

GREEN COLLAR SECTOR OVERVIEW

SECTOR: ENERGY

Almost 80 percent of the city's greenhouse gas emissions come from buildings. It is estimated that at least 85 percent of the existing building stock will still be standing in 2030. Given the rising cost of oil, energy efficiency and renewable energy are increasingly recognized as integral components of revitalizing the economy and keeping New York City competitive. Our energy needs require a trained workforce capable of transforming the ways we keep our city running and address pressing environmental challenges.

1. Building Retrofits

- A. Definition** - An electrical, mechanical and/or structural upgrade aimed at increasing energy efficiency, improving indoor air quality, and mitigating greenhouse gas emissions. Building retrofits entail a wide range of physical labor—from replacing boilers to caulking around windows to installing light sensors—as well as assessments of energy use and system performance.
- B. Growth Potential and Labor Demand** – Building retrofits is arguably the most promising green collar subsector in New York City and is primed to grow considerably in the coming years. Numerous City, State and private sector initiatives are ramping-up demand for building retrofits in New York City including:
- The New York State Energy Efficiency Portfolio Standard which mandates the creation of a number of residential energy efficiency programs and increases funding for several energy efficiency efforts;
 - Executive Order 109 which mandates a number of municipal building retrofit measures in New York City;
 - the New York City Housing Authority (NYCHA)/Clinton Climate Initiative Sustainability Partnership which is in the process of developing an ambitious retrofit program for NYCHA houses;
 - the New York State Energy Research and Development Authority (NYSERDA) which has begun to ramp-up their energy efficiency programs in New York City;
 - the City Council/Enterprise Community Green Loan Fund which will be a trust to finance affordable housing retrofits (and to build new green units); and
 - the City's ongoing efforts to push for mandatory energy benchmarks.

These initiatives demand a trained green collar workforce. By many accounts there is not currently the training infrastructure to meet demand. Retrofit contractors have lamented the lack of training resources in New York City and have expressed frustration over their inability to grow and retain a qualified construction and general laborer crew. Some contractors have had to turn down work because of a lack of qualified, trained personnel. Furthermore, there is a notable lack of auditors – home performance professionals who assess how much energy a building uses and determine what measures can be taken to improve efficiency. Building retrofits is a burgeoning market in need of a workforce development plan, and Roundtable working groups should prioritize this subsector.

- C. Green Career Paths** – Many of the skills required to do a retrofit are transferable to other green collar subsectors. Auditors, for instance, can potentially establish a career in efficient building maintenance or energy management because of their background in building science and operations. Carpenters, electricians, glaziers, insulators and laborers working in building retrofits can forge a career in green building, renewable energy installation and the construction trades.

Because of the relatively basic level of building retrofit work and the often-minimal wages that accompany this work, it has been suggested that building retrofits could be the first step in a green collar career path where workers gradually scale-up their skills and move onto more specialized and better compensated positions. Furthermore, energy marketing professionals have the potential to move into other green marketing and consulting work. With the right workforce development plan in place, building retrofits could be a great starting point in a green collar career ladder.

2. Energy efficient building maintenance

- A. Definition** - The proper operation of new, energy-efficient equipment and systems as well as existing building equipment ensures that a building is maintained at peak efficiency. Energy efficient building maintenance is grounded in the existing knowledge base of building personnel, including building cleaners, porters, maintenance workers, window cleaners, superintendents, and stationary and operating engineers. The efficient maintenance of buildings is arguably as or more important than retrofits in regulating a building's energy consumption
- B. Growth Potential and Labor Demand** – Demand for trained, green collar maintenance staff is clearly growing, particularly among the commercial and high-rise residential stock. Owners and management companies have come to realize that properly trained operations staff can generate considerable energy savings and have shown interest in retooling building maintenance jobs. Additionally, NYSERDA's Multifamily Building Program now requires that all building operations staff receive certification as Energy Efficient Building Operations Specialists through the Building Performance Institute. The City's efforts to 'green' the building code will only contribute to more demand. And The State's Energy Efficiency Portfolio Standard (EEPS) proceedings emphasized the importance of a trained green-collar building maintenance workforce. One EEPS working group explained that "maintenance personnel often focus only on tenant problems or complaints, or on malfunctioning equipment, and often are not given the time or tools to maintain the overall efficiency of the building systems." Efficient maintenance has also become a priority in public housing. In the last decade, the New York City Housing Authority (NYCHA) has retrained incumbent maintenance personnel to become Advanced Heating Plant Technicians - a skill as well as a pay upgrade.

There are several notable efficient maintenance training programs in New York City including those run by The Association for Energy Affordability, the Building Performance Lab and the Thomas Shortman Training Fund. These training programs primarily benefit incumbent workers who see their wages and skills increase as they become greener. That said, there is little indication that smaller and low-income building owners are invested in energy efficiency maintenance and there is great potential to not only retrain but also increase the green collar building maintenance workforce. As the City, CUNY, NYCHA and others have taken considerable steps toward efficient maintenance, much of the potential to grow new green collar jobs in this subsector has remained untapped.

- C. Green Career Paths** – With their knowledge of energy systems and optimal energy saving practices, energy efficient building personnel could potentially transition into building auditor and home performance contracting jobs as well as energy management jobs. Maintenance personnel could also potentially transition into higher skilled energy marketing, research, training and development positions.

3. Energy Management

A. Definition - The proper operation of new, energy-efficient equipment and systems and existing building equipment to ensure that a building is maintained at peak efficiency. Among other areas, energy management includes:

- (1) retro-commissioning – the assessment, testing, and balancing of building systems and controls after installation in a new building;
- (2) distributed generation – a system that generates electricity at, or close to, the place it will be used as opposed to the general distribution grid;
- (3) smart meters – advanced meters that display the price of electricity from minute to minute, allowing a building to reduce energy use when it is most expensive; and
- (4) optimization – advanced control techniques to effectively manage how and when a facility uses energy.

B. Growth Potential – The energy management subsector has had a number of promising developments in the last year. In December, the Public Service Commission directed Con Edison to deploy smart meters beginning in Queens and Westchester County. Additionally, the City has aggressively pushed for distributed generation (DG). There have been some initial promising conversations concerning potential DG projects in the Bronx, Brooklyn, Manhattan and Queens. And in the last decade, approximately 50 Energy Service Companies (ESCOs) have emerged to provide alternatives to Con Edison and the Consumer Protection Board is working to improve their service delivery.

Energy management is clearly a growing field, but it's too early to forecast the extent or rate of its growth. This is certainly a subsector that working groups should take into consideration and examine, but this should not be treated as a high-demand area in urgent need of workforce development resources.

C. Green Career Path – Many energy management professionals could move into the home performance contracting field, transferring their building science background to retrofit work. Additionally, many energy management professionals could transition into other white collar management, analytical and consulting positions with utilities, governments and universities.

4. Renewable Energy

A. Definition - Energy derived from natural, inexhaustible resources such as the sun, wind, and water. Renewable technologies include solar photovoltaics (PV), solar thermal, wind turbines, tidal turbines, and anaerobic digesters.

B. Growth Potential – The City has undertaken a number of steps to ramp-up the use of renewable energy in New York City and PV in particular. Specifically, the City:

- (1) released an RFP for a solar developer to install and operate 2 MW of PV on City buildings;
- (2) is pushing for a property tax abatement for solar installations to be sponsored and passed in Albany;
- (3) released an RFP for a study on the cost-effectiveness of PV with real-time pricing; and
- (4) is moving forward on a Hunts Point anaerobic digestion project and began a two-year program to contain all methane from wastewater treatment plants.

The State has also taken the lead in scaling-up this subsector. Governor Patterson's Renewable Energy Taskforce is aggressively working to increase the deployment of renewable technologies throughout the State. The Taskforce has worked with the State Department of Labor to ensure that there is a statewide training and workforce development effort around green collar jobs in renewable energy. Furthermore, the city's first carbon neutral building, Solar Two, is still in the works, and other ambitious efforts including CUNY's Million Solar Roofs Initiative and Verdant Power's tidal power pilot project in the East River have begun to develop this once nascent subsector.

Although growth potential exists, given current market constraints, renewable energy is not a promising subsector for a coordinated, green collar workforce development plan. First of all, it is still very difficult to interconnect renewable technologies with the City's electrical grid and market growth is consequently slow. In spite of some progress made over the last year, many of the problems with interconnecting to the grid outlined in CUNY's 2007 report on PV still persist. According to the report, "significant administrative delays, a lack of clarity about exporting electricity to the grid, redundant interconnection requirements, and prohibitively expensive code requirements" all hinder market growth.

Second, as the market does grow, it is not clear that the existing training system is incapable of meeting demand. Growth has been slow and employers do not appear to be unable to find, train and retain workers. There does not appear to be an imminent market transformation that will suddenly demand a large, local workforce.

- C. Green Career Path** – Jobs related to the installation and maintenance of renewable technologies require and foster skills that are transferable to green building, building retrofits and other green collar construction work. Furthermore, much of the current work around renewables in New York City entail feasibility studies, assessments, consulting and research and development – white collar skills that are transferable to other energy infrastructure projects and initiatives.

SECTOR: TRANSPORTATION

Per capita greenhouse gas emissions in New York City are among the lowest in the country thanks to our expansive mass transit system. That said, a number of initiatives aim to make the city's transportation infrastructure even more efficient and these initiatives have the potential to create numerous new green collar jobs.

1. Mass Transit

- A. Definition** - In New York City, Mass Transit includes: The MTA's busses, subways, ferries and railroads, The Port Authority's light rail and ferries, and Independent bus and ferry providers.
- B. Growth Potential and Labor Demand** – A number of proposals are in place to expand the city's mass transit system and to make it greener and more sustainable in the coming years. In the MTA's 2008-2013 capital budget, the Authority proposed to invest billions of dollars in projects that would improve local commuter rail service, provide new commuter rail access to Manhattan and expand transit access to underserved areas. These are all long-term capital projects that would create tens of thousands of new jobs if implemented. The City and MTA also have immediate-term plans in place to expand ferry service and bus service.

In addition to these mass transit expansions, steps have been taken to make the existing mass transit infrastructure more sustainable. In the last year, the City retrofitted many ferries and there are more ferry retrofits planned in the coming years. The MTA has numerous, ambitious sustainability proposals on the table including an effort to: maximize the use of regenerative braking systems in new subway cars; evaluate the effectiveness of installing wind turbines on bus depots; increase recycling; use wind turbines to power select subway stations; purchase 6 MW of solar energy; pilot platform screen doors to improve climate control; and double its program of energy audits and energy efficiency projects by 2015, among others things. These sustainability proposals would likely create many new jobs in: construction and installation; maintenance and operations; and feasibility assessments and studies.

There is no question that expanding and greening the mass transit system would be a huge impetus for green collar jobs and would demand a coordinated approach to workforce needs. The question is: will the funding be available to make many of these projects a reality? Many of these projects, such as expanding bus rapid service and retrofitting ferries, are already in the works. But it remains to be seen if the MTA will be adequately resourced to take on the more ambitious projects that would necessitate an immediate workforce development plan.

- C. **Green Career Paths** – Many of these job titles overlap with other green collar sectors, as electricians, mechanics, environmental specialists and others are capable of not only maintaining and improving our mass transit infrastructure but also making our city more energy efficient and cleaner. The MTA’s numerous sustainability proposals would additionally create a lot of work that overlaps with other green collar sectors; Retrofits, renewable energy installation, green construction and the manufacturing of the mass transit infrastructure directly feed into other emerging green collar fields.

2. Hybrid vehicles

- A. **Definition** - A vehicle that uses two or more power sources, most commonly an internal combustion engine, a battery, an electric generator, and an electric motor, so as to reduce local emissions with adequate vehicle performance.
- B. **Growth Potential and Labor Demand** – Over the last few years, the City has made a considerable effort to increase the number of hybrid vehicles on our streets, roads and bridges. The Taxi and Limousine Commission committed to mileage targets that will ensure that the city’s taxi fleet is fully hybrid by 2012 and increase the number of hybrid black cars. New York City currently has the largest hybrid-electric bus fleet in North America. By the end of 2008, the hybrid fleet will reach nearly 700 buses. The City is also working to waive the sales tax on hybrid vehicles and is looking at other incentives to promote hybrid sales and ownership.

This growing market has ramifications for incumbent mechanics. Servicing hybrid vehicles require a strong knowledge of high voltage cables. Furthermore, no two car companies make similar hybrid systems meaning that hybrid mechanics must be familiar with different software applications. Mechanics with these extra skills and knowledge sets are often paid more than their combustion-engine counterparts. But such aptitude requires expensive training and many mechanics are not in a position to invest now for jobs in the future. A workforce development plan that invests in training and certifying mechanics is a necessary component of growing the city’s hybrid car market. Realizing the necessity of trained maintenance personnel, the MTA recently invested in training mechanics to service its growing hybrid bus fleet. That said, it is not

clear at this point how the market for hybrids in the city will grow and we cannot begin to estimate the demand for mechanics in the coming years.

- C. **Green Career Paths** – There is no data that suggests that hybrid mechanics could be suited to do other green collar maintenance jobs where a background in computer systems or advanced wiring is necessary. But given the skills required of hybrid mechanics, this may be something to look into.

SECTOR: URBAN FORESTRY

Urban forestry is “the management of vegetation, particularly trees and forests, to improve the urban environment and the quality of life of people who live, work, and spend their leisure time in urban and urbanizing landscapes.” Urban forestry improves our city’s air quality, enhances our stormwater management system, lowers our energy use and beautifies our landscape. A wide range of green collar jobs make this possible.

1.Park Maintenance, Tree Planting and Open Space Design

- A. **Definition** – Park maintenance, tree planting and open space design entail the horticultural, architectural, operational and construction-based work related to New York City’s parks, playgrounds, Greenstreets, street trees and other open spaces with vegetation.
- B. **Growth Potential and Labor Demand** – The Parks Department has many ambitious projects in place to drastically increase park space and green the city’s landscape. The City is in the planning phase for expanding and completing eight large destination parks in all five boroughs. In the next couple of years construction and design is set to begin on many of those parks. The Parks Department in conjunction with the New York Restoration Project has aggressively initiated the Million Trees New York project, which aims to plant one million new trees throughout the city by 2030. The Department has also completed the design and construction of dozens of new Greenstreets in the last couple of years and plans to continue to scale-up this open space program in the immediate future. Lastly, other initiatives are underway to convert asphalt fields into multiuse fields, create new athletic fields, and develop other green open spaces.

These open space initiatives are creating new jobs. There is a need to develop a workforce to make them a reality. As it stands, the Parks Department has had trouble finding the trained, qualified personnel necessary to fill dozens of Climber and Pruner positions. This is alarming given that the Louis Berger Group projected PlaNYC 2030’s Open Space Initiatives would create over 9,000 direct, indirect and induced jobs. Realizing this potential, the New York Restoration Project (NYRP) is piloting a parks-based green collar jobs training program to create new opportunity in this emerging subsector. That said, a long-term, coordinated workforce development effort is still needed.

- C. **Green Career Paths** - The level of skill and experience required to fill these positions vary, but there is a clear career track in parks-based work. Entry level positions with the Department of Parks and Recreation are open to most workers with limited experience and education. Workers can then advance to a higher-paying Climber and Pruner position with at least six months of full-time experience planting, maintaining and cutting trees and shrubs. A background in vegetation and horticulture could lead to positions in botanical advocacy work or the advanced botanist field. Parks-based workers could also potentially transition to educational, advocacy and community outreach positions in urban, youth-based and/or community-based gardening.

programs.

Park construction provides a clear pathway to other green construction and general building trades work. Many of these career paths have not yet been explicitly paved. It is important to keep in mind the versatility of an urban vegetation background when considering workforce development planning for this growing field. Furthermore, there is not yet a clear career path to upper-level white-green collar jobs in the Parks Department, such as the Landscape Architect position. Fostering links between fieldwork and design could potentially ensure that green collar workers in this subsector continue to advance if they wish to.

2. Green Roofs

- A. Definition** - A roof of a building that is partially or completely covered with vegetation and soil, or a growing medium, planted over a waterproofing membrane to help reduce building temperatures, filter pollution, lessen pressure on sewer systems, and reduce the “heat island effect,” the tendency of metropolitan areas to be significantly warmer than their surroundings.

- B. Growth Potential and Labor Demands** – The State Legislature recently passed a green roof tax credit which enables building owners in New York City to apply for a property tax credit of up to \$100,000 if they install a green roof on up to 50 percent of available rooftop space. The tax credit takes effect January 1, 2009. Even with this incentive, green roof installation is costly and has a limited economic payback. Most green roofs cost about twice as much to purchase and install as conventional bitumen roofs. Their costs range from \$8 all the way up to \$24 a square foot, compared to around \$4-5 dollars for a conventional roof. Although green roofs do lead to energy savings, studies indicate that energy savings payback can take up to 200 years. Cost issues have considerably hindered the market for green roofs, even though their environmental benefits are numerous. Although the State’s incentive should further encourage this innovative subsector, there is no data that suggests that the market will demand an influx of new workers in the coming years.

- C. Green Career Paths** – Although there is no reason, at this point, to create a citywide, workforce development plan for green roof installation, many of the skills and background necessary to install and design a green roof overlap with those of other urban forestry positions. Workers could potentially be educated in the fundamentals of green roof installation while training for other jobs in the open space and urban agriculture subsectors

3. Urban Agriculture

- A. Definition:** The practice of cultivating, processing and distributing food in, or around, a village, town or city.

- B. Growth Potential and Labor Demands** – Over the last 20 years, a number of abandoned lots have been converted into community gardens. Several community-based urban agriculture non-profits have developed small local farming efforts into a burgeoning market for local food in New York City. For example, East New York Farms!, a community-based urban agriculture organization based in Brooklyn, runs a successful farmers market that sells local produce to thousands of families in the community. Additionally, the Parks Department is working to strengthen urban agriculture through its Green Thumb program. Green Thumb provides

assistance to over 600 community gardens. The Department of Housing Preservation and Development has also helped stimulate urban agriculture by setting aside several City-owned vacant lots for community gardens. Thanks to these efforts, urban agriculture transformed from a non-paying activity to a source of income for many New Yorkers, particularly in communities most hampered by food access inequalities.

Although urban agriculture is unquestionably a growing force in the city's food infrastructure, many of the jobs created by urban agriculture are seasonal and do not have opportunities for advancement or generate family-sustaining wages. There are few urban farmers who can make a living exclusively off of their farming work in New York City. The growing number of local food advocacy non-profits and street garden umbrella organizations, however, do present new potential job opportunities in the emerging urban agriculture subsector.

- C. Green Career Paths** – An understanding of urban vegetation and horticulture potentially creates a ladder into a Parks Department job and a background in community food security could lead to other food access advocacy positions on the rural, urban, regional and/or national levels.

SECTOR: ENVIRONMENTAL MONITORING AND REMEDIATION

Although it may not always be apparent, toxic and hazardous substances lie in our walls, air and underutilized spaces. Environmental monitoring and remediation works to change these conditions and to ensure that our aging infrastructure and building stock is clean and primed for greener development in the years to come.

1. Brownfield Remediation

- A. Definition** - Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Brownfield remediation entails the removal of ignitable, corrosive, reactive or toxic materials from brownfield sites for community, residential or commercial development.

- B. Growth Potential and Labor Demand** – Numerous community-based organizations and advocates as well at the Governor's office and the City have made progress in their efforts to ensure that New York City gets the funding necessary to remediate and revitalize the approximately 7,600 acres of brownfields in the five boroughs. Earlier this year, a Memorandum of Understanding released millions of dollars in Brownfield Opportunity Area (BOA) funding to nine BOA projects in New York City. Additionally, the City recently created the Office of Environmental Remediation to "increase resources dedicated to brownfields planning, testing and cleanups." And the State's Brownfield Cleanup Program was recently reformed to increase funding for brownfield redevelopment. It also bolstered incentives for projects that follow planning guidelines laid-out by low-income communities that participate in the BOA program, many of which are based in New York City.

With a strong remediation-training infrastructure already in place, it is unclear if we will be unable to meet the labor demands of the new efforts to clean up the city's distressed, vacant properties. Some have suggested that the city's brownfield remediation projects will not face labor shortages even as more funds become available. They further contend that workforce development resources should be focused not on brownfield remediation but on brownfield redevelopment. Newly cleaned-up properties provide us with the opportunity to revitalize the

manufacturing sector and set-aside new space for local industry. If the City worked with communities to redevelop brownfields in a way that encourages green manufacturing, the best brownfield-based workforce development plan would put resources into preparing workers for new manufacturing jobs and enabling communities to start their own businesses.

- C. **Green Career Paths** - Brownfield remediation workers are often prepared to do other work that requires handling hazardous materials or an understanding of toxic, ignitable, corrosive, or reactive materials, including emergency cleanup operations and indoor air quality work. Many brownfield remediation workers also have the potential to move into other positions in the building trades.

2. Indoor Environmental Quality Treatment

- A. **Description** – While indoors, people can be exposed to a wide range of contaminants including radon, asbestos, volatile organic chemicals, combustion by-products, tobacco smoke, biological contaminants and microorganisms. Indoor air treatment includes a number of services to treat these problems including microbiological sampling, ventilation system work, mold remediation and air duct cleaning.
- B. **Growth Potential and Labor Demand** – The majority of buildings in New York City were built before the building code contained many environmental standards and guidelines. Poor ventilation systems, asbestos, lead, mold and other indoor pollution problems are quite prevalent. The revamped building codes and a greater environmental consciousness could potentially propel this subsector, but there are no policy or programmatic efforts that indicate that this is or will be a growing field in the coming years in need of a workforce development plan.
- C. **Green Career Paths** – Indoor environmental quality treatment can lead into a career in Heating, Ventilation and Air Conditioning (HVAC) work, home performance contracting, brownfield remediation or other abatement and environmental monitoring work.

SECTOR: GREEN PRODUCT DEVELOPMENT

1. Green Manufacturing

- A. **Definition** – The manufacturing of goods: without toxic materials; made from recycled content; procured locally; and/or made in an energy efficient way. It is worth noting that locally procured products are ‘green,’ because they do not travel long distances and thereby do not contribute significantly to greenhouse gas emissions.
- B. **Growth Potential and Labor Demand** – The city’s manufacturing sector has declined considerably. Growing understanding that long transport distances contribute considerably to climate change has spurred a preference for locally manufactured products – particularly green products.

Local procurement is most clearly stimulated by the development of Green and LEED-certified buildings in New York City. LEED (Leadership in Energy and Environmental Design) awards points in a green certification process for buildings that procure materials within a 500 mile radius giving many developers the impetus to tap city-based manufacturers. A 2005 study on green manufacturing in New York City estimated that there are approximately 1,500 local manufacturers that make products used in building construction. Local Law 86, which brought LEED-equivalent standards to municipal building construction, could also grow green manufacturing in the city, even though developers are not rewarded for local sourcing under this law. The City's demand for products to complete the numerous sustainable infrastructure projects proposed in PlaNYC 2030 will create great opportunities for local manufacturers looking to tap into the emerging green economy.

Infrastructure and construction projects are not the only drivers of green manufacturing; currently there are over 60 green manufacturing companies in New York City that produce and market a goods ranging from clothes to bath and body products. The growing demand for sustainable and green products and growing consumer awareness should be advantageous for the city's green manufacturers as well.

- C. Green Career Paths** – A background in sustainable product design and manufacturing potentially creates opportunities to transition into a specialized career in green research and development. Furthermore, many green entrepreneurs and business managers have marketing skills that are potentially transferable to white-collar advertising and consulting firms specializing in sustainability.

2. Recycling

- A. Definition** – A system of collecting, sorting, and reprocessing old material into usable raw materials. Independent businesses, municipal agencies, (such as New York City's Department of Sanitation) and government contracted companies, (such as Visy Paper in Staten Island), specialize in various areas of the industry. These include composting, computer and battery recycling, aluminum and steel recycling, glass and plastic recycling, paper recycling, and recycled product manufacturing.
- B. Growth Potential and Labor Demand** – The City's 2006 Solid Waste Management Plan set ambitious recycling goals that have revitalized the recycling subsector. In order to reach the goal of 70 percent waste diversion by 2015, the city recently expanded a recycling facility in Staten Island, expanded yard waste collection, developed electronic recycling initiatives, increased the number of recycling bins on streets, and created the Office of Recycling Outreach and Education (OROE). In the two years since its creation, OROE has conducted building waste audits and identified areas for improvement, facilitated tenant training sessions and seminars for building superintendents and initiated 'special waste collections' for materials such as textiles.

The Growth of recycling creates great potential for new green collar jobs. On a per ton basis, sorting and processing recyclables alone sustain 10 times more jobs than landfilling or incineration. But many recycling-based jobs have no real opportunity for advancement and often do not pay family sustaining wages. As a result, this is not a green collar subsector that working groups should prioritize. However, the increase in city-based recycling does present the opportunity to enhance the material stream and sustainability of local green manufacturers. With the right planning recycling can be an impetus to grow new green businesses and create new green collar jobs.