without need for a warm-up time.

LED lighting alone has a high potential to improve overall energy efficiency, reducing electricity usage more than 80% compared to incandescent bulbs and more than 50% when replacing older types of fluorescent lighting. Efficiency gains are lower when newer fluorescent lighting systems are upgraded to LED, but still significant.

Although the initial cost of LED lighting is higher than that of older lamps and fixtures, its cost is coming down fast (see the cost comparison below), and its service life is far

superior, which means one LED bulb actually replaces many incandescent bulbs. Con Ed sells a variety of LED light bulbs online at discounted prices. They periodically have promotional sales (recently they offered LED bulbs equivalent to a 60 Watt incandescent bulbs for $1.00 each); if you register on their site you'll be notified of future offers. LEDs are also available at Beacon Hardware, Home Depot, Best Buy and other appliance, hardware and electronics stores.

Cost Comparison for 60 Watt Incandescent Equivalent Light Bulbs

Purchase price - Incandescent: $.40-$.50; CFL: $1.00; *LED:* $2.00-$3.50
Watts - Incandescent: 60; CFL: 14; LED: 7-9
Lifespan (in hours) - Incandescent: 1,000; CFL: 5,000-10,000; *LED*: 10,000 - 25,000
Lamp lifetime (in years @ 6 hrs/day) - Incandescent: .5; CFL: 4-5; *LED*: 5-11
Total cost (20 years @ 12.5 cents/kwh) - Incandescent: $350; CFL: $80; *LED*: $45-$60

LEDs emit light in a specific direction. This makes them useful for recessed downlights and task lighting, but they also function quite well for general room lighting. Their directionality reduces the need for the reflectors and diffusers required by other types of lighting that can actually trap more than half the light being generated. LEDs run on DC current, which means that each light bulb has a miniature AC to DC converter inside it. The most common symptom of LED light bulb failure is the gradual lowering of light output and loss of efficiency; sudden failures (which often occur with incandescent bulbs) are rare.

LEDs only operate if they are kept from overheating. Manufacturers commonly specify a maximum junction temperature of about 125 degrees Celsius (180 degrees Fahrenheit), and lower temperatures are advisable for long bulb-life. However, LEDs emit very little heat as compared to incandescent bulbs, which release 90% of their energy as heat, and CFLs (compact fluorescents), which release about 80% of their energy as heat. This means that LED technology can reduce the overall heating load on your apartment or building, reducing the cost for space cooling in warmer weather.

For all these reasons and with continued performance improvements and dropping prices, LED lamps should be utilized to replace 40, 60, and even 75 Watt incandescent bulbs, as well as their CFL equivalents. But it's important to read the lighting facts label when you buy these bulbs to make sure the product is the right brightness and color for the intended location.

Although incandescent lighting has been largely phased out in office buildings (fluorescent lighting has not been), it's still very common in multi-family residential buildings, especially in smaller ones. Given the large efficiency gap between incandescent and LED lighting, it is possible to achieve a payback period of less than a year -- not to mention that the average LED bulb lasts up to 25 times longer than an incandescent bulb. Upgrading from incandescent or CFL lighting is quite simple in most

cases, since LEDs often use the same lamp base. Upgrading from long-tube fluorescent bulbs is somewhat more complicated, but there are kits available to help do this.

Smart Lighting

Smart lighting consists of advanced controls that incorporate daylighting (using the sun to illuminate rooms), occupancy sensors, and plug and dimming controls to optimize the effectiveness of lighting and eliminate over-illuminated spaces. Networked sensors installed throughout a building can monitor multiple locations and collect minute-by-minute room conditions. Smart lighting solutions with wireless sensors and controls can be centrally managed through web-based platforms integrated into lighting management systems. Wireless controls facilitate easier retrofits, while lighting management platforms let users access controls through web-based dashboards.

This technology has many benefits. It enables us to save significant amounts of energy, increase light quality, regulate circadian rhythms, increase productivity, and make lighting more human-centric. When used for plants, it accelerates their growth.

Lighting energy consumption can be reduced by either drawing less power or using lighting systems for fewer hours. Traditional lighting controls relied entirely on the occupants to switch off or dim lights when not in use. However, too many people leave lights on when they leave a space or over-illuminate areas not in use. In response to this, many novel lighting control systems have been developed with the goal of reducing energy consumption while maintaining a high degree of occupant satisfaction and comfort through automatic or smart lighting controls.

Smart lighting may include high efficiency fixtures and automated controls and sensors that make adjustments based on conditions such as occupancy or daylight availability. The automated controls ensure that the system never operates for more hours than necessary. These controls, which can save from 20%-50% of electricity compared to conventional lighting systems, are widely used in Europe but are currently present in only 10% of NYC buildings above 50,000 square feet in area. In addition, most existing controls in our city consist of very basic timers and occupancy sensors, which means there are ample opportunities to utilize more advanced lighting controls for task lighting, accent lighting, and general lighting, such as the following:

- *Occupancy sensors* consist of a motion detector, an electronic control unit, and a controllable switch/relay. The detector senses motion and determines whether there are occupants in the space. It includes a timer that signals the electronic control unit after a set period of inactivity. The control unit uses this signal to activate the switch/relay to turn equipment on or off. Occupancy sensing is a popular energy-saving technique due to its ease of implementation and effectiveness, and thus has been heavily promoted in North American and European building codes, but has yet to be widely implemented in our area.

- *Daylight-linked controls* further reduce energy consumption when the sun is shining into a room, and can operate single or multiple zones. Using photosensors to measure indoor ambient light levels and reduce the amount of artificial lighting needed to meet design requirements, these controls can switch lights on and off or use dimmable electronic circuits to provide artificial light when daylight is present.

  Increased utilization of daylight in buildings has been shown to have an overall positive effect on occupants' health and well-being. One such benefit is its effect on the regulation of human circadian rhythms, which can increase alertness during working hours. Research has also shown that people generally prefer daylight to artificial lighting in a building.

  Although daylight-linked controls can potentially result in even greater energy savings than occupancy sensors, they do have some shortcomings. For instance, rapid and frequent switching of the lights on and off can occur, particularly during unstable weather conditions or when daylight levels are changing. Glare can also be a problem. Newer technologies such as differential switching or automated window blinds are helping to address these issues. The effectiveness of daylight-sensing systems is also dependent on multiple factors, including latitude and orientation, window size and other characteristics, shading devices, reflectance of inner surfaces, ceiling height and partition height.

- *Plug loads* are the amount of energy drawn by a device plugged into an electrical outlet. In existing buildings, smart plug load controls consist of auto-controlled receptacles and power strips that rely on time scheduling, motion sensing, or load detection to completely cut off power to equipment that is not in use. Automatically controlled receptacles, known as smart plugs, can easily replace existing receptacles and communicate with a controller, such as a timer or occupancy switch. Some smart power strips can sense the primary load, such as a computer, and operate peripheral devices accordingly. They are also capable of turning off receptacles based on feedback from occupancy sensors located in tenant spaces. Advanced power strips (APS) resemble standard power strips but can cut the power to any individual plug or combination of plugs on the strip. The strip turns off devices when they are no longer being used. For centralized controls, plug load schedules can be programmed into lighting and building management systems.

In June 2016, NYSERDA launched its Real Time Energy Management (RTEM) program to encourage smart technology implementation in existing buildings by requiring the use of sensor and meter data and data analytics to show real-time building performance. The program requires building owners to acquire a qualified vendor for third-party monitoring of building data. Service providers are responsible for installing and managing hardware and software. Program incentives of up to $115,000 are available

through June 2021 for system installation and five-year service contracts.

More Information

- Chew et al. (2017). Smart lighting: The way forward? Reviewing the past to shape the future. *Energy and Buildings*, vol. 149, pp. 180-191
- King & Perry (2018). Smart Buildings: Using Smart Technology to Save Energy in Existing Buildings. May 24 2018.
- American Council for an Energy Efficient Economy
- New York - State Energy Profile
- Energy.gov (US Department of Energy) review of LED lighting
- The Energy Saving Potential of Lighting Upgrades in New York City; New York Engineers
- Real Time Energy Management Program, NYSERDA

UWSR Eco Letter May/June 2018
COMMENTARY:
Growing and Eating Local Produce in Upper Manhattan

Growing vegetables, herbs, fruits, and nuts in Upper Manhattan might seem like something of a stretch, but it's increasingly taking place. And this really isn't new: When oil supplies were rationed during World War II, it was difficult and expensive to ship produce long distances. In response, over 20 million Victory Gardens took root between 1942 and 1944 in both public and private spaces. These gardens supplied nearly half the produce Americans ate. In Manhattan alone there were an estimated 400,000 of these gardens in spaces ranging from fire escapes to rooftops to large vacant lots. These days, as oil supplies dwindle and the effects of climate change steadily worsen, there's no reason we can't do something like this again.

The benefits of eating locally grown organic produce are many: air pollution reduction; CO_2 and global warming mitigation; fresher and more nutritious produce; as well as a boost to the local economy. On average, each food item we eat has travelled about 1,500 miles before it reaches our local grocer, consuming large amounts of gasoline and causing lots of extra CO_2 to be emitted into the earth's atmosphere. The large-scale farming that generates these market items also consumes significant amounts of fossil fuels in equipment for tilling, irrigation, baling and other agricultural processes. And the production and application of synthetic fertilizers, pesticides and herbicides is both very energy intensive and harmful to us when we consume produce treated with them. In fact, the use of herbicides and pesticides isn't really effective in controlling insect pests in the long run since the insects with a natural resistance often survive and breed offspring which are much harder to eradicate.

All in all, close to one-fifth of our nation's energy use is attributable to agriculture, almost as much as we consume with our vehicular transportation. This usage is a significant contributor to global warming. Vegetables, herbs, nuts and fruits can be raised on ground-level spaces - such as vacant lots, portions of city parks or other public spaces - and on rooftops; they can also be grown within high-rise buildings (in what is termed vertical farming) or even on piers or floating platforms. You can also grow smaller crops in your own apartment or plant climbing vegetables (such as pole beans or tomatoes) in the tree bed in front of your building. You can find a good overview of the benefits of locally grown, organic produce in *Animal, Vegetable, Miracle* by Barbara Kingsolver and Steven Hopp (see additional sources of information at the end of this commentary).

Crop yields can be considerable. For instance, a vacant lot or rooftop measuring 40 x 50 feet (2,000 sq. ft.), with good sunlight, could theoretically produce about 950 pounds of carrots, or 500 pounds of lettuce or spinach, or 350 pounds of broccoli.
The main requirements of urban agriculture are adequate sunlight (or artificial light), water, and small amounts of certain nutrients. Energy consumption is a consideration, as is the weight of the soil if the garden is situated on top of or within buildings. It's also wise to have the soil checked for lead contamination before planting and to protect the growing plants from damage or consumption by animals such as pigeons or squirrels.

A number of groups are already growing vegetables, herbs and fruit in Manhattan. Many of these are in East Harlem or on the Lower East Side, but some are located on the Upper West Side. Click here for an inclusive list of community gardens.

The largest organization on the Upper West Side of Manhattan is Harlem Grown (212-870-0113), whose office is located at 127th Street & Malcolm X Boulevard. Harlem Grown is a non-profit organization whose mission is to inspire youth to lead healthy and ambitious lives through mentorship and hands-on education in urban farming, sustainability, and nutrition, and to promote knowledge of healthy food for Harlem residents. Founded in 2011, they operate eight local urban farms, six of which are in West or Central Harlem: 118 West 134th Street; 126 West 134th Street (greenhouse); 34 West 131st Street, 127 West 127th Street (farm and greenhouse), PS 154 School Garden at 250 West 127 Street, and the PS 125 School Garden at 425 West 123 Street. These sites are open to the public, but you should call in advance for an appointment. They also oversee the NYCHA Wagner Houses Farm in East Harlem (at 122nd Street between 1st and 2nd Avenues), which sells vegetables at its own farm stand.

Harlem Grown raises a variety of vegetables (greens, root crops, tomatoes, etc.) and fruits (including apples, pears and cherries). All produce from the eight farms is donated to summer camp families or those who help with the project. This produce is seasonally available at a small market in front of the 118 West 134th Street garden. Using vegetable and fruit food scraps donated by local residents, they create their own compost at the 118 West 134th Street site using a three-bin system. That site also gets

most of its irrigation water via a drainpipe leading down from the roof of an adjoining building into water collection barrels. Volunteer opportunities at Harlem Grown's urban farms are available, including jobs in producing compost or tending to the vegetables, fruits, or chickens (yes, they also raise chickens!). No prior farming or gardening experience is needed.

Other ground-level gardens that grow at least some vegetables, herbs or fruit include the following:

- Clayton Williams Garden, 303 West 126th Street. *Info*: Green Thumb, ClaytonwilliamsCG@yahoo.com
- Clinton Community Garden, 436 West 48th Street, (212) 586-2940
- Luigi's Garden, at 227 West 115th Street, specializes in vegetables and herbs. *Info*: Grow NYC
- La Perla Garden, 76 West 105th Street. Info: Green Thumb; (212) 602-5300
- Mobilization for Change Garden, 955 Columbus Avenue on the Southeast corner at 107th Street; 212-788-7900
- PS 76 Garden, 203 West 120th Street. *Info*: Grow NYC
- West 104th Street Garden, 75 West 104th Street. *Info*: Green Thumb, 212-788-7070
- West 124th Street Garden, on two lots between Manhattan Avenue and Central Park West. *Info*: Green Thumb, 212-788-7070
- West Side Community Garden, 142 West 89th Street. *Info*: (212) 316-5490

The only rooftop vegetable gardening project we're aware of in Upper Manhattan is the Hell's Kitchen Farm Project (info@hellskitchenfarmproject.org) located on the Metro Baptist Church Rooftop at 410 West 40th Street. They grow a variety of vegetables in 52 raised beds, using food scraps and dead plant material to produce compost that enriches the soil. All produce grown on the farm is donated directly to a food pantry.

Fruit trees and berry bushes could be planted in some areas of our parks instead of or in addition to ornamental or shade trees. (For instance, many orange trees are found lining the streets of Seville, Spain.) Since they're relatively small, fruits such as strawberries, blueberries and raspberries are suitable for rooftops or vertical gardens as well. Trees New York has partnered with community gardens and public schools to create a FruiTrees New York program, whose purpose is to plant urban orchards that produce apples, peaches, apricots or pears. One such orchard is located at the Pleasant Village Community Garden at 342 Pleasant Avenue in East Harlem. Others in Manhattan are the Peach Tree Garden and Orchard Alley on the Lower East Side. But this practice need not be limited to fruit trees; nuts, such as filberts (hazelnuts) or black walnuts, grow perfectly well in this climate and are rich in protein.

For Help in Starting Your Garden

If you're inspired to start your own garden, the following organizations may be of help:

- Seeds and seedlings can be bought locally from the Urban Garden Center, 1640 Park Avenue (just north of 116th Street under the train tracks). *Info*: (646) 872-3991, sara@urbangardennyc.com

- GrowNYC's Garden Program constructs and sustains community gardens, urban farms, school gardens, and rainwater harvesting systems across New York City. To date, GrowNYC has built more than 90 gardens, and they support hundreds more through renovations, green infrastructure projects, technical assistance, volunteer days, annual plant sales, and education of children.
  GrowNYC's FARMroots program conducts a training course for both aspiring and experienced farmers.

- Green Thumb, the largest community gardening program in the nation, provides programming and material support to over 500 community gardens in New York City. Gardening tools and supplies are available at their monthly workshops.

- Just Food is another organization devoted to encouraging urban agriculture in New York City. It trains community gardeners and supports community leaders who advocate for healthy locally-grown food, especially in underserved neighborhoods. Their Farm School NYC program aims to spread knowledge about growing and marketing food in their neighborhoods.

- New York Restoration Project (NYRP) helps communities transform public spaces into community gardens through their Gardens for the City program. They lend materials, manpower and expertise in construction, horticulture, forestry and environmental education to help create these gardens, particularly in under-resourced neighborhoods.

Even if you can't grow your own vegetables, fruit or nuts, you can still make a difference and buy locally grown food by participating in Community Supported Agriculture (CSA) or Grow NYCs Fresh Food Box program.

- *CSAs* allow city residents to have direct access to high quality, fresh produce grown locally by regional farmers. When you become a member, you're helping support a regional farmer by purchasing a share of the farm's vegetables, weekly or bi-weekly, from June until October or November. Your farmer will deliver that share of produce to a convenient pick-up location in your neighborhood. CSA members pay their share of support up front for an entire season of produce (typically $450-$650). This early bulk payment enables your farmer to plan for the season, purchase new seed, make equipment repairs, and more. Shares

usually include seven to ten types of vegetables, enough for a family of two or three people. Most CSAs also offer half shares for smaller households or busy New Yorkers who frequently eat out, and have a variety of payment plans. More information about CSAs is available from Just Food.

- *GrowNYC*'s Fresh Food Box Program enables people in under-served communities to purchase fresh, regionally-grown produce at prices well below traditional retail prices. Through the power of collaborative purchasing, Fresh Food Box customers can buy for $14-15 what would normally cost $20-$30 in a store. There are four locations on the Upper East Side and East Harlem. Click here for more information.

  You can also buy your produce from local farmer's markets. Grow NYC operates three year-round farmer's markets on the Upper West Side (at 79th, 97th and 115th Streets), as well a several others in various uptown Manhattan neighborhoods. For more information, contact GrowNYC or see our Hard-to-Recycle List. In addition, Just Food supports community-run farmer's markets, including the Harlem Harvest People's Market at 219 West 122nd Street (212.662.2878; projectharmonycs@aol.com

Sources of Further Information

- *Animal, Vegetable, Miracle*. Barbara Kingsolver et al., New York, Harper Perennial, 2017, 416 pp.
- Green City Force; tel: 646-681-4700
- Green Thumb; tel: 212-602-5300; 311
- GrowNYC, 212-788-7900
- Harlem Grown; tel: 212-870-0113
- Just Food; tel: 212-645-9880; info@justfood.org
- New York Community Garden Coalition; tel: 347-699-6099
- New York Restoration Project Gardens for the City; tel: 212.333.2552; info@nyrp.org
- Trees New York; tel: (212) 227-1887

UWSR Eco Letter March/April 2018
COMMENTARY:
Trees in Our City

There are more than 5.2 million trees growing in New York City. As of 2016, about 670,000 of these were street trees, the rest being in parks, along waterways and in other open spaces. Many of these trees were planted between 2007 and 2017 as part of the MillionTreesNYC Project; they were planted by the New York City Department of

Parks, with help from the New York Restoration Project and other partners, and many volunteers. Maintaining proper care for these new trees helps ensure their long-term survival and continued benefits for all NYC residents.

We see them every time we travel around the City, and it's easy to take them for granted. But all these trees have a significant impact on the City's environment and help make it more healthy and livable. Living trees are a net absorber of carbon dioxide (CO_2) and thus help to mitigate the effects of climate change (although dead trees, when composted or burned, return CO_2 to the atmosphere). They lessen flooding by the absorption of storm water. They also absorb solar radiation and provide shade, both of which tend to lower the temperature during hot summer days. Their leaves cool by evaporation, transpiration (the "breathing" of the leaves) and shading, and their roots aerate compacted soil. Planting trees also improves air quality, helps reduce asthma rates and enhances public health and well being in other ways. They provide shelter for birds and other animals and increase the property values of human shelters.

Unfortunately, there are many neglected trees and tree beds in neighborhoods throughout the City. The garbage, dog waste, cigarette butts, and other litter that accumulate and remain in the tree beds are not only an eye-sore but are also unhealthy for the trees and to humans - and it all attracts rats. A variety of organizations help residents and community groups to plant and properly maintain trees, as well as to keep tree beds clean (see the list at the end of this Commentary).

One of these community groups, the West 80s Neighborhood Association, co-sponsors an annual Love Your Street Tree Day, a coalition of local organizations and volunteers focused on keeping us aware of the importance of NYC street trees and providing information on the care and maintenance of both trees and tree beds. Co-sponsors include the NYC Parks Department, Goddard Riverside Greenkeepers and Trees NY. This year's "Love Your Street Tree Day" is on May 20th (see Events/Urban Greening below). You can watch tree stewardship demonstrations, receive a gardening goodie bag with supplies and their popular curb-your-dog sign, and get mulch for your tree.

Types of Trees

It's generally best to plant more than one variety of tree on your block, as a single species presents the possibility that all of them could be affected by the same disease or insect pest. A list of street-tree species and their environmental tolerances for NYC is available here:

- Shade trees. Some of the most common deciduous street trees in NYC are London Plane, Linden, Norway Maple, Red Maple, Silver Maple, Pin Oak, Callery Pear, Honey Locust, Green Ash, and Ginkgo. These shade trees have proven to be suited to the NYC climate and to be resistant to the exhaust fumes released by vehicles around them. Evergreen trees currently comprise only a small minority

of street trees but are recently more frequently planted. They benefit us year-round, adding green tones and textures to our streets and cleaning the air by capturing airborne pollutants during the winter when particulate levels are often at their highest. Evergreens are available from Trees New York and some nurseries.

- Ornamental trees. If you're primarily interested in beautifying your block and providing areas of shade, you might want to plant ornamental trees such as Crabapple, Cherry or Eastern Redbud. These and other varieties are common in Riverside Park, and there's no reason why they can't become more prevalent on our streets as well. Ornamental trees approved for NYC are included in the list above, mainly under the small trees section.

- Nut or fruit trees are also suitable for street sides or community gardens, as well as in our parks. If space is limited, dwarf varieties can be planted, even on rooftops. Trees New York runs a FruiTrees New York program, whose purpose is to plant urban orchards that produce fruit such as apples, peaches, apricots, plums or pears. One such orchard is located at the Pleasant Village Community Garden at 342 Pleasant Avenue in East Harlem.

  This practice need not be limited to fruit trees; nuts such as filberts (hazelnuts), butternut (white walnut) or black walnut grow perfectly well in this climate and are rich in protein. Nut and fruit trees can be bought from a variety of nurseries, both within the NYC Metropolitan Area and outside of it. A local source is The Urban Garden Center, located at 1640 Park Avenue (116th Street). Make sure the variety you choose is sufficiently freeze tolerant to survive local winters. The hardiness of trees and other plants is rated according to zones in the United States, ranging from 3 (coldest = Adirondacks) to 10 (warmest = Southern Florida); New York City lies in zones 6 or 7.

Tree Beds

In order to plant a street tree, you must first have a soil tree bed created within the sidewalk. If one doesn't already exist, Parks Department foresters will survey the potential planting location to determine if it can accommodate the healthy growth of new trees. The NYC Parks Department will do this at no cost but it can take a long time; if you're in a hurry you can hire a private contractor for a fee.

Next, the utility companies mark the underground gas (yellow), electric (red), and telecommunication (orange) lines at the proposed planting location to ensure that the tree planting will not conflict with them or any other infrastructure. Then the forester and a planting contractor will mark the future tree bed location by painting a white "T" on the curb where the tree is to be planted. The contractor will later cut the sidewalk along the edges of the tree bed and remove the concrete, leaving an open tree planting area. It's important that tree pits be as large as possible (up to seven feet on each side)

as a greater soil volume will generally result in a larger tree at maturity and one with greater longevity.

Planting

Any property owner can request a free street tree by submitting a service request to the NYC Department of Parks or by calling 311. All requests are handled on a first come, first served basis. Requests can be made for planting trees in existing empty tree beds or for creating new tree beds in the sidewalk. The Parks Department does not plant on private property, and the tree bed is considered Parks Department property. Street trees are required to be planted at new buildings and major enlargement projects.

As mentioned above, each location you request is surveyed in person by a Parks forester to make sure there are no conflicts with the surrounding infrastructure and that the site is suitable for a tree to grow and thrive. If a site is found to be appropriate for a new tree, they will add it to a list to be planted during the next available planting season. Trees are only planted during Spring (March 1 to May 31) and Fall (October 1 to December 31) and are under guarantee for two years after planting. You can view the street tree planting guidelines here and request a specific tree species, but the Parks Forester in charge of the planting will make the final species determination.

You can also plant a tree on your own or with a local community group, but you must first obtain a tree planting permit and hire a landscape contractor. This can be done in the Spring and Fall planting seasons through the New York Restoration Project, which will either help community and corporate volunteers plant the trees or provide free trees to New Yorkers to plant themselves in their yards, courtyards or community gardens. For more questions about Tree Giveaways, please contact NYRP at info@nyrp.org or (212) 333-2552.

Maintenance and Care

Watering is the most important thing you can do for your street tree, but it may also be the most difficult. Transporting water from the source to the tree can be challenging. In general, you should water each young deciduous tree 15-20 gallons once a week during the growing season between May and October (that's 3-4 large buckets). Water should be poured slowly so it penetrates the soil and doesn't run off the surface. If it rains 1 inch or more in a week's time, you don't need to water. It's also necessary to cultivate or loosen the top 2-3 inches of soil to avoid soil compaction and help the water and air reach the tree roots.

Composting and mulching will also help the tree bed retain water (see more below under Compost and Mulching). Since street trees live in very small spaces that provide limited amounts of soil and nutrients, adding mulch to your tree bed during winter also

helps keep roots warm, keeps the weeds down, and protects the tree from harm from de-icing salt. You can learn more about how to care for your tree(s) here.

Add protective fencing to discourage dogs form urinating on the soil around the tree (see more below under Tree Guards). Weeding your site using a hand cultivator or trowel is also essential as weeds are fast growing and fast reproducing plants that tend to sap both water and nutrients from the trees (make sure you go deep enough to pull out all their roots).

The NYC Parks Department will clean up all or part of a curbside tree that's damaged as a result of weather or other causes. Call 311 or see the Parks Department site to request tree pruning, to report a damaged tree or a fallen branch, or removal of other wood debris or a dead tree.

Aside from the Parks Department, at least two other non-profit organizations provide tree services for Upper Manhattan:

- Trees New York at 100 Gold Street offers, for a one-time fee, a Citizen Tree Pruning Course that teaches New York residents how to maintain their own trees. This type of pruning and other care can greatly reduce a tree's vulnerability to pervasive urban threats such as pedestrian and vehicular traffic, drought and storms. Trees New York also runs a Tree Stewardship Training Program, in which volunteers are trained to clean up and care for tree beds, as well as providing information on tree grates and storm water runoff.

- Green Keepers is Goddard Riverside's social enterprise business, which works with local residents and block associations in the beautification of the New York urban landscape. Green Keepers is a primary provider of tree bed renovation and reconditioning in the City. They also offer horticultural, sanitation and non-toxic pest control services for a variety of clients, including the Broadway Malls and Riverside Park.

Tree Guards

Tree guards are fences around the perimeter of a tree pit that provide a physical barrier between a tree and our sometimes-harsh urban environment. These tree guards reduce soil compaction, shield the trunk from physical damage, and discourage pet waste from entering the tree pit. Dog urine in a tree bed is not just smelly; it makes the soil too acidic for the tree roots, thereby potentially harming it. Tree guards have been proven to extend the longevity of trees and reduce mortality rates; they can also provide a small protected planting bed for gardening.

There are a number of ways you can install a tree guard around a tree pit in front of your home or business. A Tree Work Permit is required prior to installing any tree guard,

and you can apply for one here. In some communities, local elected officials can provide tree guards around newly planted trees. Curb Allure (212-769-2872, 800-800-5100; info@curballure.com), located on the Upper West Side, sells metal tree guards, tree fences, tree pit guards and decorative fence panels. Their interconnecting system of posts, rails, decorative panels and accessories can be used to create unique or classic looking tree guards. Curb Allure's products are sold directly by them, installed by the Urban Garden Center or installed free if you donate to the New York Tree Trust.

You can also hire a private contractor or look into other lower cost alternatives. To make this process easier, the Parks Department has pre-approved tree guard designs listed here. All permitted tree guards should be at least 18 inches tall, installed on the outer perimeter of the tree bed, and positioned at least one foot from the curb with the curbside open. Tree guards should allow for water to flow from the sidewalk into the tree pit, so avoid building a solid wall around the bed. Any water that flows into the tree bed not only nourishes the tree but helps to alleviate the storm water runoff/sewage problem we have here in the City.

Compost and Mulching

The soil alongside our streets is often compacted and full of clay, which makes it relatively impermeable to water. It's very helpful to put a generous amount of compost beneath the root ball when the tree is first planted. Trees roots need small open spaces to breathe, and the porosity of the compost facilitates this. Working some compost into the top 2 or 3 inches of the soil in the tree bed with a hand cultivator will also help water penetrate to the roots of the tree, making it more drought resistant. Some species, particularly fruit and nut trees, have very shallow roots; in this case it might be best to work the compost only into the top inch or so of the soil, keeping an eye out for the roots. Planting flower bulbs around trees can also help to loosen the soil.

Compost can be applied at any time of the year, though this is usually done in the Fall or Winter, when it helps insulate the tree roots and thus keeps them warmer. The added compost also supplies additional humus and other nutrients directly to the roots. In addition, it contains fungi, bacteria, worms and other small organisms that help maximize a plant's ability to utilize the nutrients and water already present in the soil. As these organisms decay they also release natural nitrogen, which is necessary for tree growth.

Covering compost with mulch in the winter helps keep water from evaporating, prevents weeds from growing, and stabilizes the soil temperature. Mulch can consist of wood or bark chips, twigs, evergreen boughs (a great way to recycle Christmas trees and other greenery), straw, hay, dried leaves, or pine needles. Wood or bark chips, evergreen boughs and twigs tend to add acidity to the soil, but decompose slowly so they need to be applied less often. Straw, hay and dried leaves are less acidic but rot more quickly so they need to be added more often. Keep the mulch away from the

trunk of the tree; wet mulch in contact with the tree creates a hospitable environment for diseases and insect pests and can ultimately cause the bark to rot.

Sources of Compost

Lower East Side Ecology Center: 212-477-4022; info@lesecologycenter.org

DSNY: There are compost givebacks at Fresh Kills, Staten Island (in April) and Soundview Park, Bronx (in May). Preregistration is required. Check here for more specifics.

You can also obtain mulch at the Love Your Street Tree Day on May 20, 2018, along with a goodie bag with gardening supplies and curb-your-dog sign.

More information:

- Curb Allure, 212-769-2872, 800-800-5100; info@curballure.com
- Goddard Riverside Green Keepers, 577 Columbus Avenue, New York, NY 10024; tel: (646) 505-1088; greenkeepers@goddard.org
- Love Your Street Day. PO Box 732, NYC 10024; info@loveyourstreettreeday.com
- Nature Conservancy, The, 620 Eighth Avenue, New York, NY 10029; tel: (212) 556-1234
- New York City Department of Parks Tree Services, (tel) 311
- New York Restoration Project, 254 West 31st Street, #10, New York, NY 10001; tel: (212) 333- 2552
- Trees New York, 100 Gold Street, Suite 3100, New York, NY 10038; (212) 227-1887;

  info@treesny.org

- Urban Garden Center, 646-872-3991; info@urbangardennyc.com

UWSR Eco Letter January/February 2018
COMMENTARY:
Textile and Plastics Recycling - Updates

TEXTILES

Textiles constitute about 10% of our residential waste stream (by weight). This means that every year NYC residents discard approximately 200,000 tons of clothing, towels, blankets, curtains, shoes, handbags, belts, and other textiles and apparel. Although more post-consumer textiles are currently being recycled, they represent only about

one-quarter of the total volume. Regrettably the remaining three-quarters end up in the trash.

Generally speaking, recyclers accept all clean textiles -- including clothing, sneakers, shoes, pocketbooks, curtains, sheets, blankets, and towels. They do *not* accept textile scraps, pillows, comforters, luggage or carpeting. You can recycle textiles in your own building (if a sufficient quantity is gathered) or bring them to a local Greenmarket or thrift shop (see below). But don't forget that clothing can also be mended and re-used instead of discarding it.

A. Textile Recycling In Your Building - The following organizations pick up textiles at no charge:

- **Wearable Collections** (646-515-4387; info@wearablecollections.com) has been serving New York City for the past ten years. They offer free pick-up of the clean textiles listed above from residential buildings, schools and other non-profit organizations, as well as from street fairs. The minimum pickup is 5 large (30 gallon+) bags. In return for their co-operation, Wearable Collections will make a 5-cent-per-pound donation to participating community organizations. If you live in an apartment building with sufficient space, they can help organize periodic textile recycling drives or will site a bin in your building. If you do run a clothing drive in your building or school, it's best to specify a given period of time (e.g., two weeks) so people don't procrastinate in dropping off their textiles. Wearable Collections generally makes pickups on the Upper West Side and Harlem on Thursdays or Fridays.

- **re-fashioNYC** (call 311) is a nonprofit partnership between the NYC Department of Sanitation (DSNY) and Housing Works that offers free pick-up of textiles from residential buildings, commercial businesses and non-profit organizations with 10 or more units and space to site a bin. 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.

- **Salvation Army** provides free pick-up of clothing, other textiles, shoes, etc. You can click here to donate goods or call (212) 757-2311 or (800) 728-7825. There is a two-bag minimum.

- **United War Veterans Council**, (212) 838-8982, (203) 434-4170; info@uwvcrecycling.org) will pick up clothing and other textiles, which can be mixed with other household items. There is no minimum quantity, though they prefer at least one full bag or box.

B. Textile Recycling Outside Your Building (see also Re-Clothe NY below under "More Information")

- **Grow NYC Greenmarkets** (212-788-7900, 212-788-7476) works with Wearable Collections, who manages the process. Receipts for donated material are available upon request. You can take textiles to the following local 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 & 115th Street, 8 a.m.-3 p.m., Thursdays and Sundays
    - There are also collection sites in Inwood, the East Side and other Manhattan locations; check the Grow NYC website for locations and hours.
- **Local thrift shops:**
    - Cathedral of St. John the Divine Clothing Closet, 1047 Amsterdam Avenue (112th Street), (212) 316-7540; Tuesday and Thursday, 10:00 a.m.-12:30 p.m.
    - Center at the Red Oak, 135 West 106th Street, (212) 749-7015. Monday-Friday, 8:30 a.m.- 4:00 p.m.
    - Goodwill, 157 West 72nd Street, (212) 799-2723; 217 West 79th Street, (212) 874-5050.
    - Housing Works, 306 Columbus Avenue between 74th & 75th Streets, (212) 579-7566; 2569 Broadway between 96th & 97th Streets, (212) 222-3550.
    - NY Cares Coat Drive Warehouse, 157 W 31st St, 646-801-4022.
    - Salvation Army,. 268 West 96th Street, (212) 663-2258, (212) 337-7200.
    - St. Francis Thrift Store, 217 West 97th Street, (212) 932-8040; 11:00 a.m.-6:00 p.m., seven days/week

PLASTIC WASTE

Plastic recycling, waste reduction and re-use are extremely important. Since these materials don't usually biodegrade, just about every piece of plastic ever manufactured still exists today. Fortunately, the NYC Department of Sanitation (DSNY) collects and recycles nearly all solid plastic objects, except those made of expanded polystyrene (Styrofoam). However, they don't recycle plastic film (including plastic bags). These lightweight plastics (along with plastic straws) often blow or are washed into our waterways and are carried out to the Atlantic Ocean -- the City's vast amount of concrete or asphalt paving facilitates storm water flow into our rivers and bays, which carries the lightweight plastics along with it.

1. **Plastic Straws:**

About 500 million plastic straws (which are primarily composed of polypropylene) are used in the United States each year. Because there is essentially no recycling market for them, DSNY cannot collect and recycle them. Aside from littering our city, many end up in our oceans, contributing to the vast vortices of plastic waste that clutter them and interfere with or endanger aquatic life. Whenever possible, try to use paper straws, or better yet, don't use straws at all (see here for more information). It's perfectly easy for most of us to drink directly out of a glass or cup. When you're drinking something outside your home, just ask that a straw not be included with your drink. Cities such as Seattle and Fort Myers have already banned single-use plastic straws.

2. **Styrofoam** (expanded polystyrene [EPS])**:**

Styrofoam is also not collected and recycled by DSNY. Although proponents of the polystyrene industry claim it is recyclable, an exhaustive two-year study by DSNY concluded Styrofoam could not be recycled in an economically efficient and environmentally feasible manner. Thus, it will just end up in landfills or in the ocean. Polystyrene creates pollution wherever it is produced, used and discarded. It can break down into micro-particles that work their way into the food chain and can result in human health problems. A UN Food and Agricultural Organization study reported that over 100 commercial seafood species ingest micro-plastic, which can be contaminated with toxins. Toxic polystyrene can also leach from containers (such as coffee cups) into beverages or food.

As we mentioned in a previous Eco Letter, single-use, expanded polystyrene will not be banned in New York City for the time being because of a 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 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.

However there have been some victories. An organization called Cafeteria Culture has built strategic coalitions, resulting in the 2013 decision to completely eliminate polystyrene foam trays from all NYC schools. The City's agreement to co-purchase compostable plates with the five other largest U.S. school districts will drive down costs and eliminate an impressive 3 million polystyrene trays used per day in schools across the U.S., significantly reducing greenhouse gas emissions.

Since they are very durable (one 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. Also, whenever possible, buy eggs packed in recyclable paper cartons. If you must buy egg in Styrofoam cartons, try to donate them to local farmers for re-use, either directly or via your neighborhood greenmarket.

3. <u>Plastic Bags and Film</u>:

In New York City plastic film accounts for about 7.5% of the residential waste stream, and these materials are again not collected by DSNY. Try to 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 recyclable aluminum foil. The plastic film that you do end up using can be rinsed and brought, along with plastic bags, to most large supermarkets.

The plastic bag was only invented about 50 years ago; for centuries people simply carried food items around in cloth bags, baskets and other containers. Because they're so lightweight, discarded plastic bags are easily blown about by the wind. We've all seen plastic bags stuck in trees, clogging storm and sewage drains, but they're also washed or blown out to sea. Plastic bags become even more toxic once they break down in a marine environment; fish can eat bag fragments and accumulate chemicals that can cause liver toxicity and other pathology.

On average, each of us discards an average of about twenty single-use plastic bags every week, which adds up to about 10 billion bags a year in NYC alone, the majority of which are not recycled and are not biodegradable. Plastic bags also clog up the sorting and processing equipment at the Sims recycling facility in Red Hook. It costs the City an additional $12.5 million dollars a year to dispose of these bags once they're removed from collected recyclables.

New York City recycling advocates and Council members drafted legislation (in lieu of imposing an outright ban) for a per-bag fee at markets to encourage shoppers to bring their own reusable bags. This plastic bag bill, Intro 209A, which was sponsored by Councilmembers Brad Lander and Margaret Chin, would place a five-cent fee on the most common single-use plastic and paper bags. The fee would be kept by the stores who sell the bags, not the City. Unfortunately, the plastic bag industry blocked the bill by claiming that a fee on plastic bags would be a burden on poorer individuals. This is quite unlikely to be true: Councilman Lander, a former anti-poverty advocate, included an exemption for people who make purchases either with SNAP (food stamps) or WIC; also, low-income New Yorkers would probably adapt more quickly to a plastic bag fee than wealthier City residents, who might consider it an inconvenience. Therefore, utilizing reusable bags would not be a major obstacle.

Other cities have enacted per-bag fees and have found this system works well. Bag It NYC is a coalition of non-profits and community organizations throughout New York State that's united in seeking to eliminate the needless waste and pollution created by single-use carryout bags. They support legislation that includes a fee on all carryout bags, or a ban on thin plastic bags with a fee on all other carryout bags. Another local group, Plastic Bag Laws was created by Jennie Romer, a national expert on carryout bag policy. This organization is a resource for legislators and other interested parties who are looking into laws limiting the use of plastic bags.

Here are some current options for replacing single-use plastic bags:

- Re-usable shopping bags made of cloth or other materials. You can collect these and bring them to the market. Some are even designed to fit into a pocket or purse. Various organizations distribute re-usable cloth bags with their names on them for free or a minimal charge as a way to publicize themselves.
- Garbage bags need to be impermeable to liquids, so paper bags are generally not suitable. However, new biodegradable or compostable materials can be used to manufacture garbage bags. Some companies have developed bags composed of materials that are derived from agricultural waste (e.g., cornstarch) or hybrids of plastic and paper. The Biodegradable Products Institute provides certification services for compostable products. BPI-certified products meet ASTM testing standards to certify they will biodegrade in a managed compost facility and provide a list of companies that manufacture these products. Their compostable logo identifies products that will perform satisfactorily in facilities that achieve temperatures needed to assure rapid biodegradation; this is usually not true of home composters. Also, just because a product is "bio-based" doesn't necessarily mean that it will biodegrade in a composting facility. For example, the lignin and cellulose in wood products can take years to break down. Local stores that sell biodegradable bags include Food Emporium and Whole Foods. A citywide list can be found here.
- If you use a plastic bag to collect your own glass, metal and plastic recycling, empty it into your building's container and re-use the plastic bag. As we mentioned above, plastic bags clog up DSNY's sorting and processing equipment resulting in needless expense and garbage. If you must employ single-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.

4. CDs and Cassettes

CDs are relatively easy to recycle; DSNY accepts them so you can put them in your glass, metal and plastic recycling container. Other recycling options include Best Buy Stores

and the Salvation Army. Westsider Books at 233 West 72 Street buys and sells music CDs (212-874-1588).

Cassette and VHS tapes are not accepted by DSNY since they're composed of both film and rigid plastic. If you take the time to extract the tape from the cassette, the case only can be put in with your regular plastic recycling. Lower East Side Ecology (212-477-4022) accepts CDs, DVDs and cassette tapes for a per-pound fee at its collection events and warehouse.

More Information:

- Bag It NY (Plastic bag pollution)
- Biodegradable Products Institute; 888- 274-5646
- Cafeteria Culture, info@cafeteriaculture.com
- Food and Water Watch, 147 Prince Street, Brooklyn, NY 11201; tel: (347) 778-2743
- NYC Department of Sanitation (DSNY)
- Plastic Bag Laws, Jennie Romer; jennie@plasticbaglaws.org
- Re-Clothe NY Coalition

UWSR Eco Letter November/December 2017
COMMENTARY:
Air Quality

Nothing is more precious to us than the air we breathe. We can go without food or water for days, but we can only be deprived of oxygen for a few minutes. Breathing in and out has a close relationship to our physical and emotional well-being.

Air pollution can result in numerous human maladies, among them asthma, chronic obstructive pulmonary disease, stroke and other cardiovascular problems and neurological problems. It can also cause acid rain that makes lakes sterile, kills trees and leaches essential plant nutrients out of the soil. Yet air pollution levels seem to be rising in many areas around the world.

The good news is that it hasn't been rising recently in New York City because of local and federal environmental regulations. In fact, according to data from the NYC Health Department, air pollution in the City is at the lowest level ever recorded. Sulfur dioxide saw the biggest drop - 84% over seven years - after the City tightened heating oil rules.

Although air quality in New York City has improved over the past several decades, concentrations of multiple air pollutants remain at harmful levels, particularly for

seniors, children, and those with pre-existing health conditions. A recent study of more than 60 million Medicare recipients found that even pollution levels below those generally considered safe increase the risk for premature death, especially from particulate matter. In this study, Qian et al. followed the population for a median of seven years, recording 22,567,924 deaths. They found that each increase of 10 micrograms per cubic meter in particles smaller than 2.5 microns, or PM 2.5, was associated with a 7.3% increased mortality.

Types of Air Pollutants

A **primary pollutant** is an air pollutant emitted directly from a source. A **secondary pollutant** is not directly emitted as such, but forms when other gases (primary pollutants) react with it in the atmosphere. For example, sulfur dioxide and nitric oxide are primary gaseous air pollutants, and nitrogen dioxide is both a primary and secondary air pollutant. Another secondary pollutant is ozone, which is formed when hydrocarbons (from fossil fuel emissions) and nitrogen oxides combine in the presence of sunlight. Air pollutants can also consist of fine particles.

Fine particles (including black carbon from diesel exhaust) are tiny airborne solid and liquid particles less than 2.5 microns in diameter. They are the most harmful urban air pollutant: they are small enough to penetrate deep into the lungs and enter the bloodstream, worsening lung and heart disease, and are also a human carcinogen. Fine particles are either directly emitted or formed in the atmosphere from other pollutants. Significant local sources include fuel combustion in vehicles, boilers in buildings, power plants, construction equipment, marine vessels, and commercial cooking. Although New York City air quality is improving, the Health Department estimates that fine particle pollution alone caused an average annually of more than 2,000 deaths, approximately 1,500 hospital admissions for lung and heart conditions, and 5,000 emergency department admissions for asthma.

Gaseous pollutants include the following:

- *Nitrogen dioxide* (NO_2) and nitric oxide (NO) are part of a group of pollutants called nitrogen oxides (NOx), which are formed when fossil fuels are burned. Almost 90% of the NOx consist of NO, which is then oxidized to NO_2 in the air. Sources of NOx include coal- and gas-fired power stations, motor vehicles, boilers in buildings, marine vessels, and construction equipment. Exposures to it are linked to increased emergency department visits and hospitalizations for respiratory conditions, particularly asthma. NOx also react with other compounds in the atmosphere to form fine particles and ozone.

- *Sulfur dioxide* (SO_2) is a colorless gas with a pungent, suffocating odor. It's a dangerous air pollutant because it's corrosive to organic matter and thus irritates the eyes, nose and lungs. It also creates acid rain. Some of it drifts east from

coal-burning power plants primarily in the Midwest, but in NYC SO_2 is produced mainly from burning oils with high sulfur content, such as Number 4 and No. 6 oils. Fuel oil in NYC is used mainly to heat buildings and for hot water, but some high sulfur oil is also used to generate electric power and propel marine vessels. Some SO_2 also results from vehicle emissions. Excessive exposure to it can worsen lung diseases, causing hospitalizations and emergency department visits for asthma and other conditions. SO_2 also contributes to the formation of fine particles in the atmosphere, resulting in exposures downwind of where it is emitted.

- *Ozone* (O_3), a secondary air pollutant, is a colorless, poisonous gas with a sharp, cold, irritating odor. In the stratosphere ozone is considered beneficial -- it keeps harmful excessive ultraviolet sunlight from reaching the surface of the Earth. But it isn't so helpful at ground level; it's the main component of photochemical smog, which can cause irritation of the respiratory system, coughing, susceptibility to respiratory infections, damage to the lining of the lungs and aggravation of asthma. O_3 is formed through reactions in the atmosphere when NOx emissions combine with other airborne pollutants (such as hydrocarbons) in the presence of sunlight. In areas where there are high concentrations of fresh combustion emissions, NOx can react with O_3 to actually reduce its concentrations. As a result, lower O_3 levels can be observed near roadways, in city centers, and in other areas of high emissions density.

- *Other gaseous pollutants* include: ammonia, carbon monoxide, volatile organic compounds (such as methane and other hydrocarbon compounds) and persistent organic pollutants. Exposure to very high concentrations of caustic ammonia in the air may result in lung damage and even death. Carbon monoxide is a colorless, odorless gas that's highly toxic to humans and can result in fatal poisoning in enclosed spaces when no oxygen can enter. Sources of other volatile organic compounds include solvents, dry cleaning and fossil-fuel burning; sources of persistent organic pollutants include pesticides as well as industrial processes used in the production of goods such as solvents, polyvinyl chloride and medicines.

Indoor vs. Outdoor Air Quality

Outdoor - Poor outdoor air quality can be an important threat to the health of NYC residents. In addition to the air pollutants already discussed, fires occur routinely in the City. These may break out in commercial buildings or homes, but they can also result from practices such as burning rubbish, leaves or brush. The smoke that is created is itself an air pollutant and includes fine particulate matter. Exposure to smoke can cause eye, nose and throat irritation. In healthy individuals, these symptoms are usually short-term and are unlikely to lead to ongoing health problems. However, you should consult your doctor if you experience more serious symptoms, such as shortness of breath or

chest pains, or if you have asthma, heart disease or another medical condition that you feel is worsening.

Throughout the year, NYC may experience poor air quality due to high concentrations of fine particles found in ambient air. During the summertime, warm weather and strong sunshine can lead to increased levels of smog. If you have a health condition that makes you especially sensitive to air pollution, spend less time outdoors or in strenuous physical activity on poor air quality days. Plan your outdoor activities when pollution levels are lower, and try to avoid exercising near busy roadways. You can get a daily air quality forecast here.

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Indoor - Many things can affect indoor air quality including: temperature; humidity; indoor pollutants (including cigarette smoke, household products such as paints or cleaners and carpeting); or outdoor pollutants that have leaked in to your home,. Carpeting can contain some of the volatile organic compounds mentioned above. According to local law, building owners and tenants in NYC can only buy and install carpet or carpet cushion that complies with the emission limits specified in the NYC Administrative Code.

You can improve the air quality in your home by opening windows to ventilate (particularly when cooking or using cleaning products) and avoiding harsh cleaners whenever possible, testing your smoke and carbon monoxide detectors monthly, and minimizing dust and allergens by regular vacuuming or mopping.

Air purifiers vary widely in their ability to remove air pollutants, though some may improve indoor air quality. Keep in mind that no air purifier can remove all pollutants from the air and that most common air purifiers are designed to remove only particles. Click here to report any indoor air quality problems.

New York City Community Air Survey

The Health Department and Queens College are conducting the New York City Community Air Survey (NYCCAS), the largest ongoing urban air monitoring program, to evaluate how outdoor air quality varies in New York City. This program studies how pollutants from traffic, buildings (boilers and furnaces), and other sources impact air quality in different neighborhoods. NYCCAS monitors pollutants that cause health problems including fine particles, nitrogen oxides, sulfur dioxide and ozone. Measurements are taken at about 100 locations throughout the city in each season. Monitors are mounted 10 to 12 feet off the ground on public light poles or utility poles along streets and in some parks and use a small battery-powered pump and filters to collect air samples.

The NYCCAS publishes yearly cumulative reports. The latest, covering the period from winter 2008-2009 through fall 2015, summarizes the trend in air pollutant levels,

provides a summary of the air monitoring program and analysis methods, and describes the pollutants measured. It also identifies the sources that contribute to high levels of these pollutants in NYC neighborhoods and maps neighborhood air pollution levels, by year and by season (see links below under NYC Health).

Major City-wide findings include:

- The amount of dangerous fine particulate matter in the air, including black carbon, has fallen 18% since 2009.
- The average annual NO_2 and NO levels have declined 23% and 28% respectively, from the first year of monitoring (2009) to the most recent year reported (2015). However, higher levels of these pollutants continue to be observed in areas with greater density of large buildings, more vehicle traffic as well as in industrial areas.
- The largest declines were observed for SO_2 due to local and federal heating oil regulations. Wintertime average levels have declined by 84% over the 7-year period between the first winter of monitoring (2008-2009) and the most recent winter (2014-2015), but they still remain relatively high in areas with residual oil boilers (those the burn Number 4 or 6 heating oil).
- Summertime average O_3 levels remained relatively stable across the seven years, but they remain higher in the outer boroughs, in areas that are downwind of high emissions density and in areas with fewer combustion emissions.

Mitigating Air Pollution

Strategies and measures implemented by the Health Department include:

- converting the remaining residual oil boilers to ones that use cleaner heating fuels (Number 2);
- transitioning to more efficient, less polluting light duty and heavy duty vehicles;
- reducing motor vehicle use by shifting to more sustainable modes of transportation;
- creating more efficient freight networks and expanding truck retrofit and replacement programs; and
- reducing fossil fuel combustion in buildings.

You can help by avoiding excessive use of air conditioners or other energy-gobbling devices (such as toaster ovens or electric blankets), since the electricity they run on is probably generated by the burning of fossil fuels. Also, set your air conditioner thermostat to 78 degrees or low cool. If you own a car, don't let your engine idle for long periods of time. Report any other vehicles that have been idling more than three minutes at http://www1.nyc.gov/nyc-resources/service/2684/vehicle-idling-complaint.

For more information:

- Qian et al. (2017). Air Pollution and Mortality in the Medicare Population.New England Journal of Medicine, June 29 2017. pp. 2513-2522

- Environmental Protection AirNow Agency Air Quality Index (AQI)

- NYC Health - Air Quality

- NYC Health - New York City Community Air Survey

- Types of pollutants: http://www.tropical-rainforest-animals.com/Air-Pollutants.html

UWSR Eco Letter September/October 2017
COMMENTARY:
Local Solar Energy Organizations

Solar power usage in New York City has more than tripled over the last three years. This is to a great extent the result of steadily dropping costs of generating electricity using photovoltaic solar panels. In fact, the price of solar power is now often competitive with that of fossil fuels or nuclear energy when considered over a five- to ten-year time span, and it's expected that average global prices will drop another 25% in the next five years.

New York City now provides over 100 megawatts of photovoltaic electricity for residential and commercial use. This has the added benefit of creating about 2,700 jobs across the five boroughs. There are now more than 5,000 residential solar projects here, and the City's goal is to install one gigawatt (1,000 megawatts) of solar capacity citywide by 2030, or enough to power about 250,000 homes.

A number of local organizations are actively involved in solar energy, and following is an alphabetical list and brief descriptions of their respective work.

Google Project Sunroof (76 Ninth Avenue, New York, NY 10011) locates your home on Google Maps and combines that information with other databases to create an analysis of your roof's solar potential. It takes into account local shading, sun positions at various times of the year, as well as historical cloud and temperature patterns. Using current solar industry pricing data, Project Sunroof runs the numbers on leasing, taking a loan, or buying solar panels for your house to help you make the best choice. In calculating your final cost, it includes the following incentives: federal and state tax credits, utility rebates, renewable energy credits and net metering. *Info*: Google Project Sunroof; (212) 565-0000.

IPP Solar (140 West Street, New York, NY 10007) is an independent power provider of solar energy to electric vehicles (EVs) and commercial/industrial customers in the New York metropolitan area. They operate a network of DC Fast-Charge stations in New York, New Jersey and Connecticut where, often using solar power, you can charge your car in 15-30 minutes. *Info*: IPP Solar; (212) 791-2100.

New York Solar Energy Society [NYSES] (5270 Sycamore Avenue, Bronx, NY 10471) is a chapter of the American Solar Energy Society. Its mission is to encourage the understanding and use of various solar energy technologies through public outreach, to be a source of sound technical information, and to provide a forum in which to address critical regional and state issues relating to solar energy solutions. Since 2007 this volunteer, grassroots, membership organization has provided information on energy conservation and renewable energy; it also distributes the bi-monthly *Green Energy Times* throughout eastern New York State. They advise consumers on choosing cost-effective energy solutions via workshops, K-12 special events, solar demonstrations, and renewable energy finance seminars, and interact with city and state legislative staffs in analyzing legislation and state programs. They host a yearly conference; their 2017 conference, "Bridge to Action," is November 17 in Troy NY. *Info*: NYSES; Wyldon Fishman, wyldon1@gmail.com.

New York Sun Works (157 Columbus Avenue, New York, NY 10023) runs a Greenhouse Project dedicated to improving K through 12th grade Environmental Science Education in urban schools through integrated facilities, hands-on curriculum, and professional development. Their greenhouse classroom labs offer students the opportunity to grow food while learning about nutrition, water resource management, efficient land use, climate change, biodiversity, conservation, contamination, pollution, waste management, and sustainable development. These labs can include solar panels, hydroponic growing systems, a fish farm, a rainwater catchment system, a weather station, integrated pest management and a worm composting station. New York Sunworks also sponsors an annual youth conference. *Info*: New York Sun Works; 212-757-7560; info@nysunworks.org.

Our Power (111 Eighth Avenue, New York, NY 10011) helps people throughout the state participate in NYSERDA's Community Solar Program, which involves communities in the development of new solar projects. Having solar energy on a building's rooftop is only practical for a minority of people living in NYC. However, a subscriber to Community Solar doesn't need to install panels themselves; instead, the subscriber commits to being a customer of a solar project in their utility's area for a set amount of time and benefits from the clean power it generates and, ultimately, reduced costs. Once the project has a sufficient number of subscribers, it gets constructed. After the project is connected to the grid the subscriber receives separate bills from both the community solar project and the utility. New York State legislation has enabled Community Solar subscribers to receive solar credits on their existing utility bill for the power

generated by the community solar project, which reduces the subscriber's total cost by an average of 10% to 20% over the course of a year (see "Further Information" below). Savings are higher in summer months when the sun is shining and lower in winter months when projects generate less power. I*nfo*: Our Power; info@ourpower.solar.

Renewable Energy New York City [RENewYorkCity] (North Brooklyn, NY) is committed to organizing local communities to efficiently transition to a clean energy economy. A primary goal is to implement Community Choice Aggregation (CCA) in order to bring renewable energy to entire NYC neighborhoods at the same time. CCA gives municipalities control over their default energy supply, empowering them to aggregate and leverage the purchasing power to gain price stability. Both residents and small businesses are therefore able to obtain less expensive, cleaner and smarter energy. The City Council is currently drafting a bill that will determine how to partition the city in order to roll out CCA. *Info*: Charlotte Binns, RENewYorkCity; (347) 457-6362.

Solar One offers a number of environmental programs, including K-12 sustainability curriculum/education, green worker training, and technical assistance to NYC buildings that want to adopt energy efficiency and renewable energy. Their *Here Comes Solar* program envisions a city where solar energy is accessible and affordable for all New Yorkers. They help both affordable and market-rate multi-family buildings implement rooftop solar projects by consulting with co-op boards, providing realistic solar financial estimates, and assisting buildings to secure competitive proposals from local solar companies. In addition to residential buildings, Solar One is working with the Governor's Office of Storm Recovery to implement a pilot program that is installing solar with battery backup on non-profit community centers in areas that were impacted by Superstorm Sandy so the facilities can provide backup power and improve community resilience in the event of a blackout. Solar One also operates Stuyvesant Cove Park, a sustainably-managed, all-native-species park, located on the East River between 18th and 23rd Streets. *Info*: Solar One; 212-505-6050.

Sustainable CUNY (205 East 42nd Street, New York, NY 10017) works in partnership with the NYC Sustainability Office, NYSERDA, and many organizations and municipalities around the state. Through the NYC Solar Partnership, Solarize NYC, NYSolar Smart, and the Solar Ombudsmen program, Sustainable CUNY leads the implementation of multiple city, state and federal solar initiatives, serving as an objective and trusted third party on behalf of the City and State. *Info*: Sustainable CUNY; (646) 664-3003.

- The NYC Solar Partnership was initially formed in 2006. They work collaboratively with the Mayor's Office of Sustainability and the New York City Economic Development Corporation in developing and implementing comprehensive plans for large-scale solar integration and associated economic development in NYC. The Partnership has received federal, state and city support for its key programs.
- Solarize NYC is a citywide program designed to serve the needs of both NYC communities and solar installers by increasing access to solar power through

community group purchasing (see also Our Power and RENew York City above). To facilitate this -- and to demonstrate that solar power can make an impact in low- to moderate-income communities -- the City recently launched its first round of Solarize NYC campaigns in Harlem (with the cooperation of WEACT - see Events listings below in "Climate Change & Energy") and in downtown Brooklyn.

- NYSolar Smart is a strategic plan that supports federal, state and city initiatives to lower the soft costs (not panels or other hardware) of installing solar power. Their NY Solar State Map and Portal, launched in 2011 and updated in 2017, provides customers, installers, and municipal leaders with key solar information -- such as estimates of rooftop and ground level solar energy potential for electricity and other solar applications -- for about one-million buildings in NYC, as well as step-by-step guidance and information on permitting, financing, and other practical issues.

Sustainable CUNY also conducts Solar Installer Workshops around New York State where installers can learn area-specific best practices from building departments, utilities, finance programs and NYSERDA. They also convene city and state Installer Roundtablesthat are forums for exchanging information, workshop opportunities, RFP and RFI notices, and industry updates. An archive of workshops and more information for solar contractors can be found on the NY Solar Map.

Urban Green Energy [UGE] (330 West 38th Street, New York, NY 10018) is the New York subsidiary of a worldwide company. It's the second largest commercial solar developer in New York, and also works with residential buildings, providing end-to-end solutions, including engineering and design as well as construction and management for both solar photovoltaic and wind energy projects. UGE is contracted to develop and build New York City's first community solar project at a multi-tenant commercial facility in Brooklyn in a neighborhood between Park Slope and Boerum Hill. The project will have a rated peak capacity of approximately 100 kilowatts. The clean energy produced by the project will be net metered and sold to residential off-takers at rates lower than the rates paid to their utility, providing tenants with both immediate and long-term savings. *Info:* UGE; (917) 720-5685; info@ugei.com.

Further Information:

- NYSERDA (general)
- NYSERDA tax credits

UWSR Eco Letter May/June 2017
COMMENTARY:
Lower East Side Ecology

Since the late 1980s, the environmental group with whom we've worked the most is the Lower East Side Ecology Center (212-477-4022). LESEC is the largest non-municipal provider of electronic-waste (e-waste) recycling services in New York City, currently collecting about a million pounds of e-waste each year, and they also created and oversee significant programs in composting and environmental education.

This year, LESEC is celebrating its 30th anniversary. In 1987 they began collecting and marketing newspaper, plastic, metal and glass from Upper West Side Recycling and other organizations. A couple of years later, when the NYC Department of Sanitation (DSNY) started a city-wide recycling program for these materials, they launched a composting program on the Lower East Side, then opened a composting booth at the Union Square Greenmarket in 1994.

In 2003 they ran the first e-waste collection event (also in Union Square) as part of a waste prevention education grant awarded them by the City. LESEC gradually expanded their operations to include an ongoing e-waste collection and marketing service. This operation was given a significant boost in 2011 when the New York State E-Waste Recycling and Reuse Act mandated recycling of most electronics, and again in 2015 when DSNY began issuing fines to residential buildings that didn't recycle their e-waste (see past Commentaries for "Electronic Waste" - January/February 2015).

Electronic Waste

LESEC now offers two ways for residents to participate in e-waste recycling: You can either bring your electronics to a scheduled one-day collection event or take them directly to their Gowanus E-Waste Warehouse.

Free Collection Events

LESEC hosts e-waste recycling events on a seasonal basis throughout Manhattan and the other four boroughs. Events occur as scheduled, rain or shine. There's no limit to how much you can bring, but LESEC only accepts goods or equipment from households, not-for-profit organizations (such as churches and schools) and small businesses. Since LESEC is a registered 501(c)3 organization, your donation is fully tax-deductible; just ask one of their staff for a tax-deduction form. They transport all the equipment collected at these events to their Gowanus Warehouse (see below).

The next collection event on the Upper West Side will be held on Sunday, May 21, 2017, 10:00 a.m.-4:00 p.m. at the Jewish Community Center on Amsterdam Avenue between

75th and 76th Streets. In addition, there's an event at Manhattan Plaza on West 43rd Street on May 6th (for more information, see the LESEC website or our Events Listing.

- *Goods Accepted* (unless otherwise noted): Computers and peripherals (monitors, printers, faxes/scanners, keyboards, mice, wires, etc.); TVs; stereo and A/V equipment, VCRs, DVD players; cell and land line phones (see the LESEC website for more details).
- *Goods Not Accepted*: Microwaves, refrigerators, air conditioners, smoke or carbon monoxide detectors.

Please let LESEC know if your equipment is in working order, as they will then refurbish these items and sell them for re-use. Re-use is preferable to recycling since it saves both energy and materials, so donate your equipment as soon as possible after you know you no longer need it. Goods more than a few years old (about 90% of the total materials currently received) are generally shredded and recycled in order to recover the constituent plastic metal and glass.

VHS tapes, CDs, DVDs, and cassettes, as well as copiers and printers over 100 pounds are accepted, but you must pay a small fee as LESEC has to pay to get these materials recycled. Additionally, batteries such as lead acid batteries from Uninterrupted Power Supplies (UPS) are accepted, but there is also a fee for this service. LESEC also accepts small batteries, but they ask that you please separate alkaline and rechargeable batteries. Either tape both terminals of rechargeable batteries or pack them in a separate bag. Another option is to bring household batteries to any DSNY Special Waste Drop-Off Site (for more information see Events below - "Other Recycling/Solid Waste" for April 30 and May 13). Rechargeable batteries can also be dropped off for recycling in any store that sells them. *It is illegal to throw rechargeable batteries in the trash*.

Gowanus E-Waste Warehouse

LESEC opened their Gowanus E-Waste Warehouse at 469 President Street, Brooklyn in 2012 (tel: 718-858-8777). It's New York City's only free, permanent e-waste drop-off facility. Here they accept all the consumer electronics listed above and see that these materials are either reused or recycled in an environmentally and socially responsible way. The Warehouse is open Tuesday, Thursday and Friday 10 a.m.-5 p.m.; Wednesday 12-7 p.m.; Saturday 10 a.m.-4 p.m.

All drop-offs are free and tax-deductible. Any New York resident, small business, or non-profit organization can drop-off their unwanted electronics. If your equipment works, let them know and they'll try to give it a second life. Emphasizing re-use wherever possible, LESEC tests, refurbishes and sells such items as laptops, desk top computers, monitors, keyboards, TV's, stereo and audio equipment, small printers, etc. - anything they feel someone can use again. They sell a variety of electronic goods at their Re-Use Store in the warehouse. For goods that can't be re-used, Sims Recycling Solutions sends a trailer

truck to pick up the e-waste once or twice a week, and then transports it to an upstate facility, where it's shredded and the constituent materials recycled (see past Commentaries for "The Recycling Process: Where Do Your Materials Go?" - January/February 2017).

LESEC guarantees data security. In the case of older computers and other data storage devices like external hard drives, data will be physically shredded during the recycling process. While it isn't necessary to wipe your hard drive before recycling, you can do your own data removal by using KillDisk or Darik's Boot and Nuke. Both programs are free. Newer computers may be tested for reuse by in-house technicians; their data will be professionally wiped on-site with an electromagnet. Also, LESEC only works with recyclers who guarantee data security during transportation and processing.

LESEC also runs two other unique programs at the warehouse.

- Their one-of-a-kind Prop Library (718-858-8777, rentals@lesecologycenter.org), open by appointment only, rents a variety of vintage electronic equipment for use in TV, film and stage productions (e. g., cameras, projectors, phones, toasters, clocks, computers, TV's, audio equipment, meters and gauges, sewing machines, radios, even a slot machine, etc.). Just send them an email describing what you're looking for and when you need it. Rentals are for a minimum of one-week (no daily rentals), and pricing is determined by the item rented. A per-item deposit is required.
- The Artists-in-Residence Program supplies artists with electronic goods or other items for their creative projects (for example, one artist makes jewelry out of electrical wire).

Unfortunately, LESEC does not offer e-waste pick-ups. If necessary, you can ask family and friends with cars to help you bring your e-waste to their warehouse or to drop-off events.

Composting

Composting is a natural process of organic decomposition, in which living organisms break down material (such as food scraps or leaves) until only a beneficial soil amendment remains. Composting is an important sustainable waste management technique that diverts food waste from landfills where the food would decay anaerobically (in the absence of oxygen) and create the greenhouse gas methane.

The average New York City household currently discards over two pounds of food waste daily, which translates into 3,000 tons of organic matter that must be trucked every day to distant landfills. Composting replaces this inefficient system by allowing us to re-use food waste by processing it aerobically and then returning vital nutrients back into the earth to create healthier soil.

LESEC's composting program prevents hundreds of tons of organic material from entering landfills, and introduces countless New Yorkers to the benefits of composting. They currently operate eight food scrap drop-off sites, seven of which are in lower Manhattan (see also the Events Listing or GrowNYC for Greenmarket food scrap drop-off information).

- *Accepted*: Fruits and vegetable scraps; coffee grounds and filters, and paper tea bags; bread and grains; eggshells and nutshells; cut or dried flowers; houseplants and potting soil (disease free). LESEC suggests you put food scraps first in paper bags (which can also go into the compost bins), then transport these paper bags in plastic bags, which prevent leakage but which can usually be re-used.
- *Not Accepted*: Meat, fish, bones, shells; cheese or dairy products; fats, grease, or greasy foods; pet feces, litter or bedding; coal or charcoal; metal, glass, or plastic; biodegradable/compostable plastics

The two sites nearest to the Upper West Side are located at:

- 23rd Street just west of 8th Avenue on the south side, in front of the Vitamin Shoppe. Open Tuesday and Thursday, 8:00-11:00 a.m., year-round.
- 127th Street & Malcolm X Boulevard. Open Wednesday, 8:00-11:00 a.m., year-round.
  At this site LESEC partners with the non-profit Harlem Grown, and produces compost using a three-bin system (in which decomposing food scraps and other organic material are successively moved from on bin to another in order to expose the composting material to air as much as possible). Harlem Grown's mission is to inspire youth to lead healthy and ambitious lives through mentorship and hands-on education in urban farming, sustainability, and nutrition (212-870-0113). Founded in 2011, they operate eight local urban farms and promote knowledge of healthy food for Harlem residents.

LESEC collects, transports and processes food waste locally. With the exception of 127th Street, food scraps go to their compost yard in East River Park (just south of the Williamsburg Bridge), where they are first processed in an in-vessel composting system, then put outdoors to cure. The in-vessel system, initiated in 1998, consists of sixteen one-cubic-yard plastic containers, each filled with alternating layers of nitrogen-rich food waste and high-grade sawdust (a carbon source they collect from various local wood shops). Once a container is filled and inoculated with bacteria to start the composting process, the lid is sealed and the decomposition process begins. The containers are designed to facilitate an aerobic decomposition process, by allowing air to pass through vents on the bins. After 10-14 days, the materials in the bins are reduced to three-quarters of their original volume while going through a high temperature decomposition process (reaching up to 150 F) to ensure destruction of potential pathogens.

The second step, or curing process, begins when materials are transferred from the in-vessel containers into windrows (long rows of organic matter). Inside the windrows the responsibility of curing the composting materials is handed over to red wiggler worms - at this stage the material is cooling and brimming with microorganisms that worms find delicious. As the worms feast, they digest the partially composted materials along with microorganisms and produce worm castings, some of the most nutrient-rich, energy-packed plant food that exists.

After about three months the compost is ready. At this time it's screened to remove rocks, sticks, or other unprocessed material (like fruit pits) and to create fine compost. Screening also separates out the worms, which are returned to feast on other windrows. The finished compost makes its way back to the consumer, either as compost or as part of their potting soil mix. LESEC sells the resulting compost in one-, five- and twenty-pound bags at their Gowanus warehouse and at their Union Square Compost site; they also donate it to local community greening organizations and the NYC Parks Department for use in gardens, lawns, tree pits, etc.

To learn more, join one of their workshops that explore home composting and teach advanced composting techniques. Upcoming workshops can be found on their calendar or call the Compost Hotline at (212) 477-3155.

Environmental Education

Through their environmental education programs, LESEC works to increase community awareness, involvement and youth development by promoting access to and knowledge of our urban environment. Workshops are offered for children and adults about the urban environment, open space preservation, street tree care, and park stewardship. Education programs are developed with the specific needs of each set of participants in mind, and many of the programs are free to the public. These are provided to classroom teachers, after-school programs, and community groups. LESEC also conducts public workshops and internships for high school and college students. Most of these programs are offered from March through November only.

UWSR Eco Letter March/April 2017
COMMENTARY:
Raising Food in New York City

In a time of population growth, loss of arable land and climate change, the food issue is becoming increasingly important in urban areas. A large potential exists for growing vegetables, herbs, fruits, and nuts in our own city, rather than shipping them in from growers hundreds or thousands of miles away. We can even raise our own fish and eggs

or cultivate bees for honey. The benefits of heading in this direction are huge: air pollution reduction, CO_2 mitigation, fresher and more nutritious produce, as well as a boost to the local economy. The main requirements of urban agriculture are adequate sunlight (or artificial light), water, and small amounts of certain nutrients. Energy consumption is a consideration, as is weight if the garden is situated on top of or within buildings. It's also wise to have the soil checked for lead contamination before planting anything edible and to protect the growing plants from damage or consumption by animals such as pigeons or squirrels.

Several organizations in NYC are already working to promote urban agriculture. For instance:

- *GrowNYC's Garden Program* constructs and sustains community gardens, urban farms, school gardens, and rainwater harvesting systems across New York City. To date, GrowNYC has built more than 90 gardens, and they support hundreds more through renovations, green infrastructure projects, technical assistance, volunteer days, annual plant sales, and education of children.
- *Green Thumb*, the largest community gardening program in the nation, provides programming and material support to over 500 community gardens in New York City. Gardening tools and supplies are available at their monthly workshops.
- *Just Food* is another organization devoted to encouraging urban agriculture in New York City. It supports community leaders who advocate for healthy locally-grown food, especially in underserved neighborhoods. Their Urban Agriculture and Markets Program trains, connects, and empowers New York City community gardeners to spread knowledge about growing and marketing food in their neighborhoods.

Crop yields can be considerable. For instance a vacant lot or rooftop measuring 40 x 50 feet (2,000 square feet), with good sunlight, could theoretically produce about 950 pounds of carrots, 500 pounds of lettuce or spinach, and 350 pounds of broccoli per year. New York City covers about 300 square miles, or about 8 billion square feet of horizontal space. If only 5% of that space were devoted to food production, an amazing volume of produce could be grown. In addition, crops grown vertically in high-rise buildings can potentially produce far greater yields per square foot than crops raised horizontally in lots, rooftops and other open spaces.

A fledgling urban agriculture infrastructure already exists in our city. Crops can be raised on horizontal spaces - such as vacant lots, portions of city parks or other public spaces - and on rooftops; they can also be grown within high-rise buildings (in what is termed vertical farming) or even on piers or floating platforms. You can grow smaller vegetables, herbs and fruits in your own apartment, although some - such as tomatoes - require pollination by hand (a small paintbrush will do). All these options have advantages and disadvantages, and it's important to bear in mind that urban agriculture

at the current time should be seen as complementary to rural agriculture - particularly that which is carried out in our local region.

Types of Vegetable and Herb Gardens

On Rooftops

There are several sizable urban vegetable- and/or herb-growing gardens or greenhouses in New York City, many of which are on rooftops. Currently, most rooftop gardens consist of hydroponic systems in greenhouses (where primarily leafy greens, tomatoes, and herbs are grown) or soil-based open-air farms (which can grow a larger variety of vegetables). Prospective rooftop gardeners should take several things into consideration: building codes; the potential for leakage; and the weight loads of garden beds, soil and water. To be environmentally friendly photovoltaics could be used to provide the power for water pumping, the water could be re-circulated and the nutrients recycled via composting or other methods. Irrigation can be provided by rooftop water collection or recirculation of building greywater.

In soil-based rooftop gardens, the weight of both the soil and water is a major consideration. The inert component of the soil (about 95% of its weight) is normally composed of heavy compounds, mainly clay and sand. These inert components can be replaced by lightweight materials such as pulverized Styrofoam (which is a problem for the city to dispose of), to which you would add 5-10% of an organic material such as compost. The Gaia Institute has been working on lightweight soils for over 20 years; these soils have been incorporated in green roofs such as the one on Albert Einstein Medical College in the Bronx. They could also be used in rooftop vegetable or herb gardens around the city. Drip-irrigation systems would also help to minimize weight loads on the building structure.

In Manhattan, the Hell's Kitchen Farm Project (info@hellskitchenfarmproject.org) on the Metro Baptist Church Rooftop at 410 West 40th Street, grows a variety of vegetables in 52 raised beds, comprising about 1,000 square feet of growing area. They use food scraps and dead plant material in a combination of anaerobic and aerobic composting to enrich the soil. All produce grown on the farm goes directly to the Rauschenbush Metro Ministries Food Pantry. On a larger scale, The Brooklyn Grange, a leading U.S. rooftop farming and intensive green-roofing business, raises over 50,000 pounds of organically-cultivated produce per year. Another large rooftop grower is Gotham Greens, who have built large, 100% clean-energy powered greenhouses that produce vegetables and herbs in Brooklyn and Queens.

Ground-Level Farms

GrowNYC's FARMroots program conducts a training course for aspiring as well as experienced farmers. Their 21,000 square foot Governors Island Teaching Garden aims

to engage, excite, and educate its visitors in all aspects of urban farming. In this garden, students learn the skills and business acumen necessary to start their own farm businesses. In addition to scheduled school visits, the garden is open to the public on weekends during the Governors Island open season. The garden contains 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.

On the Upper West Side, gardens that grow vegetables include:

- *The 227 Garden*, at 227 West 115th Street, specializes in vegetables and herbs. This 1,900-square-foot community garden in the heart of West Harlem is used by neighbors and community groups for growing food, holiday events and communal gatherings.
- *La Perla Garden*, 76-80 West 105th Street. Info: info@laperlagarden.org.
- *Mobilization for Change Community Garden*, 955 Columbus Avenue on the southeast corner at 107th Street; 212-788-7900.
- *PS 76 Garden*, 203 West 120th Street.
- *West 104th Street Garden*, on two lots between Manhattan Avenue and Central Park West, is supported by Green Thumb. Info: 212-788-7070.
- *West Side Community Garden*, 123 West 89th Street. Info: (212) 316-5490.

Public Spaces

Fourteen percent of the area of New York City consists of parkland, almost 30,000 acres in all. About 1,100 acres of this is in Riverside and Central Parks alone. Riverside volunteer groups and nonprofit organizations already maintain numerous flower plantings and gardens; this could also be done for vegetable and herb gardens. In the Bronx, the New York Botanical Garden has for many years operated the large Howell Family Garden, in which a variety of vegetables and some herbs are grown. This 1.5 acre (65,000 square foot) garden offers hands-on gardening activities, children's education and tours from April through October. Their Children's Gardening Program gives kids the chance to tend their very own garden. Vegetables are eaten by people in the program or donated to local food pantries.

Vertical Gardens

Vertical farming - growing crops up rather than out in a closed stacked system - is another promising approach to urban agriculture in New York City. This technique was first investigated in this area by Dickson Despommier, a professor emeritus in Columbia's Mailman School of Public Health, as part of what he terms controlled environment agriculture (CEA). Indoor vertical farming has the advantage of producing a higher yield in a controlled, pest- and contaminant-free environment. In the case of hydroponically grown leafy greens (such as lettuce, spinach, kale or basil), as many as eight crops per year can be harvested. Compared to traditional agriculture, vertical

farming uses less water and significantly less land. Since these gardens are climate controlled and normally employ artificial light, they allow farmers to produce crops year-round, day or night.
These vertical hydroponic systems present some challenges: crops have generally been limited to leafy greens, tomatoes, and some herbs; and initial costs and energy usage are high. The energy usage (and consequent carbon dioxide emissions) could be reduced by PV-powered LED lighting augmented by focused natural light and PV-powered water pumping. A basic question remains: Is the energy consumed in CEA vertical farming (including building the structure, growing the crops, transporting them, etc.) greater or less than the energy consumed when crops are grown in regional farms, then trucked to local markets?

Vertical farms have been created primarily in new buildings or in retrofits. In a former steel supply company building in Newark, NJ, AeroFarms has constructed what they claim to be the largest indoor vertical farm in the world (in terms of annual growing capacity). The building's high ceiling allows for grow tables to be stacked twelve layers tall, to a height of thirty-six feet, in rows eighty feet long. The 70,000 sq. ft. hydroponic facility has the capability of raising up to 2 million pounds of lettuce, kale and other salad greens per year. They use a hydroponic system, but the actual growing medium (instead of soil) is a patented reusable fleece-type fabric created from recycled PET water bottles. The cloth fabric holds the seeds in place while they germinate, then the roots extend below the cloth to receive water and nutrients. The L.E.D. grow lights are in plastic tubing above each level of the grow tower. They limit the light frequency to parts of the spectrum needed for plant growth, thus saving a considerable amount of energy.

Piers and Floating Gardens

The only facility of this kind we could find in the NYC Metro Area is the Science Barge, a floating urban farm and environmental education center that has been docked in Yonkers since late 2008. The Barge grows crops using a hydroponic greenhouse powered by solar panels, wind turbines, and biofuels (tel: 914-375-2151). However, there seems to be a lot of potential for this in our watery city. Manhattan alone has 32 miles of shoreline and about 40 piers, some of which already have park-like spaces on them. Also, if 20-foot wide agricultural barges or other floating gardens were moored along the Hudson from 86th to 100th Streets, they could produce thousands of pounds of fresh vegetables or herbs each year. Water could be supplied using photovoltaic pumping and solar desalination, with drip irrigation. Floating vertical gardens could also be constructed on moored barges, which could be later towed to market (a very fuel efficient method of transportation).

Fruits and Nuts

Fruit trees and berry bushes could be planted in some areas of our parks instead of just ornamental or shade trees. Since they are relatively small, fruits such as strawberries, blueberries and raspberries are suitable for rooftops or vertical gardens as well. Trees New York has started a FruiTrees New York program, whose purpose is to plant urban orchards that produce fruit such as apples, peaches, apricots or pears. One such orchard is located at the Pleasant Village Community Garden in East Harlem. This practice need not be limited to fruit trees; nuts such as filberts (hazelnuts) 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 CO_2.

Other Food

Aquaculture

There are hundreds of miles of land-sea water interface in the NYC metropolitan areas. New York City residents eat more fish than the US average, and many varieties of sea fish inhabit the NYC harbor area - such as flounder, striped bass, albacore, mackerel or bluefish. Freshwater tilapia, now sold in many fish markets, could be cultivated onshore. Also, New York Harbor was once home to billions of shell fish, including oysters, mussels and scallops, and these can be reintroduced. As we clean up our waters, we should be able to scale up our efforts in aquaculture.

The Brooklyn Aquaculture Project, led by Martin Schreibman and Chester Zarrnoch of Brooklyn College, has conducted a pioneering study of the feasibility of raising both fresh- and salt-water fish in the Brooklyn area. They concluded that large-scale aquaculture in this area is not only feasible, but could result in economic development in shoreline areas.

It's estimated that 400 years ago there were 220,000 acres of oyster reefs in the harbor.The Billion Oyster Project, an initiative of the New York Harbor Foundation, aims to restore live oysters to New York Harbor. Students at New York Harbor School have been growing oysters in New York Harbor for the last six years and, to date, have restored over nineteen million oysters. Fifty-four schools have partnered with the project. Also, the Sims Brooklyn MRF facility (discussed in the January/February 2017 *Eco Letter*) has created small, artificial marine habitat reefs for growing mussels, and this could be replicated on a larger scale throughout the NYC harbor area.

Eggs

Gardeners all over the city keep chickens that provide fresh eggs, fertilizer for the garden, aerated soil and food scrap recycling. Just Food's City Chicken Project is working

with experienced chicken keepers in New York City to create model projects from which gardeners can learn how to keep happy, healthy, and productive chickens.

Beekeeping

Since very little space is required to raise honeybees, and there are plenty of flowering plants in our city, it seems natural that this avocation (or vocation) will grow in the coming years, and we'll be able to enjoy fresh, locally produced honey. The New York City Beekeepers Association, which currently has about 2,000 members, was formed to "pollinate" mutual interest in beekeeping, and to educate and promote the benefits of beekeeping in our urban environment.

Further Sources of Information

- Aerofarms
- Frazier, Ian (2017). "High-Rise Greens: The Vertical Farm." *The New Yorker*, January 9, 2017, pp. 52-59.
- Green Thumb, 100 Gold Street, Suite 3100, New York, New York 10038; tel. (212) 602-5300, or 311; greenthumbinfo@parks.nyc.gov
- Grow NYC, 51 Chambers Street, 212-788-7900
- Just Food, 114 West 47th Street, 212-645-9880; info@justfood.org
- New York Community Garden Coalition, 232 East 11th Street, (347) 699-6099
- Trees New York, 100 Gold Street, (212) 227-1887; info@treesny.org

UWSR Eco Letter January/February 2017
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.

UWSR Eco Letter November/December 2016
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. Paper and Cardboard (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

UWSR Eco Letter September/October 2016
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

UWSR Eco Letter July/August 2016
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.

UWSR Eco Letter May/June 2016
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

UWSR Eco Letter March/April 2016
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

UWSR Eco Letter January/February 2016
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

UWSR Eco Letter November/December 2015
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

UWSR Eco Letter September/October 2015
COMMENTARY:
Energy Conservation

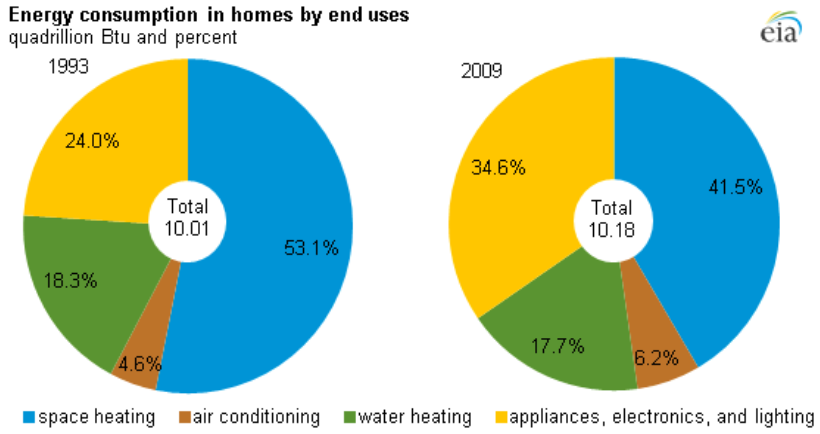
1. Introduction

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

UWSR Eco Letter July/August 2015
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

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- Sobel, Adam (2014). *Storm Surge: Hurricane Sandy, Our Changing Climate, and Extreme Weather of the Past and Future*. New York, Harper, 314 pp.

UWSR Eco Letter May/June 2015
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

UWSR Eco Letter March/April 2015
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.

UWSR Eco Letter January/February 2015
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/