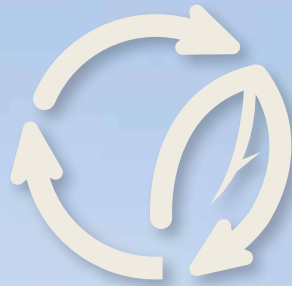


The City of Newark

SUSTAINABILITY ACTION PLAN



LETTER FROM THE MAYOR



I am proud to introduce The City of Newark's first formally published Sustainability Action Plan. It matured out of a commitment to sustainability that was made at the very beginning of my Administration. This plan represents a vision developed over the last five years, via a partnership comprised of residents and a team of municipal employees. We are engaged in a tremendous effort to revitalize Newark, improving the quality of life for all of our residents and stakeholders. Our quest is to move Newark toward a future that is healthy, green, and vibrant!

In 2008, hundreds of Newarkers gave of their time, talents and energy at the Newark Green Future Summit in order to craft an agenda focused on green jobs, economic development, youth and community development, and healthy, affordable housing. Pursuant to that agenda, the City established a full-fledged Sustainability Office, coupled with our first Environmental

Commission. At this juncture, there are projects underway to expand urban farming and fresh food access, reduce energy bills, plant more trees, increase green community spaces, curb air pollution, and reduce the cost of government through smart, efficient operations.

This Plan arrives at a critical stage in Newark's history. The population is growing. Major investments from public, private, and philanthropic sectors have led to new developments and affordable housing projects in all five wards. Key to these actions is the City's Master Plan, which has also been revised.

As the nation emerges from a recession, Newark is poised to realize even greater gains. At the same time, we face environmental and social challenges unknown by previous generations. Carbon emissions world-wide are at a record high. Climate change is contributing to more severe storms, hotter summers, and other challenges for cities that need affordable energy, clean air, fresh food, and open spaces. These trials disproportionately impact our most vulnerable residents. To be meaningful, sustainability efforts must confront poverty and public health, while strengthening the link between economic development and opportunity for residents, especially our youth. Newark's actions, outlined in this Plan, demonstrate that it is possible to meet these challenges. We can make our urban environment healthier and more resilient while at the same time create jobs and new business opportunities for residents.

I thank everyone who helped create this document. And I invite everyone who lives, works, or visits in Newark to become part of the exciting projects described herein. Working together, we can build that healthy, green, vibrant urban environment where generations of Newarkers will thrive.

Sincerely,

A handwritten signature in dark ink, appearing to read 'C. A. Booker', written in a cursive style.

Cory A. Booker
Mayor, City of Newark

LETTER FROM THE NEWARK ENVIRONMENTAL COMMISSION



GET INVOLVED

Newark's Sustainability Action Plan needs YOU. Get involved by making your home, your neighborhood, your business, or your community healthier, greener, and more affordable. Learn more by visiting www.SustainableNwk.org, by contacting us at 973.733.6575 or info@SustainableNwk.org. You can also follow us on Twitter: @SustainableNwk. All members of the public are invited to attend monthly Newark Environmental Commission meetings. These generally take place on the first Wednesday of the month at 6:30 pm in room 304 of Newark City Hall. Schedule for the Environmental Commission meetings is available at: http://www.ci.newark.nj.us/residents/green_newark/newark_environmental_commission.php. We look forward to working with you!

Creating a Sustainable Newark through “Going Green” initiatives has been a major priority for the Booker Administration since it took office in 2006. The Environmental Commission works closely with the Office of Sustainability and the Municipal Council to develop policy, programs, and partnerships that support healthy neighborhoods, vibrant businesses, and job creation. The core of our efforts is grounded in the principles of Environmental Justice, because every Newarker has the right to a clean and healthy environment to live, work, play, and pray.

As an Environmental Justice Organizer, I have a long history of educating and empowering citizen leadership and conducting programs to improve our health, advance environmental equity, and enhance our communities. While improvements must ultimately be realized at the individual level, they often require changes in policy at the institutional, local, regional, state, and national levels. We must work together as residents, businesses, and community organizations to save our environment.

The Sustainability Action Plan is a living document to guide the City of Newark, but “Going Green” cannot be done by the City alone—Going Green depends on all of us. We all have a green job to do! There are simple actions we each can take in our homes, our lifestyles, and in the course of our daily business.

As Chair of the City of Newark's Environmental Commission, I invite the Newark Community to join in making Newark a greener and sustainable city. In our community smart growth development will expand economic opportunity, create jobs, protect public health, and the environment and enhance the places that residents love.

The Sustainability Action Plan is our community plan to make Newark a healthy, vibrant, and sustainable city! I want to thank all the citizens who attended our meetings and gave input for the plan. In addition, I thank all of the commissioners, environmental organizations and Environmental Justice advocates for their input as well.

A handwritten signature in black ink that reads "Kim Gaddy". The signature is fluid and cursive, with the first name "Kim" and last name "Gaddy" clearly distinguishable.

Kim Thompson-Gaddy
Chair, Newark Environmental Commission

ACKNOWLEDGMENTS

This Plan is the work of many hands. The City gratefully acknowledges everyone who participated in developing ideas, reviewing drafts, and contributing material. We look forward to continuing these partnerships during the implementation phase of the Plan.

Stephanie Greenwood served as lead author and project manager for this Plan with content, editing assistance, and support provided by other members of the Sustainability Office, the consulting team, and the Newark Environmental Commission.

Funding

This Plan was developed with support from the U.S. Department of Energy through the Energy Efficiency and Conservation Block Grant Program. This program is part of the American Recovery and Reinvestment Act, designed to stimulate the economy through activities that address pressing local needs, including the need to plan for improved energy efficiency and greenhouse gas reduction.

Community Leaders and Residents

This document benefited tremendously from the input of residents and organizational leaders that came out to meetings, sent comments, participated in Sustainability Office activities, and pushed the final draft of the Plan to reflect community priorities. Their efforts have been (and will continue to be) crucial to the Plan's success.

Newark Environmental Commission

The Newark Environmental Commissioners played a central role in developing ideas, engaging the public, and refining the final draft of this Plan. Particular thanks are due to Chelsea Albucher for her generous contribution of time and expertise to revising and improving this document.

- Kim Gaddy—Commission Chair
- Ana Baptista—Vice Chair
- Chelsea Albucher
- Jermaine James
- Donna Kirkland
- Gail Maynor
- Elizabeth McGrady
- Carla Robinson

Newark Municipal Council

The Newark Municipal Council provided advocacy and essential support for the creation of the Environmental Commission, the Sustainability Office, and for this Sustainability Action Plan. Grateful acknowledgments to Council Member Augusto Amador, Council Member Ras J. Baraka, Council Member Mildred C. Crump, Council Member Carlos M. Gonzalez,

Council Member Luis A. Quintana, Council Member and Acting Council President Anibal Ramos, Jr., Council Member Ronald C. Rice, Council Member Darrin S. Sharif, and to Congressman Donald M. Payne, Jr., former Council President.

Consulting Team

The Newark Sustainability Action Plan was prepared with the assistance of a consulting team comprised of KSS Architects, Steven Winters Associates, and Langan Engineering. Professionals from these firms provided research, conducted interviews, assisted with public outreach, and prepared written material for inclusion in the Plan. KSS Architects also provided graphic design.

Municipal Staff

Newark municipal staff participated in interviews and group meetings and provided thoughtful feedback. Staff has also taken leadership in-house by pushing for sustainability advances in municipal operations through the City's "Green Team." Special thanks to:

- Adam Zipkin, Deputy Mayor and Director, Department of Economic and Housing Development, for his vision in advancing sustainability as a function of city government
- Tharien Karim Arnold, Director of Neighborhood and Recreational Services Department
- Richard Lopez, Public Buildings Manager
- Mehdi Mohammadish, Director of Engineering Department
- Jack Nata, Director of Traffic & Signals Division
- Newark Municipal "Green Team" members: Jerusha Schultze, Damaris Quinones, Nydia Guimaraes, Brenda Anderson, Louis Matos, Deidre Knight, Sherronda Carroll, Jamiyl Peters, Tawana Johnson, Regena McCray-Palmer, Charles Crawley, Kellee Johnson, Edite Martins, Peter Pinckney, William Ordonez, and Mahima Giri

Sustainability Office Staff

Sustainability staff provided content, editing assistance, and support throughout, and will coordinate implementation.

- Stephanie Greenwood, Sustainability Director
- Joel Sonkin, Chief of Energy and Environment
- Elizabeth Reynoso, Food Policy Director
- Robert Thomas, Energy Project Manager
- Mahima Giri, Sustainability Project Manager

U.S. Environmental Protection Agency (EPA) Region 2 and New Jersey Department of Environmental Protection (NJDEP) Staff

Staff in environmental offices at the State and Federal levels provided thoughtful and detailed feedback on this Plan as well as offering continued support through the implementation phase.



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INTRODUCTION

Sustainability Action Plan



EXECUTIVE SUMMARY

Newark's environment forms the context in which everyone in the city lives, works, and plays. The environment can support health and prosperity, or it can be a factor contributing to illness, inequality, and barriers to economic opportunity. This Sustainability Action Plan lays out strategies for making Newark's environment a positive force in the life of the city. Working with the tools of municipal government and leveraging partnerships with community and business leaders, the City of Newark commits to pursuing the vision of a healthy, green, vibrant city articulated by residents and other stakeholders over the last several years. The goals of the Plan are captured in the term "sustainability," which means promoting environmental, social, and economic well-being over the long-term.

Under Mayor Cory Booker, Newark has made an unprecedented commitment to sustainability. Since 2006, based on a planning process that involved hundreds of Newarkers and built on decades of activism, the City hired its first Sustainability Officer, established the Newark Environmental Commission, and formally created an Office of Sustainability within the Economic and Housing Development Department. The City has leveraged state and federal resources and organizational partnerships to promote energy efficiency, boost recycling, plant trees, increase urban farming, reduce air pollution, clean up brownfields, and more. This Plan builds on all the work that has been done to date and lays out a policy framework, principles, and priority Action Items for moving Newark's sustainability agenda forward over the coming years.

POLICY FRAMEWORK

The City of Newark's efforts to improve the urban environment seek to promote the following four policy goals:

1. **Improved public health:** Clean air, water, and land is foundational for the city's success.
2. **Cost savings:** Wise use of resources and energy can save money for residents, businesses, and government while reducing environmental impact.
3. **Enhanced quality of life:** Environmental improvements can also beautify and cool neighborhoods and boost the quality, health, and affordability of buildings.
4. **Expanded green economic opportunity for Newarkers:** Improving the environment means supplying a range of new goods and services. These opportunities can and should serve as ladders of economic advancement for Newark residents. They should also position Newark as an engine for sustainable economic development and innovative, clean technology growth for the region.

PRINCIPLES

In order to ensure that the implementation process reflects the spirit as well as the letter of this Plan, the City commits to the following guiding principles:

1. **Leading by Example:** Newark municipal government will seek to advance sustainability in its own operations.
2. **Environmental Justice:** Policies will support the right of all members of the community to enjoy the benefits of a healthy environment, regardless of income, race, class, or location.
3. **Local Self-sufficiency:** A sustainable economy is rooted in the ability of a community to meet its own needs. Policies will support local ownership of sustainable businesses and the success of green, "Made in Newark" products.
4. **Stakeholder Driven Policy-making:** Policies and programs will be developed in consultation with people that will be affected by them. This includes efforts to build shared knowledge and increase environmental literacy.
5. **Connection to Community Development:** A healthy urban environment is inextricably linked with a healthy community, including strong neighborhoods. Sustainability efforts will support neighborhood revitalization and community engagement activities.
6. **Data and Research:** The City will reach out to and engage long-term partnerships at local universities and research centers on environmental issues in order to use the best available information in policy decisions.
7. **Sustainable Relationships:** Implementation activities will demonstrate respect and build trust among stakeholders.

PRIORITY ACTION ITEMS

Air Quality

Improving air quality can have a substantial impact on public health and quality of life while at the same time advancing environmental justice.

- Convene an air quality taskforce to identify, monitor and address health-harmful local sources of air pollution
- Reduce diesel pollution from trucks and other vehicles
- Develop and implement a Cumulative Impact Ordinance and Zoning Amendments to minimize and mitigate new pollution
- Strengthen partnerships and advocacy work on major emission sources
- Phase out use of Number 6 and Number 4 heating oil in building boilers
- Roll out a "Green and Healthy Homes Initiative" for Newark focused on homes with children with asthma

Energy

Bringing down energy use and costs helps everyone's budget, reduces the pollution associated with fossil fuel-based energy production, helps the City meet its greenhouse gas targets, and drives improvements in the quality of the building stock.

- Reduce the City of Newark's municipal energy consumption by 20 percent over the next five years
- Facilitate energy savings for residential, commercial, industrial, and institutional partners
- Explore and support clean energy alternatives and distributed generation development
- Promote and enhance green building and design principles for development projects

Recycling and Materials Management

Reducing the amount of waste we produce and diverting remaining waste for productive reuse in the local economy saves resources, reduces the pollution and greenhouse gas associated with traditional waste disposal methods, and spurs the creation of new jobs and businesses as materials are made into new products.

- Develop and implement a Newark Zero Waste Strategy
- Double city-wide municipal recycling rate from 2010 levels
- Develop strategies for waste reduction and increased recycling at commercial and institutional facilities
- Expand waste reduction and diversion for food and organics
- Develop and implement a Construction and Demolition Waste Recycling Ordinance
- Develop and implement an Electronics Recycling program
- Grow and attract green businesses that upcycle materials (re-use materials by taking them out of the waste stream and making them into new 'Made In Newark' products)

Stormwater Management and Community Greening

Significantly expanding the city's capacity to absorb stormwater through landscaping, permeable surfaces, tree planting, and other "green infrastructure" measures helps reduce flooding and water system overflows; at the same time, these strategies cool and beautify the city.

- Launch a high-profile campaign to put Newark on track to double its tree canopy and establish a stable source of revenue for tree maintenance
- Implement a new Newark Stormwater Ordinance and develop green infrastructure policy
- Develop green infrastructure standards for City capital projects
- Identify and implement at least 10 pilot green infrastructure projects over the next five years
- Develop a stormwater infrastructure bank and explore options for funding stormwater improvements through fees on impermeable surfaces
- Support neighborhood-based rain capture projects

Greenhouse Gas Emissions

Newark's greenhouse gas (GHG) emission strategies seek to meet reduction targets and at the same time address key policy goals such as improved air quality and lower costs.

- Promote GHG reduction within City operations and in City-supported private projects
- Capture and track GHG reductions associated with Action Items in this Plan
- Work with North Jersey Transportation Planning Authority (NJTPA) to refine existing GHG inventory for Newark sectors, determine tools for tracking GHG for City and key sectors, and participate in NJTPA's GHG mitigation workgroup
- Work with priority sectors (e.g. Port and Port related, Passaic Valley Sewerage Commission, large buildings and institutions) to advance GHG reduction goals

Healthy Food Access

Fresh, affordable food nourishes us as individuals, families, and communities and brings people together in new ways. Producing, distributing, and preparing healthy food for local consumption, education work on food, and responsible processing of food waste can all act as drivers of local economic development.

- Establish a city-wide Newark Food Policy Council
- Support successful, affordable Farmers Markets in each ward
- Stimulate urban agriculture on vacant public land
- Educate and engage youth in transforming Newark's food environment, including increasing food literacy and food education, and promoting healthy corner stores near schools
- Increase Made In Newark food sales at bodegas and food outlets

CONCLUSION

Five years from now, the implementation of these actions will have moved Newark closer to a sustainable future. This future will be built from tangible projects—more urban farms, healthier, more energy efficient homes, less diesel pollution, and more trees. But it will also grow from the relationships that form as these projects are planned and completed. Working together across siloes to expand our collective capacity for healthy urban living will strengthen our networks. These stronger personal and professional relationships will help us set and realize even more ambitious goals in the years to come.

INTRODUCTION

By making our homes, neighborhoods and economy more sustainable we will make Newark a healthier more liveable and vibrant city with increased access to fresh foods and open spaces; enhanced air quality and lower asthma rates; reduced operating costs for our homes and businesses and a hub of green economic activity with family supporting living wage jobs.

—VISION STATEMENT BASED ON THE NEWARK GREEN FUTURE SUMMIT, 2008

WHAT IS THE NEWARK SUSTAINABILITY ACTION PLAN?

The Sustainability Action Plan outlines strategies to address Newark's key environment issues with the goal of creating a healthier, more prosperous future for the city. It represents a commitment from the City of Newark (the City) to incorporate sustainability into municipal operations as well as into city policies, programs, and partnerships with community members.

In order to realize these goals, the City is committed to working across municipal agencies and engaging with a wide range of stakeholders. The strategies in the Action Plan are designed to work together to advance the policy goals described in more detail below: driving down costs, improving public health and quality of life, and expanding economic opportunity in the sustainable economy. They are also designed to give everyone that cares about Newark's environment plenty of opportunity to participate. Acting together, we can make our homes, our communities, and our businesses healthier and more economically viable over the long term.

This is an action plan in the sense that the policy goals, principles, and priorities discussed below are linked to specific actions with detailed implementation strategies. The policy framework and action items are intended to complement the City's Master Plan, which lays out a direction for development in Newark over the next 30 years. The Action Plan focuses on early activities to be launched within the next five years. Implementing these actions will advance Newark's sustainability agenda while at the same time building momentum and strengthening the relationships critical for reaching the long-term goals laid out in the Master Plan. The Newark Sustainability Action Plan is a living document, meant to serve as a starting point for strategic action, rather than as an end product.

WHAT IS SUSTAINABILITY?

Sustainability refers to strategies for meeting the environmental, economic, and social needs of people today without compromising the ability of future generations to meet

their needs. It is an approach to living, governing, and doing business so that the benefits of a healthy environment remain available to everyone.

Newark joins communities all over the world in grappling with the issue of sustainability. Cities, in particular, are demonstrating innovation in addressing the impact of climate change and pollution, making better use of scarce resources, and positioning themselves to survive and thrive, now and long into the future.

HISTORICAL CONTEXT

Newark's environment reflects its history as both a proud, diverse, industrial city and a place subject to social and economic forces that have resulted in disinvestment and economic decline. Despite past and present challenges, Newark has also been characterized by innovation, culture, community organizing, and a deep commitment on the part of residents and local businesses to making the city a better place.

Newark has several tremendous environmental assets including its watershed properties, Olmstead-designed parks, Branch Brook Park whose cherry blossom festival attracts thousands of visitors a year, and a dense transit network that facilitates the movement of goods and people throughout the region.

At the same time, Newark's industrial legacy and its role as a regional hub have created environmental challenges that shape the context for this Plan. Newark hosts highways with continuous truck and car traffic, air and sea transport, the region's waste incinerator and wastewater treatment plant, and some of the region's dirtiest power generation infrastructure. Land contamination from former uses—called brownfields—



March against garbage burning organized by Ironbound Committee Against Toxic Waste (ICATW), 1980s. Photo credit: Ironbound Community Corporation EJ Archive.

limits development potential and holds down the tax base. An aging building stock imposes both higher energy cost burdens and greater indoor air quality problems on Newark residents than on suburban counterparts. The cumulative impact of all this is an urban environment that can contribute to health problems, reduce quality of life, raise costs, and isolate residents from economic opportunity. The concentration of pollution in areas with high proportions of poor and minority residents has come to be known as environmental racism or environmental injustice.

In response to environmental issues and injustices, Newark residents and community organizations have organized and fought for their rights. This history includes several victories that led to national policy change, including the creation of the Toxics Release Inventory and Community Right to Know Act. Residents have also been actively engaged in opposing the location of polluting facilities in Newark, and have won some important victories.

Recent years have witnessed a resurgence of development in the downtown core, substantial increases in affordable housing construction, the first population increase in many years, new park development, a riverfront rezoning—and an unprecedented commitment on the part of City government to sustainability.

DEVELOPMENT OF SUSTAINABILITY ACTION PLAN

Building on the history of activism and commitment to environmental health in Newark, the City under Mayor Booker embraced the challenge of sustainability as a function of local government. In 2008, the City hired its first Sustainability Officer and held a major three-day Green Future Summit. Newark Green Future Summit mapped out an agenda focused on public health, quality of life, economic development, and job creation. Following the Summit, Newark swore in its first Environmental Commission in 2009.



Graphic notes on a discussion at Newark's Green Future Summit, September 2008. Photo credit: Notes by Brandy Agerbeck; Image courtesy of the Apollo Alliance.

In 2010, the Municipal Council voted to create the Office of Sustainability as a formal function of city government. The Sustainability Office launched a municipal “Green Team” and began to implement a federal stimulus grant from the U.S. Department of Energy. This grant provided Newark with resources to develop a Sustainability Action Plan—a document that lays out policies, priorities, and actions that advance a comprehensive municipal sustainability agenda.



Children enjoy music at the opening festivities for the new Newark Riverfront Park, July 2012. Photo credit: Damon Rich.

In addition, the City has leveraged millions of dollars to reclaim brownfields and has undertaken the largest rehabilitation and renovation project of City parks in decades, opening the largest such municipally-owned facility, Nat Turner Park, in 2008 and a new riverfront park in 2012. The Sustainability Office secured millions of dollars in federal and state grants to launch programs within municipal government and the community.

The Sustainability Office works across municipal departments, with the Environmental Commission, and with external stakeholders to develop policies and programs that support healthy urban living. Projects have included facilitating energy savings for households, businesses, and institutions, leveraging federal and state funds to reduce municipal energy use, support for green job training and placement, clean fuels, tree planting, recycling, and much more.

The Newark Sustainability Action Plan was developed over a year and a half of community engagement, including a series of public meetings, in-depth interviews with City staff and community leaders, and consultation with environmental professionals at state and federal agencies. While the publication of this Plan represents a milestone, the real test of its success will be in its implementation phase. All members of the Newark community are urged to get involved. Visit www.sustainablenewarknj.org to learn more.



Activities such as zumba and yoga continue throughout the summer following the opening of the new Newark Riverfront Park. Photo credit: Damon Rich.



In April 2011, over 75 Newarkers came out to talk with the Sustainability team and consultants about their priorities for the Action Plan. In this photo, Ironbound Community Corporation Environmental and Planning Projects Director, Ana Baptista, helps lead a break-out group on air quality. Photo credit: Andrew Tucker.

POLICY FRAMEWORK

The Newark Sustainability Action Plan provides an overarching framework to organize the work of City staff, community members and potential partners seeking to connect with Newark's sustainability agenda. The Action Items in this Plan advance four major policy goals:

1. **Improved Public Health:** Action Plan policies and programs will seek to reduce the negative health impacts associated with existing pollution, both outdoor and indoor. They will minimize or mitigate new pollution from public or private development. City agencies will collaborate internally and with outside partners to support well informed, precautionary decision-making on Newark's environmental health issues.
2. **Cost Savings:** Action Plan policies and programs will reduce costs for residents, businesses, and government by improving resource conservation, efficiency, and stewardship. Sustainability Action Plan initiatives will seek to identify and pursue viable cost-saving opportunities across sectors.

3. **Enhanced Quality of Life:** Action Plan policies and programs will enhance amenities such as trees, green open spaces, healthy, energy efficient homes, "green" flood control measures, and affordable fresh food. Sustainability Action Plan programs will support and complement neighborhood revitalization efforts including vacant lot reclamation and rehabilitation of abandoned structures.
4. **Expanded Green Economic Opportunity for Newarkers:** Action Plan policies and programs will support job and business development with on-ramps for Newark residents in the green economy. Action Plan policies and programs will support increased demand for goods and services that meet a local or regional environmental need as well as the success of green Made In Newark businesses.

PRINCIPLES

The way projects are designed and implemented can be just as important to their success as the content of the projects themselves. Newark's sustainability agenda includes a commitment to the following guiding principles. These will be applied to all policy development and program implementation enacted under this Plan:

1. **Leading by Example:** Newark municipal government will strive to improve the sustainability of its own operations as a first step toward advancing sustainability city-wide.
2. **Environmental Justice:** Everyone deserves to live, work, and play in a healthy environment, regardless of income, race, ethnicity, or place of origin. Sustainability initiatives will put a priority on addressing the environmental health needs of those who are most vulnerable or currently most disproportionately burdened with environmental health costs.
3. **Local Economic Self-sufficiency:** Making better use of existing materials and resources can help generate savings and income. Sustainability Action Plan initiatives will promote strategies that make the local economy stronger and more independent, and that generate widely shared economic benefits.
4. **Stakeholder Driven Policy-making:** Those most affected by policy outcomes should have a voice in shaping the decisions. As the Sustainability Action Plan develops and implements policy on particular topics, City staff will engage those who might be affected to engage their participation. This principle includes a commitment to training and education opportunities in Environmental Literacy.
5. **Connection to Community Development:** A healthy urban environment cannot exist separately from healthy communities. The City's sustainability program will support community development efforts, including neighborhood revitalization, vacant lot reclamation, rehabilitation of vacant buildings and other physical improvement projects, and, most importantly, engagement with neighborhood residents and institutions.

6. **Data and Research:** A wealth of information and best practices on environmental issues exist both within and beyond Newark's university system. Sustainability Action Plan initiatives will seek out and draw from this material to make well-informed decisions. This includes a commitment to develop and maintain strong relationships with partners at Newark research institutions.
7. **Sustainable Relationships:** Sustainability is in many ways about cultivating more respectful relationships between people and the environment, among groups of people, and between today's people and future generations. As we implement this Action Plan, we seek to embody and encourage that value of respect in the ways we interact as individuals, coworkers, community members, and members of the global community.

PRIORITIES

To advance the policy goals outlined above, the Plan lays out a series of Action Items, organized into six priority categories. These categories were chosen because they each represent a major system that affects the city's environment, health, and economy. With an eye on feasibility, these areas were selected because they address areas where City government exercises some control and where staffing and funding exist to move the agenda forward. The priority categories and Action Items in the Plan are summarized below.

Air Quality

Poor air quality is linked to illnesses including asthma, lung cancer, and heart disease. The Action Items in this category seek to reduce the health impact of existing pollution, minimize any new air pollution coming into the city, and enhance partnerships and monitoring capacity to advance solutions to air quality problems. Action Items in this category also provide benefits for other categories including Greenhouse Gas Emission reduction or Energy reduction.

- Convene an air quality taskforce to identify, monitor and address health-harmful local sources of air pollution
- Reduce diesel pollution from trucks and other vehicles
- Develop and implement a Cumulative Impact Ordinance and Zoning Amendments to minimize and mitigate new pollution
- Strengthen partnerships and advocacy work on major emission sources
- Phase out use of Number 6 and Number 4 heating oil in building boilers
- Roll out a "Green and Healthy Homes Initiative" for Newark focused on homes with children with asthma

Energy

Using less energy from fossil fuels means cost reductions on utility bills as well as environmental benefits. Since the City owns and manages a number of buildings and vehicles, there is a chance to lead by example with municipal operations. The Action Items in this category commit to energy use reductions,

improved management of energy systems, promotion of existing energy programs to the private sector, and support for alternative energy generation.

- Reduce the City of Newark's municipal energy consumption by 20 percent over the next five years
- Facilitate energy savings for residential, commercial, industrial, and institutional partners
- Explore and support clean energy alternatives and distributed generation development
- Promote and enhance green building and design principles for development projects

Recycling and Materials Management

Managing trash offers some of the most exciting opportunities for sustainability gains in Newark. Much of the material that is currently thrown away in Newark households, businesses, public offices, and institutions has value. It can be reused or recycled. Rather than paying to dispose of material in ways that carry costs for the taxpayer, public health, and for the environment, the City and its partners can begin to redirect that material into new product lines and business development. The Action Items in this category promote a "Zero Waste" approach that says the value of our materials belongs in the community, not in the trash.

- Develop and implement a Newark Zero Waste Strategy
- Double city-wide municipal recycling rate from 2010 levels
- Develop strategies for waste reduction and increased recycling at commercial and institutional facilities
- Expand waste reduction and diversion for food and organics
- Develop and implement a Construction and Demolition Waste Recycling Ordinance
- Develop and implement an Electronics Recycling program
- Grow and attract green businesses that upcycle materials

Stormwater Management and Community Greening

Newark's status as one of the country's oldest cities means that it has inherited a large combined stormwater system. That means the pipes that carry the city's sewer waste also carry its rainwater. In heavy storms, that can lead to flooding and discharge of waste water into the Passaic River. The City can reduce flooding by developing green infrastructure: landscaped earth and plantings that absorb stormwater throughout the city and release it very slowly into the sewer system. The Action Items in this category expand the role of green infrastructure in managing the city's stormwater.

This section also includes a major new initiative to expand and maintain Newark's tree canopy. Trees absorb GHG; they also help with air pollution, energy use, stormwater management, and neighborhood greening.

- Launch a high-profile campaign to put Newark on track to double its tree canopy and establish a stable source of revenue for tree maintenance

- Implement new Newark Stormwater Ordinance and develop green infrastructure policy
- Develop green infrastructure standards for City capital projects
- Identify and implement at least 10 pilot green infrastructure projects over the next five years
- Develop a stormwater infrastructure bank and explore options for funding stormwater improvements through fees on impermeable surfaces
- Support neighborhood-based rain capture projects

Greenhouse Gas Emissions

Climate change caused by greenhouse gas emissions affects health and well-being all over the planet with increased incidence of droughts, floods, severe storms, heat waves, and rising sea levels. These global trends pose particular threats for cities like Newark. Already one of the hottest spots on the eastern seaboard, Newark can be expected to get even hotter in the coming years. The Actions Items in this section aim to improve local government capacity to track Greenhouse Gas (GHG) emissions, encourage GHG mitigation in private development projects, and reduce GHG emissions associated with City operations.

- Promote GHG reduction within City operations and in City-supported private projects
- Capture and track GHG reductions associated with Action Items in this Plan
- Work with North Jersey Transportation Planning Authority (NJTPA) to refine existing GHG inventory for Newark sectors, determine tools for tracking GHG for City and key sectors, and participate in NJTPA's GHG mitigation workgroup
- Work with priority sectors (e.g. Port and Port related, PVSC, large buildings and institutions) to advance GHG reduction goals

Healthy Food Access

One of the most basic measures of health and wellness in a community is the way that community nourishes itself. Food justice refers to the idea that everyone has the right to access healthy, affordable, safe, culturally appropriate food. A healthy food system celebrates the diversity of culinary traditions among community members, and enables them to meet their nutritional needs with dignity. The Action Items in this category put in motion the dynamics required to build a healthier, more just food system in Newark.

- Establish a city-wide Newark Food Policy Council
- Support successful, affordable Farmers Markets in each ward
- Stimulate urban agriculture on vacant public land
- Educate and engage youth in transforming Newark's food environment, including increasing food literacy and food education, and promoting healthy corner stores near schools
- Increase Made In Newark food sales at bodegas and food outlets

IMPLEMENTATION STRATEGY

The Sustainability Action Plan has been developed with implementation in mind. Each Action Item comes with its own implementation details, including target deadlines, staffing, funding, and tracking information.

Other key elements of implementation for this Plan include:

Interdepartmental Municipal Taskforces—Most of the actions in this Plan require cooperation from more than one City agency. The Mayor's office and the Sustainability Office will co-convene several interdepartmental taskforces to ensure that City staff understand and “own” the sustainability agenda. Areas of focus include energy, air quality, stormwater, food policy, and sustainable economic development.

Sustainability Presentations to Boards and Council—The Environmental Commission and the Sustainability Office will collaborate to present information on environmental justice, cumulative impact, and sustainability goals to the Municipal Council and members of the Central Planning Board and Board of Adjustments. This will help foster greater awareness of the impact of land use policy and other municipal regulations on environmental health for Newark residents.

Partnerships with Universities—Newark is blessed with academic resources that could inform municipal sustainability work. The Sustainability Office will cultivate formal relationships with Newark's universities to advance city-wide Sustainability goals. Projects may include air quality monitoring, stormwater infrastructure detail, green building assistance, or participation in discussions about clean tech, energy infrastructure, green business growth, and sustainable economic development.

Engagement with Neighborhoods—The success of Newark's sustainability agenda should be determined by the extent to which it supports a healthy, affordable, economically stable environment where people can live and raise their families. Involvement of residents, neighborhood associations, community development groups, and neighborhood based institutions and businesses are essential to the success of the Newark Sustainability Action Plan. The Sustainability Office will support City efforts on neighborhood stabilization, engagement, and empowerment.

Taskforce on Sustainable Economy—One of the most important aspects of this Plan is the potential it offers for increasing job and business opportunities for Newarkers in the sustainable economy. By setting clear policies and boosting demand for green goods and services, the work performed under this Plan will grow demand for workers and entrepreneurs in the sustainable economy. To prepare for and take advantage of these opportunities, the City has already begun working

with a technical assistance provider with support from the U.S. Environmental Protection Agency (EPA). We intend to use that work as a springboard for a Sustainable Economy taskforce, which will meet quarterly to assess and promote green economic opportunities for Newark residents.

The following schedule is intended to support successful implementation of the plan overall.

- **Plan Launch:** Winter 2013—The City, Environmental Commission, and partners announce the release of the Newark Sustainability Action Plan to the public and the media. Sustainability Action Plan is posted on Newark Sustainability Office webpage.
- **Meetings with Stakeholders to Introduce Plan:** Winter 2013—Sustainability Office staff and Environmental Commissioners provide a summary of the plan to a wide range of groups including business associations, community-based organizations, houses of worship and civic associations.
- **Partnership Outreach:** Winter 2013—Many resources for advancing Newark's sustainability agenda already

exist in or near the city. Targeted outreach to universities and schools, state and federal agencies, major business and infrastructure entities, and community-based organizations will build partnerships to support implementation of Action Items.

- **Stakeholder Meetings on Specific Action Items:** Spring - Summer 2013—These will be working meetings to advance particular actions, for example, a group may gather to identify hotspots for truck idling and create a map.
- **Convening of Sustainable Economy Taskforce:** Spring - Summer 2013—This group will meet quarterly to identify opportunities, resources, gaps, and industry sectors that advance the goal of expanded economic opportunity in the sustainable economy.
- **Report-back on Progress:** Fall 2013 and annually thereafter

Be part of the implementation of this Plan! Contact us at www.SustainableNwk.org, by phone at 973.733.6575, by email at info@SustainableNwk.org, or stop by an Environmental Commission meeting on the first Wednesday of each month at 6:30 p.m. in Newark City Hall room 304 to learn more.

SUSTAINABILITY ACTION PLAN TIMELINE

	WINTER 2013	SPRING 2013	SUMMER 2013	FALL 2013
PLAN LAUNCH				
MEETING WITH STAKEHOLDER TO INTRODUCE PLAN				
PARTNERSHIP OUTREACH				
STAKEHOLDER MEETINGS ON SPECIFIC ACTION ITEMS				
CONVENING OF SUSTAINABLE ECONOMY TASKFORCE				
REPORT BACK ON PROGRESS				

PUBLIC SPACE, SUSTAINABILITY, AND URBAN DESIGN



This mural of Newark's riverfront is part of a City-wide initiative to promote public art that reflects local stories and experiences. Photo credit: Damon Rich.

The quality and design of Newark's public spaces, streets, sidewalks, and parks can contribute to a healthy and sustainable city. Newark is a walking city, a bus and train city. According to the U.S. Census, more than four in 10 Newark households do not own a car, and find other ways to get around. For these reasons, Newarkers produce less greenhouse gas per capita than your average American. While this has been true for decades, it has also been the case that the design of the city's primary public spaces has skewed towards the convenience of cars. Sustainable urban design can rebalance the needs and convenience of drivers with walkers and riders by making streets and sidewalks safe and welcoming places for walking and civic life.

- In 2012, with funding from the Urban Enterprise Zone, Newark began renovations along four important commercial corridors, replacing sidewalks, street furniture, crosswalks, and traffic equipment on portions of Clinton Avenue, South Orange Avenue, Broadway, and Mount Prospect Avenue (including a new bicycle path).
- In 2009, Mayor Booker revived the Newark Public Art Program. Since then, through its This Is Newark! project the City has partnered with arts organizations, community-based organizations, artists, and young people to produce thirteen large-scale public artworks, celebrating the city and creating more welcoming and alluring public spaces.
- As part of the construction of Riverfront Park, the City will conduct a one-year test of a "road diet" on Raymond Boulevard in the Ironbound to see if a narrower roadway can accommodate car traffic while making it easier for pedestrians to cross the street to the new park.
- Efforts are underway to increase the amount of green space in and around Newark's streets by developing small green plazas on traffic triangles and "gateways" neighborhoods. This will help manage stormwater and diminish sewer overflows.
- The City and Newark Downtown District have installed dozens of benches around downtown Newark, inviting everyone to take a minute to rest and enjoy the sights.
- The City is launching a Newark Tree Fund to install and help maintain a healthy tree canopy in Newark neighborhoods to improve the air and keep cool in the summer.

To learn more, visit www.thisisnewark.wordpress.com.

PRIORITY ONE

Air Quality



VISION

Newark will take action to understand and improve the relationship between air quality and human health in all city neighborhoods. The City will work with community partners, state and federal agencies, researchers, health professionals, and the business community to mitigate existing sources of air pollution, with priority on the types of pollution most dangerous to human health. New development projects will be required to meet performance standards for air quality so they do not add to the cumulative impact of air pollution affecting the city. In Newark's sustainable future, children will not face a disproportionate health burden from air pollution relative to their counterparts state-wide.

CHALLENGES

Newark's air quality is among the worst in New Jersey, due to a combination of factors. A dense transit network that includes seaport, airport, trains and several highways, concentration of industrial uses, the region's processing facilities for waste and wastewater, high volumes of diesel trucks traveling through residential areas, and older building stock all contribute to air quality problems. Air pollution is linked to increased illness and death from problems such as asthma, hypertension, heart disease, and cancer. According to the Coalition for Healthy Ports, more Newark residents die from illnesses associated with air pollution than from gun violence in Newark every year. The various pollution sources contribute to a total cumulative impact that can be more dangerous to human health than any one pollutant alone. The EPA has designated Newark as an "Environmental Justice Community of Concern" as a result of these factors.

ACTION SUMMARY

- Convene an air quality taskforce to identify, monitor and address health-harmful local sources of air pollution
- Reduce diesel pollution from trucks and other vehicles
- Develop and implement a Cumulative Impact Ordinance and Zoning Amendments to minimize and mitigate new pollution
- Strengthen partnerships and advocacy work on major emission sources
- Phase out use of Number 6 and Number 4 heating oil in building boilers
- Roll out a "Green and Healthy Homes Initiative" for Newark focused on homes with children with asthma



Action Item 1:

CONVENE AN AIR QUALITY TASKFORCE TO IDENTIFY, MONITOR, AND ADDRESS HEALTH-HARMFUL LOCAL SOURCES OF AIR POLLUTION

An Air Quality Taskforce convened by the City of Newark would bring together community members, researchers, health professionals, state and federal agency staff, and advocates to develop and implement strategies for measuring and improving air quality. The Taskforce would:

- Review available research on the relationship between air pollution and health outcomes and identify top priority pollutants
- Create and implement an ambient air monitoring system to capture neighborhood-level information on ambient concentrations of these pollutants
- Recommend policy and program changes to reduce the health impact of air pollution, with priority on neighborhoods with the highest concentration of air pollution-related health problems
- Provide information on air pollution to the Environmental Commission for inclusion in a city-wide Environmental Resources Inventory

DID YOU KNOW?

The U.S. Environmental Protection Agency (EPA) develops the National Ambient Air Quality Standards (NAAQS) which provide a benchmark for six criteria pollutants considered harmful to public health and the environment. According to the EPA, Essex County does not meet the standards for particulate matter (2.5 microns or smaller) and ozone. To track New Jersey's air quality, the N.J. Department of Environmental Protection (NJDEP) maintains 38 air quality-monitoring stations throughout the state, one of which is located in the City of Newark.

This taskforce approach brings together a number of players already working on air pollution in Newark from a variety of angles. Environmental Justice activists regularly highlight the link between air pollution and human health through activities such as truck counts, community air monitoring projects, participation in the Coalition for Healthy Ports, and advocacy work through the New Jersey Environmental Justice Alliance. Organizations such as Ironbound Community Corporation, Clean Water Fund, and the Weequahic Park Association have decades of experience organizing residents around air quality issues. Researchers at the University of Medicine and Dentistry of New Jersey (UMDNJ), Rutgers University, and Drew University study the impact of air pollution on human health.

New Jersey has a range of professionals dedicated to the study of asthma. The U.S. Environmental Protection Agency (EPA) and the N.J. Department of Environmental Protection (NJDEP) have offices responsible for air quality monitoring, regulatory compliance for major emission sources, and research on stationary, mobile, and indoor air quality issues. The NJDEP's "Stop the Soot" campaign works with communities to reduce the impact of diesel pollution and Particulate Matter. Each of these entities has something valuable to contribute to the conversation in Newark about how to reduce the health impacts of air pollution. Bringing them together will provide a stronger base from which to develop effective policy and programs.

One key responsibility for the taskforce will be developing recommendations for an air quality monitoring system that captures neighborhood-level ambient air quality information. The existing monitoring capacity in Newark currently provides regional-level information. Newark hosts one of 38 air quality monitoring stations set up throughout New Jersey by the NJDEP, on a firehouse on Clinton Avenue in the city's South Ward. (For information about this, visit: <http://www.nj.gov/dep/baqp/>.)

Although the EPA/NJDEP monitoring station is very helpful, it does not provide a fine-grained picture of ambient air quality throughout Newark's various neighborhoods. Creating a baseline and understanding how air quality differs from place to place within Newark will help inform more effective mitigation programs and policies. To gather this information about local ambient air quality, Newark will need to establish a network of smaller monitoring stations or efforts in various locations throughout the city.

Full-scale ambient air quality monitoring stations are expensive to establish and maintain. As a result it will be important for the taskforce to consider the most cost-effective ways to monitor air quality that still produce information that can inform good policy and drive improved outcomes. Focusing on a few key measures may be one way to keep costs down. Collecting information on temperature, wind speed and direction, and concentration of particulate matter (2.5 microns or smaller) would allow the taskforce to form a better picture of where particulate matter concentrations and heat island effect are within the city. ("Heat island" refers to the hot air formed over urban concrete in the summer. In hot air, particles tend to form pollutants such as ozone and particulate matter [PM] at a faster rate, worsening air quality.) Decisions about the type of monitoring system deployed should be governed by the policy goal of protecting human health. In particular, the monitoring system should help determine types and/or sources of health-harmful pollution and correlations with certain types of industrial activities, land uses or vehicular traffic.

The information collected by monitors must also be analyzed. This will take resources and expertise as well as community

WHAT IS PARTICULATE MATTER?

"Particulate matter," also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. The EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. EPA groups particle pollution into two categories:

- "Inhalable coarse particles," such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter.
- "Fine particles," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air.

—U.S. Environmental Protection Agency

participation. This Action Item recommends two approaches for analyzing the results of the monitoring system:

- Establish formal, ongoing relationships with researchers at universities in coordination with EPA and NJDEP staff and community members. This is a great example of how the City and its universities can work more closely together. There are a number of local colleges and universities with interest and capabilities in research, public health, science, and social justice that may be open to assisting in setting up and analyzing data from monitoring stations. Representatives from these institutions should be invited to participate in the taskforce. The City of Newark should engage in scoping and joint fundraising with universities to obtain resources for the projects.

WHAT IS HEAT ISLAND EFFECT?

The term “heat island” describes built up areas that are hotter than nearby rural areas. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, heat-related illness and mortality, and water quality.

—U.S. Environmental Protection Agency

- Engage Newark high school students in neighborhood-level air monitoring work. Air quality affects young people disproportionately. Understanding that impact and being part of a process that helps address it would serve as a valuable educational opportunity for Newark youth. The taskforce could reach out to high schools to invite participation in research projects performed

in collaboration community organizations, university staff, or staff from EPA or NJDEP. The information collected through these participatory processes should be collected by the Sustainability Office and provided to the Environmental Commission for use in creating the Environmental Resources Inventory described below.

The air quality taskforce should develop a budget for the air sampling stations and monitoring work based upon the level of data that will be required to develop a neighborhood-level picture of the concentrations and sources of air pollution most closely tied to human health impacts. A significant level of funding for this will be required and can come from a variety of sources, including grants to the City, to community organizations, to colleges and universities and from impact fees from new development.

The taskforce should present its findings to the Environmental Commission. The City of Newark’s Sustainability Office will be responsible for integrating recommendations from the taskforce into City policy and program work with advice from the Newark Environmental Commission.

Action Item 2:

REDUCE DIESEL POLLUTION FROM TRUCKS AND OTHER VEHICLES

A large body of research points to the health hazards associated with exposure to diesel exhaust, especially from older trucks. Newark has many sources of diesel pollution. Major and minor highways criss-cross the city, carrying a continual flow of traffic. The seaport and airport activities involve the use of heavy diesel-fueled equipment and vehicles. Of particular concern is the exhaust from diesel trucks. Trucks often idle for hours a day at multi-modal transfer facilities and distribution centers at the Port. Smaller delivery trucks serving the city’s industrial and commercial properties drive and idle through residential neighborhoods of the city. The cumulative impact of all these trucks contributes to health problems, especially for those living, working, or going to school near major sources.

According to the U.S. Environmental Protection Agency (EPA), for every gallon of diesel fuel burned, 22.2 pounds of carbon dioxide is emitted into the atmosphere.

An idling truck consumes approximately 0.8 gallons of fuel for each hour of idling, according to the EPA (A Glance at Clean Freight Strategies: Idle Reduction, February 2004, EPA420-F-04-009). Idling also expels other pollutants including particulate matter, oxides of nitrogen, various

hydrocarbons and carbon monoxide. These pollutants adversely affect both workers and residents, contributing to increased rates of illnesses and death in the community. The World Health Organization recently classified diesel pollution as a carcinogen, putting it on par with second-hand smoke.

Newark should look at diesel pollution as a health hazard and take aggressive steps to reduce emissions from trucks and other vehicles. The strategy may include:

- Improved enforcement of existing Anti-Idling Laws, Truck Route rules and the State executive order on diesel mitigation
- Expansion of diesel retrofit programs
- Expansion of plug-in and shore power technologies at warehouses and distribution centers and exploration of electrified truck stop for independent contractors
- Facilitation of upgrades to cleaner vehicles for City-owned or City-subsidized fleets
- Land Use and Zoning rules that increase the efficiency of truck travel and minimize impact of diesel emissions on vulnerable populations

ANTI-IDLING AND TRUCK ROUTE ENFORCEMENT

New Jersey has a law on the books prohibiting vehicles from idling their engines for longer than 3 minutes. There is also a State executive order mandating retrofit of public vehicles.

Newark has locally designated truck routes designed to keep heavy truck traffic away from residential areas. All these rules are tools that communities and the City can use to reduce health impacts of diesel pollution. Improved enforcement is a key starting point for realizing the benefits of these rules.

One barrier to enforcement can be lack of awareness among local agency staff about the anti-idling law. In particular, a feature of the State law makes it possible for fines from idling tickets to be redirected back to the enforcement agency to off-set the cost of enforcement. The City of Newark Sustainability Office and NJDEP should work with the Newark Police Department and the Director of Neighborhood and Recreational Services to offer trainings for precinct captains and code enforcement personnel. Trainings should cover the nuts and bolts of ticketing for idling offenses and recouping the costs through fines. Training should be focused first in precincts where idling is a problem identified by residents and community organizations. Anti-idling enforcement strategies used in other communities where staff and resources are scarce should inform the trainings. These may include deployment of cameras in “hotspots” to conserve staff time. The possibility of training and deploying special officers may also be explored.

Community organizations and concerned residents can play an important role in identifying places where trucks and buses frequently idle. Idling that takes place close to residential areas or next to institutions such as daycares, schools, or healthcare facilities is particularly problematic. One approach for engaging the community in gathering information about hotspots is for the Environmental Commission and Sustainability Office staff to put out a call for snapshots or reports of idling offenses to be collected during a specific advertised period of time. Samples can be provided to facilitate participation by a wide range of community organizations and residents. The results should be collected and reviewed at an Environmental Commission meeting. Based on the results of this activity, the Environmental Commission and Sustainability Office staff can create a map. Information from this map would become part of the Environmental Resources Inventory discussed below.

Once hotspots are identified, the City of Newark, in partnership with NJDEP, should reach out to property owners to seek cooperation in deploying “No Idling” signs that include instructions to the public on how to call in offenses. Sustainability staff should ensure that City employees at the 4311 hotline are trained in how to field and refer complaints from residents about truck idling or route violations. Outreach material should stress that New Jersey law allows both property owners and vehicle owners to be fined for idling offenses.

The Sustainability Office together with the Environmental Commission, partner community organizations, and the NJDEP should explore developing an education and outreach campaign

NEW JERSEY IDLING REGULATIONS

Maximum Idling Time: 3 minutes (15 minutes if stopped for 3 hours or more when temperatures are less than 25 degrees Fahrenheit)

Fines: \$100 for first offense, \$200 for second, \$500 for third, \$1,500 for fourth and subsequent offenses (NJAC 7:27A3.10(m)14)

Penalties: For commercial vehicle and property owner: \$250 for first violation, \$500 for second, \$1,000 for third and each subsequent offense.

Exceptions:

- Traffic Conditions
- Mechanical Operations
- Waiting or being inspected
- Performing emergency services
- Being repaired or serviced
- Auxiliary power unit/generator set, bunk heaters; etc.
- Sleeper berth with 2007 or newer engine or diesel particulate filter

—New Jersey Administrative Code Title 7, CH. 27-14-3.

targeting truck drivers, fleet owners, and owners of warehouse and distribution centers. This effort may include mailings, direct distribution of brochures, and volunteer time spent on outreach at popular idling spots. Materials should educate truck drivers about the health dangers to themselves and the community of idling or violating truck route rules, and communicate the laws and the enforcement policy to drivers, distribution centers and fleet owners. Consideration should be given to increasing the penalties above the New Jersey statutes to create a stronger deterrent in the “hotspot” or with repeat offenders.

New Jersey’s Idling Laws are fairly restrictive compared to the national average. Many states limit idling to 5 minutes in duration, while some states extend allowable limits up to 15 minutes. Fines range from warnings for a first offense, to no greater than \$1,000 for subsequent offenses; most fines range between \$50 and \$150.

DIESEL MITIGATION RESOURCES

National

The Federal Highway Administration of the U.S. Department of Transportation has been encouraging truck stop electrification (TSE) through Congestion Mitigation and Air Quality (CMAQ) funds. While it appears these funds are not available for private development, with the rising cost of fuel private ventures for truck stop electrification are becoming more financially viable.

The EPA has had partnerships between various freight industry sectors in establishing incentives for fuel efficiency improvements and reduction of greenhouse gas emissions. One of the three primary components of the program identifies the reduction of all unnecessary engine idling (www.epa.gov/smartway).

The Clean Cities Program is part of the Office of Energy Efficiency and Renewable Energy's (EERE's) Vehicle Technologies Program of the U.S. Department of Energy (DOE). Their website provides a summary of federal and state idle reduction programs, incentives and financing alternatives available. www.eere.energy.gov/afdc/incentives_laws.html.

Federal Excise Tax Exemption—In the Energy Improvement and Extension Act (EIEA) of 2008 (PL 110-343), Section 206 excludes certain idling reduction devices and advanced insulation from the federal excise tax. This law amends section 4053 of the Internal Revenue Code.

EPA's Diesel Emission Reduction Program's (DERA) competitive grant opportunities: <http://www.epa.gov/cleandiesel/grantfund.htm>.

The EPA also provides localities with guidance documents on reducing diesel pollution. These include:

- Tips for a Successful Diesel Retrofit Project: <http://www.epa.gov/cleandiesel/tools/tips-for-success.htm>
- Cleaner Diesels: Low Cost Ways to Reduce Emissions from Construction Equipment: <http://www.epa.gov/cleandiesel/documents/I00r07002.pdf>
- NEDC Model Contract Specifications: <http://northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf>

State

N.J. Department of Environmental Protection's (NJDEP) Stop the Soot campaign (www.stopthesoot.org) provides signs and citizen tickets at cost and has already funded staff that is available to assist localities with implementation of anti-idling efforts.

Local

The Idle Reduction Technology Grant through the New Jersey Trucker's Challenge, established by the NJDEP, provides funding for the purchase or installation of idle reduction equipment used in New Jersey-based heavy-duty diesel trucks. Eligible equipment includes Auxiliary Power Units (APUs) and other emissions reductions technologies. The program pays for 50 percent of the cost of an APU up to a maximum of \$4,500. The New Jersey Motor Truck Association administers the program.

DIESEL RETROFIT EXPANSION

New diesel vehicles must meet stringent emissions standards, while older diesel engines emit high levels of pollution and can operate for decades before being replaced. New Jersey's *Diesel Retrofit Law* was passed in 2005 to address this issue by mandating the use of emission control technology on certain older vehicles and equipment. Required retrofits ranged from diesel particulate filters (DPFs) to diesel oxidation catalysts (DOCs) and other tailpipe attachments that filter pollutants. The intent of this regulation is to target vehicles that have a large operational presence, reducing harmful diesel exhaust affecting cumulative air pollution. The law mandates that the following vehicles be retrofitted with emission control systems: garbage trucks that are publicly or privately-owned, New Jersey Transit buses, privately owned commercial buses, and publicly owned heavy-duty on-road and non-road vehicles.

There is no cost to cities to install the emission control technology or what has been labeled 'BART'—the best available retrofit technology. New Jersey contracts with authorized installers eligible to perform the retrofit and reimbursing them for installation costs. A list of authorized retailers can be found here: <http://www.state.nj.us/dep/stophthesoot/Authorized%20Installer%20Chart.pdf>.

The *Diesel Retrofit Law* is implemented by the Mandatory Diesel Retrofit Program, with which the City of Newark currently complies. To date, there have been 33 solid waste collection vehicles retrofitted with a diesel emissions control device. In addition, the NJDEP is currently reviewing the City of Newark's request to retrofit a total of 108 on-road and off-road diesel vehicles (as per the timelines established in the regulations). Newark has been an active and responsive participant in this program. (Private haulers contracted by the City should also comply with the retrofit rules. This is discussed further in the section on municipal fleets below.)

Expanding the uptake rate of diesel retrofit in the private sector could have substantial health benefits if the reach of the program were sufficiently large. Current laws do not require most private trucks to undergo retrofits. The air quality taskforce may wish to consider scoping projects that provide incentives or otherwise facilitate diesel retrofits for delivery trucks, trucks that serve the port, and trucks that refuel at Newark gas stations. These upgrades can be made mandatory for companies receiving City incentives.

NJDEP requires offset payments for projects seeking air permits that exceed threshold emission levels for certain pollutants. The agency also collects fines for violations of requirements associated with air permits. Both types of payments can serve as potential funding sources for diesel pollution mitigation in Newark, to the extent that the mitigation projects meet the agency's requirements. The City should work with NJDEP staff

and local businesses to develop projects that are pre-approved by NJDEP as eligible for offset or compliance-related projects. By linking offset and penalty payment funds to well-vetted mitigation projects, the City and NJDEP can build a resource base to address some of the most intractable air pollution problems in Newark.

FACILITIES INFRASTRUCTURE IMPROVEMENTS

Technology exists that allows trucks waiting at loading docks, commercial truck stops, distribution centers, and warehouses to turn off their engines while still running internal climate control systems and keeping the engines warm. These generally consist of plug-in stations—termed “shore power”—that run on electricity from nearby buildings. Keeping the engines off eliminates needless consumption of diesel fuel and reduces air pollution.

Many state-of-the-art distribution centers now provide shore power connections at loading docks to run truck electrical systems, refrigeration, and climate control. At commercial truck stops, where trucks often idle during rest and waiting periods, the shore power stations can be elaborate, providing telephone, Internet and cable television in addition to the electrical power, as well as a means to pay via credit card.

A BETTER TRUCK STOP

At commercial truck stops, where trucks often idle during rest and waiting periods, shore power stations can provide telephone, Internet and cable television in addition to electrical power. For example, IdleAir, a commercial service found at truck stops throughout the country, allows truck drivers to turn off their diesel engines and still enjoy heat, cooling, standard electric inside and outside the cab, and many more of the comforts of home—all while saving money and getting better sleep without the noise, vibration and exhaust from idling.

At distribution centers, the provision of shore power requires the installation of electrical outlets at the exterior of all loading docks and running a power supply to these outlets. Since power is already provided at the loading docks to operate the overhead door and dock leveling equipment, the expense is minimal. The cost of the electrical power supplied to the truck is offset by reduced fuel consumption for facilities that own their own

fleets. The City should consider developing and implementing an outreach campaign targeting owners of distribution centers to make them aware of the technology for both shore power and cleaner trucks and to provide them with information about any incentives or rebates available to offset the cost of upgrades.

In addition to outreach and channeling information about rebates, Newark can promote these technologies by adopting revisions to the city's Zoning Ordinance directed at new facilities with multiple loading docks and at new truck stops. These facilities should be required to include shore power capacity in Site Plans in order to obtain Site Plan approval. Enforcement would be implemented through the permit, application and review process associated with planning and zoning approvals. Installations should include signage in English and Spanish to ensure that all drivers are made aware that the facility has a no idling policy and that shore power is available. These standards can also be applied to facilities receiving City incentive packages.

As discussed in more depth below, the City of Newark participated in a collaborative process to develop the Clean Air Strategy of the Port Authority of New York and New Jersey (PANYNJ). The document incorporates a commitment to exploring upgrades, including shore power, to reduce emissions associated with idling trucks, ships, and cargo equipment at the Port. Some warehouses have already been upgraded on a voluntary basis. The City should re-engage with both PANYNJ and with Port tenants to assess progress to date on plan implementation and identify next steps. Expanding shore power is one possible joint initiative within the partnerships and agreements discussed there.

Another possible project promoted by advocates and mentioned in the Clean Air Strategy involves the allocation of resources to developing an electrified truck stop for independent truckers equipped with shore power capability. These contractors drive some of the oldest trucks at the Port and have very few resources available to upgrade to cleaner technology because of low pay scales associated with federal labor classification status that prevents them from joining a union. Developing an electrified truck stop would improve both air quality and working conditions for these workers. Identifying resources and real estate for such a project would take time, but may serve as a point of discussion between the City and PANYNJ.

The impact of electrifying one truck dock can provide nitrogen dioxide (NO₂) reductions equal to removing about 300 cars and light trucks, from the road.

—EPRI AUGUST 2004, ELECTRIC TRANSPORTATION

FACILITATION OF UPGRADE TO CLEANER VEHICLES FOR CITY-OWNED AND SUBSIDIZED FLEETS

The City of Newark provides development support to a variety of projects, including some with truck intensive uses. To the extent that the City is providing tax abatement or other business assistance to a project that involves trucking, it should consider incorporating minimum emissions standards into its support package. In addition, the City can channel information about rebates for alternate fuel programs, diesel retrofits, and other emission reduction strategies to private fleet owners through direct mail, brochures, and materials distributed in collaboration with Brick City Development Corporation. Since these programs often generate savings for private fleet owners in terms of fuel costs, they may be considered a business benefit.

CITY FLEETS

Newark owns and operates a large fleet of vehicles used to provide essential services to residents. The fleet of more than 1,400 vehicles is comprised of police cars, sanitation trucks, and fire trucks, ranging in age, make, model, and fuel type. Records indicate that the City spends a significant amount of money to power these vehicles; an estimated \$2.5 million was spent on gasoline and diesel fuel in 2010. In addition to the monetary cost, these vehicles adversely affect the air quality in Newark.

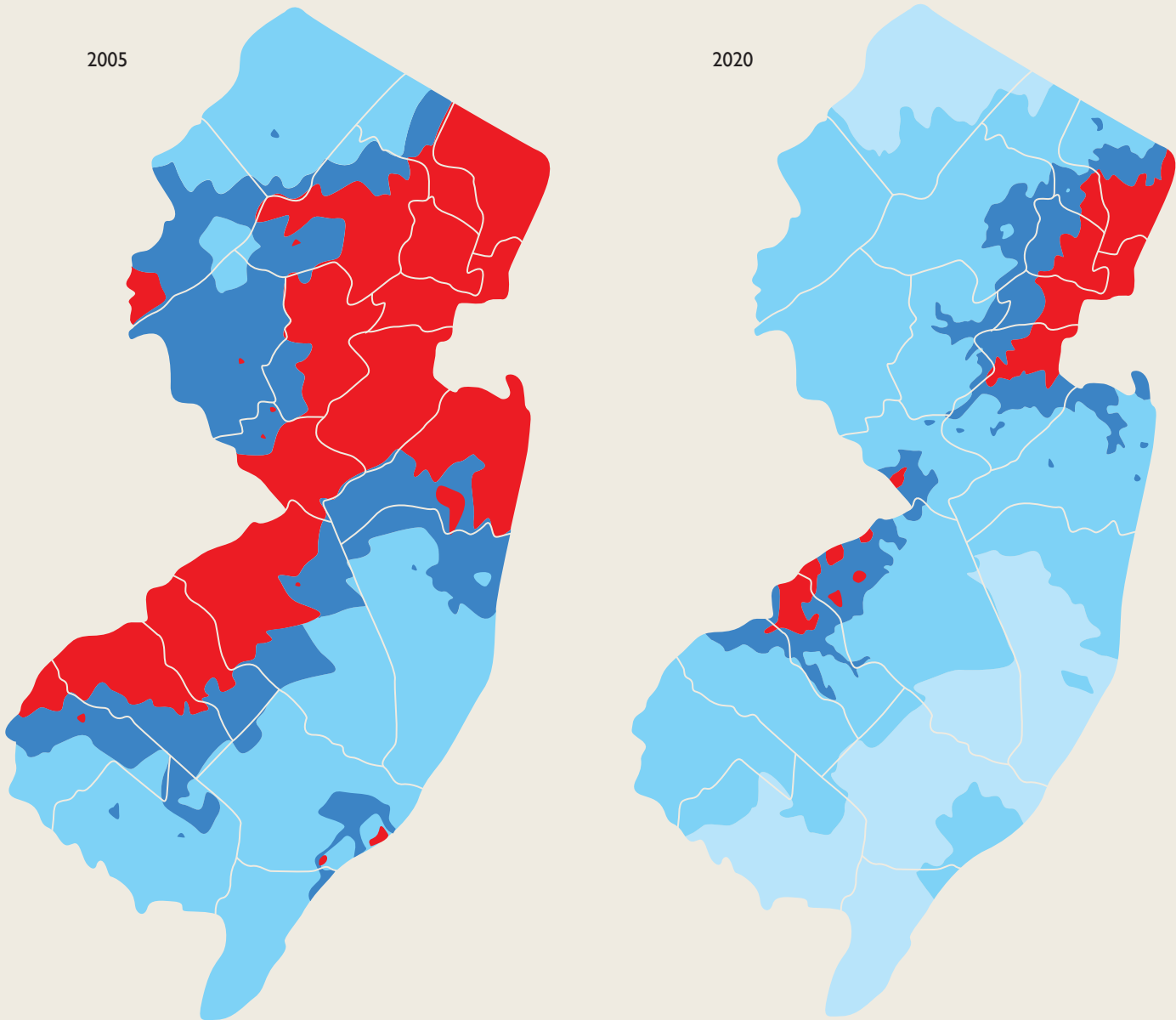
The City of Newark can and should reduce its costs for fuel, along with associated air pollution and greenhouse gas emissions, and at the same time set an example to the public and the private sector about the value of fuel efficiency and air pollution reduction. The Fleets Taskforce will generate and oversee implementation of recommendations to shift the City fleet toward procurement of fuel efficient vehicles, car lease or car share arrangements to reduce unnecessary driving, compliance with State law on diesel retrofits, and alternate fuel strategies. In particular, the sanitation fleet which relies on diesel fuel and runs exclusively through residential neighborhoods should be prioritized for upgrade to Compressed Natural Gas fuel.

Possible cleaner fuel upgrades for all City vehicles include:

Hybrid Vehicles

Hybrid vehicles can offer large savings in annual fuel cost, while also boasting vehicle procurement prices that are equivalent to that of conventional models. Though electric vehicles are currently more expensive upfront than are gasoline-powered machines, they offer the potential to save significant sums of money over time, in fuel and maintenance savings. By some estimates, electric vehicles may be 40 percent to 70 percent less expensive to operate, depending on gasoline prices and distance traveled each year. The Sustainability Action Plan encourages the Newark Department of Motors to consider

ESTIMATED DIESEL PARTICULATE RISK IN NEW JERSEY FROM MOBILE SOURCES



Diesel Particulate Risk

- Under 10 times benchmark
- 10 – 50 times benchmark
- 50 – 100 times benchmark
- 100 – 1000 times benchmark
- 1000 – 2400 times benchmark

Maps are based on 2005 NATA concentrations and California risk factor. The 2020 estimates were developed by scaling the 2005 concentrations using state-level emission changes between 2005 and 2020.

While progress across New Jersey continues to be made in reducing air pollution from diesel powered mobile sources, the 2020 map reveals that there are still areas projected to have high risk and thus further actions are needed to reduce that risk. Source: N.J. Department of Environmental Protection

CITY AND REGIONAL BUS CONVERSIONS AND EQUIPMENT REPLACEMENT

In addition to trucks, buses are an important component in improving air quality. A Drew University report completed in June 2011 analyzed and compared the air pollution generated from traffic in Newark's Ironbound community with that of suburban Madison, NJ. It concluded that the Ironbound neighborhood has a 40 percent higher than average level of particulate matter air pollution than Madison. The study identified that the highest levels of pollution correlated with high truck and bus traffic in the sample area. These spikes in pollution included black carbon, particulate matter (2.5 microns or smaller) and ultrafine particulates, all of which have a negative impact on residents' health. Since 2009, NJ Transit has been engaged in the purchase of 250 suburban buses and 895 transit buses, replacing existing bus equipment with newer clean technology diesel vehicles. The outcome of the Drew University study strongly recommended that the City retrofit public transit buses with greener technology in order to immediately begin lessening the particulates emitted into the air and improve the health of the city's neighborhoods.

The City of Newark should consider engaging in discussions with NJ Transit to focus a high priority for the deployment of new clean technology diesel buses, and any planned retrofits, on routes that pass through areas significantly affected by cumulative air quality issues with particular focus on routes in close proximity to schools and residential neighborhoods.

purchasing hybrid or electric vehicles for City personnel driving mainly in municipal boundaries. Beyond the potential to reduce government expenses, such an action would capture public attention and set a precedent of environmental consciousness.

Electric Vehicles

Capacity to charge electric passenger vehicles may make sense in certain locations and for certain purposes in Newark. In particular, if the City determines that moving forward with leasing or purchasing electric cars for code enforcement or other City uses makes financial sense, charging stations in the City employee lot could facilitate this improvement. Other possible strategic locations include airport taxi stands and large downtown garages.

The City of Newark is home to several Edison 'ParkFast' locations, which house electric vehicle charging stations. It would be beneficial for the City of Newark to partner with Edison Parking to use their existing charging stations for electric vehicles, giving government employees easy access in multiple locations.



Newark on a smoggy (February 1, 2005) versus clear (April 5, 2005) day. Photo credit: Northeast States for Coordinated Air Use Management (NESCAUM) and Camnet, Realtime Air Pollution & Visibility Monitoring, www.hazecam.net.

Compressed Natural Gas

Newark already has two stations for Compressed Natural Gas (CNG)—one at the Covanta incinerator and another at the airport. These fueling stations allow heavy-duty vehicles that would otherwise run on diesel fuel to use CNG which is cleaner-burning and (for now) much less costly. CNG may

make particularly good sense as a fuel for City sanitation vehicles, due to their necessary presence on residential streets throughout Newark. Several programs exist that address the incremental cost of a CNG sanitation truck over and above the cost of a new diesel truck. Securing the funds to cover the base cost of the new sanitation truck should be a matter of priority for the City, which currently uses diesel trucks that range from seven to almost twenty years in age.

ZONING AND LAND USE STRATEGIES FOR DIESEL REDUCTION

Another approach to address truck-related diesel air pollution is to minimize the impact of truck intensive uses on residents and workers through zoning and land use changes. The Zoning Ordinance is currently undergoing a review and amendment process. The Sustainability Office is participating in that process to ensure changes reflect consideration for environmental health in a number of areas. In terms of separating diesel exhaust from residents, staff from Sustainability and Planning should collaborate on a proposed amendment to the Zoning Ordinance that spells out performance standards for truck-intensive uses such as material-handling facilities, distribution centers and truck docking facilities and any other commercial or industrial use that involves more than two truck deliveries per week. Meeting these standards would then become a condition of Site Plan approval (described in further detail below). Performance standards could include:

- Location more than one mile away from any vulnerable receptors including schools, daycares, senior centers, public housing, prisons, or detention centers
- Requirement that trucks using the site meet minimum emissions standards to be developed by the Newark Sustainability Office in collaboration with NJDEP and comply with all State and Federal requirements related to diesel emissions. This requirement should be passed through to tenants in the event that a facility will be leased to an operation with truck-intensive use

TRAFFIC SIGNAL OPTIMIZATION

Many people who have driven through downtown Newark can attest to the need for improved traffic sign optimization. Perhaps surprisingly, lack of coordination among traffic lights is also a major source of air pollution and greenhouse gas emissions. Cars and trucks spend much more time stalled at red lights when they are not properly coordinated. Newark has already committed to a plan to address this problem. The new system will replace old traffic controllers and reconstruct and upgrade the communications cables and modules for over 130 signalized intersections and integrate them all into a central traffic control system. The system will provide uniformity in signal timing methods that will allow for system-wide optimal traffic flows that will significantly reduce idling time throughout the City.

- If the facility use involves trucks waiting for delivery or pick-up, facility must submit plans that reflect shore power capability
- Submission of truck route plans that comply with City truck route rules and submit a plan for emissions minimization associated with trucks.

These requirements can be waived for projects using electric, hybrid or CNG trucks.

Action Item 3:

DEVELOP AND IMPLEMENT A CUMULATIVE IMPACT ORDINANCE AND ZONING AMENDMENTS TO MINIMIZE AND MITIGATE NEW POLLUTION

This Action Item addresses the problem of cumulative impact—the combined effects of many sources of pollution, small and large, on ambient air quality. Current regulation on the location of new facilities tends to focus on a comparison between the amount of pollution the facility is projected to emit and a threshold amount. Whether the projected pollution amount is over or under the threshold amount drives the permitting decision. In cities such as Newark, where there is a concentration of polluting facilities, the threshold approach poses challenges in terms of protecting human health and promoting environmental

justice. New pollution sources may be approved in locations with already-high background concentrations of pollution as long as they meet the threshold tests.

The Environmental Justice Advisory Council (EJAC) to NJDEP developed a report titled “Strategies for Addressing Cumulative Impacts in Environmental Justice Communities.” This report highlights cumulative environmental pollution and other threats to public health and makes recommendations based on best practices from other states, such as California.

DID YOU KNOW?

Air quality impacts can be measured in two ways: emissions (how much pollution comes out of the tailpipe or smokestack) and ambient air concentration (how much pollution is in any given breath you take). More emissions tends to mean higher ambient air concentration. But some emissions are more hazardous to your health than others. For example, emissions that happen close to the ground lead to higher pollution concentrations in the air than emissions that happen high in the air. The total combination of all the different types of emissions in the local environment has a **cumulative impact** on air quality. It is important to understand this cumulative impact in order to protect human health and improve quality of life.

The City of Sacramento, for example, developed an Air Quality Management guide to address cumulative air quality impacts and nonattainment contributions. Sacramento's plan determines if a project will result in a net increase of any pollutant for which the project region fails to meet federal air quality standards. NJDEP is in process of developing more fine-grained tools for dealing with the problem of cumulative impact.

To ensure progress on this issue at the local level, in 2011 the New Jersey Environmental Justice Alliance approached the City of Newark about implementing a cumulative impact ordinance and provided a sample document. The goal of the ordinance is to use the local site plan review process to reduce the amount of new pollution being introduced to areas already over-burdened with existing sources. Based on the draft developed by the Alliance, City staff is developing an ordinance to present to the Municipal Council with three major features:

- Proposed industrial and commercial projects (with certain exceptions) will be required to submit an Environmental Impact Statement (EIS) that conforms to a City template. (Current law allows the Engineering Director to request this at his or her discretion. The new ordinance would make submission mandatory.) The EIS must include information on existing conditions, projected pollution and other impacts anticipated from the new project,

alternatives considered to minimize any negative impacts, and mitigation strategies for unavoidable impacts.

- The Newark Environmental Commission and the Sustainability Office would be directed to coordinate the development of an Environmental Resources Inventory (ERI). This document would include information about baseline environmental conditions throughout the city. As it becomes more detailed, the ERI would begin to serve as a point of departure for understanding the cumulative impact of proposed new facilities on given neighborhoods. As noted above, one approach for collecting information for the ERI would be to engage with universities, students, and community groups to conduct neighborhood-level environmental assessments. These could be aggregated into a city-wide assessment over time. Health data and environmental hazard data should be overlaid in the ERI to identify any geographic patterns or correlations that might indicate an environmental health problem requiring intervention.
- The third element of the Cumulative Impact Ordinance would direct any mitigation funds collected as part of Site Plan approval to be spent on project types and in neighborhoods deemed by the Department of Child and Family Wellbeing in consultation with the Environmental Commission to have the greatest need of environmental health projects.

A complementary strategy to the Cumulative Impact Ordinance is a set of revisions to the Zoning Ordinance to strengthen the City's ability to require environmental mitigation or, in some cases, to deny applicants permission to build. One proposal under consideration is to make Industrial Zone uses (with certain exceptions) "Conditional," meaning that they must meet certain conditions in order to obtain approval from the Central Planning Board. The conditions projects must meet would include performance standards relative to the environment. For certain harmful pollutants, the standard would be no net impact, meaning that either the project does not emit that pollutant at all, or, to the extent that it does, it provides mitigation either on or near the site sufficient to net the impact back down to zero for that neighborhood. One way to mitigate would be to pay into a fund that supports mitigation projects, as directed by the priorities developed pursuant to the Cumulative Impact Ordinance. This standard is similar to that required in the City's stormwater ordinance. Because the system is already over-burdened, rules require developers to capture one hundred percent of any incremental addition. Over time, these rules will have the effect of encouraging cleaner development projects and discouraging those that would erode Newark's quality of life. They would also provide an additional funding source for pollution mitigation projects.

Action Item 4:

STRENGTHEN PARTNERSHIPS AND ADVOCACY WORK ON MAJOR EMISSION SOURCES

Newark's air quality problems stem from the combined effects of many sources of pollution, large and small, as discussed previously. But Newark also hosts several major facilities that emit a high volume of pollution annually. To address health impacts associated with emissions from these sites, the City must develop strategies based on partnerships, advocacy, and strategic use of regulatory power. Newark has already engaged with several of these entities around air quality issues. The City participated in the process that led to the development of the Port Authority's Clean Air Strategy. Mayor Booker advocated successfully for the installation of a baghouse filter on the Covanta facility. Newark participates in the Greenhouse Gas Emission mitigation taskforce run by the North Jersey Transportation Planning Authority and is an executive steering committee member for the implementation of a HUD Sustainable Communities grant, both of which involve partnerships with major emitters. This Action Item recommends that the City build on this experience to develop strategies for high-impact pollution mitigation work with major Newark-based emitters.

“Nothing is more fundamental to our wellbeing than the air we breathe,” said Mayor Cory Booker. “As a strong advocate for this upgrade, I am proud to be celebrating today’s major achievement with Covanta and everyone else who made it possible.”

—THE STAR-LEDGER

ENGAGING THE PORT AUTHORITY

The Port Authority owns, manages, or leases a number of large facilities, including the airport and seaport. Activities on Port-owned land include use of heavy-duty equipment and vehicles. According to a 2006 Baseline Inventory published in November 2008, maritime Port activities alone are associated with the following emissions in tons per year: (Note: these figures do not include airport or major stationary source emissions on PANYNJ property.)

Ocean-going vessels and cargo handling equipment accounted for the bulk of these emissions. However, heavy duty truck may be more closely linked with adverse resident health impacts,

since they operate at ground level, closer to workers, residents and pedestrians.

PANYNJ released its Clean Air Strategy document in 2009 outlining plans for voluntary emissions reductions in a variety of categories, including ships, cargo equipment, trucks, and rail (See <http://www.panynj.gov/about/port-initiatives.html> for more information and copies of the report.) The Clean Air Strategy is intended to reduce emissions over the ten years after the report release, despite major port expansions and anticipated increases in traffic. Emission reduction goals in the Strategy include an annual 3 percent net decrease in criteria pollutants over 10 years (totaling a 30 percent reduction over the 2006 baseline) and an annual 5 percent net decrease in greenhouse gas (or 50 percent decrease from the 2006 baseline) over the same period (See www.panynj.gov/about/pdf/CAS-FINAL.pdf). Initiatives of the Clean Air Strategy include upgrades to cargo handling equipment, an incentive-based phase-out of high sulfur fuel for ships, incentive-based phase out of pre-1994 trucks for 2004 or newer trucks, a loan program to facilitate truck upgrades, and investments in rail and harbor craft upgrades. The actions in the document are voluntary rather than mandatory. This has raised concerns among Environmental Justice advocates about their effectiveness. Advocates have also pointed to the link between working conditions for truck drivers at the port and their financial ability to upgrade to cleaner fleets. To learn more about the Clean and Healthy Ports campaign, visit <http://cleanandsafeports.org/new-yorknew-jersey/about-the-campaign>.

The City of Newark should re-engage with PANYNJ on implementation of the Clean Air Strategy, with a focus on identifying mutually supported projects that achieve reductions in pollution. The City should also consider engaging the Port Authority on how current activity and planned expansions affect Newark residents in terms of economic opportunity. As the owner of the land beneath the Port, the City has some oversight capacity. One approach to consider is a negotiated agreement linking Port expansion with increased access to job and business opportunities for Newark residents and increased progress on pollution reduction. Engagement with the Port Authority should include regular staff meetings on environmental issues and at least one public meeting per year to report on progress made toward the goals of reducing pollution

PM 10	PM 2.5	SO2	NOX	VOC	CO	CO2 Equivalents (Greenhouse Gas)
537	452	3,595	7,800	413	1,434	591,053

Clean Air Strategy for the Port Authority of New York & New Jersey, October 2009.

NEWARK CLEAN AIR VICTORY! COVANTA REACHES AGREEMENT WITH STATE AND PORT AUTHORITY FOR THE INSTALLATION OF A BAGHOUSE

Since the 1990s, Newark has hosted the region's waste processing facility, which accepts household trash from Essex County, New York City, and the surrounding metropolitan area. The plant combusts the waste and makes electricity. Ash residue is trucked to a landfill. The facility sits on land owned by the Port Authority of New York and New Jersey. Construction of the facility was funded by the Port Authority, Essex County and American Ref-Fuel Company. American Ref-Fuel was the original operator, but operations were acquired by Covanta Energy Corporation in 2005.

The facility uses various technologies to reduce the emissions produced in the combustion process. For years, local advocates fought the placement of the facility in their neighborhood and then focused on pushing the facility to upgrade to more state-of-the-art filtration technology: a "baghouse" that would capture more emissions, especially of particulate matter, which is linked to respiratory illness. The complicated ownership structure of the facility and the fact that the facility's emissions with the current systems met existing annual State standards meant that the filter upgrade was not required by the State or provided voluntarily by the property owners.

However, in early 2012, after years of community activism, and with the support and leadership of Mayor Booker, along with State and County officials, the Port Authority and Covanta, it was announced that an agreement had been reached to upgrade the facility and install baghouses for all three boilers at the facility by 2016. In advance of the baghouse construction, Covanta will also be hosting a new compressed natural gas (CNG) refueling station, which will allow sanitation trucks with CNG capability to use a cleaner burning fuel than diesel. In addition, the company will be installing a new metal recovery system that will significantly increase the amount of metals recovered for recycling on an annual basis. The partners involved in the transaction have expressed interest in continuing to work with the City and the community on additional improvements and outreach programs.



Pollution from stacks by the Passaic River caused by electricity generated to meet “peak” demand during hot summer months Photo credit: Damon Rich.

and greenhouse gas emissions associated with port activity and expanding economic opportunities at the port for Newarkers.

ENGAGING OTHER MAJOR ENTITIES

Entities to engage in dialogue about air pollution impact and mitigation include:

- **Passaic Valley Sewerage Commission:** This facility processes sewer waste from a broad region of northern New Jersey. Advances in technology have allowed wastewater treatment plants around the country not only to reduce their energy use, but to become energy generating. City of Newark should seek to engage PVSC to support upgrade strategies that are both cost effective and environmentally beneficial.
- **Covanta:** The company recently helped broker a deal to upgrade its stacks to baghouse technology. However, much of the municipal waste processed at the facility is still unsorted. This leads to pollution, as inappropriate materials are incinerated, and to lost opportunities in finding the “highest and best use” for the materials. The City should seek to develop programs with a range of partners to divert as much as possible all basic recyclables, small electronics and small household hazardous waste from the

facility. Scoping the diversion of plastics or organic waste may offer a promising partnership opportunity.

- **PSEG:** The regional utility owns energy generation infrastructure in the region that affects Newark’s air quality, including several “peaker” plants in Newark that provide power during hours of high demand. These peakers emit pollution relatively close to the ground and tend to run on the hottest summer days when ozone formation is greatest. They are due to phase out or upgrade by 2015 based on new state regulations. The City should engage with PSEG to explore ways to accelerate this phase-out by reducing peak demand for energy. Participation of Newark residents in PSEG energy saving and retrofit programs should also be explored. (More on this in the Energy chapter.)
- **Companies with major air pollution emission permits from NJDEP:** Several Newark companies must obtain permits from the State to emit a large, controlled amount of pollution. Local examples include Anhauser Busch and the University of Medicine and Dentistry of NJ. The City should initiate contact with these companies to discuss mitigation strategies, including those funded through required offset payments through NJDEP.
- **Major Airlines:** Newark Liberty International Airport is the hub for several major airlines, many of which have commitments to sustainability and community engagement. The City should continue to develop relationships with airlines. Some airlines, such as United, have already engaged their employees in tree planting events with the Newark community. These activities can be replicated by other firms and scaled up to achieve greater benefit.
- **Business and Trade Associations:** From the Port Truckers Alliance to the new Manufacturers’ Roundtable, Newark has a number of membership-based entities for businesses that have an emissions profile. The City should work with existing relationships and seek to develop new ones to ensure dialogue about best practices, new rules and regulations, and incentives for emission reduction technologies.

Action Item 5:

PHASE OUT USE OF NUMBER 6 AND NUMBER 4 HEATING OIL IN BUILDING BOILERS

Buildings that use heavy heating oil emit large quantities of particulate matter into the air through their venting systems and chimneys. This pollution is especially harmful because it is emitted so close to the ground in residential areas. Particulate matter irritates the lungs, contributes to asthma in children, and increases the risks of heart attacks and premature death.

Recently, in New York City, the law has been changed to require all buildings with boilers using Number 6 oil to be replaced by low-sulfur Number 4 oil by 2015. The use of Number 4 oil will be banned by 2030 and all buildings must burn cleaner fuels.

While Newark has fewer buildings that burn heavy heating oil, the impact on air quality is sufficiently large to warrant aggressive action. The City should gather information on the number of large buildings in the city using heavy heating oil. Building owners and managers should be approached to explore options for upgrading heating oil as part of a comprehensive energy upgrade, using supports from public and private programs. The City has access to \$3 million in boiler upgrade funds associated with a recently negotiated settlement approved by the Municipal Council. This agreement facilitates upgrades that will be paid back over time out of energy savings. This project can form the basis of a larger initiative to remove heavy heating oil as a building fuel from the city altogether. If major oil-burning buildings remain after the end of the voluntary conversion program, Newark should assess the benefit of pursuing a legislative ban approach similar to the one taken in New York City.

Action Item 6:

ROLL OUT A “GREEN AND HEALTHY HOMES INITIATIVE” FOR NEWARK FOCUSED ON HOMES WITH CHILDREN WITH ASTHMA

Most people in today’s U.S. spend the great majority of their time indoors. Indoor air quality has an important impact on our overall health and quality of life. Newark’s childhood asthma rates are estimated to be substantially higher than county and state averages, with the increase attributable in large part to the poor air quality in their immediate environment. The combination of poor outdoor air quality and older buildings that may have dust, mold, lead, poorly maintained ventilation systems, and other problems means that already-vulnerable children are exposed to many triggers for asthma attacks when they are in their homes. Asthma attacks are not only painful and frightening, they lead to missed school days and reduced ability to exercise, play, and participate in community life. They also pull parents away from work, leaving them potentially more economically vulnerable.

The City’s Department of Child and Family Wellbeing is already working to remove health hazards from the homes of children with asthma through a Health Homes Program funded through the U.S. Department of Housing and Urban Development (HUD). There are several organizations in Newark that provide weatherization services, helping families bring down their energy bills by making minor home repairs and equipment upgrades. These services are currently not well coordinated.

The Green and Healthy Homes Initiative (GHHI) is a federally-supported nonprofit effort to bring together energy, air quality, and health and safety intervention programs for residential housing. The goal is to serve more families by leveraging existing programs more effectively. Each family served by any

In addition to the steps above, the City should explore passing an ordinance or amending its building code regulations to require highly cost effective energy efficiency measures either for all buildings or at point of sale as one of the requirements for obtaining a Certificate of Occupancy or a Certificate of Continuing Code Compliance. These measures could include, for example, requiring building owners to equip all the residents’ radiators with functioning shutoff valves or thermostatic radiator valves and working steam traps. Steam systems, which are used mostly in large commercial and residential buildings, well-maintained steam traps can reduce fuel consumption by 10 to 20 percent. Other options include Energy Star appliances or venting and HVAC systems that comply with Energy Star Indoor Air Quality standards. (See the Green Building section for a more thorough discussion of voluntary options.)



Newark Public Schools, December 4, 2008—The Newark Public Schools District was honored with the U.S. Environmental Protection Agency’s (EPA) 2008 Indoor Air Quality Tools for Schools (IAQ TFS) EXCELLENCE AWARD for its exemplary efforts to improve indoor air quality for students, teachers, and staff. Photo credit: Rodney Williams.

of the programs will end up with a comprehensively “green and healthy” home. The program has been piloted in fifteen cities around the U.S. and has shown effectiveness particularly in reducing asthma hospitalizations for children. Existing residential programs that traditionally do not coordinate with one another and could be brought into one conversation through this initiative include lead abatement, weatherization, home health inspections, home repair, mold, asbestos, radon inspections, and energy efficiency retrofits. Savings and efficiencies as well as innovative ideas and help with case management result from bringing all these services to “one table” to address housing problems holistically.



Photo credit: Bryan Katz

PRIORITY TWO

Energy



VISION

Newark will reduce energy consumption through conservation, efficiency and clean energy, smart grid and alternative fuel technologies. Newark will support and implement demand-side management principles and greenhouse gas emission reduction strategies in buildings and operations, especially during peak hours. The City will be a leader in energy efficiency by developing and implementing a comprehensive municipal energy strategy. Through addressing its own energy consumption, the City will provide leadership and serve as a demonstration project for residents and businesses on how investing in energy conservation measures can save money and fund other capital improvements. All work on energy will also address and improve indoor air quality in order to enhance public health. In Newark's sustainable future, the City's energy strategies will result in significant savings, improved quality of building stock, cleaner air and increased economic viability for government, households and local business.

CHALLENGES

Energy prices in New Jersey are among the highest in the country, and the cost of energy falls disproportionately on the older, less well-maintained buildings typical of New Jersey's largest city. Newark residents, businesses and government agencies pay a high price for energy to begin with, buy more of it because of inefficient buildings and equipment, and often face challenges in taking advantage of programs designed to alleviate energy cost burdens. The energy used in Newark's buildings, streets and vehicles also negatively impacts the environment and public health, especially diesel fuel or combustion-based electricity generation and building heating fuels that worsen the air quality for everyone who lives or works in Newark. Strategies must be thoughtful to avoid unintended consequences. For example, as efficiency improves, consumers may choose to buy more energy rather than less. As with other categories in this Plan, moving toward sustainability in energy use involves challenges in changing individual behavior and changing major systems.

ACTION ITEM SUMMARY

- Reduce the City of Newark's municipal energy consumption by 20 percent over the next five years
- Facilitate energy use reduction and clean power in commercial, institutional and residential sectors
- Explore and support alternative energy and distributed generation development
- Promote and enhance green building and design principles for development projects



Action Item 1:

REDUCE THE CITY OF NEWARK'S MUNICIPAL ENERGY CONSUMPTION BY 20 PERCENT OVER THE NEXT FIVE YEARS

The City of Newark owns and manages more than 100 buildings, 76 of which are in active use by City employees. In 17 of the City's most energy intensive buildings, municipal government used approximately 15,327 megawatts of energy during the year between the fall of 2009 and summer of 2010. According to the U.S. Department of Energy, local governments can spend up to 10 percent of their annual operating budgets on energy, a portion that is likely to grow as energy prices rise. This Action Item commits the City of Newark's municipal government to reducing its energy use by at least 20 percent below a 2010 baseline within five years of the release of this Plan through a combination of auditing and benchmarking, retrofits, operations and maintenance improvements, and old-fashioned conservation. These strategies to reduce energy demand are designed to meet the energy saving goal while at the same time saving taxpayer dollars and stimulating demand for jobs and contracting opportunities for Newark residents in the clean power sector. Through implementing these strategies, the City will set the context for challenging all sectors within Newark to match or beat the City's energy savings goal.

The City's energy strategy will be formulated and implemented through a Municipal Energy Taskforce, coordinated by the Chief of Energy and Environment and including representatives from the Office of the Mayor, the Business Administrator, Economic and Housing Development and the Engineering Department. The Taskforce will be responsible for municipal energy policy

development, setting milestones for implementing the policy, and determining time frames and responsibilities for reaching those milestones. Areas of additional responsibility include making decisions related to the City of Newark's energy supply, distributed resources and energy delivery infrastructure and assigning clear roles and responsibilities to Taskforce members and their departments for carrying out these decisions. This approach will help break down silos across departments, facilitate information sharing, and allow the Business Administrator and the Mayor to make well-informed choices about the wise deployment of resources for meeting the energy needs of City government. The Taskforce will help oversee the implementation of the initiatives listed below in order to move toward the goal of a 20 percent energy use reduction over the next five years.

CONDUCT ENERGY AUDITS, ESTABLISH ENERGY BASELINES, INSTALL BUILDING MANAGEMENT SYSTEMS, AND IMPLEMENT ENERGY CONSERVATION MEASURES IN THE CITY'S MOST ENERGY INTENSIVE BUILDINGS

Energy Audits

In 2010 the City conducted Level 1 energy audits on 17 municipal buildings with the highest energy bills through the New Jersey Office of Clean Energy's Local Government Energy Audit program. The audits were the first step in developing a comprehensive energy strategy, identifying and quantifying cost-saving energy conservation measures for City buildings.

Auditors inventoried mechanical systems and observed existing conditions and current building operations for the purpose of identifying energy conservation measures ranging from inexpensive, simple fixes with immediate paybacks to more expensive upgrading of lighting and boiler systems. Implementing all of the energy conservation measures the auditors recommended for these 17 buildings could result in an estimated 19 percent energy savings and a greenhouse gas emissions reduction of 2,269 tons of carbon dioxide.

Identify Baseline of Municipal Energy Usage

A baseline of energy usage must be established in order to track, measure, and verify the impact of energy conservation measures. The Sustainability Office, along with selected consultants, will use this information to create energy baselines or benchmarks and to set aggressive yet achievable reduction goals. The Energy Taskforce will assist by compiling critical building information such as size, occupancy, energy consumption history, functionality, etc., and creating a database on building energy performance. The EPA's Portfolio Manager tool can be used to identify the most cost-effective and strategic energy retrofit projects that will allow the City to reach and exceed its 20 percent energy reduction goal.

Building Management Systems

A Building Management System (BMS) is a computer-based system that automatically controls and monitors building mechanical and electrical systems and allows the City to track energy use in real time. A comprehensive BMS groups control of heating, air conditioning, ventilation, boilers and lighting systems and can result in significant energy savings.

The City used a portion of its EECBG funding to install a pilot BMS program to monitor and track the energy usage in five municipal buildings and identify opportunities to reduce energy consumption by eliminating inefficiencies without adversely affecting operations or the comfort of municipal employees. This BMS program also allowed the City to participate in a program called Demand Response that provides payments from the electricity grid in exchange for the City demonstrating the capacity to reduce its electricity use on demand in the event that the electricity grid becomes strained due to high demand (usually during hot days in the summer months). Expanding participation in Demand Response throughout the city would increase overall resiliency and reliability of the electricity grid in Newark. The City's pilot project serves as a basis for outreach to large property owners to consider participation.

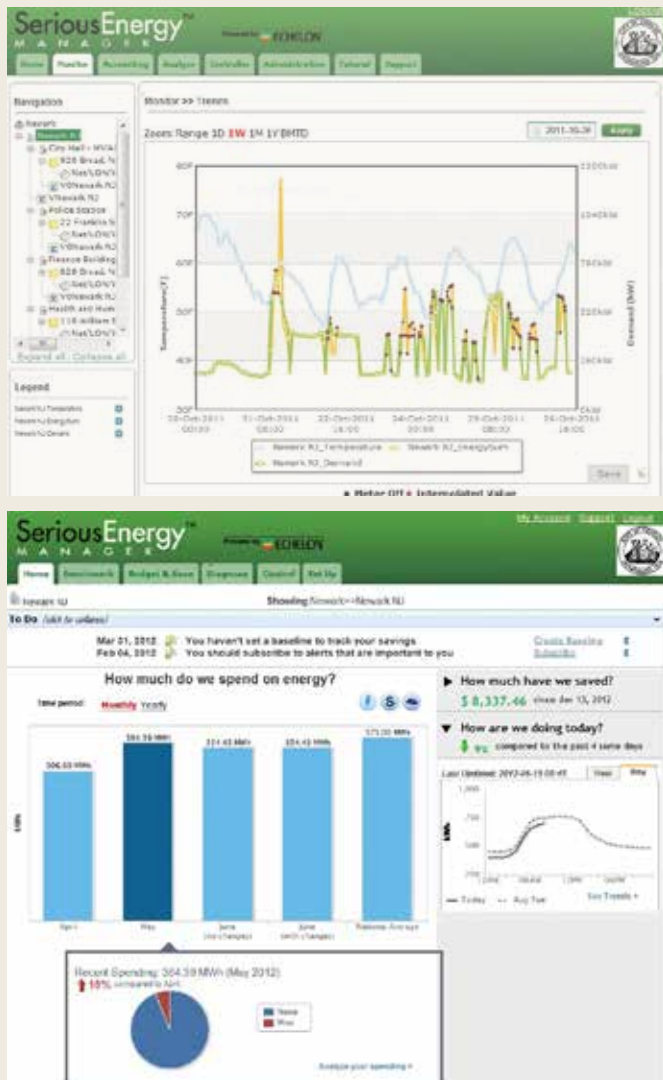
The City will look to expand the BMS pilot program by installing a comprehensive building management and controls systems in every municipal building where energy conservation measures or energy retrofits are performed. In buildings or facilities where BMS has yet to be implemented simpler measures should be taken to track energy usage and conservation.

LEVERAGING STATE AND FEDERAL DOLLARS FOR ENERGY EFFICIENCY

Newark received just over \$2.8 million in 2009 through the Energy Efficiency and Conservation Block Grant (EECBG) program administered by the U.S. Department of Energy as part of federal stimulus legislation. These funds have allowed the City pursue a number of goals including energy use reduction, greenhouse gas emissions assessment, waste reduction, community engagement on green neighborhood pilot projects, and the development of this Sustainability Action Plan, all while stimulating job creation in Newark. EECBG funds helped the City begin to implement energy efficiency program by leveraging existing State and Public Utility funding and programs to install energy efficient lighting and heating as well as building energy management tools, all without drawing on City funds. To date, municipal energy projects have included participation in the NJ Local Government Energy Audit program, the PSE&G Direct Install Program, energy decision support tools and direct retrofit work that replaced HVAC units and inefficient boilers at City Hall and at one of Newark's most popular recreation centers.



Much of the associated energy savings from a BMS depends on how inefficiently a building is operating before a system is installed, with the average projected savings being between 5 and 15 percent. Older, poorly maintained buildings generally see higher savings. Given existing building stock and completed



Real-time building energy use as displayed in City's building management program. Photo credit: The City of Newark.

energy audits, Newark is likely to achieve at least 15 percent energy savings in most buildings where it installs a BMS, though BMS would likely be installed in conjunction with other energy conservation measures for even greater energy savings. The City's goal is to eventually have a fully integrated BMS that can remotely control and monitor all municipal buildings.

Implementing Energy Conservation Measures and Retrofits

The results of the energy audits conducted in 2010 and the utilization of pilot energy decision-making tools has allowed the City to move toward a more comprehensive energy program. The program will focus initially on reducing energy consumption in the municipal buildings that use the most energy. The City will fund this program through the State of New Jersey's Energy Savings Improvement Program (ESIP). The ESIP is New Jersey's 2009 legislation that allows municipalities to engage in contracts for energy efficiency upgrades that are paid for through the energy cost savings. The

State has developed policy, guidance and draft contracts to help local governments enter into an Energy Savings Performance Contract (ESPC) for energy-related capital improvements to buildings with no upfront cost to the client. The improvements and the company's fee come from the savings generated by the capital improvements over a period of up to 15 years. Energy-related capital improvements generally take the form of new energy efficient equipment that reduces energy and water consumption, operational costs and greenhouse gas emissions. The City will select an Energy Services Company (ESCO) through a competitive bidding process. Once chosen and approved by the Municipal Council, the ESCO will be tasked with performing an Investment Grade Energy Audit (IGA) and developing a comprehensive Energy Savings Plan (ESP). The City will then review the ESP and if the recommended energy conservation measures, calculations, and project approach are financially sound, staff will recommend to the Municipal Council to authorize the City to enter into an Energy Savings Agreement with the ESCO to implement the approved energy conservation measures. Savings calculations prior to construction and post construction must be verified through a third party. The ESCO will also train City staff to use the BMS and conduct routine maintenance procedures as well as



Stimulus funding from the US Department of Energy helped the City of Newark upgrade the heating and cooling equipment in its municipal buildings, saving both money and energy. Photo credit: Robert Thomas.

educate them on systems optimization to ensure maximum efficiency and savings.

In order to advance the City's mission of addressing environmental issues while expanding local economic opportunity, this project should be designed to address indoor air quality and should also include job opportunities for residents and local businesses. The ESCO selected to perform the work in the Energy Savings Agreement should be required to use local labor and the professional services of local and minority and woman owned-business enterprises. The City can work through its Workforce Investment Board and One Stop as well as partner nonprofits to connect Newark job-seekers in the construction industry with general contractors and sub-contractors associated with this project.

Eligible Energy Savings Improvement Program projects include:

- Boiler Plant Improvements
- Chiller Plant Improvements
- Building Automation Systems / Energy Management Control Systems (EMCS)
- Heating, Ventilating, and Air Conditioning (HVAC, not including boilers, chillers, and BAS/EMCS)
- Lighting Improvements, such as interior and exterior lighting replacements lighting control improvements, occupancy sensors installation, LED exit sign installation, day lighting
- Building Envelope Modifications
- Chilled Water, Hot Water, and Steam Distribution Systems
- Electric Motors and Drives
- Refrigeration
- Distributed Generation
- Renewable Energy Systems
- Energy/Utility Distribution Systems
- Water and Sewer Conservation Systems
- Electrical Peak Shaving/Load Shifting
- Energy Cost Reduction Through Rate Adjustments
- Energy Related Process Improvements
- Commissioning—by which building systems are calibrated to ensure efficiency

CASE STUDY: NJIT TRAINING—MUNICIPAL BUILDING DATABASE CREATION

In 10 weeks during the summer of 2010, a research group of students and faculty from the New Jersey Institute of Technology (NJIT) Center for Building Knowledge conducted an architectural facilities survey of all Newark Public School (NPS) facilities (approximately 80 schools) and compiled the results into a database for the school system. A team of 10 NJIT architecture student interns supported the Center for Building Knowledge in the collection of building data that included an inventory of rooms, their square footage and usage, measurements and sketches for the diagramming of floor plans, and representative images of the building.

The survey was a significant step forward for NPS, allowing it to understand its assets in a more sophisticated manner. This database could be expanded into a Computerized Maintenance Management System that will enable NPS Facility Management to track the status and costs of maintenance work in school buildings, and to maintain inventories of building systems equipment. It would also track utility bill data, service reports, etc.

ENERGY SAVING MEASURES ALREADY INSTALLED BY NEWARK

Buildings	Total Cost	Total Cost to Csr. (20%)	Annual Savings	Kilowatt per hour Saved Annually	Payback Period
920 Broad Street (City Hall)	\$347,170.00	\$69,434.00	\$45,219.00	301,461	1.5
920A Broad Street (City Hall Annex)	\$76,824.00	\$15,365.00	\$15,800.00	105,475	1.0
31 Green Street (City Courts)	\$297,273.00	\$59,455.00	\$47,100.00	314,000	1.3
226 Rome Street (Ironbound Rec. Center/ Pool)*	\$220,077.79	\$44,016.00	\$24,666.00	51,930	1.8
46 St. Charles St. (Ironbound Rec. Center)	\$87,312.91	\$17,463.00	\$12,573.00	83,821	1.4
Total	\$1,028,657.70	\$205,733.00	\$145,358.00	856,687	1.4

INCENTIVE PROGRAMS

Incentive programs can help to minimize the cost of implementing energy conservation measures by giving rebates for installing the measures. These can vary from a fixed price-per-item incentive, such as for lighting to a tiered structure like Pay for Performance, which gives money based on amount of energy saved. It is important to consider all incentive offers as they will lower cost, influence decisions, and lower the return on investment. The City will require that the ESCO selected to develop and implement the comprehensive Energy Savings Plan use all available incentives to lower the project's cost and increase the return on investment for the City. The following is a summary of currently existing programs, many of these same programs are available to the commercial sector and are included in the City's energy initiative outreach and education activities.

Pay for Performance

Pay for Performance (P4P) is an incentive program through the NJ Clean Energy Program designed to encourage energy savings made through implementation in both existing buildings and new construction. The State of New Jersey will subsidize the cost of most energy savings installations through energy audits, expected savings estimates and post-implementation metering.

Pay for Performance incentives are awarded upon the satisfactory completion of three program milestones. To qualify for Pay for Performance, the energy retrofit must save at LEAST 15 percent of the facility's electricity usage. Monitoring must be done before and after implementation, along with a full energy audit to ensure quality results. For more information go to <http://www.njcleanenergy.com/commercial-industrial/programs/pay-performance>.

NJ Smart Start Direct Install

New Jersey Smart Start's Direct Install program allows small-to-medium-sized facilities to replace existing equipment such as lighting, heating ventilation and air conditioning (HVAC) with high efficiency models by paying up to 70 percent of the retrofit costs. To be eligible a building must have peak demand that has not exceeded 150 kilowatts (kW) in the past 12 months.

Because the customer is only paying 30 percent of the project's total cost, Direct Install-supported projects tend to pay for themselves through energy savings over a period of just a couple of years, or in some cases months. For more information go to <http://www.njcleanenergy.com/commercial-industrial/programs/direct-install/steps-to-participation>.

PSEG Direct Install

Direct Install from PSEG allows small businesses to cut their energy costs at a discounted price. PSEG offers a free on-site energy audit of electrical equipment and then proposes energy savings measures based on the audit. PSEG will install energy savings equipment, such as lighting fixtures and controls, at no up-front cost to the business. The business then must repay only 20 percent of the total cost, reflected on their monthly bill. Other equipment upgrades include sensors, refrigeration, motors, HVAC, and other site-specific projects. To be eligible for the direct install program the customer must simply be a PSEG customer with a separately metered gas and electricity account, with average demand of 200 kW or less. For more info visit http://www.pseg.com/business/small_large_business/save_energy/efficiency.jsp.

For further information on performance contracting, please visit: <http://www.energyservicescoalition.org/resources/whatis.htm> and http://www.energystar.gov/ia/partners/spp_res/Introduction_to_Performance_Contracting.pdf.

Newark has already begun implementing several energy conservation measures, again using EECBG funds and available state and local programs. The City participated in PSEG's Direct Install Program that subsidized the cost of replacing older lighting fixtures with newer, more efficient fixtures and ballasts. The upgrade led to an average savings of approximately 14 percent in four buildings.

CONSERVE ENERGY THROUGH MUNICIPAL FACILITIES OPERATIONS AND MAINTENANCE AND EMPLOYEE BEHAVIOR CHANGE

Even well designed and retrofitted buildings may waste energy if they are not operated correctly. Substantial energy savings can be realized through improvements in maintenance, operations, and simple behavior changes such as switching off and unplugging equipment that is not in use. Recommendations provided here would assist the Energy Taskforce to maximize potential energy savings associated with the measures performed by the ESCO.

Effective building operations and maintenance must draw on a realistic, detailed understanding of existing conditions and capacity. By collecting and better integrating information on capital plans, building square footage, building utilization information, hours of operation, building systems inventory and current operations and maintenance activities, Newark can position itself to take better advantage of energy savings opportunities. This information can be used to prioritize improvements and upgrades, identify training requirements for staff, plan for effective utilization of space and negotiate facilities maintenance contracts that serve the City's needs.

Facility operation and maintenance covers a wide range of services to ensure that building systems operate so that they serve the needs of the occupants and support the function of the building itself. A preventative maintenance plan is a key component a well-developed program. While some problems are unavoidable, a well-thought-out preventative maintenance plan can reduce unexpected equipment failures, extend the lifetime of equipment, reduce equipment downtime, improve equipment performance and alleviate occupant complaints. A preventive maintenance plan consists of scheduled maintenance requirements (varying by equipment) that provide a basis for performing maintenance procedures including adjustment, calibration or replacement of worn parts and overall assessments of equipment condition and operation.

A Building Management System (BMS) will automate the majority of any operating plan, reducing the risk of leaving

CASE STUDIES IN LED RETROFITTING

Smithtown, Long Island

Smithtown, Long Island recently received funding to help convert 10 percent of its 11,600 High Pressure Sodium streetlights to LEDs. Smithtown's Lighting and Traffic Safety Director estimates that the LED retrofit of 1,100 lights will save the town \$75,000 in maintenance costs per year and another \$150,000 in annual energy expenses.

Anchorage, Alaska

The City of Anchorage, Alaska was one of the first to take on a LED road lighting project. More than 4,650 LED fixtures have been installed and metered circuits have measured a 45-58 percent drop in energy use. The city anticipates a full payback in six and a half years.

Ashville, North Carolina

Ashville replaced, and now owns, all 9,000 of the city's streetlights with LED fixtures. Instead of paying a flat rate, the city's new rates cut lighting costs by more than 50 percent. With the establishment of a Green Capital Improvement Plan, the annual savings from the LED replacement are captured and used to both pay off debt incurred from the fixtures and also to fund other energy savings initiatives. Over 10 years, the LED savings are expected to generate \$3.3 million, after paying installation debts. To finance the initial project, Ashville authorized borrowing (in the form of a bond issuance) of \$3.6 million to implement the replacement program. The borrowing occurred in three separate installments, one per year for three years, to finance the project.

equipment running when not needed and alerting operators when equipment is not performing properly. Facility personnel will need training to implement any new operating plan. To

create an operations plan, it is recommended that the City create a database of mechanical equipment, which can be generated from building surveys.

The City should also consider an Issue Tracking System, (also known as Trouble-Ticket Tracking). This is a software package, which manages and maintains lists of issues related to mechanical equipment. In choosing a BMS the City will give preference to systems that also maintains Trouble-Ticket Tracking software.

The ability to compile and format utility data into a database is a critical part of managing energy consumption and building performance. The preferred format is one that is easily transferable to the U.S. Environmental Protection Agency's online ENERGY STAR benchmarking tool called Portfolio Manager. When utility bills from each building arrive from power companies like PSEG, data can be transferred into the database for an easy-to-read portfolio.

Employee Behavior Change

A surprising level of savings can be achieved through simple behavioral changes. The City should consider producing a clear, easy-to-read handbook that can be distributed to department directors and employees explaining City policy for the use of electronic equipment, lighting and heating and cooling systems. The handbook should be used as a tool for achieving energy savings on a per-office basis in order to meet departmental targets for energy use reduction set by the municipal Energy Taskforce.

LAUNCH A LED STREETLIGHT REPLACEMENT PROGRAM

Based on the available data, Newark's streetlights use nearly 60 percent of the municipality's energy costs, releasing an equivalent of more than 48,900 tons of carbon dioxide emissions into the atmosphere. In 2010, the City paid over \$8 million to power streetlights, traffic signals and walk/don't walk signs. Newark's streetlights are currently owned and maintained by PSEG with the majority of these lights having inefficient high-pressure sodium (HPS) fixtures. LED bulbs use half the energy of HPS bulbs to provide the same amount of light and they cost far less to maintain as the bulbs last up to five times as long. Newark's Department of Engineering has already successfully upgraded all red and green traffic lights to LED city-wide and have seen a significant reduction in energy

and maintenance costs. (Yellow traffic lights do not stay on for long enough to justify the upgrade for them.)

PSEG currently charges the City a flat monthly rate per streetlight that includes maintenance, energy transmission and energy consumption. As of the time of publication, PSEG does not have a viable program for replacing HPS streetlight bulbs with LEDs in urban areas like Newark. (PSEG has approved LED streetlight technology for suburban locations that require lower levels of illumination.) This means the City's only current option for converting streetlights to LED is to take ownership of the lights.

By taking ownership of streetlights, retrofitting them with energy efficient LEDs, outsourcing maintenance to a private entity, installing meters, and paying for the actual electricity use (as opposed to a flat rate), the City could experience both energy and cost savings, as well as decreased greenhouse gas emissions and improving Newark's overall carbon footprint. However, there are a series of legal and financial questions to address before making the decision to proceed. The recommendation here is contingent upon those issues being addressed to the satisfaction of the Business Administrator and the Corporation Counsel.

If the City pursued a LED retrofit of approximately 1,580 new fixtures (or 3 percent of its street light stock), the City can expect to see a 0.9 percent reduction in energy use and a 1.2 percent reduction in carbon emissions.

Newark could partially finance LED streetlight retrofits through available incentives for energy efficiency products. A statewide effort, known as the New Jersey Smart Start Buildings Program, is available to qualified non-residential customers, including commercial, industrial, educational, institutional, government and agricultural operations which are constructing, expanding, renovating facilities or replacing equipment. The program offers incentives of up to \$175 dollars per fixture for outdoor pole mounted LEDs.

For more details on the New Jersey Smart Start Buildings program, visit <http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/contacts-resources/program-guide/pdf/pdf>.

Action Item 2:

FACILITATE ENERGY SAVINGS FOR RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL PARTNERS

Newark municipal government exercises direct control only over its own building stock. But the majority of buildings

contributing to Newark's energy, air quality, and greenhouse gas challenges are in private hands. To address these buildings,

the City should encourage, facilitate, and, where appropriate, require energy improvements in the private sector. This can be accomplished through:

- Facilitating increased awareness and participation in existing energy programs
- Highlighting innovative projects and best practices implemented within Newark
- Using incentives and regulation to promote improved energy use



The City of Newark's Sustainability Office teamed up with Project Porchlight, three community organizations, and over 100 Newark volunteers to distribute 1,500 energy efficient light bulbs in Newark neighborhoods. Photo credit: Stephanie Greenwood.

PROJECT PORCHLIGHT

In 2008, the City partnered with Project Porchlight to engage over 10,000 residents who took an Energy Star pledge and received a compact fluorescent light bulb, with the motto "Simple Actions Matter." This was accomplished through events and neighborhood blitzes where volunteers canvassed neighborhoods. The partnership with Project Porchlight was renewed in 2010 when over 100 volunteers distributed over 1,500 bulbs to their neighbors.

This Action Item provides recommendations for these strategies within various sectors of Newark's built environment. To measure and spur progress, all building types can be encouraged to participate in EPA's ENERGY STAR National Building Competition: www.energystar.gov/BattleOfTheBuildings.

COMMERCIAL

Businesses can generally realize substantial savings from making energy improvements, but often lack the time or expertise to take advantage of these opportunities. Many Newark property owners and facility managers are not aware of available financial and technical assistance programs to support cost saving energy efficiency actions. The City should consider working through existing business outreach efforts to pass on easily digestible information about existing programs and highlight success stories. These may include:

- Brick City Development Corporation (BCDC)—In 2009, BCDC, the Office of Sustainability and the State's Energy Program partnered to bring sustainability programs and strategies to various business sectors including logistics, office, and construction. As of this publication, BCDC is launching a project to facilitate energy cost savings to Newark businesses through bulk purchase of electricity. BCDC interacts with many businesses through its attraction and retention programs. As part of its commitment to promoting business viability and a high quality economic development environment, BCDC may wish to consider hosting one or more events per year targeting particular sub-sectors to discuss the value proposition of energy savings and help businesses enroll in existing programs.
- Made in Newark—Newark is home to more than 300 registered manufacturing firms. Efforts are underway to bring manufacturers together to address barriers to success and expansion. This forum can serve as a vehicle for discussions of resource efficiency and lean production that overlap with the City's sustainability goals. At least one

meeting a year could provide information about existing programs and assist firms in enrolling. These meetings can also showcase local examples of success. A solar installation and energy efficiency upgrade at Mannkraft, a Newark-based manufacturer of custom packaging and displays offers one recent example.

RESIDENTIAL

Newark residents tend to pay a much higher proportion of their income in energy bills than do their suburban counterparts, as a result of living in older, less well-maintained buildings with older building systems. Residential energy audits, weatherization, and energy retrofit projects can reduce energy bills, make homes safer and more comfortable, and provide job opportunities for residents. They represent an important potential growth area in the “green” economy.

The roll-out of the Green and Healthy Homes Initiative (GHHI) described in the Air Quality chapter forms the backbone of



Stimulus funding from the U.S. Department of Energy allowed the City of Newark to fund International Youth Organization (IYO), a youth development organization active in Newark for over 40 years. IYO members that graduated from the New Jersey Energy Corps program are shown here sealing windows, wrapping boilers, and performing a blower door test. The youth employment project weatherized the homes of over 50 Newark residents. For more information, visit <http://www.iyonewark.org/>. Photo credit: International Youth Organization.



Stimulus funding from the U.S. Department of Energy allowed the City of Newark to fund Lincoln Park Coast Cultural District, a community development corporation, to employ local workers performing energy retrofits for 10 buildings in the Lincoln Park neighborhood of Newark. For more information, visit www.lpcdd.org. Photo credit: Lincoln Park Coast Cultural District.

a residential strategy on energy. This effort will coordinate and scale up weatherization services while at the same time addressing health and safety issues in the home. Through this initiative, the City will work to connect residents with savings opportunities associated with existing programs at the federal and state level and through the public utility. While GHHI seeks to provide comprehensive services to as many homes as possible, the initiative should be complemented by efforts from the City’s Sustainability Office to connect all residents in Newark with basic information about energy savings services and opportunities. These should be represented on the City’s website and made available through easily-understood handouts at community meetings.

Newark has allocated \$426,000.00 of its federal stimulus grant from the U.S. Department of Energy to community groups in support of residential energy improvements. These funds support two projects:

NEWARK PUBLIC SCHOOLS

Newark Public Schools (NPS) is the state's largest school district. The NPS district consists of 83 school buildings, 11 leased sites, and a number of athletic fields. The total footprint is 9.5 million square feet. NPS spends more than \$15 million a year on energy. NPS, like many of our nation's school districts, has been looking for ways to conserve energy and reduce its carbon footprint. The first step toward that goal is to have established a comprehensive Energy Master Management Plan which was drafted by the Executive Director of Facilities Management. Staff then established an Energy Steering Committee which consists of a cross section of school departments and community.

Commitment to student involvement and education in the energy program is a given. Facilities management started an internship program for high school students, providing opportunities to apply education in real life, developing partnerships with key business leaders, and helping design Facility Management Tools for the future. This program is designed to give the students an opportunity for rewarding career paths in Energy, Engineering, and Building Management.

NPS has embarked on one of the largest solar projects in any urban school district. Through a public/private partnership with the state's largest utility company, PSEG, NPS will install 2.6 megawatts of solar electricity on school roofs and carports. This public/private partnership would be different in that it would include an academic component. This provides opportunities for students to explore programs in the classroom, have input into the solar energy technology at their schools, and gain valuable knowledge about careers in those fields. The ultimate goal of the program would be to reduce the district's carbon footprint and to help the district become innovators in the state, using school facilities to promote green technology in the building, classrooms and community.

To begin this initiative, five schools were selected as models for the installations. Selection of the school sites was based on maximum exposure year around to the sun's rays, ample space for equipment, good condition of the roof, and warrantee coverage of 15 years or greater. After a review of the district's facilities Barringer High School, Central High School, Camden Street School, Camden Middle, and Park Elementary School were chosen. The ages of these schools varied from 50 years old to 1 year old.



Participant in the NPS Energy Diamond program helps measure energy use in her school building. Photo credit: Photo courtesy of Newark Public Schools.

NPS students and staff produced an Energy Awareness video that included middle school students demonstrating what we need to do to conserve energy. This video was shown district-wide and on the community cable channel and has encouraged a district wide awareness of saving energy. A few years later, students and staff produced an educational documentary entitled "Journey to Sustainability" where they received the 2012 Edison Green Award.

—Rodney Williams, Newark Public Schools, Facilities Management

- International Youth Organization worked with a crew of young people to complete energy audits, safety checks and weatherization work on over 55 homes in Newark. The youth have all completed training with the New Jersey E-corps program. In addition to providing the weatherization services, the youth also educate residents about energy efficiency and energy saving tips.
- Lincoln Park Coast Cultural District has built and redeveloped several LEED Certified affordable residential buildings in the neighborhood of Lincoln Park near downtown Newark. The federal stimulus sub-grant enabled the organization to pay graduates of its energy audit training program as part of a comprehensive energy

analysis and upgrade for 10 buildings, including three that house non-profit organizations.

INSTITUTIONS

Newark's hospitals, universities and colleges, arts and cultural institutions all face budget shortages and all interact with the public. Several of them have made impressive strides on energy efficiency already. The City should consider working with these institutions to convene facilities managers to learn from local leaders, gather information about financing options and payback periods, and to join the challenge to reduce energy use by 20 percent over the next five years, along with advancing other sustainability measures at their facilities.

Action Item 3:

EXPLORE AND SUPPORT CLEAN ENERGY ALTERNATIVES AND DISTRIBUTED GENERATION DEVELOPMENT

With a growing population and limited supply of energy, Newark faces a clear need to focus on demand reduction, conservation, and efficiency. However, to move toward the clean energy future, Newark also needs to look at strategies for supporting new cleaner energy generation and distribution technologies. In 2007, New Jersey set aggressive targets to reduce greenhouse gas emissions, increase renewable energy technologies, and promote energy efficiency programs through the adoption of the Global Warming Response Act and the State Renewable Portfolio Standard (RPS). Both pieces of legislation set targets for greenhouse gas stabilization and reduction goals. But the legislation also sets goals of securing 22.5 percent of the state's energy needs from "clean" sources by 2021 (with solar making up 17.88 percent of that total) and 70 percent by 2050. (The recently adopted State Energy Master Plan calls for a slight reduction in this target to 20 percent by 2012.)

Renewable energy sources generate energy from the natural environment (the sun, the wind, plants, and water) which are naturally replenished. Distributed generation refers to small-scale electricity generation that is either on-site or close to the primary user that is also connected to the electric grid. This type of small-scale generation can be renewable or use technologies such as Combined Heat & Power (using an existing heat source to generate power), fuel cells or micro-turbines. While development of this type of infrastructure is very costly, there are benefits in terms of savings and reliability as well as efficiency of transmission.

The City of Newark has one of the most complex energy infrastructure systems in the world. This complexity stems from the multitude of interdependencies; a "system of systems" in which various infrastructure systems are dependent upon one another. The system demands require that any wide-scale

deployment of renewable energy in Newark be preceded by strategic long-term planning and careful analysis of the existing energy environment. Newark's building stock is relatively old, with most buildings having roofs that are poor candidates for solar installation. Energy audits conducted on municipal facilities to date have not resulted in recommendations for solar installation, mostly based on questions of economic feasibility and structural considerations.

Despite the many challenges facing renewable energy and distributed generation deployment in Newark, planning for the future should seek to incorporate these technologies whenever feasible. Strategically developing renewable energy and distributed generation systems throughout the City would improve energy security, stimulate economic activity and reduce the municipal carbon footprint. These projects have the potential to:

1. Save the City money by reducing the electric load at key facilities that lessen the burden on the electric grid
2. Provide jobs opportunities for local contractors and laborers
3. Improve the environment by offsetting dirtier generating plants during peak demand hours which has the added benefit of reducing wholesale power costs and the price of electricity to all customers. (http://nj.gov/emp/docs/pdf/2011_Final_Energy_Master_Plan.pdf)

These benefits will become even more important as weather events intensify due to the changing global climate, increased stress on the electric grid, and as energy demand rises.

Diversifying the City's energy portfolio will increase the resiliency of energy infrastructure systems. Resiliency is the ability to respond effectively to an energy emergency and recover quickly from the damage. Improving the resiliency

throughout the City has a direct relationship to maintaining and enhancing public safety, public health, and economic security.

In an effort to increase the resiliency in the City through the deployment of renewable energy and distributed generation systems, the Sustainability Office is leading the development and implementation of a Local Energy Assurance Plan. An Energy Assurance Plan is a standardized planning document that the City can rely on during an energy emergency, energy supply disruption or natural disaster to ensure the safety of community members. This Plan is being developed through U.S. Department of Energy stimulus funding awarded through a competitive process to Newark in 2009. The Plan focuses on strengthening reducing the impact of energy supply disruptions, building capacity to coordinate and communicate with local, state, and public agencies on energy security, reliability and other related emergency response issues. One outcome will be that City staff is better prepared to help prevent and respond to energy emergencies. Another outcome will be feasibility studies for deployment of “Smart Grid” technologies as well as safe introduction of Plug-in Hybrid Electric Vehicles, renewable energy and distributed generation integration at critical City facilities. A smart grid is an electrical grid that uses information and communications technology to gather and act on information, such as information about the behaviors of suppliers and consumers, in an automated fashion to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity. (citation- U.S. Department of Energy. “Smart Grid / Department of Energy”.)

As the Local Energy Assurance Plan identifies opportunities for deploying renewable energy, Smart Grid, and distributed generation in an economically feasible manner, the City will incorporate support for renewable energy projects into its program of activities from an emergency management perspective to ensure that critical facilities are operational during energy supply disruptions or natural disasters.

Deployment of renewable energy should include scoping of possible solar installations on brownfields, parking lots, and viable rooftops. One opportunity may exist at the Otilio landfill, a brownfield that cannot be used for development purposes because environmental restrictions on the site prevent any digging or foundation work. The Energy Taskforce should engage partners at other government agencies and in the private sector to explore the feasibility of solar deployment at Otilio and other locations.



The City of Newark partnered with Weston Solutions, Bright Power, and a Newark-based design and contracting firm to install a 185-kilowatt system on the roof of the City's municipal garage on Wilson Avenue. The panels generate about 75 percent of the building's power and reduce CO₂ emissions by an estimated 179 tons a year. The project also provided on-the-job training for several Newark residents. Shown here, East Ward Councilman Augusto Amador and Councilman-at-large Carlos Gonzalez. They are standing with Rob Gascyone, of Weston Solutions. Photo credit: The City of Newark.

Action Item 4:

PROMOTE AND ENHANCE GREEN BUILDING AND DESIGN PRINCIPLES FOR DEVELOPMENT PROJECTS

Green building practices have gained significant momentum in the building industry in recent years, and have become standard practice for many building types, including municipal, institutional, and corporate projects. Sustainable design provides a positive impact on a building's energy performance and overall quality while also substantially reducing environmental impacts. Sustainable design practices can also address health issues inherent within the building construction process as well as for building occupants, and enhance human comfort and work performance. Many third-party entities have been established to support sustainable building efforts through education, tracking and certifying projects. The EPA's ENERGY STAR program and U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system are examples of programs that address sustainability and energy efficiency and have become widely adopted references within the industry. Standards particular to affordable housing development such as the Enterprise Green Community Standard have helped ensure that green building is available across the income spectrum. New Jersey has developed guidelines and resources for developers available in the New Jersey Green Building Manual: <http://greenmanual.rutgers.edu/>. In addition, states and municipalities have the option of incorporating environmental and health standards into building codes. Supporting a high performance building stock has become an economic development tool for many municipalities, as demand for sustainable buildings rises.



These new townhomes are part of the first project in the State of New Jersey to be cited with USGBC LEED Neighborhood Development Gold Certification. The buildings consist of one-, two-, and three-bedroom apartments and contribute to the revitalization of Lincoln Park, a neighborhood close to Newark's downtown that has seen substantial gains in green affordable housing plus a major annual music festival through the efforts of Newark-based community development corporation Lincoln Park Coast Cultural District. Photo credit: Photo courtesy of Lincoln Park Coast Cultural District (www.lpcd.org).



On Friday, February 18, 2011, Mayor Cory A. Booker, Members of the Municipal Council, Deputy Mayor of Economic and Housing Development Stefan Pryor, N.J. Department of Community Affairs Commissioner Lori Grifa, HELP USA President Larry Belinsky, and HELP USA Chair Maria Cuomo Cole, Make It Right Executive Director Tom Darden, and Newark residents broke ground for the construction of a new LEED Platinum, affordable housing project, at 634-648 Clinton Avenue in the City's South Ward. This project, constructed with local union labor and featuring a roof garden, now provides 56 units of rental housing for veterans and low-income families. Photo credit: E. Cameron. Newark Press Information Office.

ENERGY STAR

Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping to save money and protect the environment through energy efficient products, building certification and building portfolio management practices. It provides tools for assisting in developing projects to energy efficiency targets, managing performance goals and energy ratings for buildings. To learn more, visit ENERGY STAR at www.energystar.gov/ or ENERGY STAR Buildings at www.energystar.gov/buildings.

Newark has made enormous strides in green building in the last few years, with particular pride in hosting several award-winning affordable housing projects. Under the leadership of Housing and Real Estate Director Mike Meyer, Newark has seen production of affordable housing more than double. These include one of the first LEED Platinum affordable housing developments in New Jersey, completed in 2012 with support from the Make It Right foundation. The building contains set-aside units for disabled veterans and was built with local union labor. The first

LEED Neighborhood Development certification was achieved by Lincoln Park Coast Cultural District. Other green housing developments are listed in the chart on the below.

Newark also supports sustainable development in its residential rehabilitation projects. A collaborative process sponsored by the City and facilitated by the Housing and Community Development Network of New Jersey developed a rehabilitation standard based on Enterprise Green Communities for use in projects supported by HUD's Neighborhood Stabilization Program. The technical assistance provided to these developers will enhance the capacity of the local building industry to deliver high performance units to Newark residents.

Commercial properties have also broken new ground on green building in Newark. Panasonic Corporation of North America is constructing a 14-story, 41,000-square-foot signature commercial office space to house its headquarters in Newark at the corner of McCarter Highway and Raymond Boulevard. This new building is on track to achieve USGBC LEED Platinum certification and is expected to begin operations in 2013. The Newark office of McCarter & English LLP was recently awarded LEED Gold and Silver Certifications from the USGBC for renovations. Citilog, an urban sawmill that began operations in Newark and East Orange in 2012, is on track for a high level of LEED certification as well.

The success achieved thus far with green building standards in Newark indicates that it may be both feasible and beneficial to introduce a green building ordinance that would require green building standards to be met for certain types of new major development and renovation projects. In addition, the majority of Newark's greenhouse gases, and a substantial portion of the air pollution in Newark, can be attributed to the electricity and fuel used in its buildings. Policies that improve the energy and environmental performance of buildings should help advance several of the City's other sustainability goals.

In passing a green building ordinance, Newark would be joining many other cities, including several in New Jersey. In 2009, Jersey City adopted four ordinances that addressed sustainability. The first two ordinances address green buildings, while the third and fourth address green purchasing and vehicles. The first green building requirement established a minimum certification level of LEED Silver for all city building projects valued at \$1 million, or for projects in which the city provides 50 percent funding. The second ordinance provides green incentives for private developers to receive rebates for development application fees for projects receiving LEED certification. Priority review processes were also provided as an incentive for projects proposing to meet LEED or Energy Star certification.

The Newark Sustainability Office initiated an effort in 2009 to develop sustainable building ordinances for the city for non-residential new construction and major renovation projects greater than 10,000 square feet, owned by the City of Newark or receiving more than 50 percent of project costs from the city. The proposed ordinance was based on Jersey City's ordinance. Evolution of the standards, increased acceptance in the building industry, and reduction of cost premium mean that there is a renewed opportunity to examine the potential benefit of passing a green building ordinance in Newark.

The 2009 proposed ordinance established the following provisions:

- Newly constructed municipal projects must be qualified to achieve LEED-New Construction (NC) ratings
- Major-renovation municipal projects with estimated costs in excess of \$500,000 must be qualified to achieve LEED-Existing Building (EB) ratings.
- Municipal projects must achieve 75 points on the PA national energy performance rating system as determined by the Energy Star Target Finder Tool. This is to ensure that facility operating costs are optimized.

GREEN AFFORDABLE HOUSING PROJECTS

Project Name	Developer	Number of Units	Green Features
LPCCD Residential Developments	Lincoln Park Coast Cultural District	84 scattered-site units	LEED Gold Neighborhood Development—first of its type in NJ
Newark Genesis Apartments	Help USA	56 units	LEED Platinum (employed over 50 Newark residents in construction; includes rooftop vegetable garden; houses veterans)
Springfield Commons	RPM Development Group	72 units	NJ HMFA's Excellence in Housing Award for Green/Sustainable Development; Installed solar panels
Roseville Commons	RPM Development Group	50 units	LEED Platinum certified with features including solar, rooftop garden, LED light fixtures, Energy Star appliances, water conservation, waste minimization in construction, and sustainable materials
Studebaker Lofts	RPM Development Group	68 units	Energy Star and LEED for Homes certifications
Richardson Lofts	RPM Development Group	67 units	Energy Star and LEED eligible
Neighborhood Stabilization Program	Consortium of eight non-profit and three for-profit affordable housing developers working with the City of Newark to reclaim foreclosed and abandoned properties	~200 units	Enterprise Green Communities Standard

FINANCING GREEN BUILDING

The EPA has provided small grants for non-profit organizations through a program for Environmental Justice that was established to support and empower communities that are working on local solutions to local environmental and/or public health issue. In the past, these have addressed a variety of issues, and may be applicable to developing a program for identifying or addressing green building initiatives, such as indoor air quality. One of the 2010 top priorities of the program was to address improving air quality. (<http://epa.gov/environmentaljustice/grants/ej-smgrants.html>)

Tax incentives and direct rebates are available from the Federal Government such as the EPart 205 179D Program targeted to private building owners (or design firms if publicly owned building). This program provides building owners a direct deduction up to \$1.80 per square foot for heating, ventilation and air conditioning (HVAC), hot water system, and lighting system upgrades beyond standard building practices and energy codes. For more information visit: <http://www.irs.gov/businesses/small/industries/article/0,,id=160505,00.html>

Additional funding and financing opportunities are available for energy efficiency strategies outlined in the Energy category of the Sustainable Action Plan, including the New Jersey Smart Start Program, which provides incentives for incorporating energy efficient equipment or design. Other categories of work including sustainable site design, storm water, water reduction, may have incentives and financing opportunities available as well.



Studebaker Lofts, a LEED for Homes and Energy Star certified project completed by RPM Development Group, rehabilitated an old automobile company showroom and service center close to Newark's Broad Street train station. The renovated building now offers 68 loft-style apartments, half market rate and half affordable, in Newark's Central Ward. The building features a solar array on its roof. Photo credit: Andy Foster.



Roseville Commons is a LEED Platinum certified project built as a joint venture between RPM Development Group and New Community Corporation, Newark's largest community development organization. Twenty percent of units are designated for formerly homeless families and all are available to low-income households. The project includes commercial tenants, community space, and a rooftop garden. Photo credit: Andy Foster.

- If the cost of adhering to these standards exceeds 20 percent of project cost, the Business Administrator may modify the project to cut costs, even if doing so will require waiver of the standards.
- At a minimum, however, the project must still be qualified to attain a LEED Certified rating.
- The Business Administrator was directed to select one of the next three municipal projects as a pilot to meet the LEED-NC rating and achieve the Energy Star rating.
- All municipal buildings shall be benchmarked with the Energy Star Portfolio Manager Tool. This requirement was to be phased in starting with buildings over 200,000 gross square feet.
- Requirement that repair service and replacement purchases be assessed relative to energy efficient alternatives.

The Sustainability Action Plan recommends that the City consider two sets of policies and ordinances: one for municipal buildings and one for private sector buildings. For municipal buildings, the Plan recommends that the Energy Taskforce and the Sustainability Office review the draft ordinance, research effective ordinances in other municipalities, and

prepare a revised green building ordinance for the Business Administrator's review and approval and eventual submittal to the Newark Municipal Council. Guidelines and requirements for the new ordinance and for projects being upgraded through the ESCO should address sustainable design provisions including indoor air quality, reduced waste, green product use, water conservation, and energy use.

For private development, a range of incentives and requirements can help promote sustainable design. The City should consider how to incorporate sustainable design elements into its Site Plan approval process, for example by requiring minimum solar reflective index levels for roofs and parking lots, minimum permeable surface requirements, and enhanced tree planting requirements. For projects exceeding a certain size threshold, the City should consider requiring the submission of a "sustainability" plan asking each developer to detail aspects of the project that address sustainability. Finally, the City may wish to develop policies and a stakeholder engagement process to educate developers and encourage green building and operations.



Richardson Lofts is a former jewelry factory located in downtown Newark converted to mixed-income rental housing. The existing steel spiral staircase was preserved in the renovation. The building also includes a rooftop garden and energy efficient, sustainable design features in accordance with EPA Energy-Star Program requirements. Photo credit: Andy Foster.





PRIORITY THREE

Recycling and Materials Management





Action Item 1:

DEVELOP A NEWARK ZERO WASTE STRATEGY

The concept of “Zero Waste” challenges both the public and the private sectors to rethink their use and disposal of materials. The goal is to get as close as possible to burning and burying nothing. This is accomplished through a range of policies and practices that focus first and foremost on *waste reduction*. After making every effort to avoid creating waste in the first place, any material left over is reused, turned into a new product, recycled, or composted. All these activities constitute waste diversion. Entities that achieve a waste diversion rate of over 90 percent are considered “Zero Waste” according to the standards developed by the Zero Waste International Alliance. (For more information, see: <http://www.zwia.org>). Companies with Zero Waste commitments include Toyota, MillerCoors, Safeway, Pillsbury, Xerox, and Anheuser-Busch, among others. Cities that have adopted Zero Waste policies include Austin, Atlanta, Los Angeles, Seattle and San Francisco. The strategy is gaining traction as municipalities and businesses grapple with the costs of hauling and disposing of solid waste.

Newark’s adoption of a Zero Waste policy makes sense from a number of angles. Currently, the City pays approximately \$86 per ton plus hauling costs to dispose of household trash. (Commercial entities are responsible for their own hauling and disposal contracts in Newark.) Disposal options are governed by contracts with the Essex County Utilities Authority, which direct municipal solid waste to a waste-to-energy incinerator located in Newark and its bulk trash to a landfill in a nearby

town. In both cases, in addition to the environmental burdens, the potential value of much of the material to the local economy is lost. A Zero Waste policy would save Newark taxpayer dollars, reduce pollution and greenhouse gas emissions, and help create new job and business opportunities through waste diversion.

Key elements of a Zero Waste Policy for Newark may include:

- Waste characterization studies at disposal facilities or major waste sources
- Guidelines for Zero Waste events, venues, and zones, especially for events requiring City permits
- Expanded use of recycled content and reused materials in City procurement contracts
- Feasibility study for industrial resource recovery facility
- Development of partnerships with municipalities that send waste to Newark to advance a Zero Waste agenda for the region

WASTE CHARACTERIZATION STUDIES

A first step in waste reduction and repurposing is to understand what is being thrown away. The City should consider commissioning a waste characterization study of municipal solid waste and bulk trash loads. The study would assess the amount and type of material in the waste stream, analyze existing secondary markets for those materials, and provide recommendations about strategies for source separation and

collection or after-the-fact separation at a resource recovery facility. The City may also consider encouraging major businesses and institutions to conduct waste characterization studies of their own by providing guidelines or case studies. The results of the studies should be used to inform waste reduction strategies and to identify potential business opportunities.

ZERO WASTE EVENTS, VENUES, AND BUSINESS PRACTICES

There are examples around the country of successful programs to encourage waste reduction and diversion at stadiums, performance centers, college campuses, airport food courts, even whole downtowns. Newark should draw on lessons learned from other jurisdictions, national experts, and feedback from local stakeholders to develop strategies for encouraging Zero Waste events, venues and zones. The City is already in discussions with several venues about reducing waste at their major events through pilot projects. This may be scaled up to include a pledge taken publicly by businesses or institutions to move toward Zero Waste. It may also be incorporated into city policy via an ordinance requiring entities applying for large event permits to prepare and submit a waste minimization and recycling plan.

EXPAND RECYCLED CONTENT AND REUSED MATERIALS IN CITY PROCUREMENT

One way the City can encourage more reused materials is simply to buy them. Within the requirements of State law, the City should explore opportunities to increase post-consumer content in the supplies and equipment that it procures. Some municipalities require a certain percentage of the asphalt mixture used in road repaving to come from old tires, for example. Recycled paper products and insulation incorporating ground glass offer other examples.

EXPLORE MATERIALS RECOVERY AND SUPPORT SECONDARY MARKET EXPANSION

Given the large quantity of materials already flowing to Newark and their potential value in secondary markets, the City should explore scoping a resource recovery facility in partnership with a major public or private entity. The goal of this project would be to attract source-separated streams of material that would otherwise end up co-mingled with the rest of the trash, and to repurpose that material into new, value-added manufactured goods in Newark. The volume of plastic currently sent to the Newark for disposal could support a business that produces new plastic products, for example. The same is true for organics, an idea explored in more detail in a later section of this document. A feasibility study would identify potential partners, assess market conditions, and provide recommendations for how to proceed.

Action Item 2:

DOUBLE CITY-WIDE MUNICIPAL RECYCLING RATE FROM 2010 LEVELS

The City of Newark requires all properties to recycle paper, metal, plastic, and glass. For residential properties, the City provides a collection service that hauls the materials to processing facilities in Newark and Elizabeth, NJ. (Commercial properties are responsible for their own hauling of recyclables. Increasing commercial and institutional recycling rates is the topic of the next section.) Every ton of recycled material is a triple-win for the City: it avoids paying the tipping fee charged for disposing of regular trash; it gets paid for the recycled material at the going rate for that particular commodity; and it earns State grant dollars through the New Jersey Municipal Tonnage program. The avoided health impacts of burning or burying recyclable material in a landfill may be harder to quantify, but nonetheless provide real benefits and savings. Despite challenges associated with reductions in City staff, the healthy, fiscal, and environmental benefits of increasing recycling make scaling up recycling a key priority for the City on its path to sustainability.

Recommended strategies include:

- Introducing public space recycling
- Launching an education and awareness campaign on recycling
- Simplifying collections and exploring incentive programs
- Boosting enforcement
- Targeting multi-family buildings
- Engaging Newark's schools

PUBLIC SPACE RECYCLING

Currently there is very limited opportunity for recycling outside one's home in Newark. The City's Department of Neighborhood and Recreational Services (NRS), which is responsible for recycling, is in the process of changing this situation. NRS' public space recycling initiative will install recycling bins along major commercial corridors. This program will boost collections and serve as a platform for building public awareness about the City's recycling program.

CASE STUDY: CITY OF PHILADELPHIA

In the summer of 2009, the City of Philadelphia installed 470 solar powered trash compactors, 210 of which have recycling receptacles attached. The City is averaging 14 to 18 tons of recyclable materials per month in the street containers. The solar trash cans have reduced trash pickup from three times daily to once daily and limit wind-blown trash issues. This effort was funded through a \$2.2 million grant from the State of Pennsylvania.

Nationally, recycling has increased from under 10 percent of Municipal Solid Waste (MSW) in 1980 to over 34 percent in 2009. But over the same time period, the amount of trash each person generates has also increased. Solid waste generation went from 3.66 to 4.34 pounds per person per day between 1980 and 2009, according to the U.S. Environmental Protection Agency. With finite raw materials and limited disposal options, the planet can only handle so much trash. These facts challenge us to boost recycling. But they also remind us that to be sustainable, our economy must find ways to deliver well-being while at the same time drastically reducing production, consumption, and disposition of material goods.

EDUCATION & PUBLICITY

Many residents and businesses are not aware of what is recyclable or that recycling is mandatory. An overarching awareness campaign can make people aware of the law and can also create a sense of fun and urgency around the issue. A comprehensive campaign would include a high-visibility launch, branding, posters, signs and billboards, and events that engage various members of the population, especially the youth, media, and social media. Newark can learn from other cities with diverse housing types and multi-lingual populations that have launched effective awareness campaigns on recycling. For example, the New York City recyclable materials list and collection schedule are shared with residents through a double sided tri-fold mailer that becomes a kitchen poster. It graphically displays pictures of what is recyclable. This

coupled with outreach at neighborhood events can increase participation. Campaigns involving schools offer an especially promising approach. (Recycling in the schools is discussed in more detail below.) Newark youth can bring recycling habits home, adding to the reach of the program.

Creative financing strategies, including engaging the philanthropic arms of Newark companies interested in promoting environmental goals should be considered. Efforts should be made to engage recycling pick-up vendors that have the capacity and willingness to assist the City in publicizing the campaign. The City may also wish to consider engaging a third party to support its public education with an incentive program. There are a number of companies whose business model revolves around public education to improve recycling program participation. A sub-set of these entities do not require allocation of existing City budget, but rather receive reimbursement for their efforts as a percentage of the revenue received by the City from tipping fee savings and recycling revenues.

SIMPLIFY COLLECTIONS SCHEDULES

Another way to boost collections is to make it easier for residents to participate. This may include ensuring that schedules for pick-up are simple, clear, and well-communicated. The current system involves two recycle pick-up days per week that vary by geographic zone—one for paper and cardboard and another for co-mingled glass, metal, and plastic. Residents must determine based on the published schedule which zone they fall into and which days apply within that zone. It is possible that the burden placed on residents and building managers to put recyclables out on different days, which are also often different than general trash pickup days, dampens participation rates. The City should consider options for making the recycling schedule easier and more accessible. Picking up all recyclables on the same day is one possible simplification that may save some hauling costs as well. Another key ingredient may be expanding access to bins, or publicizing alternate systems such as use of clear plastic bags or regular household bins that show a City-issued recycling sticker.

RECYCLING INCENTIVE PROGRAMS

Studies show that people can be induced to change their behavior based on small signals such as contests and rewards. Simply showing people their level of energy consumption relative to their neighbors can have a large effect on behavior with regard to energy use in the home, for example. Several programs to encourage recycling have arisen based on this premise. The City of Philadelphia initiated a neighborhood household recycling incentive program (Recycling Rewards) that offered gift certificates to local vendors for neighborhoods with the largest quantity of recyclables collected along the truck route. The program is run by a company called RecycleBank, which was paid based on commission associated with increased recycling rates within the city, which also corresponded to

increased recyclable material revenue for the city. The Recycling Rewards program was developed in December 2009 and was slated to be available city-wide by summer 2010. It was rolled out in combination with a move to single stream recycling pick-up. Recycling rates city-wide tripled from 2008 to 2010.

The City of Grand Rapids, Michigan decided to create a homegrown program based on software and recycling bins developed by Grand Rapids firms. Similarly, residents gain points that can be redeemed at local businesses based on the volume of recycling collected in their neighborhoods. Rewards include discounts but may also include more creative offerings. In 2011, a local brewery offered to design a beer specifically for—and name it after—the person who achieved a high number of recycling rewards. Grand Rapids saw its recycling rate go up 80 percent and its municipal solid waste volume decline by 13 percent, which city staff attributes to a combination of moving to single stream pick-up and offering the rewards program.

Newark should explore strategies for instituting a rewards program either through an existing company or through solicitation of interest from local firms. Linking rewards for recycling points to locally owned firms would help ensure that the program not only boosted recycling but also strengthened the local economy. Working with the schools, establishing neighborhood-wide competitions, or offering high-profile rewards could help develop enthusiasm and further increase participation. Careful consideration should be given to the costs and benefits of engaging an incentive program to ensure that the fee for any outside vendor is more than covered by increased revenue, avoided tipping fees, and State grant dollars for increased recycling volume.

ENFORCEMENT

Education, awareness, and incentives will boost recycling participation among residents. But to ensure broad, consistent participation, especially in larger buildings, an enforcement



Newark Department of Neighborhood and Recreational Services Director Tharien Karim Arnold speaks to City employees and janitorial staff about the importance of recycling in municipal buildings. Photo credit: Photo by Damon Rich.

MUNICIPAL RECYCLING CAMPAIGN

In November 2011, the City of Newark kicked off an internal municipal building recycling campaign for plastic, glass, and metal with an event attended by the Mayor, Department Directors, cleaning staff, and “recycling floor captains” responsible for educating and encouraging their coworkers to participate in the new program. The launch signaled a renewed commitment on the part of the City to “walk the talk” of recycling enforcement by beginning at home. The City purchased new bins and storage containers, trained janitorial staff, recruited and trained floor captains, and obtained high-level support for this employee-driven effort to boost recycling collections in municipal buildings. In City Hall alone, collection of cans and bottles went from zero to one full dumpster (about 50 bags) a week.

component is necessary. One approach is to announce a lead period during which staff will focus on education and awareness, provide materials on the requirements of the law, and inform building owners about the penalties that will kick in during the enforcement period. Once this window of time is over, the City should focus on identifying and fining buildings that are not in compliance. Publicity about these fines may help convince others to participate. With limited staff available to inspect and issue tickets for recycling violations, staff may wish to focus on a different ward or building type each month, with the goal of obtaining one enforcement action each month for a certain period of time.

TARGET MULTI-FAMILY BUILDINGS

Newark’s large residential buildings offer the potential of the largest gains in recycling compliance. This is true both because of the high volume of material that can be collected at large buildings and because many large buildings currently do not participate in the recycling program at all. Neighborhood and Recreational Services has already begun efforts to target large buildings. These include ensuring that recycling takes place at municipal buildings, engaging leadership and tenants within the Newark Housing Authority, and working with student interns to reach out to property managers and owners at large buildings on a pilot basis to identify barriers to recycling

and begin programs. Going forward, a multi-family building campaign could include:

- Mass mailing to owners of all buildings over 10 units in the city notifying them that recycling is required, highlighting resources and information available to assist them in compliance, and clearly stating that increased enforcement and fines will begin on a particular date, following a grace period.
- Meeting with leadership at the Newark Housing Authority to review results from pilot projects and ensure all facilities managers have begun developing compliance plans for their sites. These should include meetings with tenant associations to ensure resident awareness and participation.
- Placement on City website of information and resources available to property managers, including awareness posters, options for obtaining bins, and tips for resolving challenges posed by building layout or storage capacity. The website should also include clear information on recycling pick-up schedules. Finally, the website should list the fines that will be imposed for those buildings that do not comply.
- Enforcement actions beginning at the conclusion of the grace period should identify, fine, and publicize one non-compliant building in each ward.
- Buildings with high levels of participation and compliance should be recognized either on the City website or at a public event.

ENGAGE NEWARK'S SCHOOLS

Recycling at Newark Public Schools can not only bring in large volumes of new material. It can engage students and teachers in

EARTH DAY

For Earth Day 2012, students throughout the East Ward prepared a recycling extravaganza that included a fashion show of clothes made from recycled materials, recycled material art and jewelry, and a documentary created in the media lab at East Side High School about the recycling accomplishments of the ward's elementary and middle schools. In the South Ward, several schools and park organizations are working on recycling projects. These projects can serve as inspiration to other schools and community organizations throughout Newark.



The 2012 Earth Day Show at East Side High School featured an exhibit by the Hawkins Street School celebrating ways to reuse, reduce and recycle. Photo credit: Office of Councilman Augusto Amador.

stewardship and learning, and help motivate parents to recycle at home. As with any cultural or large-scale behavioral change, the youth have a special role to play in leading the community.

Components of a recycling program for Newark Public Schools may include:

- Supporting improvements in recycling collections and hauling contracts. This may include an arrangement for the City of Newark to receive and haul NPS recyclables. It may also include transition to a hauling contract with a high-level commitment to supporting the City's and the schools' recycling goals.
- Providing protocols and working with the District to develop regular (at least annual) training for NPS staff at each facility, including janitorial personnel.
- Working with the District, the NPS facilities manager, and principals to ensure that each school has collection equipment, awareness materials, and storage capacity to manage recyclables in accordance with City law.
- Ensuring that school recycling programs emphasize waste reduction as a first step.
- Supporting student and teacher engagement in recycling by sponsoring contests and highlighting successes and innovation. This may be done through the Newark Environmental Commission in partnership with NRS and the Office of Sustainability.
- Developing and distributing fun, accessible materials to each school explaining why recycling is important, including information about where the garbage from their school goes when it is not recycled.
- Highlighting innovative recycling projects at schools.
- Developing and implementing and enforcement strategy for non-compliant schools.

Action Item 3:

DEVELOP STRATEGIES FOR WASTE REDUCTION AND INCREASED RECYCLING AT COMMERCIAL AND INSTITUTIONAL FACILITIES

Newark's businesses and institutions produce large volumes of potentially recyclable material. Under current City law, they are responsible for hiring their own haulers and paying their own disposition fees. Unfortunately, much of the recyclable material from these sectors ends up going into the trash. Focusing on increasing compliance at businesses and institutions has several potential benefits. The City gain revenue from the State's municipal tonnage grant program. The large volume from these sectors will no longer contribute as much local air pollution and greenhouse gas by being sent to landfill or incineration. Recycled material from these sectors has the potential to become part of new production processes that contribute to the City's goal of boosting local job and business opportunities.

Because of variation within these sectors, separate strategies should be developed, including for schools, universities and hospitals, large office buildings, and small businesses. Outreach, stakeholder engagement, public recognition of leaders, and enforcement are important components of any specific strategy. In addition, all outreach and engagement on recycling should conform to the City's Zero Waste Policy by stressing waste reduction as a first, most cost-effective step. Finally, the City should advance its air quality goals by encouraging the use of clean fuel vehicles for hauling contracts for private sector recyclables.

UNIVERSITIES AND HOSPITALS

Universities and hospitals are also great places to engage stakeholders on reducing waste and boosting recycling. Their

social missions dovetail well with the environmental, public health, and economic goals of the City's sustainability agenda on waste. The City should support campus-based efforts to go Zero Waste, particularly for events. The City should also consider scanning current practices at these institutions, highlighting innovative and successful programs, and engaging with facilities that may not be participating yet.

LARGE OFFICE BUILDINGS

Large office buildings generate plenty of paper and cardboard, which currently sells for the highest price of any of the regulated recyclable materials. Boosting compliance in this sector has an important potential revenue benefit. The City should consider developing an outreach, education, and enforcement strategy for these buildings similar to the one recommended above for multi-family housing. The City may also wish to consider a public recognition event for the most successful recyclers in this sector.

SMALL BUSINESSES

Newark's small businesses face particular challenges when it comes to recycling due to the cost of hiring a separate hauler. The City should explore opportunities for developing collection points at certain locations along retail corridors for pick-up by City staff or haulers. Another option may be to work through existing and developing Business Improvement Districts (BIDs) to explore collective hauling contracts paid for through BID fees and managed by the BID.

Action Item 4:

EXPAND WASTE REDUCTION AND DIVERSION FOR FOOD AND ORGANICS

Nationally, food waste is the largest component of the municipal waste stream that is not recovered, at about 14 percent or 34 million tons in 2010, according to the U.S. EPA. Food and other types of organic waste (grass clippings, yard waste, etc.) tend to be heavy, due to their high water content. Since hauling contracts are generally based on weight, food and organic waste adds substantially to the cost of waste disposition. Traditional methods of waste disposal are especially problematic when it comes to organics. Decomposition in landfills is a potent source of greenhouse gas emission. Organics do not burn efficiently and can worsen problems associated with trash incineration. Food waste in dumpsters can attract pests that detract from quality

of life and in some cases harm public health. From an economic point of view, organics are especially wasteful to send to landfill or incineration because technology exists to turn them into valuable compost or energy. Local job and business opportunities can be generated in Newark using these technologies.

Across the nation, communities are developing methods to address food and organic waste. The EPA has launched a Food Waste Reduction challenge to support and advance these initiatives. (More information at: <http://www.epa.gov/epawaste/conservation/smm/foodrecovery/index.htm>). The City of Newark has great potential to made advances in food

and organic waste reduction and reuse. This Action Item recommends that Newark approach food and organic waste using the Food Recovery Hierarchy developed by the EPA. As always, the first step is waste reduction. This is followed by an emphasis on sending food that is safe for people to where it can do the most good in reducing hunger. Use by animals, industrial processes, and composting all offer alternatives that can generate revenue. Finally, only as a last resort, should food and organics be permitted to go into the trash.

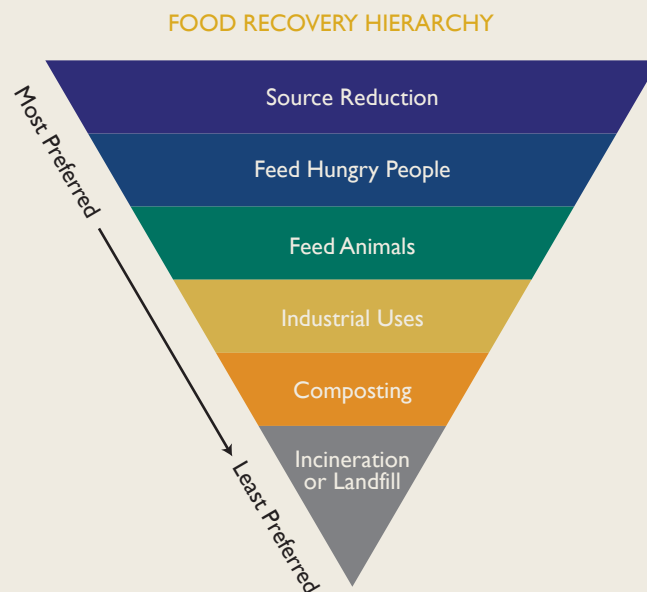
The food waste component of Newark’s overall waste stream comes from a variety of sources including residential, commercial and institutional food preparation. Particularly high volume producers include restaurants, schools, institutional food services providers, and food markets. In addition, the City has a steady stream of organic waste from yards and parks.

Newark’s food and organic waste efforts should include:

Food Waste Reduction

The City should work with major venues, restaurants, and other partners to identify strategies for avoiding food waste. A first step could be to conduct a food wasteshed audit focused on the major producers. A wasteshed borrows from the idea of a watershed and creates boundaries around populated areas for entities that choose to use the same disposal or recycling facility. A food wasteshed audit measures the amount and type of food waste generated at the facilities in the study. Information from the audit can be used to identify opportunities to scale back procurement, increase efficiencies, and explore options for reducing post-preparation waste.

Thoughtful work on food waste reduction is already going on in Newark. Beth Israel performed a food waste audit as part of installing its cafeteria digester. The hospital found that it was disposing of over 300 pounds of food waste a day. A substantial portion of this food waste came from large portions provided to patients that are only partially eaten. The hospital is in process of exploring options for reducing portion size to avoid waste and support patient health.



Source: U.S. Environmental Protection Agency

Anti-Hunger Programs

A startling amount of clean, packaged food is discarded daily all over the country. Newark, like other places where too many residents live in poverty, has its share of hungry people that depend in part on food pantries or other charitable sources of food. Non-perishable and unspoiled perishable food can be donated to food pantries or food rescue operations while being protected against possible liability by the Bill Emerson Good Samaritan Food Donation Law (<http://www.usda.gov/news/pubs/gleaning/appc.htm>).

Again, there are entities in Newark already demonstrating that it can be done. The New Jersey Devils hockey team has been recognized by the EPA for its successful Rock and Wrap it Up! program to divert food from landfills and incinerators through donation. Between October 2010 and April 2011, the Devils donated over 9,550 pounds of food, which was enough for about 7,300 meals.

According to the EPA, (<http://www.epa.gov/osw/conserve/materials/organics/food/fd-donate.htm>) resources for food waste reduction and donation include:

WASTESHED AUDITS

In 2008, the Solid Waste Resource Renewal Group presented a wasteshed feasibility study to City of Newark’s Neighborhood Services Department. The study focused on the famed Newark Ironbound neighborhood, home to hundreds of restaurants, and was financed by the Ironbound Business Improvement District. Four restaurants and a supermarket participated in waste audits; the results of these audits helped SWRRG to create an estimate of the volume and type of food waste generated by this district.

- Feeding America (www.feedingamerica.org) is a national network of food banks that is the largest charitable hunger relief organization in America. It oversees the distribution of surplus food and grocery products through nearly 200 network affiliate food banks and nearly 50,000 charitable agencies. Your nearest food bank can also tell you which food pantries and kitchens are in your neighborhood.
- Food Pantries (www.foodpantries.org) allows you to search for food banks by state or by zip code.
- AmpleHarvest.org (www.ampleharvest.org/find-pantry.php) is a nationwide effort that aims to educate, encourage and enable gardeners with extra produce to easily donate to a local food pantry.
- Rock and Wrap It Up! (<http://rockandwrapitup.org>) is an independent anti-poverty think tank based in New York. It is non-profit and nonpartisan, an organization devoted to developing innovative greening solutions to the pressing issues of hunger and poverty in America. They cover over 500 cities and work with a national database of over 43,000 shelters and places of need.

Industrial Use

The next highest use of food waste is for the production of new goods. Used cooking oil can be made into bio-fuel. Food waste can also be processed on an industrial scale into fertilizer or fuel. This differs from traditional composting (discussed below) mainly through scale, but also through the type of technology used. Industrial composting facilities are enclosed in buildings. Many employ anaerobic digestion to turn the food waste into fuel. This is an example of policy driving industry. A ban on organics in landfills in Europe has led to the deployment of many digesters. The City of Toronto has been operating a large scale anaerobic digester capable of processing 250,000 tons per year as a demonstration project.



Clean Water Fund worked with Beth Israel Hospital to install a food waste digester in the employee cafeteria. Here, a young Newarker trained by the Urban Environmental Institute demonstrates how to add materials to the machine. For more information, visit <http://www.cleanwaterfund.org/nj>. Photo credit: Photo courtesy of Beth Israel Hospital.

Composting and On-site Food Waste Processing

Especially in the short term, before any larger scale facility becomes available, the most cost-effective way to turn food waste into new products or at least to divert it from incineration may be on-site processing. This can be done through small digesters using a range of technologies. These can be installed indoors or out of doors. Some create compost. Others turn food waste into a liquid that can be put into the sewer system or, possibly, used as a nutrient-enrichment for landscaping projects.



Newark's allocation of stimulus funds from the U.S. Department of Energy helped Clean Water Fund and Weequahic High School install a composter to accept cafeteria scraps. The results will be used on school grounds and gardens. For more information, visit <http://www.cleanwaterfund.org/nj>. Photo credit: The City of Newark.

Newark has already begun experimenting with on-site food waste processing through several pilot projects:

- New Jersey Institute of Technology (NJIT) has a food waste digester in its cafeteria. This turns food waste into a liquid that is put into the sewer system. NJIT personnel have documented savings associated with both tipping fees and extermination costs, as dumpsters no longer attract pests.
- A similar technology has been installed in the employee cafeteria of Beth Israel Hospital, in partnership with the Clean Water Fund, an environmental advocacy organization. The project is using a City of Newark subgrant of U.S. Department of Energy stimulus funds.



Ironbound Community Corporation, a community organization serving the Ironbound neighborhood, has a long history of promoting environmental justice and best practices. Here, ICC staff help children learn about turning food waste into compost for their community garden. The project was supported by the City of Newark's allocation of stimulus funds from the U.S. Department of Energy. Photo credit: Ironbound Community Corporation.

- Clean Water Fund, through the same sub-grant, also helped Weequahic High School install a composter for its cafeteria. The composter will make fertilizer that will be used on school grounds. Students performed a waste audit as part of the installation of the composter and will continue to monitor its activity.



Newark's stimulus funds also helped Ironbound Community Corporation teach residents about composting through door-to-door outreach and through games at a community-wide festival. Photo credit: Ironbound Community Corporation.

- Ironbound Community Corporation is using Bokashi composters, which employ a fermentation process, to generate compost for community gardens in Newark's East Ward.
- Greater Newark Conservancy, a Newark-based nonprofit that supports environmental education and community gardens, ran a project in 2012 to collect coffee grinds, grains, fruit and vegetable waste from several retail establishments including two Dunkin' Donuts locations, Brick City Coffee, Subway Restaurant, Blimpie's, Denny's Restaurant, Metropolitan Baptist Church, Harvest Table, TM Ward Coffee, Intrinsic Café, Burgundy's and the Farmers Market on 7th Ave in Newark. The material collected from these sites was composted on a former vacant lot that the Conservancy has adopted and transformed into an urban farm. The end product is then utilized as ground cover or as soil compost in the various community gardens around Newark.

Building on these pilot projects, the City should make information about these sites, including costs and benefits for various models, available on the Sustainability website and should reach out to major food producers that might want to consider an on-site processor. In some locations, it may make sense to explore cooperative local food waste processing. This would involve an anchor site with the largest amount of food waste accepting food waste from nearby smaller sites. The cost of hauling to the local processor must be lower than the cost of regular trash hauling in order to be financially feasible. An initial food waste audit may suggest promising participants in a stakeholder conversation about food waste processing. Possible stakeholders include restaurants, supermarkets, hotels, hospitals, entertainment venues, the airport food court, and corporate cafeterias.

Action Item 5:

DEVELOP AND IMPLEMENT A CONSTRUCTION AND DEMOLITION WASTE RECYCLING ORDINANCE

Construction and Demolition (C&D) recycling requirements have the potential to reduce green house gas emissions and pollution, ease the environmental burden of creating new construction materials, boost the City's recycling rate, and most importantly, have potential to support additional business activity in fields such as deconstruction and upcycling of building materials. Newark has seen a steady number of construction and demolition projects even through the recent recession.

Construction waste management rules in Newark currently require contractors to submit documentation to the City about where the material from the site went. There is no requirement to achieve a specified rate of recycling for this material. Materials that are classified as "construction and demolition waste" in Essex County must be sent to the New Jersey Meadowlands Keegan Landfill, which is the Essex County Utility Authority's approved landfill for accepting C&D waste in the county. The Meadowlands Keegan Landfill is not equipped to sort and recycle C&D material. There are construction sites in Newark that send all their material to this landfill and do not recycle at all. In order to recycle C&D within Essex County's regulations for waste, the material must be separated by type at the construction site, rather than put into one mixed-media dumpster. Once materials are sorted on site, they are considered "recyclable" rather than "waste." The material can then be sent to licensed recycling facilities without contractors having to obtain paperwork from the Essex County Utilities Authority. The contractors do have to document the destination of the materials to the City. Facilities licensed to recycle C&D material can provide documentation about the diversion rate achieved by a particular site. This enables Newark to consider an ordinance that requires a minimum level of C&D recycling.

Commercial construction generates between 2 and 2.5 pounds of solid waste per square foot of construction area, the majority of which is recyclable with some materials able to be targeted for direct reuse.

Examples of C&D ordinances around the country offer useful lessons for Newark. California has a state law that includes a sample ordinance requiring a 50 percent diversion rate and detailed implementation guidance (<http://www.calrecycle.ca.gov/LGCentral/Library/CandDModel/Default.htm>). The experience from California municipalities strongly suggests that C&D ordinances be developed based on research of the local industry and consultation with all affected stakeholders. Other guidance documents include the U.S. Green Building

WHAT IS DECONSTRUCTION?

Deconstruction is the process of disassembling a building so that its materials such as joists, flooring, siding, fixtures, etc. can be reused. Deconstruction is often a cost competitive alternative to conventional building demolition.

Council (USGBC) Leadership in Energy and Environmental Design 2009 (LEED 2009) rating system. The section on Construction Waste Management establishes targets and procedures for how construction waste should be managed.

This Action Item recommends the City explore the development of a C&D recycling ordinance. This would include developing a list of licensed C&D recyclers in the area, surveying current disposal practices from construction sites, and obtaining information about costs for various disposal methods. The City should also explore secondary markets and upcycling opportunities for the source-separated material. In particular, the City should look at its own C&D disposal practices for City facilities and develop best practices for these projects. These can be incorporated into the Green Building Ordinance discussed elsewhere in this Plan. If initial research supports continuing to a next stage, the City should convene a series of stakeholder conversations to discuss the impact of a C&D ordinance on haulers, contractors, processors, and others.

The City should also explore strategies for encouraging deconstruction over demolition for certain buildings. Deconstruction is the process of disassembling a building so that its materials such as joists, flooring, siding, fixtures, etc. can be reused. Deconstruction is a particularly sustainable process because it reclaims existing building materials, provides an affordable source of building materials reduces waste, and generates jobs and building trade-training opportunities. The reclaimed material can be used in new production processes, as discussed in more detail in the following section.

As a first step, the City should identify successful examples of deconstruction businesses around the U.S. One example of a possible best practice is offered by Cotati, CA, where anyone pulling a permit to demolish a building must offer a publicly noticed window of opportunity for contractors or nonprofits

THE CHALLENGE PROGRAM

The Challenge Program engages 15 youths, ages 18-21, for six months of intensive construction training that includes deconstruction of buildings and on-site classes to help participants obtain their GED high school diplomas. Materials recovered from deconstruction projects are used to renovate two affordable houses per six-month period. With support from industry and government workforce development grants, The Challenge Program focuses exclusively on at-risk youth. It has a 66 percent completion rate and an 80 percent placement rate for participants who complete the program. Visit <http://challengeprogram.org/articles/program-overview> for more information.

to remove materials from the site for salvage and resale. Only after deconstruction entities have had a chance to remove what they consider salvageable from the site may it be demolished. (The language of the ordinance is available at: <http://www.calrecycle.ca.gov/condemo/sampledocs/Cotati.htm>.)

Pilot projects on deconstruction should incorporate job training and placement opportunities for Newark residents. Possible partners include youth development organizations such as YouthBuild and IYO, nonprofit housing developers such as

Habitat for Humanity or neighborhood-based community development corporations, and labor organizations such as Laborers Local 55, and several deconstruction resources are listed below:

Resources

- **Environmental Protection Agency (EPA)**—<http://www.epa.gov/wastes/nonhaz/industrial/cd/>. The EPA provides a wide range of resources and links on C&D debris and has produced a number of articles including ‘Building Savings Strategies for Waste Reduction of Construction and Demolition Debris from Buildings’.
- **Building Materials Reuse Association (BMRA)**—<http://www.buildingreuse.org>. The BMRA provides recommendations and techniques for addressing deconstruction of buildings and methods of recovering building materials and recycling.
- **Construction Materials Recycling Association (CMRA)**—<http://www.cdrecycling.org>. The CMRA promotes the safe and economically feasible recycling of the more than 325 million tons of recoverable C&D materials that are generated in the United States annually. These materials include aggregates such as concrete, asphalt, asphalt shingles, gypsum wallboard, wood and metals. CMRA represents a diverse group of member companies and agencies from the many C&D materials recycling disciplines and industry specialties active in the United States and other countries.
- **The National Association of Home Builders Research Center (NAHB)**—<http://www.nahb.org>. The NAHB developed ToolBase.org to educate residential builders of the positive economic attributes of addressing construction waste through reuse, recycle, etc. <http://www.toolbase.org/Best-Practices/Construction-Waste/residential-construction-waste>.

Action Item 6:

DEVELOP AND IMPLEMENT AN ELECTRONICS RECYCLING PROGRAM

Electronic waste is particularly harmful to human health when burned. Some also have a resale value that can help them find another productive use in the local or regional economy. Last and most importantly, electronics are the subject of New Jersey’s only producer take-back law. This law went into effect in January 2011. It requires companies that make electronics such as televisions and computers to pay for programs that recycle or otherwise properly dispose of them. Producer take-back laws are a very important strategy for easing the burden on municipalities for handling difficult-to-recycle or toxic consumer products in their waste streams. All these factors

indicate that Newark has a high potential opportunity to focus on recycling of electronics.

Newark has several types of experience with e-waste collection already. There are two NJDEP-certified electronics recycling firms within its borders: SIMS metal management and Advanced Recovery, where residents and businesses have the option of dropping off e-waste at no charge. A third entity, Urban Renewal Corporation (URC), is a homeless services organization that refurbishes old computers as a jobs training program. URC also accepts e-waste of other kinds and contracts with certified

vendors to dispose of it responsibly. Through a sub-grant of the City of Newark's funds from the U.S. Department of Energy's EECBG program, URC facilitated e-waste collection in the East and South wards and ran a collection route that removed televisions and other e-waste from city sidewalks for a period of six months in 2012. The City will use this pilot to assess the viability of scaling up e-waste collections.

Several corporate-sponsored e-waste recycling activities are also available in Newark. Covanta Corporation, which manages the incinerator in Newark, also owns E-Covanta, a facility located in Philadelphia with an R2 certification to handle e-waste. Ecovanta and the Ironbound Business Improvement District recently sponsored a public drop-off day in the Ironbound section of Newark. Verizon offers cell phone recycling that supports battered women support programs. Panasonic, which is building a new headquarters in Newark, has supported e-waste collections at several Salvation Army

locations throughout Newark and may be a potential partner for a future conversation about how the producer take-back law may be made more effective in New Jersey's largest city.

Newarkers also have the option of participating in annual collections days sponsored by Essex County where materials can be dropped off at a facility in Cedar Grove, another municipality within the county.

Given Newark's size, the limited access of residents to cars, and the health consequences of electronics ending up in the trash, this Action Item recommends that the City explore and implement the following strategies for improving access to e-waste recycling for all Newark residents:

- Incorporate awareness about e-waste into the recycling public awareness campaign, helping residents understand the health hazards of putting e-waste into the trash



Newark's e-waste recycling project with Urban Renewal Corporation did not just take old electronics off the street. Urban Renewal Corp used the material to train Newarkers and others to refurbish and use computers. This stimulus-funded project helped the City divert waste away from irresponsible disposal and

toward productive re-use, while helping support job training and placement for residents. For more information, visit <http://www.urbanrenewal.org/>. Photo credit: Ironbound Community Corporation.

- Streamline options for safe disposal by increasing the number of drop-off sites in each ward and boosting resident awareness of these sites
- Explore creating additional drop-off points in Newark neighborhoods at City recreational centers, libraries, schools, or other institutions with commitments to increased recycling
- Develop relationships with major producers of electronics to explore partnerships under the new producer take-back law; Assist with enforcement of the law by publicizing

- through awareness campaign and seeking to ensure that Newark stores that sell electronics are aware of the law
- Use the producer take-back law to fund collections, potentially including a municipal contract for regular curbside pick-up of e-waste and/or pick-up by appointment from one of the certified vendors in Newark or the region
- Explore e-waste recycling standards including “e-steward” and require all City e-waste contractors to meet the selected standard

Action Item 7:

GROW AND ATTRACT GREEN BUSINESSES THAT UPCYCLE MATERIALS

Perhaps the most exciting aspect of a Zero Waste approach is its potential to generate new job and business opportunities within the local economy. Materials taken out of the waste stream can be “upcycled,” or made into products with greater value than the material has initially. The City, through the Economic and Housing Development Department, Brick City Development Corporation, Sustainability Office, and Newark Works, should identify and pursue strategies for growing and attracting upcycling companies in Newark. This can be done in partnership with key outside entities including universities, the Manufacturers Roundtable, existing waste diversion businesses, and state and federal agencies.

CITILOGS

In 2012, Citilog, a company located at the border of Newark and East Orange, opened for business. The facility, which is seeking a high level of LEED certification from the U.S. Green Building Council, accepts trees removed by city contractors and turns them into new wood products including railroad ties and tree stakes. Production will eventually include mouldings, cabinetry, and indoor furnishings. The facility will employ 50 people when it is fully staffed and will add to the “Made In Newark” brand by recycling old city wood into new local products.



Mayor Booker celebrated the ribbon cutting of Citilog, an urban sawmill on the border of Newark and East Orange, NJ in the summer of 2012. This project, on track for a high level of LEED certification, is an example of “upcycling”—taking material out of the waste stream and turning it into a higher-value product. Trees that fall or are cut down by municipalities are delivered here and transformed a visit: www.citilog.com. Photo credit: The City of Newark.

Strategies may include:

- Highlighting materials upcycling as a desired end use in solicitations for development proposals for City-owned land
- Providing economic development support such as access to capital, assistance with site identification, support through permitting processes, etc.
- Showcasing innovative business success stories, supporting pilot projects, and facilitating business-to-business networking on secondary markets
- Supporting technical assistance consulting contracts to assist local businesses interested in either selling their waste or using secondary market materials in their production processes
- Developing formal collaborations with university partners to advance upcycling technology, research, and development and to incubate new business ideas

Newark is already home to several waste diversion businesses. These include Grease Lighting, which repurposes old cooking oil, Carpetcycle, which recycles carpets, and Citiloggs.





PRIORITY FOUR

Stormwater Management and Community Greening



VISION

Newark will use its land to absorb stormwater before it gets into the sewer system, and do that in ways that also cool and beautify its neighborhoods. Green infrastructure, which mimics the capacity of nature to absorb rainwater into the earth using engineered landscaping, plants, trees, raingardens and pocket parks, and permeable surfaces, will become a critical complement to the City's existing gray infrastructure of pipes and storage tanks. Strategically combining the two approaches will reduce instances of flooding and help prevent the sewer system from becoming overwhelmed. At the same time, Newark's use of green infrastructure will expand the network of green community spaces in order to cool and clean the air, beautify neighborhoods, and filter toxins and pollutants from the soil and water. Accomplishing this shift will provide job and business opportunities for Newark residents. In Newark's sustainable future, rainfall will be a resource for the city's expanding network of parks, gardens, and trees, rather than a problem for its river, streets, and basements.

CHALLENGES

Newark has aging water infrastructure with limited resources available for making needed upgrades. In addition, the majority of the city is paved, creating problems for stormwater runoff and contributing to urban heat island effect. Newark often has the highest temperature in the region (sometimes 6-8 degrees warmer than neighboring suburban communities) in part because of its lack of green spaces relative to concrete and paved surfaces. The city's many brownfields, or sites affected with industrial contamination, also pose stormwater challenges as runoff may contain harmful pollutants. Newark hosts the region's wastewater treatment plant and has a combined sewer system—meaning that the same pipes handle rainwater from street gutters, building waste water, and sewage. The combination of extensive paved surface and aging and outdated stormwater infrastructure results in flooding during heavy rainstorms, and can also lead to discharges of raw sewage into the river and the bay. Addressing these serious problems will require changes in policy, financing mechanisms for infrastructure, and significant expansion of both green and grey infrastructure projects.

ACTION ITEM SUMMARY

- Launch a high-profile campaign to put Newark on track to double its tree canopy and establish a stable source of revenue for tree maintenance
- Implement a new Newark Stormwater Ordinance and develop green infrastructure policy
- Integrate green infrastructure standards into street repair and other public space capital projects
- Identify and implement at least 10 new green infrastructure capital projects over the next five years
- Develop a stormwater infrastructure bank and explore options for funding stormwater improvements through fees on impermeable surfaces
- Support neighborhood-based rain capture projects



Action Item 1:

LAUNCH A MAJOR CAMPAIGN TO DOUBLE NEWARK'S TREE CANOPY AND ESTABLISH A STABLE SOURCE OF REVENUE FOR TREE MAINTENANCE

Trees can function as part of a city's green infrastructure by absorbing stormwater and reducing the volume that runs into the sewer system during heavy rains. But they also provide a range of other environmental services. Trees absorb carbon dioxide, a greenhouse gas and they can significantly reduce demand for electricity by shading buildings and decreasing the need for air conditioning. Leaves can also absorb pollution, including particulate matter from diesel exhaust that settles around highways and truck routes. They cool the air on hot summer days, an especially important service in Newark, where temperatures tend to be about 7 degrees higher than in the surrounding (leafier) suburbs during the summer. Tree-lined streets are more beautiful, calmer, and have much more real estate value than do streets without trees.

But GHG reduction is just the beginning. Trees also absorb pollution, including particulate matter from diesel exhaust that settles particularly around highways and truck routes. Trees absorb stormwater through their roots and tree pits, reducing the likelihood of neighborhood flooding and alleviating pressure on the sewer system. They cool the air on hot summer days, an especially important service in Newark, where temperatures tend to be about 7 degrees higher than in surrounding (leafier) suburbs. Tree-lined streets are more beautiful, calmer, and have much more real estate desirability than do streets without trees. The project of substantially increasing Newark's tree canopy offers the potential for

training and for living-wage employment in a specialized field. With rising frequency and severity of storms, demand for tree care specialists can be expected to rise. Funding and carrying out a major tree planting and maintenance campaign turns the City of Newark into a predictable market for tree services—one that can employ Newark residents and contractors. Finally, tree planting and care offers an avenue for community engagement, education, and stewardship activities. This can bring neighbors together and create partnerships with volunteers or sponsoring firms or organizations. Projects to expand the tree canopy may also help strengthen civic and social ties within a community.

Trees are not a totally unmixed blessing, however. Many species carry pollen that can worsen allergies and asthma. They require maintenance and can create a nuisance if not given proper care. Neglected urban forests can even become hazardous. Resources and experience in city government, the private sector, and the community are required to maintain a healthy tree canopy.

On balance, because of the many benefits offered by trees, the Sustainability Action Plan calls for an ambitious program to generate enough resources to grow and maintain a well-preserved urban forest. The goal of this Action Item is to establish the financial and technical capacity to put Newark on track to double its tree canopy, and to develop a stable, recurring private revenue source for tree maintenance.

Recommendations for growing and maintaining Newark's urban forest include:

- Develop a baseline analysis of existing tree canopy coverage
- Increase the City's capacity to plant and maintain street trees
- Establish an independent nonprofit entity to raise and re-deploy funds in support of the City's tree canopy
- Launch a high visibility campaign to connect individual, corporate, and organizational donors to Newark's tree planting and maintenance efforts
- Explore connecting Newark's urban forestry program to promotion of carbon offset payments made by businesses and individuals flying through Newark airport
- Support development or scaling up of community engagement, stewardship, job training, and job placement for Newark residents within tree care industries

DEVELOP A BASELINE ANALYSIS OF EXISTING TREE CANOPY COVERAGE

Newark has one of the lowest tree canopy coverage ratios of any city of its size in the nation. The City has begun the process of developing a clearer picture of that canopy, working in partnership with the U.S. Forest Service. The U.S. Forest Service has intensified its focus on urban forests in recent years. It collaborated with a number of stakeholders and the New York Restoration Project to produce a new guiding document for supporting tree canopy growth in cities such as Newark: *Vibrant Cities & Urban Forests* (<http://vibrantcities.org/>). The baseline map under development will show areas of relative scarcity of trees within the city. It will also show areas with potential to absorb new trees, whether on the street, in parks, or on private property. The map can be used to make tree planting strategies more effective.

INCREASE CITY CAPACITY TO PLANT AND MAINTAIN TREES

Newark's capacity to grow and maintain its urban forest rests with two City departments and with several key nonprofit partners, particularly the New Jersey Tree Foundation (NJTF: www.newjerseytreefoundation.org), a nonprofit with a mission to engage and train volunteers in planting and caring for new trees in urban areas throughout the Garden State. Within City government, the Traffic & Signals division opens tree pits and manages street tree planting contracts. The Department of Neighborhood and Recreational Services (NRS) provides tree maintenance and removes fallen or hazardous trees. NRS also maintains a current Community Forestry Management Plan and coordinates an annual Arbor Day celebration. These activities allow Newark to be recognized as a Tree City USA.

Newark benefits every year from the Newark Renaissance Trees Program (N RTP: <http://njtreefoundation.org/about/newark-renaissance-trees-program/>) run by the New Jersey Tree Foundation. Over the last several years, NJTF has worked with residents and businesses to plant more than 1,624 trees, using a model that cultivates stewardship and helps build

community at the block level. Ten neighbors on a block must pledge to care for the young trees for two years. Residents on any block can apply for participation. NJTF provides instruction, coordinates preparation, including opening up new tree pits in the sidewalks, brings young trees to the neighborhood, engages paid and volunteer help to assist residents with planting their own trees, and conducts follow-up visits. The City works in partnership with NJTF, particularly through its Neighborhood and Recreational Services Department, to support the success of tree planting days. NJTF recently added a Treekeepers Training that will provide 40 Newarkers with the knowledge and tools needed to provide excellent care to trees under 5 years old throughout the city.



In 2006, the New Jersey Tree Foundation kicked off the Newark Renaissance Tree Program. Here, Lincoln Park residents volunteer as tree planters, part of a community event that planted over 800 trees around Newark. Photo credit: Lincoln Park Coast Cultural District.

Despite all this effort, Newark's tree canopy is still low and in some cases declining as trees are lost due to storms, age, and removal based on hazard status. Moreover, the City has not had capital funds allocated to planting street trees for several years. New trees planting since that time have relied on volunteers and donations. Neighborhood Services focuses the time and capacity of its tree specialists on taking down hazardous trees, a key priority in the Community Forestry Management Plan. To bolster existing capacity and to prepare for the future, the Sustainability Action Plan recommends that the City take the following steps:

Use a planning ordinance to gain trees and tree planting funds from applicants for site plan approval

Current law requires certain types of development applicants to provide for tree planting on their properties if they are approved. A subsection of the law allows developers to pay into a Tree Planting and Maintenance Fund if planting the required number of trees on-site is not practical. The City should ensure that these rules are not waived and that steps are taken to

permit the collection of funds for off-site planting. (This process is currently on hold pending required State approvals.) Trees planted through this law are the responsibility of the private developer. They add to the canopy without adding to the City's maintenance costs. Funds obtained for off-site planting can be used either directly on street tree contracts or indirectly on staff to help manage the urban forest.

Engage a professional urban forestry manager

Urban forestry is the practice of caring for the whole system of trees within a city. This means understanding the local conditions, the existing species represented, and the age and condition of the canopy as a whole. Rather than seeking to plant the maximum number of trees or to keep every single tree alive at all costs, an urban forester takes action to create and maintain a well-balanced mix of ages and species well-suited to the demands of the location. An experienced professional in this field can help existing City staff with planning and project management and can identify and import best practices and communicate across City departments and with the public about the urban forestry program. Funds raised through Site Plan review can be used to engage an urban forester either on staff or via a consulting contract.

Establish a Shade Tree Commission

New Jersey state law permits municipalities to form Shade Tree Commissions with the power to oversee planting and maintenance decisions on behalf of the city. In Newark's 2007-2012 Community Forestry Management Plan, the City committed to forming such a commission. One key advantage to cities is that having a Shade Tree Commission in place offers liability protection from lawsuits associated with tree-related damage or injuries. A Shade Tree Commission would be staffed by residents and community leaders knowledgeable and passionate about the role trees can play in Newark. Commissioners must live in Newark, serve on a volunteer basis, and are invested with substantial responsibilities for street tree management. Together with an urban forester on City staff, a Shade Tree Commission can engage residents in stewardship projects, coordinate tree inventories, recommend new species or best practices, and address disparities in tree canopy coverage across the city. The New Jersey Forestry Service has provided the City with information about model ordinances as a starting point for implementing this commitment of the Community Forestry Management Plan.

Establish an independent nonprofit entity to raise and re-deploy funds in support of the City's tree canopy

At the root of the City's tree challenges lies a lack of resources. Given enough funding, Newark could staff, contract for, and manage not only a robust tree planting and maintenance program, but also a well-developed community engagement and education initiative, and an effective job training and placement network—all associated with its urban forest. The



Corporate sponsors play a key role in expanding Newark's tree canopy. Here, United Airlines employees volunteer with Greater Newark Conservancy to establish new trees on a formerly vacant City-owned lot. Photo credit: The City of Newark.

benefits of trees are real, but so are the holes in the City's budget. Reliance on private donations, therefore, will be central to the health of Newark's urban forest. An independent nonprofit dedicated to Newark's tree canopy could accept tax-deductible private donations. Its stand-alone status would shield it from potential changes in City administration and could attract donors even if they happen to be at odds with the City's then-current political leadership. Finally, an independent nonprofit can hire staff, re-grant funds, and raise additional donations on a dedicated basis, without being distracted by other urgent municipal priorities. Such nonprofits exist in cities around the country, including NYC's Million Trees campaign, and similar projects in Los Angeles, Chicago, Philadelphia, Houston, and



Trees offer many benefits to neighborhoods, including beautification. These photos, taken before and after a New Jersey Tree Foundation volunteer planting day in on Goldsmith Avenue in Newark's South Ward, show what a difference trees can make to the look and feel of a street. Photo credit: New Jersey Tree Foundation.

elsewhere. Newark can benefit from their lessons learned and adopt proven, effective practices.

The new entity (which may also be a new division within an existing community foundation) would raise and accept donations from a wide range of sources and then re-grant those donations to support one of the following program areas:

1. Tree maintenance and planting
2. Community engagement and stewardship
3. Job training and placement of Newark residents as tree care specialists

EARTH DAY TREE GIVEAWAY

For Earth Day 2012, the City of Newark, the Green Team from the township of Sparta, and Greater Newark Conservancy teamed up to give away 1,500 baby trees donated by the NJTF. About half these trees went home with residents to be planted in their backyards. The other half stayed with Greater Newark Conservancy to help launch their new tree nursery.



Art of Survival community garden celebrates Earth Day with the City of Newark's baby tree giveaway. The trees will be planted in an adopted City lot in the South Ward. Photo credit: The City of Newark.

Launch a high visibility campaign to connect individual, corporate, and organizational donors to Newark's tree planting and maintenance efforts

Once an entity is set up to accept donations, the City should support the launch of a high visibility fundraising campaign that makes it easy and exciting for individuals, corporations, or organizations to participate at a range of levels. Via a sophisticated web platform, donors could choose to volunteer their time, sponsor an individual tree, support a Newark resident training as a tree care specialist, support an entire block, purchase young trees for every member of a given Newark kindergarten class, co-brand through support for fund-raising events, or contribute to community stewardship programs. The website would also display visual information about Newark's tree canopy and keep donors apprised of the progress of their particular projects. The campaign would also host events, seek corporate sponsorships for high visibility advertising, and reach out to the large community of individuals and institutions in the region with historical ties to Newark.

Several Newark-based firms have already expressed interest in becoming founding members of this campaign, which is currently planning its launch. (To get involved, please contact the Newark Sustainability Office: Newarksustainability@gmail.com).

Partner with carbon offset programs to encourage dual donations that support both carbon reduction and community greening

One potential source of revenue for Newark's tree canopy is an innovative partnership with the airlines at Newark Liberty International Airport. This major hub serves millions of passengers a year. Many airlines now offer passengers the option of purchasing a carbon offset, a small voluntary contribution added to their ticket price that is then donated to a project that takes carbon out of the atmosphere somewhere in the world. Businesses with carbon reduction commitments can purchase offsets on behalf of their associates when they travel. Carbon markets and regulations for carbon offsetting of air travel in Europe may serve as a spur to increase carbon offsetting in the U.S.

Companies that already make carbon offset payments or that would consider making them could add to their sustainability work by providing matching local dollars to Newark's tree canopy campaign when their employees fly through Newark. More than 33 million people pass through Newark Liberty International Airport every year. If even a very small percent of

them choose to participate in a GreenNewark Fund that both offsets carbon and helps grow Newark's tree canopy, the City would realize a stable, recurring source of private revenue for urban forestry.

Support development or scaling up of community engagement, stewardship, job training, and job placement for Newark residents within tree care industries

One of the most important ingredients for a successful forestry management program is already in place: dedicated community organizations. The New Jersey Tree Foundation, Trust for Public Land, Greater Newark Conservancy, International Youth Organization, and a range of neighborhood-based community development corporations are already working hard to improve Newark's environment. As the urban forestry program develops, the City should engage these partners in discussions about program design, and should seek to "grow the pie" of resources to allow them to engage and serve more residents. Some programs that already exist may be especially valuable in the context of efforts to expand Newark's urban forest. These include programs that engage youth, especially at-risk youth, ex-offenders, recent college graduates, and residents committed to acting as stewards on their blocks or in their neighborhoods. Funds raised through the tree campaign should be deployed in part to support these programs and to build capacity at existing local organizations.

Action Item 2:

IMPLEMENT A NEW NEWARK STORMWATER ORDINANCE AND DEVELOP GREEN INFRASTRUCTURE POLICY

WHAT IS STORMWATER?

Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that adversely affects water quality if the runoff enters lakes, rivers, streams and groundwater sources untreated.

—U.S. Environmental Protection Agency.

Policy tools can encourage increased green infrastructure use on both public and private land. Benefits, as described previously, include increased green open spaces and tree canopy. This can reduce urban heat island effect, improve air quality and beautify the city. These greening efforts can be complemented by small-scale technologies such as rain barrels that will help mitigate Combined Sewer Overflows (CSOs). Green Infrastructure (GI) can also be used to filter stormwater of certain pollutants. And, of course, it can be used as a technique to slow the rate of discharge into the ground or sewers. GI policies and projects will complement City efforts to clean up brownfields in order to reduce toxins and pollutants on the ground and in the soil, minimizing the harmful substances that storms carry into the water system. This approach can be more cost effective and more attractive and can provide more ancillary environmental benefits than the traditional methods of concrete, pipes and storage tanks. On the other hand, GI comes with maintenance costs that must be taken into account when scoping and budgeting projects. And although scaling

up GI deployment will make a substantial impact on Newark's stormwater system, it will not by itself be enough to address the whole system. A combination of green and grey infrastructure will be needed to handle Newark's stormwater in order to meet regulatory standards and protect water quality.

IMPLEMENT STORMWATER ORDINANCE

In 2012, Newark updated its Stormwater Ordinance to bring it into compliance with new State requirements and to emphasize the role of non-structural techniques for controlling stormwater. To ensure that the new ordinance is implemented, the Sustainability Action Plan recommends:

- Development and distribution of a summary of the highlights of the new ordinance
- Distribution of guidance documents on green infrastructure, including technical specifications for recommended elements to applicants for Site Plan approval, which should draw on best practices for GI design
- Training of relevant City staff on GI design and engineering concepts
- Re-examination of Stormwater Ordinance within five years to make any revisions or updates deemed necessary

DEVELOP GREEN INFRASTRUCTURE POLICY

A written policy documents on GI should be developed and distributed. This document should include a set of guidelines for how, when, and where to incorporate GI into City projects and into regulations for private development. It should also include guidance on how to account for maintenance costs in developing an assessment of the feasibility of a particular project. Finally, it should direct engineering staff and City contractors to provide information to the Business Administrator that allows for the tracking of metrics related to GI. These may include square feet of permeable or planted surface, anticipated runoff mitigated at each project, and estimated costs. The policy

WHAT IS A CSO?

Like many older cities, Newark has a combined sewer system which means a single pipe collects rainwater runoff, domestic sewage and industrial waste. Most of the time, Newark's combined system is capable of conveying combined wastewater to a sewage treatment plant managed by the Passaic Valley Sewerage Commission (PVSC) where it is first treated and then discharged into the Passaic River or Newark Bay. However, during periods of heavy rainfall or snowmelt the wastewater volume in the combined system often significantly exceeds the capacity of the treatment works plant and an overflow may be discharged directly into the closest water body. These overflows, called combined sewer overflows or CSOs, contain not only stormwater, but also untreated human and industrial waste, toxic materials and debris.

should be revisited and updated as needed to ensure it reflects current best practices and on-the-ground realities. (Note: a major component of Newark's stormwater management policy will be a tree canopy expansion project discussed in detail in the Greenhouse Gas Emissions chapter.)

Action Item 3:

DEVELOP GREEN INFRASTRUCTURE STANDARDS FOR CITY CAPITAL PROJECTS

One of the City's regular responsibilities is the upkeep of City streets, parks, and other City-owned public spaces. The role of landowner offers the City an opportunity to develop standards for incorporating more plants, trees, and permeable surfaces into the city's landscape.

Newark recently developed new streetscape design standards for several major commercial corridors. This can serve as a basis for the development of more comprehensive standards. The streetscape design standards provide for much more permeable surface than exists today. For example, most tree pits in Newark are 16 square feet (4 feet by 4 feet). The new

standards increase tree pits to 32 square feet—or 8 feet by 4 feet. This simple measure not only helps trees grow, but also greatly increases the amount of surface available to absorb rainwater. Other elements of the new design provide for increasing the planting and permeable surface in the medians of large streets.

Staff from the City's Planning, Traffic and Signals, Water and Sewer and Sustainability Offices should work together through a series of regular meetings to identify opportunities for building on these standards and incorporating minimum requirements into all streetscape and road repair projects undertaken by the City. These standards can then be included

NEWARK RETURNS TO ITS RIVER

The Passaic River is a major feature and resource throughout Newark's natural and human history. But for too long, Newark's river has been a site of contamination. Its neighborhoods and public spaces have been blocked and barricaded from the river in their own backyard. In 2009, Mayor Cory Booker launched Newark Riverfront Revival (NRR), his initiative to revive the city's riverfront for the benefit of Newark residents and visitors while enhancing stewardship and driving ecological restoration.

- In 2012, in partnership with Essex County, The Trust for Public Land, Ironbound Community Corporation, and the City of Newark will open the first two segments of Riverfront Park, containing a walking and biking trail, floating boat dock, riverfront boardwalk, soccer and baseball fields, basketball and tennis courts, and other settings for relaxation, picnics, exercise, and environmental education. In coordination with Friends of Riverfront Park, the new public spaces will be alive with art and education programs, fitness opportunities, and the cultures of Newark.
- At the same time, the environmental remediation of the river has reached a milestone as Tierra Solutions, a private company found responsible by federal and state authorities, is paying \$80 million to remove 40,000 cubic yards of highly contaminated Passaic River sediment, a small but critical start in the clean-up of the river. The U.S. Environmental Protection Agency has funded a Community Advisory Group for the clean-up work that meets regularly in the Ironbound.
- To reduce sewer overflows during rainstorms, the City installed netting chambers along the shore, and is investigating ways for more rainwater to absorb into the ground instead of drain into the sewer.
- To understand how the riverfront can benefit the City, and to build support for its projects, NRR has welcomed over 1,600 people on boat and walking tours, hosted dozens of outreach events, organized design education programs for youth, and staged a City Hall exhibition. By bringing residents and visitors to see the river and adjacent areas with their own eyes, people become experts and ambassadors for the river and its future.
- Alongside these public investments, the City has produced Newark's River: A Public Access & Redevelopment Plan, an update to Newark's municipal development regulations along five miles of the city's Passaic Riverfront. The plan replaces 50-year-old zoning regulations primarily planned for industrial uses and lacking specific riverfront provisions with a legal framework that allows new uses and mixes of uses, consolidates design standards to create valuable urban places, and provides for public access as required by federal and state law.



More than 1,600 Newarkers have visited their river on boat and walking tours organized by the Newark Riverfront Revival. These tours have provided residents with an enjoyable new perspective on the Passaic as it runs through the city. Photo credit: Damon Rich.

See you down by the water.



New streetscape design guidelines will increase the size of tree pits. This will allow trees to capture more stormwater and help prevent flooding. Photo credit: The City of Newark.

in the Green Infrastructure Policy document mentioned above. Newark can draw on information from Philadelphia and New

York City, both of which have made aggressive progress in green infrastructure in the last five years. In addition, the New Jersey Stormwater Best Management Practices Manual offers some interesting examples including:

- Bio-retention systems (plant-based filtration devices that remove pollutants through a variety of physical, biological and chemical treatment processes)
- Pervious paving systems (materials that permit water to enter the ground by virtue of their porous nature or by large spaces in the material)
- Vegetative filters (are designed to remove suspended solids and other pollutants from stormwater runoff flowing through a length of vegetation)

The new standards should be presented to members of the Central Planning Board and Board of Adjustment as well as the Business Administrator. Staff should ensure that the designs standards are distributed to any contractor performing streetscape or road repair work and reviewed as part of the construction meetings associated with those projects.

Action Item 4:

IDENTIFY AND IMPLEMENT AT LEAST 10 PILOT GREEN INFRASTRUCTURE PROJECTS OVER THE NEXT FIVE YEARS

The City of Newark engages in relatively small capital projects on a regular basis. This offers the opportunity to plan and execute pilot projects to vet the costs and benefits of proposed green infrastructure projects. Staff from the City's Planning, Sustainability, and Traffic and Signals departments should work together to identify a list of at least 10 capital projects that increase permeable surface and green space. These might include replacing concrete on traffic triangles with plants and soil, expanding green space through curb bump-outs, repaving portions of the street itself with permeable pavement, creating grassy strips along the sidewalks, and landscaping and planting strategically located, vacant, City-owned lots with water retentive plants. Similar projects in Philadelphia and New York City have already begun to show results. For a detailed description of Philadelphia's program, visit http://www.phillywatersheds.org/what_were_doing/green_infrastructure. Pilot projects should be selected in part for ability to mitigate neighborhood flooding.

Once at least 10 possible projects have been identified, staff should create project documents including scope of work and specifications for any contracts, budget, including maintenance, sources and uses of funds, roles and responsibilities for staff in managing and monitoring projects, and anticipated timelines.



Trust for Public Land managed a community design and construction process for the largest City-owned park, located in the Central Ward and serving 19,000 residents, including 7,000 children. Photo credit: Trust for Public Land.

Finally, as projects are implemented, the maintenance costs and stormwater absorption effectiveness should be tracked and reported to the Business Administrator.

THE TRUST FOR PUBLIC LAND

The Trust for Public Land (TPL) launched the Parks for People-Newark program in 1995 to address the lack of outdoor recreational spaces in Newark's neighborhoods, where research showed that more than 50 percent of children did not live within walking distance of a park or playground. Working closely with the City of Newark, Newark Public Schools, and local communities, TPL has completed 11 park and playground development projects to date. TPL's process includes extensive community outreach, participatory design, environmental education, and stewardship training. TPL's work in Newark includes redevelopment of the City's Mildred Helms Park, development of Nat Turner Park, ongoing redevelopment of Jesse Allen Park, and the development of Newark Riverfront Park. In addition to active recreational elements such as playgrounds, athletic courts and playing fields, these park projects feature many green elements that allow Newark residents to connect to the natural world. These include natural grass areas, planting beds, and many new trees. Future projects will do even more to incorporate green elements that will assist with stormwater management, including rain gardens, vegetable beds, and other permeable surfaces. These spaces will not only function as safe, healthy, outdoor recreational spaces, but also become part of Newark's clean water infrastructure. For more information, visit www.tpl.org.

In addition to implementing its own pilot projects, the City should continue to collaborate with and support partner organizations such as the Trust for Public Land (TPL), a nonprofit that creates city parks, playgrounds, and gardens and raises funds to conserve land. TPL has been active in Newark for decades. Its work has restored and created green open space that has become part of the city's stormwater management system.



Young people work with the Trust for Public Land to beautify Mildred Helms Park in Newark's South Ward. Photo credit: Trust for Public Land.

Action Item 5:

DEVELOP A STORMWATER INFRASTRUCTURE BANK AND EXPLORE OPTIONS FOR FUNDING STORMWATER IMPROVEMENTS THROUGH FEES ON IMPERMEABLE SURFACES

This Action Item proposes the establishment of a citywide fund for stormwater infrastructure improvements funded by contributions from developers applying for site plan approval.

Such a fund would allow some of the monies spent on stormwater management at a particular property to be spent by the City elsewhere, where it may be more effectively used.

Cory Booker, the mayor of Newark, New Jersey, said Hurricane Irene should act as a wake-up call to policymakers to upgrade the nation's deteriorating infrastructure. "We're seeing, in the City of Newark, lots of flooding and problems because our infrastructure is getting very aged, and we haven't had the kind of investment or the resources to put the investment into it to keep our infrastructure strong and safe."

—NBC MEET THE PRESS

At present, new developments or significant redevelopments in the City of Newark are required to capture 100 percent of stormwater on site. This standard is more restrictive than the NJDEP's minimum requirements and is not feasible on certain sites. But the requirement is necessary because Newark's stormwater management system is already at full capacity. However, stormwater management capacity is a system-wide, not site-specific issue, so capturing the same amount of stormwater on another site can provide equal or greater value.

With a new stormwater infrastructure fund in place, the property owner would be given the option of either capturing 100 percent of stormwater on-site or capturing the NJDEP-mandated amount on-site and contributing into a fund via a formula so that the City can fund projects that capture an equal or greater amount of the remaining stormwater off-site. This will result in the desired amount of stormwater capture while allowing for the construction of community-enhancing natural infrastructure projects (described in Action Items 1 and 2) and flood mitigation projects in high-flood areas rather than forcing developers to construct slightly larger subsurface concrete retention basins. This strategy would ease the financial burden on new development while still meeting state regulations and improving the overall performance of the city's stormwater management system. The improvements to these portions of the stormwater management system can have a far greater impact than site-specific stormwater management.

This strategy can be effective in facilitating brownfield redevelopment projects that are often rendered infeasible due to engineering challenges and high costs associated with managing 100 percent of stormwater on brownfield sites. Premium costs and complexity stem from the coordination of stormwater infrastructure with environmental caps associated with these sites, and the care that must be taken to avoid

further harm to groundwater. NJDEP stormwater management minimum standards would govern brownfield sites, with the option of some site development funding for stormwater being redirected to stormwater infrastructure initiatives not burdened with environmental issues.

The funds collected through this process could begin to support the green infrastructure pilot projects discussed above. The City must also establish financial controls to require that monies in the fund may only be used to pay for narrowly defined stormwater management purposes. Staff from the City's Planning, Sustainability, Engineering, and Finance Offices, and Office of Management and Budget will need to be involved in this process. The Municipal Council must authorize a resolution creating the fund and the State Division of Local Government Services must approve a "Dedication by Rider" to allow the City to use the funds for a specific, designated purpose.

NEW JERSEY ENVIRONMENTAL INFRASTRUCTURE TRUST

The New Jersey Environmental Infrastructure Trust (NJEIT) provides low-cost financing for the construction of environmental infrastructure projects that enhance and protect ground and surface water quality, ensure the safety of drinking water supplies, and facilitate responsible and sustainable economic development. Project funding is available to municipal and county governing bodies; local and regional water, sewer and utility authorities; county improvement authorities, certain state authorities and private water purveyors. Since 1987, the NJEIT, in partnership with the New Jersey Department of Environmental Protection, has issued more than \$5.6 billion in loans, funding more than 900 clean water, drinking water, land acquisition, brownfields remediation and landfill cleanup projects.

—ConstructionExecutive.com

Action Item 6:

SUPPORT NEIGHBORHOOD-BASED RAIN CAPTURE PROJECTS

Stormwater management has a number of ancillary benefits, including reduced urban heat island effect and neighborhood beautification. Because the success of the program will result from the combined effect of many small projects, the more residents and businesses participate in neighborhood-based micro-projects, the more effective the city-wide policy will become. To expand access to projects such as rain gardens, rain barrels and gutters, and roof capture of stormwater, the Sustainability Office will seek to work with partners such as Rutgers Cooperative Extension Water Resources Program, NJDEP, Greater Newark Conservancy, Clean Water Fund and others to hold workshops in all five wards, co-sponsored by

local neighborhood associations or entities. These workshops will provide basic information about how to obtain, use, and maintain stormwater capture devices, and install raingardens at home, at small business, or house of worship. Each workshop should seek to identify an “anchor” project that can serve as a model and teaching tool for others in the area.

The City’s Adopt-a-Lot program offers residents the opportunity to create gardens, including raingardens, on vacant, City-owned land for a \$1/year lease. The Housing and Real Estate Division is working in collaboration with Newark’s Food Policy Director to scale up this program (see Category 6). Some adopt-a-lots may be suitable for raingardens with technical support from Rutgers.

GREATER NEWARK CONSERVANCY AND RUTGERS RAIN GARDENS

In 2009, Greater Newark Conservancy and the Rutgers Water Resources Program teamed up with the City of Newark to address stormwater issues on vacant City lots. The goals of the program were:

- Construction of demonstration stormwater best management practices
- Stormwater management and environmental education in Newark Schools
- Green-collar job training

The project created six rain gardens throughout Newark. These were designed in collaboration with schools or community organizations and involved participants in Greater Newark Conservancy’s “Clean and Green” program, a City-funded transitional jobs program for people coming back from prison. The gardens exemplify how one project can meet multiple sustainability goals: beautify the neighborhood, cool the air, absorb stormwater, and spur green economic activity.



The Rutgers University Center for Urban Environmental Sustainability partnered with Greater Newark Conservancy and the City of Newark to create raingardens throughout the city with support from the NJ Department of Environmental Protection. The gardens capture stormwater, beautify neighborhoods, and serve as educational settings for local school children. Photo credit: Rutgers University.

GREATER NEWARK CONSERVANCY

Greater Newark Conservancy has been promoting environmental education, justice, and stewardship and supporting community greening in Newark for many years. Greater Newark Conservancy's program areas include:

Community Greening Program—This program helps Newarkers transform their blocks through curbside flower barrels, new pocket parks, and community gardens. Greater Newark Conservancy provides technical assistance to residents and runs the popular annual gardening contest. Greater Newark Conservancy also works with Rutgers University to develop rain gardens.

Education Program—This program works with students and youth in school, at the Greater Newark Conservancy garden, and at projects around the city. The Youth Farmstand initiative helps young people learn business skills as well as nutrition while providing fresh, local vegetables for sale to the public.

Environmental Justice—Greater Newark Conservancy partners with several Newark non-profit and government agencies on advocacy for open space in urban areas. Greater Newark Conservancy was a Charter Member of the Newark Partnership for Lead Safe Children and continues to provide lead safety education. Greater Newark Conservancy, along with other Newark organizations including the Ironbound Community Corporation and the Newark chapter of Clean Water Fund, is a member of the NJ Environmental Justice Alliance.

Job Training—Greater Newark Conservancy runs the Newark Youth Leadership Project (NYLP), a year-round job and leadership training program for high school and college youth from Newark. The program exposes young people to different career options in environmental and horticultural fields and opportunities for pursuing a college education. Greater Newark Conservancy also manages the Clean and Green program on behalf of the City's Office of Prisoner Re-entry. This program offers a 13-week transitional job training experience cleaning, landscaping, and even growing produce on vacant City-owned lots.

Urban Farming—In 2011, the Conservancy operated a one-acre urban farm on City-owned land on Court Street in Newark's Central Ward. Clean and Green participants produced over 5,000 pounds of vegetables in their first season. The Conservancy will begin operating a second large-scale urban farm, this one 2.5 acres, on Hawthorne Avenue in the South Ward in 2013. This land is being leased by the City from the Schools Development Authority and subleased to the Conservancy. The Conservancy will also begin several tree farms in 2012. The tree farms will help increase the city's tree canopy, measure carbon sequestration, and provide training in tree care for Newark residents.



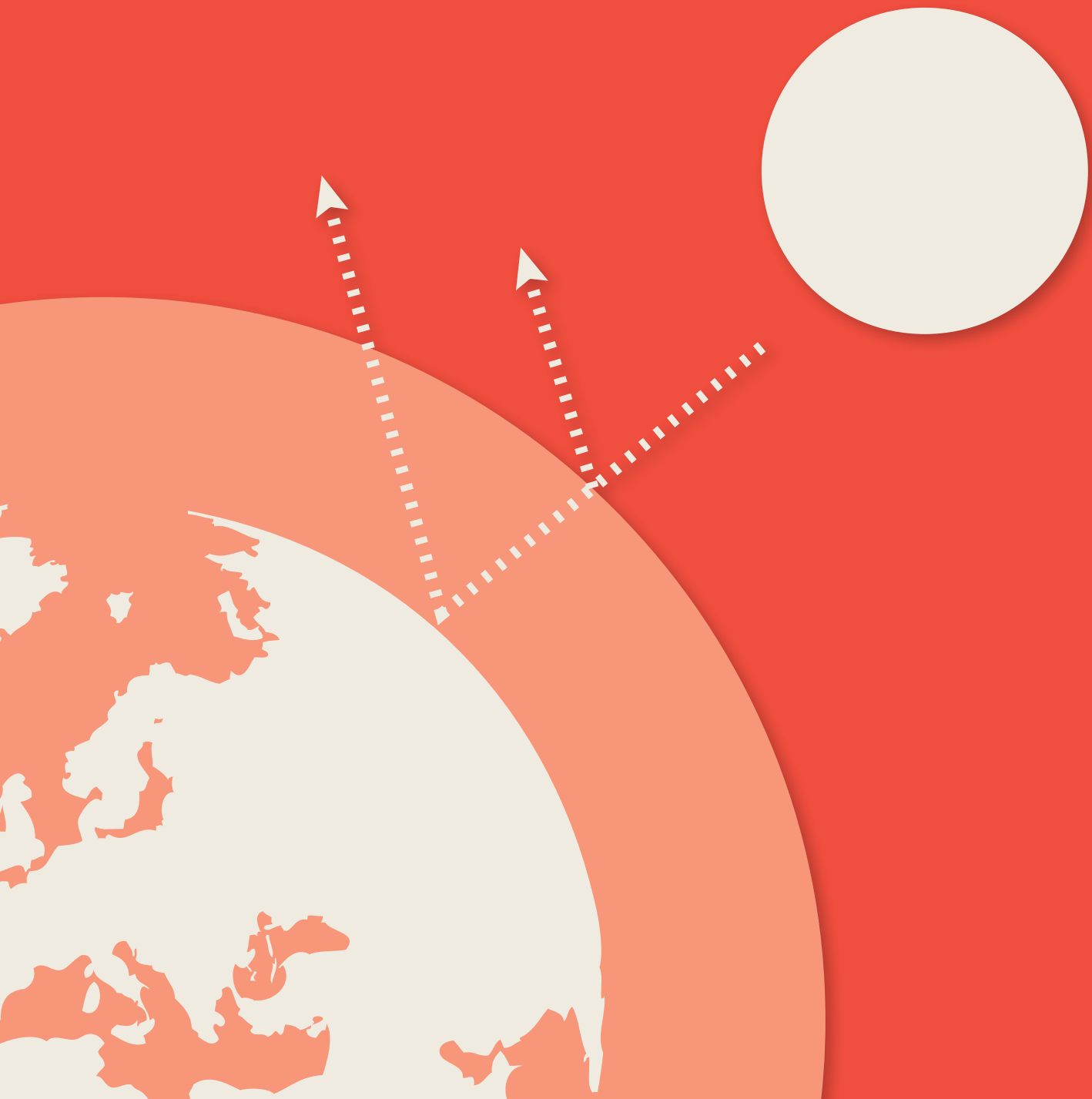
Greater Newark Conservancy works with the community to support gardens, run urban farms, manage job training programs, advocate for environmental justice, and educate youth about food and environmental stewardship. Photo credit: Greater Newark Conservancy.





PRIORITY FIVE

Greenhouse Gas Emissions



VISION

Newark will do its part as a signatory to the U.S. Conference of Mayors Climate Protection Agreement to track and reduce its own greenhouse gas (GHG) emissions and advocate for policy action on climate change at higher levels of government. Newark will work to meet or exceed the GHG reduction targets established by the State's Global Warming Response Act of 2007 (N.J.S.A. 26:2C-43) that mandate statewide emission reductions to 1990 levels by 2020 and further reductions of 80 percent below 2006 levels by 2050. In keeping with the principles, priorities, and goals of this Plan, the mitigation and emission reduction work summarized in this section link to actions that promote public health, cost savings, resource conservation, and local economic activity. Newark's actions will demonstrate that climate change is an urgent economic and environmental justice issue for U.S. cities. In a sustainable Newark, policy leadership on climate change will improve the local environment and economy, and inspire meaningful action at the state and federal levels that moves the United States toward climate safety.

CHALLENGES

Climate scientists increasingly agree that only large-scale, drastic changes to business-as-usual can avert or reduce extremely disruptive and harmful consequences from greenhouse gas emissions associated with human use of fossil fuel. The scale of reduction required means making radical changes to our use of energy, transportation, consumption, land use, building management, and waste. Climate change results from the sum of many tiny actions, and coordinating a response that has sufficient scale among so many actors can be very challenging. Cities like Newark face challenges related to the impact of storms, floods, heat, and energy security. Even though most changes also have operational or lifecycle savings, financing the initial change can be a challenge. Finally, all local governments face the challenge that many of the policies needed to achieve meaningful impact on climate change must take place at the state, federal and international levels. The U.S. continues to lack the political will necessary to address this problem at scale and with urgency.

ACTION SUMMARY

- Promote GHG reduction within City operations and in City-supported private projects
- Capture and track GHG reductions associated with Action Items in this Plan as City mitigation strategy
- Work with North Jersey Transportation Planning Authority (NJTPA) to refine existing GHG inventory for Newark sectors, determine tools for tracking GHG for City and key sectors, and participate in NJTPA's GHG mitigation workgroup
- Work with priority sectors (e.g. Port and Port related, PVSC, large buildings and institutions) to advance GHG reduction goals



Action Item 1:

PROMOTE GHG REDUCTION WITHIN CITY OPERATIONS AND IN CITY-SUPPORTED PRIVATE PROJECTS

The City has an opportunity to reduce greenhouse gas (GHG) emissions both directly, through changes in municipal operations, and indirectly, through policies and regulations that impact private sector behavior. Many of the strategies discussed elsewhere in this Plan have the cross-over benefit of reducing GHG. These are summarized in more detail in the following section. However, there are several policy options specific to GHG emissions reductions that are available to the City in addition to the other actions in this Plan. City policy can affect GHG emissions through both municipal operations and through regulation. Possible policy changes include:

CITY OPERATIONS

- Require analysis of GHG emissions and development of alternative design or mitigation plans for construction or major rehabilitation of municipal buildings. This can be achieved as part of the Municipal Green Building ordinance proposed elsewhere in this document. The City should take advantage of experience with GHG minimizing design and construction techniques available within the universities as well as at state and federal agencies and the U.S. Green Building Council.
- Prioritize GHG emissions reduction in fleet management. This may include the development of a weighted scale for decision-making on vehicle purchase and maintenance that favors the least climate harmful option to the extent financially feasible. It may also include a focus

on car sharing, fuel efficiency, electric vehicle use, and technologies that limit the need for municipal workers to travel in cars. Consideration should also be given to the GHG impact of fuel used by off-road City machines such as construction equipment.

- Incorporate GHG emission reduction targets into municipal energy policy. This may include progressively increasing the percentage of clean energy in City energy procurement contracts. It should also include attention to building fuel use, electricity conservation, building management systems, and development and deployment of pilot projects on renewable or distributed generation energy for City buildings.

CITY-SUPPORTED OR PERMITTED ACTIVITIES

- Require GHG emission analysis in presentation of alternatives in the Environmental Impact Statement submitted for proposed new development or redevelopment projects. Making GHG emissions a key component of the EIS prompts developers to consider design alternatives, and educates decision-makers and the public about the GHG impact of development.
- To the extent permitted by law, leverage the site plan review process to require GHG mitigation as a condition of approval, in conformity with the Master Plan's commitment to promote a sustainable city.

- Provide training to members of the Central Planning Board and Board of Adjustments, as well as to Brick City Development Corporation staff, on how building and land use decisions impact GHG emissions. This training should include information about the link between Newark’s long-term economic competitiveness and the climate profile of its built environment.
- Facilitate connections between the development community and technical assistance professionals as well

as university resources to promote increased familiarity with strategies for achieving development goals with minimum GHG emissions. Both the New Jersey Institute of Technology (NJIT) and Rutgers University have resources for green building design and construction. Students at NJIT have recently developed designs for a net zero energy home. The City should strive to promote innovation that draws on its universities as it advances its GHG goals.

Action Item 2:

CAPTURE AND TRACK GHG REDUCTIONS ASSOCIATED WITH ACTION ITEMS IN THIS PLAN

This Action Item summarizes the GHG emission reductions associated with actions listed throughout the Plan. Realizing and monitoring these reductions forms the core of the climate change mitigation plan will help Newark meet its GHG goals.

The chart below (continued on page 86) lists each of the Action Items in this Plan that will have the effect of reducing GHG emissions. The remainder of the Action Item discusses methods for measuring and monitoring these results.

Sustainability Plan Category	Sustainability Plan Action Item	GHG emissions reduced through...
Air Quality	Action Item 2: Reduce diesel pollution from trucks and other vehicles	Shore power and on-board technologies, and electrified truck stop that reduce engine running time for trucks Upgrades to cleaner fuel vehicles for City-owned or City-subsidized fleets Land Use and Zoning rules and traffic signal optimization that decrease road time, especially in residential areas
	Action Item 3: Develop and implement a Cumulative Impact Ordinance and Zoning Amendments to minimize and mitigate new pollution	Requirement that new development projects analyze projected GHG emissions and present alternatives that take GHG emission reduction goals into account
	Action Item 4: Strengthen partnerships and advocacy work on major emission sources	Continuing work with the PANYNJ on the Clean Air Strategy to implement action and identify new opportunities Projects with other major emission sources (eg, energy efficiency upgrade at PVSC) that reduce on-site emissions or energy demand that links back to GHG emissions
	Action Item 5: Phase out use of Number 6 and Number 4 heating oil in building boilers	Replacement of higher GHG emission fuel with lower GHG emission fuel in major heating systems Pairing of boiler upgrades with energy efficiency assessment may lead to reduced energy demand in large buildings
	Action Item 6: Roll out a “Green and Healthy Homes Initiative” for Newark focused on homes with children with asthma	Energy efficiency gains in homes that lead to reduced energy demand
Energy	Action Item 1: Reduce the City of Newark’s municipal energy consumption by 20 percent over the next five years Actions include: <ul style="list-style-type: none"> • Municipal building audits, baseline development, building management systems • Efficiency retrofits through ESCO • Operations and maintenance and employee behavior change • LED streetlight upgrade program • Reduced energy use linked back to reduced emissions from power generation 	Tools that allow the City to assess baseline GHG emissions associated with municipal building and fuel use and develop metrics for measuring progress toward goals Reduced energy use linked back to reduced emissions from power generation
	Action Item 2: Facilitate energy savings for residential, commercial, industrial, and institutional partners	Reduced energy use linked back to reduced emissions from power generation Increased deployment of renewable energy technologies
	Action Item 3: Explore and support clean energy alternatives and distributed generation development	Shift to cleaner power less dependent on fossil fuels
	Action Item 4: Promote and enhance green building and design principles for development projects	Reduced energy use, lower GHG footprint associated with building fuel, materials procurement, waste disposition, transportation, etc.

Sustainability Plan Category	Sustainability Plan Action Item	GHG emissions reduced through...
Waste & Recycling	Action Item 1: Develop a Newark Zero Waste Strategy	Reduced GHG footprint associated with paper use reduction, recycled content procurement strategies, and vendor contracts to remove and reuse certain portions of the City's waste stream (ie tires, etc.) Reduced production and disposition of waste at City-permitted events If industrial resource recovery park is found to be feasible, reduction in GHG footprint associated with obtaining new raw materials and with disposing of used materials
	Action Item 2: Double city-wide municipal recycling rate from 2010 levels	Reduced emissions associated with production of new goods from raw materials Reduced emissions from incineration of recyclables
	Action Item 3: Expand commercial and institutional recycling	Reduced emissions associated with production of new goods from raw materials Reduced emissions from incineration of recyclables
	Action Item 4: Expand waste reduction and diversion for food and organics	Reduced emissions associated with production, transportation, and disposal of wasted food Reduced methane emissions from incineration and landfilling of organics Increased use of cleaner-burning bio-fuels Shorter supply chains for fertilizer, fuel, and other products created through processing organic waste
	Action Item 5: Develop and implement a Construction and Demolition Waste Recycling Ordinance	Reduced emissions associated with production of new goods from raw materials, especially concrete and wood Reduced emissions from incineration or landfilling of materials
	Action Item 6: Develop and implement an Electronics Recycling program	Reduced emissions from production of new goods from raw materials Reduced emissions from inadvertent incineration of electronics
	Action Item 7: Grow and attract Green Businesses that upcycle materials	Reduced emissions from production of new goods from raw materials Reduced emissions from incineration or landfilling of materials Reduced vehicle miles traveled for Newark residents employed at local green businesses!
Stormwater Management	Action Item 3: Identify and implement at least 10 pilot green infrastructure projects over the next five years	Some direct absorption of GHG by vegetation Reduced emissions from production and transportation of materials used in "grey" infrastructure Reduced demand for energy associated with processing waste water that links back to emissions from energy generation
	Action Item 1: Implement a new Newark Stormwater Ordinance and develop green infrastructure policy	Some direct absorption of GHG by vegetation Reduced emissions from production and transportation of materials used in "grey" infrastructure Reduced demand for energy associated with processing waste water that links back to emissions from energy generation
	Action Item 5: Support neighborhood-based rain capture projects including conversion of vacant lots into rain gardens, use of rain barrels, and green roofs or roof-based stormwater capture systems	Some direct absorption of GHG by vegetation Reduced emissions from production and transportation of materials used in "grey" infrastructure Reduced demand for energy associated with processing waste water that links back to emissions from energy generation
GHG Emissions	Action Item 1: Launch a high-profile campaign to put Newark on track to double its tree canopy and establish a stable source of revenue for tree maintenance	Some direct absorption of GHG by trees Reduced demand for energy associated with using less air conditioning due to cooling effect of trees near buildings
Healthy Food Access	Action Item 1: Establish a city-wide Newark Food Policy Council	Stronger constituency and improved policy environment for healthy, locally grown food that facilitates shortening of food supply chain with associated reductions in GHG emissions for production and transportation of industrially-produced food
	Action Item 2: Support successful Farmers' Markets in each ward	Shorter supply chains, less energy-intensive overhead for distribution, and smaller-scale production
	Action Item 3: Stimulate urban agriculture on vacant public land	Shorter supply chains, less energy-intensive overhead for distribution, and smaller-scale production Some direct absorption from city-based vegetation
	Action Item 4: Engage youth in transforming Newark's Food Environment	Increased demand and more viable market for locally-grown, less GHG intensive food
	Action Item 5: Strengthen the local real food industry through support for Made In Newark value-added food products and increased procurement of locally and regionally-grown food	Shorter supply chains, less energy-intensive overhead for distribution, and smaller-scale production Less vehicle miles traveled as opportunities increase for Newarkers to work in local food businesses

The Sustainability Office will work with partners to identify and deploy tools for measuring and monitoring the GHG emission reductions in the chart on the previous pages.

Based on the tools already in place through NJTPA (discussed further below) for measuring baseline GHG emissions in Newark, the City should develop priority categories for GHG mitigation. Information already available suggests that electricity, heating fuel for buildings, and transportation account for the bulk of GHG emissions in Newark. In making decisions about how to focus resources for measuring and

monitoring progress, the City should emphasize tools that focus on these three sectors. Ongoing monitoring will allow projects that demonstrate high impact on GHG goals to emerge as future priorities.

Once metrics are in place to measure GHG emission reductions for all Action Items, the City may wish to explore having these reductions verified as carbon offsets. This would allow them to be sold on carbon markets, generating revenue to help fund mitigation projects.

Action Item 3:

REFINE NEWARK'S GHG BASELINE AND PARTICIPATE IN NJTPA'S GHG MITIGATION WORKGROUP

In June 2011, the North Jersey Transportation and Planning Authority (NJTPA) completed and published a Regional Greenhouse Gas Inventory and Forecast Report to measure the amount of GHG emissions in the region and to determine the most significant emissions sources. As a part of a multi-year climate change initiative, in support of the goals outlined in the New Jersey Global Warming Response Act of 2007, NJTPA developed a 2006 baseline calculation tool based on best practices and designed to facilitate mitigation planning. (See <http://www.njtpa.org/plan/Element/Climate/RegionalGreenhouseGasInventory.aspx> for additional information). The report covered the entire NJTPA region which is comprised of 13 counties and 385 municipalities in northern New Jersey with an approximate population of 6.5 million people from Ocean County up to Sussex County. Within this region, the vast majority of GHG emissions can be attributed to three sources:

- Production of electricity used in homes, businesses, and industry
- Fuel use such as natural gas or oil in heating homes, businesses, and industry
- Gas and diesel fuel used in the transportation sector

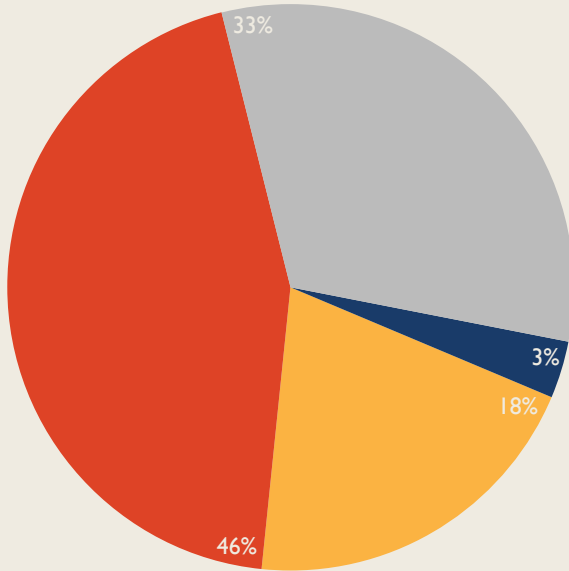
The tools created for the NJTPA regional inventory can be used to generate results at the municipal level. Focusing only on emissions associated with Newark reveals a pattern that is basically similar to that of the region overall, with the top three categories continuing to be building energy use (both electricity and fuel) and transportation.

The inventory examined GHG from several perspectives: Direct emissions include only GHG emitted from activities that take place within the city of Newark. Consumption-based emissions include the GHG that is generated by activities that occur within Newark, even if the emissions associated with them happen somewhere else. (For example, energy used in Newark that draws on a power plant in Kearny would include the GHG associated with the Kearny plant in this analysis.) Finally “Energy Life-cycle” emissions include all the emissions associated with extracting the resources used to generate the power that supports the activities in Newark. So, using the same example, the GHG emissions related to removing coal from the earth and transporting it to the Kearny power plant would be included in this version of the analysis.

Electricity used in buildings forms a greater share of the city's total GHG emissions from the consumption perspective because it includes emissions associated with power plants located outside of Newark.

Newark is already a participant in the NJTPA greenhouse gas mitigation plan working group. Through this process, the City has the opportunity to deepen its understanding of its own GHG footprint and to develop methodologies for further refining that analysis by sector. The City should meet with NJTPA staff outside of the mitigation working group process to pursue this Action Item.

NEWARK GHG DIRECT EMISSIONS BY SECTOR—2006

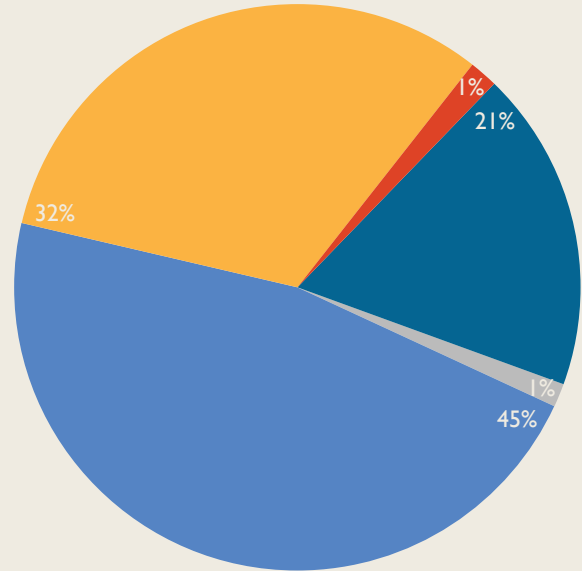


Direct Emissions (tons CO₂e) – 2006

- Agriculture
- Electricity
- RCI Fuel Use
- Solid Waste Management
- Transportation
- Wastewater Treatment

Source: NJTPA

NEWARK GHG EMISSIONS—CONSUMPTION BASIS 2006



Direct Emissions (tons CO₂e) – 2006

- Electricity
- RCI Fuel Use
- Solid Waste Management
- Transportation
- Wastewater Treatment

Source: NJTPA

Action Item 4:

WORK WITH PRIORITY SECTORS TO ADVANCE GHG REDUCTION GOALS

The collaborations with major entities recommended in the Energy, Air Quality, and Recycling and Materials Management sections of this Plan should include a clear focus on GHG reduction goals as well. This is particularly true for the Port Authority's Clean Air Strategy, which commits to GHG reduction goals through the anticipated expansion of the coming years. The City, as a formal participant in the development of the PANYNJ's Clean Air Strategy, should continue to work with PANYNJ staff on updating and implementing their plan with emphasis on both GHG emission reduction and air pollution mitigation as discussed previously.

The City should incorporate GHG emission reduction targets into its engagement with other major entities around air pollution. These engagements, described in more detail in the Air Quality section should include outreach to Passaic Valley Sewerage Commission and PSEG. Staff capacity permitting, additional outreach should include entities with air permits from the State, and Newark's major office buildings and

manufacturing facilities. Options for GHG reduction projects should address building electricity and fuel use as well as fuel for fleets serving the facilities.



Newark's parks help absorb GHG and stormwater as well as providing public space for rest and recreation. Weequahic Park, shown here, is one of a growing network of parks in Newark. Residents like those in the Weequahic Park Association play a key role in maintaining and improving Newark's natural resources. Photo credit: Mahima Giri.



PRIORITY SIX

Healthy Food Access





Action Item 1:

ESTABLISH A CITY-WIDE NEWARK FOOD POLICY COUNCIL

Many residents and organizations in Newark are already working on promoting healthy food access. But they often work separately from one another and miss the opportunities that would come from a more collective approach. In addition there are many residents that are not currently engaged in organizational work related to food. Nevertheless, they experience the food environment and need a forum to share their powerful ideas and develop their leadership potential to improve the food environment in their communities.

Food Policy Councils have emerged throughout the country as a way to bring together and coordinate a cross-section of stakeholders committed to improving food security and food justice in their cities. (Examples in Baltimore, New York City, and Detroit among others offer valuable learning opportunities to the effort in Newark.) Council membership seeks to represent all aspects of the food system such as production, distribution, sale, consumption, and waste processing. They also draw membership from residents in their communities and policy makers and program directors from within local government.

The idea of establishing a Newark Food Policy Council grew out of a series of discussions over two years about healthy food in Newark. These included several large meetings organized by the Rutgers Business School under the heading of the “Food Empowerment Network,” as well as the efforts of individual organizations to promote healthy food access or expand urban

agriculture for their members or constituents. The Mayor’s service as co-chair of the national Let’s Move! Campaign spearheaded by First Lady Michelle Obama brought additional focus to strategies to address childhood obesity. The Let’s Move! Newark initiative has several standing committees that bring together leaders on issues pertaining to healthy food. A Newark Food Policy Council would serve as a community-driven network that shapes and helps move forward a collective vision for a healthy Newark food system, makes policy recommendations, and supports projects and programs that advance the collective food agenda.

Another consistent theme emerging from these discussions was the need for a Food Policy Director, a person responsible on a full-time basis for coordinating and moving forward the agenda being framed by the various groups. In response to this discussion, the City of Newark, Brick City Development Corporation, and the Strong, Healthy Communities Initiative, a collaboration funded through the Living Cities Integration Initiative, came together to support the creation of a Food Policy Director position within the Newark Sustainability Office. The Food Policy Director is responsible for strengthening Newark’s food system through coordination of existing efforts, and facilitation of new policies, projects, and partnerships. One of the first tasks of the Food Policy Director is to plan and convene a Newark Food Policy Council.



Source: C.S. Mott Group at Michigan State University

The Sustainability Action Plan endorses the formation of a Newark Food Policy Council. Recommendations in the rest of this section speak to strategies for forming a Council that builds on existing work, draws in new community voices, develops a strong working relationship with City Hall, and works intentionally to transition the council into an independent, self-sustaining body over the coming years.

BUILD ON EXISTING WORK

Groundwork on both vision and policy recommendations has been laid by existing efforts over the last several years. In terms of vision, the Food Policy Director, through a series of

one-on-one and group discussions, research on Food Councils elsewhere, and a survey of the current food landscape has distilled common themes. These include a desire to promote:

- Food access that results in improved health outcomes and decreased hunger and food insecurity
- Food literacy that results in a defined food culture, language, and an increased demand for real food at food retailers
- Sustainable urban agriculture that is environmentally sound and utilizes energy-efficient, toxin-free, and water conserving growing, processing and distribution practices
- Economic development and entrepreneurship that boosts the local economy and provides jobs

In terms of policy recommendations to realize the vision of the Food Policy Council, members can also draw on existing work. Let's Move! Newark has a committee on Law, Policy and Food Systems that meets regularly and considers policy recommendations. Greater Newark Conservancy has begun to hold Healthy Empowerment meetings and bring together community gardeners. The Food Policy Director convened the city's first farmers' market operators meeting, has held numerous one-on-one and small group meetings, and works closely with the City's Adopt-a-Lot program. The following priorities have emerged as consistent themes in all these discussions:

- Map the City's Food Resources and Conduct a Food Assessment
- Ensure Fresh Food Options in Schools
- Increase Urban Agriculture
- Encourage Fresh Food Supply and Demand through Policies and Education
- Engage with State and Regional Food Partners

Building on the wisdom and effort that have already gone into food-related work will give the new Food Policy Council a strong foundation for moving forward into new territory.

DRAW IN NEW VOICES

Everyone in Newark experiences its food environment. If people who are directly affected have a voice in shaping the vision and agenda of the Food Policy Council, it will have a better chance of responding to the needs of the community. To make it

possible for interested community stakeholders to participate meaningfully in the work of the Council, it is envisioned that members of the first steering committee of the Council, leaders already in work on food in Newark, will facilitate a series of cultural convenings (film screenings, tastings, cook-offs, social gatherings) to draw new people into the conversation in an open and welcoming setting. These convenings will include an opportunity to talk about food and an invitation to anyone interested in getting more involved to take the training required for members of the Council. Both these committee members and interested members of the community will participate in a series of training workshops. Training will give participants a common experience and language through which to discuss Newark's food environment. Recommended material focuses on food justice as a lens, looking at the social determinants of health and the ways in which the food environment is shaped by economic and racial inequalities.

In addition to cultivating new leadership, the Council should solicit new voices by having its meetings well-advertised, with translators available, in venues accessible and open to the public. Particular invitations should go to resident associations, organizations, and businesses representing various aspects of the food system, including production, processing, distribution, consumption, education, recycling, and waste.

Efforts should also be made to ensure the inclusion of organizations that affect the food system but may not think of themselves as active members of a conversation about food in Newark. These include the Newark Public Schools, Newark Charter Schools, Newark Pre-Schools, houses of worship, food pantries, community development corporations, Business Improvement District Restaurants, food manufacturers, supermarkets, bodega workers and owners, food distributors and food waste companies.

DEVELOP A STRONG PARTNERSHIP WITH CITY HALL

The Food System Council will be convened and coordinated by the Food Policy Director, but will stand outside city government as an independent body. In order to ensure that its recommendations have a receptive audience in local government, the Sustainability Action Plan recommends that an internal Food Policy Taskforce be formed. This group would be composed of City agencies such as the Department of Child and Family Well-being, Division of Tax Abatement/Special Taxes, Planning Department, and Economic & Housing Development as well as Brick City Development Corporation (BCDC), the City's economic development catalyst. They will meet at the request of the Mayor's office to identify and reduce barriers to healthy food access that may exist within current policy and regulation. Examples of areas of study include clear rules on food safety and land use and zoning that encourages urban agriculture. The Food Policy Taskforce will receive and respond to recommendations from the Food System Council.

BUYING POWER

Institutions and businesses in Newark spend substantial sums each year buying food. In cities and states around the U.S., this local purchasing power is being leveraged to support local agricultural production. While New Jersey state law strictly regulates the considerations that can be placed on public contracts, many opportunities exist in New Jersey and in Newark to connect local demand with local production. For example, supermarkets, university and corporate cafeterias, and corner stores can all choose to source a percentage of produce locally to prolong shelf-life, secure against contingencies in the national and international markets, and brand themselves to customers as purveyors of fresh, local food.

BECOME INDEPENDENT WITHIN SEVERAL YEARS

The Food Policy Council should be designed from the beginning with a plan to become independent and self-sustaining. Interim steering committee members will then be tasked with recruiting and preparing their replacements. The Food Policy

Director will seek and raise funds for a new Food System Council coordinator. Within several years, the Newark Food System Council should be run by well-prepared community members and housed and led outside of City government.

Action Item 2: SUPPORT SUCCESSFUL FARMERS MARKETS IN EACH WARD

A farmers market is defined as a multi-stall market at which several farmer-producers sell agricultural products directly to the general public at a central or fixed location, particularly fresh fruit and vegetables (but also meat products, dairy products, and/or grains). Farmers markets help regions become self-sufficient by connecting local economies and communities while supporting public health and local food systems. In a 2008 University of California, Los Angeles study published in the *American Journal of Public Health*, women who shopped at farmers markets ate about three additional servings of fruits and vegetables a day compared to women who had access only to supermarkets.

Newark's three farmers markets are run separately by the University of Medicine Dentistry of NJ Auxiliary, The Commons in Washington Park, and the Newark Downtown District. Two are located downtown and are all in the Central Ward. In the 2012 season, five family-owned, New Jersey farms provide the produce at Newark's three markets (two producers per market). Farmers are also providing fresh produce in underserved areas of Newark. Garden State Urban Farms and Greater Newark Conservancy are operating farm stands selling their Newark-grown produce, and the Ironbound Community Corporation hosts one farmer weekly at their Family Success Center.

The Sustainability Action Plan recommends the City support the development of new farmers markets in neighborhoods throughout the city, launch a comprehensive publicity campaign for existing farmers markets, mobile markets, and farm stands, and promote the redemption of federal nutrition benefits at all markets to increase new consumer attraction, food access, and support farmers.

The City should update and disseminate the Brick City Development Corporation's Farmers Market Manual and integrate the Department of Child and Family Well-being's health permit guidelines into the manual. In an effort to reduce the requirements for those vending fresh food in the city the City of Newark's Division of Tax Abatement/Special Taxes no longer requires farmers to obtain a special event vendor license. To promote the manual, the City will provide farmers market operator training for existing and potential farmers markets to ensure that

all markets have the resources and tools to be economically viable, in compliance with local and state regulations, have the capacity to provide food education at markets, and effectively serve the needs of both consumers and producers.



Mattarazzo Farms sells their produce at two different markets in Newark. Photo credit: Elizabeth Reynoso.

Existing markets operate independently, catering to customers in their immediate vicinity. Through a cohesive, high-visibility marketing campaign, all of Newark's markets and farmers could benefit from increased traffic from Newark residents as well as employees from area businesses and visitors from surrounding towns. Improved marketing would help all the existing outlets attract more consumers, which in turn would enable the participation of more farmers, providing access to an even greater variety of products grown locally and regionally. The City of Newark's Sustainability Office website and Twitter currently publicize times, locations, and public transportation access weekly to each of the markets and stands. The Greater

Newark Convention Visitor's Bureau in collaboration with the City's Food Policy Director is already engaged to publicize the 2012 markets widely to visitors to the city. In May 2012, the City and Brick City Development Corporation applied for funding to support a comprehensive marketing campaign for the 2013 market season. To supplement these efforts, the City should coordinate with community-based organizations, community development corporations, faith-based organizations and restaurant owners to help bring and keep small-scale regional farm vendors to Newark.

WHY FARMERS' MARKETS?

- Farmers/producers sell directly to consumers, minimizing profit loss by circumventing the middleman
- Consumers can buy direct from the farmer/producer
- Consumers can obtain organic fruits and vegetables from Certified Organic farmers
- Consumers can enjoy fresh, seasonally-grown food that was produced within a drivable distance from their homes
- More capital remains in the consumers' community

Another way to increase local consumer purchases of fresh produce at farmers markets is to improve the affordability of the food sold. The U.S. Department of Agriculture's Farmers Market Nutrition Program (FMNP) checks (issued to seniors and participants of the Special Supplemental Nutrition Program for Women, Infants and Children [WIC]) and the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, can assist many Newarkers interested in purchasing locally grown, real food. In 2011, 13,379 Newark clients received WIC benefits. Many WIC recipients also receive SNAP to stretch their food budgets. Approximately 69,000 people were SNAP recipients and 33,436 were children who received SNAP support. In 2011 \$85 million of SNAP benefits were redeemed at authorized retailers in Newark. Farmers at farmers' markets have the potential to incur revenue through these federal nutrition benefits while a greater number of consumers can be guaranteed to access fresh, seasonal produce with these benefits at farmers' markets which are easily accessed by public transportation.

While FMNP issues paper checks, SNAP benefits are received on Families First cards electronically and require wireless

point-of-sale equipment to accept benefits for purchases. The equipment is costly for sale or rent and therefore sometimes cost-prohibitive for farmers and farmers markets. In 2009 the Brick City Development Corporation participated in a pilot program run by the State of New Jersey to provide wireless scanners to farmers markets in order to accept the electronic benefits transfers from SNAP recipients purchasing produce with their benefits. In 2012, the Federal Government provided \$4 million to increase the number of farmers markets participating in SNAP. The City's Food Policy Director is working with the city's farmers market operators to take advantage of New Jersey's one-time \$91,874 federal funding of the allocation to subsidize the full cost of the wireless scanning equipment and monthly service fees. Although farmers and individual farm stands are not eligible for this funding, the City provided technical assistance to Greater Newark Conservancy and Garden State Urban Farms to become SNAP-authorized producers and retailers. At the time of this writing the UMDNJ Auxiliary Farmers Market, The Commons Farmers Market, the Newark Downtown Districts' market, and the Greater Newark Conservancy were newly authorized to receive SNAP.

Consistent access to urban farming can supplement a family's food budget by \$500 to \$1,200 worth of produce annually since most produce from urban gardens is consumed at home by the gardeners themselves and their relatives and neighbors."

—FARMING FROM THE CITY CENTER TO THE URBAN FRINGE: URBAN PLANNING AND FOOD SECURITY

The City will continue to explore resources for future farmers market participation in SNAP. In addition, with the increase of farmers markets authorized to receive SNAP, the City's markets will have the opportunity to implement an incentive program that will enhance SNAP redemptions at the markets. Programs like Wholesome Wave's Double Value Coupon Program (DVCP) at farmers markets in Connecticut, California, New York, and Massachusetts increased farmers revenue by almost \$2 million in federal benefit and incentive purchases. \$1,072,000 came from federal food benefit redemption and \$816,000 from DVCP incentives. The Fair Food Network's Double Up Food Bucks (DUFb) offers low-income consumers an opportunity to purchase more fresh fruits and vegetables by matching up to \$20 in SNAP funds spent per market visit using tokens that can be redeemed to purchase more Michigan-grown produce. DUFb markets reportedly benefited from new customers, with 86 percent of market managers agreeing that repeat customers were returning to the market more often, 80 percent of vendors reported selling more fresh fruits and/or vegetables and 75 percent reported making more money at the market because of the DUFb program.

Action Item 3:

STIMULATE URBAN AGRICULTURE ON VACANT PUBLIC LAND

Although much of our food comes from rural farms, agricultural production also occurs in Newark's five wards. The city's community gardens and urban farms provide residents with access to fresh food, the opportunity to participate in a sustainable and economically viable food system, and a chance to reconnect with the land and real food. Outdoor urban agriculture can also provide benefits such as neighborhood stabilization, beautification, and community engagement. Finding space for agriculture and gardening can be difficult, but technologies such as greenhouses, hoop houses, hydroponic, aeroponic, and aquaponic systems indoors and on rooftops can extend the city's capacity to become more self-reliant and determine our own food sovereignty, which is the right of communities to choose where and how their food is produced and what food they consume.

SUPPORT ADOPT-A-LOT PROGRAM FOR CULTIVATION

In the 1970s when more people began living in cities and inflation caused food prices to soar, an effort to make cities not only consumers of agriculture, but also a base for agricultural production began. In 1977, the U.S. Department of Agriculture (USDA) sponsored the Urban Gardening Program that established urban offices to promote vegetable gardening and community gardens in 16, later 23 cities. The Rutgers Urban Gardening Program was established in Newark in 1978. More than 6,000 city residents established about 1,900 community and family gardens covering about 30 acres of vacant city lots with vegetables, herbs, small fruits, and other food crops worth about \$915,000 annually based on an Extension Services-USDA formula. The City has the same opportunity for stimulating an environment in which local and regional agriculture can thrive by promoting urban gardening education and increasing access to land for food production today. Through the City's Adopt-A-Lot program any resident, business, block association or non-profit organization interested in beautifying a City-owned vacant lot in Newark is eligible to adopt a lot from the City. Leasees help reduce neighborhood blight by beautifying vacant lots with interim uses when more traditional redevelopment might not occur for years. The City already partners with Greater Newark Conservancy to provide technical assistance with gardening, property maintenance, site design and plant materials when available.

To improve the effectiveness of the Adopt-A-Lot program, the Food Policy Director will assist the Adopt-A-Lot manager to promote the program in communities where lots are available, document the amount of city-owned land used for cultivation, ensure access to garden education that is affordable, and remove barriers to resources needed to maintain community gardens.

The City will engage the Rutgers Cooperative Extension to provide additional capacity to enhance existing opportunities for new gardeners including a series of gardening classes and a Master Gardeners' hotline to answer residents' questions about cultivating food in an urban setting. The Food Policy Director will also connect anti-hunger, food literacy, and public health initiatives to available City-owned land to increase the city's footprint dedicated to urban agriculture.



In 2012, Newark entered its first lease with the Schools Development Authority for land cleared in the past for school construction. This two and a half acre site in the city's South Ward, located across the street from Hawthorne Elementary School, will become Newark's largest urban farm to date. The farm will be managed by Greater Newark Conservancy according to a plan developed with community residents. Photo credit: Elizabeth Reynoso.

The City and its partners should also develop a robust outreach and education program to help potential resident gardeners and farmers develop projects that increase local production. In 2012, the Department of Economic and Housing Development engaged Newark Community Solutions (NCS) to provide Adopt-A-Lot leasees with helping hands. NCS program participants have the option of serving their community hours on Adopt-A-Lots as part of the program's diversion of low-level offenders from incarceration. The City, in collaboration with Greater Newark Conservancy and community-based organizations, continues to explore funding for resources and tools needed to support local food production on City-owned land.

SCALE UP SDA PARTNERSHIP

The City is undergoing a process to substantially increase locally-grown produce on public land through leases with the New Jersey School Development Authority (SDA). The SDA owns several large tracts of land in Newark that were cleared in the past in anticipation of school construction. Lack of school construction funds have meant that some of these properties have remained vacant for years. The City is in the process



Signage for Newark's first non-profit urban farm. Photo credit: Elizabeth Reynoso.

of leasing a 2-acre site in the South Ward to be subleased to Greater Newark Conservancy for urban farming. Similar applications for other sites are in the pipeline. The City and SDA should build on this partnership to expand local growing and should include program elements that involve schools and food pantries closest to the urban farm locations.

WHAT'S HAPPENING NOW

Newark is already actively addressing food security issues. From backyard gardens to church properties, communities throughout Newark are growing garden produce from eggplant to corn. Some urban agriculture initiatives include the Art of Survival's Urban Organic farm, First Tabernacle's Swagarden, Garden State Urban Farms and market at Newark Beth Israel Hospital, Greater Newark Conservancy's Court Street Urban Farm and Plot It Fresh sites, and the Prodigal Sons and Daughters community garden. Potential initiatives to expand urban agricultural technology and new markets for year-round produce in Newark include Aerofarms system at St. Philips Academy, City Hydroponics system developed at NJIT, the Lincoln Park Community Farm and Branch Brook Park Alliance Urban Farm project.

CREATE LAND USE STRATEGIES TO SUPPORT LONG-TERM AGRICULTURAL USE

The Sustainability Action Plan recommends that the City protect community gardens by working with nonprofit partners to ensure that certain City-owned parcels will remain open, public green spaces. One way to achieve this goal is through the creation of a land trust. The Essex County Land Trust creates permanent affordable housing throughout the county by acquiring title to land that is owned by the community with extended 99-year ground leases. In Chicago, NeighborSpace works with community groups to acquire land where urban gardens have been created so that their gardens will no longer be vulnerable to redevelopment. Furthermore, the City should consider establishing an urban gardening zoning district such as Cleveland's which was enacted in 2007 "to meet needs for local food production, community health, community education, garden-related job training, environmental enhancement, preservation of green space, and community enjoyment." Zoning for urban agriculture helps clarify rules and requirements for this relatively new land use and will help encourage both non- and for-profit growing.



Produce and signage for a commercial farm that has a farm stand and market at Newark Beth Israel Medical Center. Photo credit: Elizabeth Reynoso.

SUPPORT COMMERCIAL URBAN AGRICULTURE PILOTS

Some organizations have begun experiments with commercial food production. Although they do not currently provide a major source of food, these enterprises can provide training and education that stimulates local food demand, job creation, and encourage a new generation of farmers. The City should review land use code provisions to identify codes, ordinances and permits that inhibit potential future development of commercial-scale urban agriculture and market gardening and to develop new standards or incentive programs to support local food production and innovations in urban agriculture. In order to create more opportunities for economic growth using commercial farming, the Sustainability Action Plan recommends identifying strategies to support several

commercial agriculture pilot projects over the coming years. The City's Sustainability Office, in partnership with other City departments and external organizations, will explore ways to support development of ancillary infrastructure, including distribution facilities, agricultural supply centers, reliable water sources, and processing facilities to support commercial urban agriculture.

ENHANCE SUPPORT FOR LOCALLY GROWN FOOD

Many institutions, corporations, and restaurants in Newark buy food, and some have either a mission or a business interest in supporting a healthier food system in Newark. The Food Policy Director will reach out to potential partners to

initiate conversations about local procurement of food. Local procurement may also become an element under consideration for development projects receiving City subsidies that involve the purchase of food. Marketing Newark-grown food to local and regional restaurants may also increase demand for Newark's urban agriculture as well as raising the visibility of Newark's food system efforts. In the summer of 2012, the City sponsored Turn-Table Tastings to promote locally-grown produce with a Newark food enterprise. Vonda's Kitchen owner Vonda McPherson sourced produce grown at the Court Street Urban Farm for a cooking demo that highlighted the connection between music from the African Diaspora her healthy soul food cooking at the Lincoln Park Music Festival.

Action Item 4:

EDUCATE AND ENGAGE YOUTH IN TRANSFORMING NEWARK'S FOOD ENVIRONMENT

Newark's youth have tremendous potential to shape the culture of fresh food consumption in the city. Youth in Newark are also greatly affected by the problems in Newark's current food environment. According to the New Jersey Childhood Obesity Study in 2009-2010 conducted by Rutgers's Center for State Health Policy:

- Newark children are more likely to be overweight or obese compared to their national counterparts. The rates are highest among the youngest (3–5 years) and the middle (6–11 years) age groups.
- The majority of Newark children do not meet recommendations for vegetable consumption.
- Non-Hispanic black children tend to consume energy-dense foods such as fast food, sugar-sweetened beverages, and sweet and salty snacks.
- Although most parents shop at supermarkets and superstores, they report limited availability of fresh produce and low-fat items at these stores. Cost and quality are reported as major barriers to buying healthy foods.
- Between one-third and one-half of Newark parents surveyed report having a limited selection of fruits and vegetables at the store where they shop.

A healthy food system in Newark should address these challenges in ways that incorporate and respect the perspective and leadership potential of our young people. Education, empowerment, and program development can all play a role in bringing youth to the fore of Newark's healthy food initiatives.

PROMOTING HEALTHY FOOD IN THE SCHOOLS

The food environment in schools can influence a student's eating habits and provide food choices that will result in positive health outcomes. One way in which Newark is already a leader in school food nutrition is in providing school breakfasts. It is

well known that students who eat breakfast regularly perform better academically than those who do not. The national School Breakfast Program is important to low-income children's well-being. Children from families with incomes below 130 percent of the federal poverty line receive school meals for free. Children between 130 percent and 185 percent of the poverty line receive school meals at a reduced price. In Newark the program is universal or offered to students at no charge, regardless of income. Serving breakfast to all children reduces the stigma of the program just being for "poor kids" and allows all students to begin the day on the same page. New York Public Schools piloted their "Breakfast in the Classroom" using the Newark Public School model.

Several Newark Public Schools also participate in the Fresh Fruit and Vegetable Program. The purpose of the program is to increase elementary school children's consumption of fresh fruits and vegetables, to expose elementary school students to new fruits and vegetables, to improve healthy eating habits and, to help elementary schools create healthier school food environments.

Some Charter Schools have contracts with Revolution Foods which provides freshly prepared meals served with real ingredients and Red Rabbit's kid-tested, made-from-scratch, farm-fresh foods to set up students for success with nutritious meals.

Many Newark youth already have been improving the food environment by growing and eating local fresh food. At St. Benedict's Preparatory School in Newark, young men can take a farming course in the spring and tend crops in their container gardens. Project U.S.E. has been growing on the rooftop of New Jersey Institute of Technology for their farmstand program called Pedal Farmers. The Greater Newark Conservancy provides three Newark public schools: Harriet Tubman, John

F. Kennedy and Thirteen Avenue schools with construction and plant materials, equipment, tools and technical guidance to help teachers and students grow vegetables, test soil and compost in their Living Laboratory, an outdoor classroom. St. Philip's Academy's 4,500-square-foot rooftop garden supplies fresh produce to the cafeteria. The Greater Newark Charter School just started its Community Organic Garden through the Adopt-A-Lot program to empower "our people with produce and educate our youth through hands learning!"



A 10-year old student offers guided tours and tastings to City staff from his school's garden at Harriet Tubman Elementary School in Newark. Photo credit: Elizabeth Reynoso.

The Sustainability Action Plan recommends that the Food Policy Council and the Let's Move! Newark Council engage youth who are part of their school's Nutrition Advisory Councils and those who are not in the development of school food charters, garden classrooms, and culinary job training programs and serve as peer educators and wellness ambassadors in their schools and neighborhoods. The Food System Council and the Let's Move! Newark will work with parent teacher associations, schools, and non-profit organizations to explore more farm-to-school menu options and healthy vending machine products and placement. The Office of Sustainability along with the Department of

Community Engagement will promote city-wide after-school and summer session culinary programs that feature seasonal produce, celebrate the cultural culinary traditions of the student population, and provide a safe welcoming space for youth to eat, cook, and buy their food. Furthermore, the City should scale up successful youth programs that integrate curricula on gardening, nutrition, and culinary and food system careers.

IDENTIFY AND SCALE UP EFFECTIVE PROGRAMS

Some promising initiatives are: the Rutgers TEEM Gateway & Greater Newark Conservancy's Newark Youth Farmstand entrepreneurship program; the Robert Wood Johnson Foundation's New Jersey Partnership for Healthy Kids—Newark's collaboration with the Alliance for a Healthier Generation to enhance the power that schools have to be places that shape the health, education and well-being of our children; the Barat Foundation's healthy food vending, education-dispensing mobile Green Truck; the YMCA Coordinated Approach To Child Health (CATCH) program which builds an alliance of children, parents, teachers, and school staff to teach skills and behaviors associated with maintaining healthy lifestyles; and Kids Farm, a program of Kids Corp which educates youth and brings thousands of pounds of fresh, naturally grown produce to the Newark community to feed its students. The produce is sold at a very low profit margin, directly to the summer and after-school programs where a high numbers of children with obesity and nutrition issues have been identified by its health clinic.

Finally, the Sustainability Action Plan recommends that the City explore development of Safe-to-Eat Zones around schools and recreation centers. In the Newark Children's Bill of Rights, the second and third rights are:

#2: The right to safe homes, schools, and neighborhoods that will preserve an individual's dignity, respect, and freedom from discrimination

#3: The right to good nutrition, a decent permanent home, clean air, and healthy drinking water

SAFE-TO-EAT ZONES

Safe-to-Eat Zones would uphold the right for youth to eat free from violence and unhealthy foods, because both impair a child's ability to learn and thrive. Every child should have the choice to consume real food snacks- fruit, nuts, baked goods, naturally sweetened beverages—and items without artificial ingredients at bodegas, markets, and food establishments 1,000 feet from schools and feel safe from harm where they shop and eat.

Action Item 5:

INCREASE MADE IN NEWARK FOOD SALES AT BODEGAS AND FOOD OUTLETS

In 2008, Brick City Development Corporation ran a pilot program called the Small Grocer Initiative, one component of the Newark Fresh Foods Program. The Small Grocer Initiative assisted small grocery store owners in expanding and building capacity to carry fresh fruits and vegetables in an effort to increase nutritious, affordable food retail options in Newark. Small local operators used funds for the purchase of equipment, fresh food inventory and leasehold improvements. The Sustainability Action Plan recommends that the City explore expanding the pilot program to bodegas nearest to schools and in neighborhoods with the highest rates of obesity and diabetes. Building off of the lessons learned from the initial Small Grocer Initiative, the City should seek to link loans for increased fresh food capacity to a grocer's or store owner's commitment to source locally grown and/or locally prepared foods.



Vonda, the chef from a new healthy soul food restaurant in Newark, provides a food demo called TurnTable Tastings at the Lincoln Park Music Festival where she linked her food to the music performed from the African Diaspora. Photo credit: Elizabeth Reynoso.

Many food products and food commodities pass through Newark via the Port. In addition, there is a growing group of sophisticated food businesses located in Newark, including Damascus Bakery, Bartlett Dairy, Manashevitz, Flying Food, and D'Artagnan among others. The Sustainability Action Plan recommends that the City work with Rutgers Business School and other consultants as needed to map out the current food supply chain that stocks Newark's food environment. The map will identify potential products and markets as well as gaps in services and supplies that will inform economic and workforce development strategies that will support a more robust food

business cluster. The City should also continue its efforts to learn from food manufacturers about barriers and growth opportunities through the Manufacturer's Roundtable and the Made In Newark campaign. In particular, the workforce needs of the food businesses in Newark should be an area of focus for the Food policy Council, the Made In Newark campaign, and the City's workforce development and vocational education institutions. For the Democratic National Convention, the City supported Made In Newark by working with Joey's Fine Foods, TM Ward Coffee, and Damascus Bakery to promote Made in Newark products in the Mayor's gift bag given to over 500 New Jersey delegates who attended the convention in Charlotte, N.C..

Through Newark's Manufacturing Initiative and the Newark chapter of the Business Alliance for Local Living Economies (BALLE) Network, Newark has gained capacity to support and grow locally owned businesses and to foster the development of local entrepreneurs. Forward Ever, BALLE's chapter in Newark, will be focusing on potential of growing the local food manufacturing sector through support for member businesses. Identification and development of sites that can house food enterprises and incubators, such as the Ballantine Brewery, can lead to a greater variety and availability of food in the city as well as increased job and business opportunities in the local food industry. Marketing the availability of these new goods and services to local and regional restaurants, institutional food services, and food establishments will further strengthen the market.

WHAT IS THE SMALL GROCER INITIATIVE?

The Small Grocer Initiative, one component of the Newark Fresh Foods Program, helps Newark small grocery store owners expand and build capacity to carry fresh fruits and vegetables in an effort to increase nutritious, affordable food retail options in Newark. As part of the initiative, Brick City Development Corporation provides technical assistance and grants from \$5,000 to \$20,000 to small local operators for the purchase of equipment, fresh food inventory and leasehold improvements.







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Mayor

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The City of Newark Sustainability Action Plan

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