

Sustainable Newark



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Executive Summary

Newark is in good company.

As with the other cities along the Northeast corridor, Newark is struggling with aging infrastructure and a complicated industrial legacy. But Newark does not have to look as far as Providence, or even Bridgeport, to understand how older cities are tackling sustainability. Just across the river, New York's Million Trees initiative is one of the most ambitious and comprehensive urban forestry initiatives in the nation. And an hour to the south, Philadelphia leads the nation in best-practices urban storm water management. Discrete sustainability actions such as these ones need to be developed within the overarching need for a comprehensive strategy that focuses on local priority areas and that coordinates implementation mechanisms with a fiscal point of view. The City of Newark should establish an on-going planning exchange with both of these potential partner cities and take advantage of both the good will and the technical expertise they have to offer.

Our research here suggests that Newark is as well, if not better positioned than these other cities to leverage sustainability for urban revitalization. The exceptional variety of built and open space environments creates opportunities for sustainability initiatives of almost every kind and scale: from retrofitting older building stock with new energy technologies to best practice storm water management in the parks, wetlands and watersheds. A highly diversified economy, with a changing but still well-positioned industrial base, creates unique opportunities for green manufacturing and 'eco-industry' where waste streams and input streams among industries are linked.

Newark is already well underway as a sustainable city. City-wide initiatives with important implications for sustainability include the restoration of the Passaic River Waterfront and the development of green affordable housing stock. The City is actively engaging the citizenry, including the previously incarcerated, in a variety of green jobs initiatives. There are new opportunities for subsidized weatherization and energy reduction programs as well. At the neighborhood level, both the Lincoln Park and Ironbound neighborhoods are implementing best-practice storm water management techniques and are actively promoting green jobs and green building practices. These are all excellent initiatives and the city and the neighborhoods should build on the energy and capital already invested to bring these to full fruition.

In addition, the legal and institutional infrastructure is in place to support a model city-wide sustainability initiative. The detailed audit of the Newark ordinances that was undertaken as part of this study suggests that while the ordinances are neither assertive enough nor clear enough about specific standards to be as effective as they could be, the foundation is broad enough and strong enough to enable the most progressive sustainability measures.

As suggested above, Newark must continue to build on the neighborhood-scale initiatives that are underway and should reinforce the strong legal and institutional framework for sustainability that already exists. In addition, this report recommends the following:

- **Find New Partners:** Find new opportunities for public-private partnerships as well as partnerships with institutions such as NJIT, UMDNJ and Rutgers University.
- **Leverage Industrial Strength Sustainability:** As suggested above, Newark should take advantage of its extensive industrial landscape that offers a variety of opportunities including wind harvesting, solar arrays, green roofs and storm-water capture and reclamation as well as more complex opportunities for green jobs "eco-industry."
- **Work Together:** An integrated approach to sustainability requires that different agencies and departments within agencies work closely together. Reinforcing the role of the Environmental Commission is strategic here.
- **Get the Word Out:** The Newark case studies suggest that there could be better communication between the communities and the City, both in terms of what each is trying to achieve for sustainability and what each is struggling with.
- **Re-Focus on Health:** The city should highlight the role that sustainability can play in addressing Newark's health issues, especially as they relate to asthma, active living and food choice.

Finally, one of the strongest themes to emerge from our survey of national case studies was the role that outreach and advocacy play in comprehensive sustainability programs, whether in New York, where the web site for the Million Trees initiative allows residents to post "planting stories" and to suggest sites for tree planting; or in Portland, where Smart Trips program volunteers go door-to-door to distribute information about transportation alternatives. In Newark, there has been no shortage of planning, but civic engagement continues to be a challenge. A comprehensive sustainability initiative can point the way to addressing this challenge because sustainability initiatives lend themselves to incremental, but potentially highly visible results that citizen stakeholders can truly take ownership of. By leveraging sustainability to achieve new levels of citizen empowerment, it is Newark that will be the next national case study in sustainable cities.

The Larger Context for Sustainability: Good Town Planning and Climate Change

The most widely accepted definition of “sustainability” comes from the United Nations’ Brundtland Commission 1987 report “Our Common Future.” They define sustainable development as “... development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

This is obviously an extremely broad concept – at some level, it touches on everything relating to land-use and planning. For the purposes of this study, and in order to focus and define this initiative in a way that can be most useful to the City of Newark, sustainability is addressed according to several specific categories which recur in the research, literature and practice of sustainability and defined generally in the following terms:

- **Waste Management:** The practices of collection, disposal and recycling of organic and non-organic waste and the citizen’s participation in the relation of communities to the byproducts of their activities and their impacts.
- **Water Resources:** Measures for provision, conservation and use of water resources in landscape installation and maintenance, reclamation and harvesting including clean water, storm water and wastewater and gray water management.
- **Housing Design and Construction:** Standards for residential building practices that aim to create energy efficient structures and make the optimal use of resources and have the least ecological impact.
- **Energy:** Strategies for conservation and efficient use of resources to operate the needed systems for community life that can affect landscape impact on temperatures and other climate issues from buildings to the regions.
- **Green Business and Economy:** Business practices that embed environmental principles in economic development, such as strategies for green business attraction and retention and green workforce jobs initiatives.
- **Transportation and Connectivity:** Policies and plans to reduce auto-dependency and improve mobility and promote transit-oriented development, car sharing, diverse modal transport and pedestrian friendly spaces.
- **Public Health and Local Food Production:** Programs and policies that look to provide environments that promote healthy living by increasing pedestrian and other physical activity and that encourage access to quality food to reduce morbidity.

- **Habitat:** Standards that promote the ecological diversity in any given area, such as a municipality or other political unit that is inhabited by a particular group of flora and fauna and other species that contribute to the environment.

While this report is organized within these categories, it is important to understand the larger context that informs the specific initiatives in each of these eight categories.

Sustainability initiatives have been underway in communities across the nation for decades with names as varied as their focuses. As science proving climate change and its impacts on humanity has become increasingly compelling, the need to reduce carbon emissions and to adapt to the inevitable local impacts has provided a larger context and clear set of objectives for local sustainability initiatives. Global climate action tends to focus on forestland protection for sequestration and the shifting of electricity generation to renewable and lower-carbon energy sources on a large scale. Limitations of sub-national governance result in regional and local action focusing on reducing building energy demand through efficiency, limiting transportation emissions by shifting people out of their cars onto mass transit, and facilitating harnessing renewable energy locally. In particular, local plans and policies can explicitly influence carbon emissions in the buildings, transportation, electricity generation, and waste sectors and can indirectly influence emissions from the agricultural sector and from sequestration. Local decisions can also have a pronounced impact on the ability of communities to adapt to those climate change impacts.

Older cities like Newark face both significant barriers to and opportunities for climate change mitigation and adaptation unparalleled in their suburban neighbors. While the traditionally compact settlement patterns, multifamily structures, walkability, transit-orientation, and acres of rooftops are the ingredients of low-carbon and low-energy living that is difficult to recreate in newer suburban communities; industrial development along the waterfront, brownfields, an ageing building stock, and recent emphasis on the automobile provide significant challenges. Cities successfully taking on climate action as a component of their local planning processes are building on their assets and focusing on those areas with greatest opportunity to reduce emissions that provide co-benefits to improve the quality of life in their neighborhoods.

It is also important to acknowledge that there is a great deal of overlap between best practices town planning and the initiatives that are targeted specifically at resource sustainability, which is the focus of this report. Overall land-use and development patterns play a huge role in the ability to achieve sustainability objectives. There is also a good deal of overlap between the sustainability agenda and other planning concepts such as transit-oriented development (TOD). Well-designed, compact, mixed-use neighborhoods are desirable for a host of reasons above and beyond the more targeted objectives related to resource sustainability. Conversely, each of the sustainability objectives listed on the opposite page also contributes to good town planning.

Objectives for Sustainability

Waste management

Waste reduction conserves the resources and energy needed to replace products and to transport and dispose of used materials. But it also has these non-resource benefits:

- Reduces the negative impacts on neighborhood quality of life by reducing the noise, traffic and odors associated with waste collection and transfer.
- Promotes entrepreneurship and new industry by supporting the creative reuse of byproducts from some businesses as inputs for other businesses.

Water resources

The use of best-practice storm water management strategies and the reduction of impervious surfaces can conserve water and protect the quality of water resources and the habitats they support. But it also has these non-resource benefits:

- Well landscaped streets and parking lots create better walking environments and healthier communities.
- Water resources provide recreational opportunities and create development value for adjacent properties.
- Beautiful parks and open spaces provide opportunities for physical activity and social interaction.

Housing design and construction

The rehabilitation and preservation of existing housing stock, as well as the construction of new energy-efficient buildings, will conserve energy and reduce waste from demolition and construction. But it also has these non-resource benefits:

- Rehabilitation/preservation of existing housing stock can promote affordability by increasing the diversity and mix of housing types.
- Reclamation of underutilized or environmentally challenged land can increase housing stock and restore blighted areas within neighborhoods.
- Flexible live-work arrangements promote economic diversity and enliven neighborhoods.

Energy

Sustainable energy means improved air quality by reducing dependence on fossil fuels, but it also has these non-resource benefits:

- Reinforces community character by promoting careful siting and massing of buildings.
- Improves amenity by promoting access to daylight.

Green business and economy

Promoting green businesses conserves energy, reduces material inputs and waste. But it also has these non-resource benefits:

- A diverse economy provides more employment opportunities at varying levels of training and education.
- Innovative business can reactivate a wider variety of underutilized building types.

Transportation and connectivity

Reduced auto dependence increase air quality and can increase water conservation and quality by reducing the amount of land covered by impervious surfaces. But it also has these non-resource benefits:

- Well-connected street networks enable healthier living by promoting social interaction and higher physical activity levels through biking and walking.
- Compact mixed-use development patterns can reduce the amount of land devoted to parking and increase the amount of land that can be devoted to community-supporting development.
- Concentrations of uses can better support transit services and improvements.
- Mixed-use environment enable access to jobs, shopping, services and cultural activities.

Public health and local food production

By promoting physical activity through non-automotive forms of mobility and by reducing the amount of shipping required for food products, a public health and local food production initiative can improve air quality, water use and help reclaim grey field sites. But it also has these non-resource benefits:

- Community gardens and farmers markets create opportunities for local employment.
- Urban farming creates new open space amenity.

Habitat

A habitat initiative preserves forested areas and protects water quality in wetlands and water bodies. But it also has these non-resource benefits:

- Creates or preserves open space amenities.
- Encourages creative landscaping for streets, plazas and other urban spaces.

Governance plays a large role in these areas. Just as government can offer an expedited approvals process and development bonuses for developments that achieve good town planning policy objectives, so can similar incentives be offered for projects that achieve sustainability goals.'

Sustainable Initiative

Case Studies from around the Nation

Across the country, cities like Newark are embracing sustainability initiatives of many different kinds. Because sustainability has so many dimensions, cities are proceeding on multiple fronts. But particular cities have become case studies for particular strategies because of their political, geographic and resource disposition. Even though these success stories reflect the particular circumstances of these places, they offer lessons for other cities including Newark.

Case: Waste Management

Seattle, WA

Waste management best practices focus on the disposal and recycling of waste, organic and non-organic. A comprehensive approach to waste management includes a range of waste types and waste streams well beyond the familiar recycling of residential paper, glass and plastic. Other types of waste include residential organics, construction waste, pet waste, leaf composting and hazardous waste.

The array of policies and regulations may include a “unit-based pricing for trash” (“Pay as You Throw”), strategies targeted at waste generated by institutions and larger businesses and recycling at public events. Some cities have set their sights on the most aggressive goal - Zero Waste.

While some new infrastructure may be required including the siting of facilities such as centralized composting sites, proactive waste-management focuses more on programs and policies, and especially policies related to measuring waste and pricing it.

The most sophisticated programs look at waste management in an integrated way with an emphasis on cyclical flows, sources and sinks.

In 1998, after reconsidering the true need for a new transfer station, and holding a public hearing on the idea of zero waste, which received enormous public support, Seattle adopted a “zero waste” principle to guide its management of solid waste resources. Zero waste follows a few key ideas, including investment in infrastructure instead of landfills, incinerators or transfer stations; more aggressively penalizing waste and promoting green collar jobs in the process. Zero waste further attempts to combine social policies with market-based incentives to redesign products and packaging methods which create less waste and are less toxic; and promote reuse through planning ahead as well as producer responsibility.

Tremendous public interest in waste reduction pushed government in a new direction. The City passed a resolution establishing a goal of 60% recycling by 2012 and 70% by 2025. Eventually, the founder of Sustainable Seattle, was elected the City Council Chair. The Council is committed to strengthening the link between the economy and green policies. The City instituted a \$100,000 annual Waste Reduction/Recycling Matching

Fund for community recycling / waste reduction initiatives. The SPU initiated a market development effort to aid in recycling difficult materials such as asphalt roofing, drywall, and tires. The City “tracks and adapts.” When it veers off track to meet the 60% recycling goal, it readjust the timeline, and then revisits policies and programs to realistically achieve the goal.

The City leads by example, requiring all agencies to meet or exceed requirements for waste reduction placed on commercial and residential customers. Collection trucks are mandated to use ultra-low sulfur diesel/biodiesel mixture or compressed natural gas. The City instituted performance-based contracting instead of basing contract awards purely on quantity criteria. The City has expanded recycling services available at large events and Parks. The City conducts waste reduction audits and training for commercial customers. As well, it actively seeks to cooperate with other jurisdictions and governments that share access to Puget Sound.

The City is aware that not all city compost and recycling programs succeed and the City is forging ahead with that perspective in mind. In other towns and cities that have implemented pilot curbside composting, initial lack of interest or knowledge killed the budding programs. Individual perceptions of garbage and tolerance for handling and smell seem to play a large role. Most communities who started food scrap collection already had a yard waste collection program, so adding the material didn’t add substantial cost.

Despite that, the City implemented a food waste composting program on a bi-weekly to weekly pickup model with over 100,000 households currently participating. Everyone is provided with a cart (size is based on output), and all food and food related items are collected in it. That is then taken to a compost center by the pickup service. A tiered pricing rate was established, and an exemption system for those who compost in their yard. A ban on food waste will be imposed once the program is fully implemented.

The City implemented a 20 cent advanced disposal fee for plastic bags. Essentially, every person who gets a bag is charged the \$0.20 fee and the store puts that money into a solid waste fund used for recycling programs. Seattle met a great deal of resistance by industry to their 20 cent per plastic bag disposal fee ordinance. Although the ordinance had wide public support, industry spent \$200,000 to get the signatures it needed to bring the vote to ballot (approximation of \$15 per signature).

Case: Water Resources

Philadelphia, PA

Water resources is a topic area that covers water conservation in landscape installation and maintenance, reclamation and harvesting of water, storm water management, wastewater and grey water.

Philadelphia, PA, is leading the nation in water management best practices and is one of the only cities relying primarily on urban greening strategies to comply with the Clean Water Act. In 1999, The Philadelphia Water Department created the Office of Watersheds, as a pivotal unit within the Planning Department’s

Engineering Division. It has since embarked on an ambitious path to integrate its urban waterways into the surrounding communities, as it continues to upgrade an aging infrastructure. The Office refers to it as a 'land-water-infrastructure' based approach, and one with socio-economic implications. The approach to water management is comprehensive, multi-generational and is committed to a vision of understanding and managing water closer to where it falls.

The City is mandated to address its water resources in a number of ways and by a host of agencies, so its sustainable efforts require from the support of various regulators. It seeks this support through building extensive knowledge of laws and regulations, and the research that supports all initiatives. The City's approach to watershed management is reflected in policies coordinated across various departments. Eight Land-Based Green programs, aim to achieve reductions in localized flooding, combined sewer overflows, and an improvement in water quality, as well as quality of life for residents.

Storm-water parcel-based billing is a Philadelphia policy not widely used elsewhere. Normally, a city would try to absorb increasing storm water management costs by imposing utility fees indiscriminately on all users. Starting in 2009, Philadelphia has been gradually shifting much of this cost to non-residential properties, calculated based on the ratio of impervious surfaces area to gross property area. Green practices result in credits.

The City's governing bodies rely heavily on existing research to drive their policy and implementation decisions, including baseline and ongoing waterways assessments. They capitalize on research about the value of green spaces as amenities and as generators of economic opportunity. This research informs planning, design and regulatory decisions. The City further supports its policies through incentives, including tax breaks, and free engineering services are provided to applicants who want to initiate a watershed friendly project.

Community partnerships and community involvement are a central focus for the City, as well as community-wide awareness and education. Toward that end, a well-developed user-friendly website, recently launched, communicates intent, reason, policy, governance, program, planning design and regulation at a range of levels in a way that is appealing and accessible to the public. Updated documents, data, and maps are freely available on the site, and allow for easy access to information and history on a person's 'own' watershed.

Entitled "What's in it for you" this website communicates specific and useful actions to the homeowner, businessperson, community group, or institution, so they can become actively involved and be part of a cumulative and positive effect on the watershed. Action recommendations include those related to auto maintenance, trash removal, pet waste, lawn and garden care, pavement cleaning, litter control, waste disposal, materials storage, control erosion and landscape areas, employee training, vehicle/equipment cleaning, kitchen grease storage, trash storage handling, outdoor food storage and processing areas, outdoor washing areas, and illicit drain connections.

The City also hosts public presentations and workshops, helps organize clean-ups, gathers public input, provides educational materials and exhibits at education facilities. There are programs and outreach efforts around watershed partnerships, storm water management, drinking water protection, neighborhood beautification, or open space/land protection.

Philadelphia is a city with 60% combined sewer, and a 40% separate system, and as such, in heavy rainstorms raw sewage discharges into the surrounding water bodies. The physical planning, design and regulatory goals aim to reduce concentrated flow as much as possible, and to disperse flow through a combination of strategies. It attempts to leave the model of store-and-treat through pipes and tanks behind.

The City's comprehensive design and planning strategy includes waterways restoration, green infrastructure retrofitting and rebuilding. This gets played out in the redesign of streets, park re-design, schoolyard redesign, pavement differentiation, and the incorporation of more specific tools that include stormwater planters, rain gardens, and landscape installations on the ground and on top of buildings, all with the aim of keeping as much water on-site as possible.

Case: Energy

Boulder, CO – Smart Grid City

Sustainable energy refers to the conservation and efficient use of energy and to systems, which provide power or work to cool or heat the landscape from a building to a region. This relates also to waste management, since a truly sustainable city will tap into its waste resources for energy.

Boulder Colorado, a city with a population of 91,685 (2006), has implemented the first large-scale pilot project installing Smart-Meters on approximately 10,000 homes in the first phase alone for a total of nearly 20,000 homes as of March 2010.

This intelligent meter is one component of a broad information network, which connects suppliers or providers, and consumers through Broadband over Powerline (BPL) technology. BPL uses existing electrical wires to provide digital communications capabilities and create a multi-directional, high-speed communication network. The Grid further allows the provider (in Boulder's case Xcel Energy) to monitor the energy consumption of individual houses in real time and to check it against the larger, more complex distribution system, and to adjust for optimization.

Smart Meters result in a variable pricing system. Consumers can see how much power is being used in 15 minute increments, and adapt their use to consumption and load across the larger interconnected smart grid. Electricity is most expensive when demand is greatest, and cheaper, for example, late at night, when the loads are lower. The overall impact is energy conservation and carbon emissions reductions.

This kind of technology creates a feedback loop, which further impacts the physical and planned environment. Its availability and installation create a financial incentive to use sustainable energy sources and technologies at an individual and building-by-building level, since excess energy generation by a decentralized energy source can be sold to the Smart Grid to augment power

needed during periods of high peak demands. Hybrid cars with fully charged batteries, for example, can connect to the grid and upload power for a reduction in their energy bills the following month. Boulder's existing solar access regulations further strengthen this incentive. Its regulations guarantee access to sunlight for homeowners and renters in the City, by requiring new development be sited for optimal solar access, and by setting limits on the amount of permitted shading by new construction or new solar array installation.

The City of Boulder took advantage of federal incentives to develop the existing electric supply grid, and their initiative is now acting as a pilot project being watched by the nation. Within the City, the Smart Grid City effort is part of Climate Action Plan (CAP) recently approved by the City Council. A CAP technical team, guides this plan, and is charged with implementation and adjustments to program design toward the ultimate emission reduction goals.

These related policies trickle down to various departments, including City operations. The City's Fleet Energy Strategy Team Subcommittee has established a goal of 90 percent from the previous 65 percent alternative fuel vehicle (AFV) purchase protocol, a vehicle-miles-traveled budget, which essentially calls for a zero increase in miles driven yearly. They have also tried to reach, and have now surpassed the Kyoto greenhouse reduction goal for 2012 of 2,913 metric tons of Carbon Dioxide. Boulder focuses on energy and climate broadly defined to include commercial activity, transportation and city operations. But it is part of a comprehensive approach that addresses air quality, recycling and compost, green building and planning, urban wildlife management and the management of residential lawn, garden and pesticide use.

Boulder supports its renewable energy policies through public-private partnerships and financial support and incentives. The administration of a solar grant program, implemented by ordinance, provides a partial sales and use tax rebate on qualified photovoltaic (PV) or solar thermal (hot water) systems installed within the city of Boulder. A solar domestic hot water rebate program is also in place and administered by the Center for ReSource Conservation, a flourishing community-oriented organization founded in 1976 by a group of citizens seeking ways to help reduce dependence on non-renewable resources. Matching funds are provided through the Governor's Energy office. University student resources as well as County programs are also engaged to conduct 'Neighborhood Sweeps,' whereby teams of student's pair with Boulder County senior citizen tax workers to visit one to two neighborhoods a year distributing Climate Smart kits and promote the installation of energy efficient measures.

The City has been creative about financing these investments as well as creating financial incentives to participate. The ClimateSmart Loan Program, approved by ballot, allows Boulder to issue bonds to finance options for energy efficiency improvements and renewable energy. City of Boulder water rebates are also available for low-use washing machines, toilets and irrigations systems. The City has also worked with Xcel Energy to provide residential cash rebates for evaporative cooling, heating, insulation and air sealing, water heaters and photovoltaic installation. Xcel also offers a wind-source program.

The City provides an eco-pass to promote public transit use. It is purchased through employers. It offers user unlimited rides on all regular round trip destination transit services, and includes a Guaranteed Ride Home program. Any individual with an Eco Pass can get a free taxi ride home if they have used any transportation option (bus, bike, car/vanpool) to get to work and have an unplanned emergency and need to get home.

Boulder also tries to lead by example, as exemplified by its City Wastewater Treatment Plan Solar Power Project in the works. And its city departments actively respond to suggestions for improving its policies in ways that support GHG emission reduction goals and other city goals. Currently, 186 of the city's 468 vehicles or 40 percent are alternative fuel vehicles. Following a successful pilot project that evaluated the use of B20 (20 percent biodiesel and 80 percent diesel fuel), the city installed a 6,000 gallon tank at the City Yards. Biodiesel is currently being used by 138 city vehicles and equipment.

Smart Grid will require some new infrastructure, including plug-in stations, and allowances for the installation of decentralized alternative energy systems. The City can showcase the first zero-energy neighborhood, a development of twelve new homes completed in 2009 for the high-end market.

Regulations exist which promote solar access, and this is enforced through permitting. New Construction standards insist on planning ahead for possible solar installation by insisting on solar orientation (long axis within 30 degrees of east-west); roofs which are physically and structurally capable of supporting at least 75 square feet of solar collectors per dwelling unit; and unimpeded solar access through the provisions of the ordinance or through private covenants. Non-residential buildings have similar requirements for siting.

The City of Boulder integrates energy reduction goals via its Green Building Program and Green Points system, all of which are supported by adopted ordinances, and strengthened through City training programs in green building.

Case: Green Business

Washington, DC

The Green Business model links environmentally sound business and development practices with economic development. The foundational idea is that sustainable practices can have a net positive fiscal impact when all of the true costs and benefits are accounted for over the long term.

Washington, D.C., is one of many cities looking at how urban infrastructure can be managed as an ecological resource that returns money to the City. It has developed a substantial agenda with key commitments, and has begun to track their successes online for the public to access.

From a policy perspective, the District takes the approach that businesses should be environmental stewards and work with government to improve the environment and create green jobs. The governmental role is to provide supporting tools and to help create an overall more healthy and beautiful District to attract residents, tourists and business investment, and makes efforts to

achieve the latter, in part, through a green agenda which aims to make the District more sustainable overall. In doing so, a wealth of green jobs and opportunities are made available, bolstering existing businesses, as well as future ones.

The City's Green Building Act supports green businesses. This legislation requires all publicly-funded (and eventually all privately-funded) new building construction to meet various LEED requirements.

Many of the District's efforts fall under the Green Collar Jobs Initiative. This initiative is a cooperative effort between the District Government, for-profit entities, non-profit organizations, and academic institutions to help prepare District residents and businesses to take advantage of the growing green sector of the economy.

Other supportive policies include the development of an Urban Tree Canopy Goal (40% coverage), which recognizes peer-reviewed research that shows that consumer activity in tree-lined areas versus barren streets tends to be comparatively elevated, as shoppers linger longer.

A key aspect of the District's Green Business initiative is information-sharing and outreach as well as a commitment to leadership through a combination of programming and funding efforts. The district maintains a Green Jobs web portal, Green Collar Jobs Demand Study and a Green Collar Jobs Advisory Council. The District also works to identify Certified Green Businesses.

The District conducts green business and restaurant surveys, the coordination of the Mayor's environmental excellence awards and case studies program, the creation of a 'Green Restaurants Guide,' a 'Green D.C.' map – identifying green businesses, a 'Guide to Green Buildings,' the development of a green public-private development projects database and a green sustainability business resources website.

The District also offers information on green incentives for businesses, a 'Going Green for Contractors' class, and access to green training providers and opportunities, a Mayors Conservation Corps and a Mayors Green Summer Jobs Corp, classes on 'Greening Your Restaurant and Greening Your Cleaning Business,' and training for workers as dust sampling technicians and solar panel installers. Green Collar Job Training will be provided at Homeless Shelters in partnership with a non-profit group. The development and distribution of a pollution prevention guideline document for businesses also works to support green efforts. Information is made accessible with online CBE Certification applications, and online Environmental Compliance information for DCRPA Business Licenses. The District also plans to restart small business sustainability audits to help identify energy and water efficiency measures.

This commitment to Green Business impacts physical planning, regulation and design. As part of their Key Commitments agenda, the District intends to modify the contracts procurement process to award extra bid points for businesses that have green operations, supply lines, products, and/or services. New public projects are required to meet LEED silver standards or the Green Communities standard for affordable housing. The District is enhancing the enforcement of pesticide regulations as well as auto repair shop environmental compliance, and the strengthening of business district litter laws.

The City is restructuring storm water fees to be based on the amount of a property's impervious area. This will provide incentives for business to green their operations and development practices, while achieving best practice storm water management.

The success of the Green Collar Jobs Initiative is also expected to have regulatory and design implications. For example one partner – D.C. Greenworks, an organization which runs a group of non-profit social enterprises trains and employs local "at-risk" youth, as well as runs program offshoots like the D.C. Treekeepers, D.C. RainKeepers, D.C. Greenworks Green Collar Job Training Program and the D.C. Greenworks Low Impact Development Program. Their work helps to inform new regulations and programs.

Case: Sustainable Mobility

Portland, OR

Sustainable transportation efforts reduce auto-dependency and improve mobility, promote transit-oriented development, car-sharing, diverse modal transport, and increase public space by reclaiming space devoted to automobiles. By looking at transportation comprehensively and in relation to other community systems, sustainable transportation has collateral benefits related to health, the environment and community character.

Portland is considered a model for sustainable transportation because the City consistently links transportation and land use planning.

The City attributes its reputation for livability in large part to the host of options it offers for getting around, from light rail and street cars to car sharing to bicycles and skateboards. It tries to make a wide variety of options desirable and efficient. It looks for solutions to fragmentation, creates networks, and phases implementation. The City makes these benefits widely available. In line with its ease-of-use approach, the City has created a seamless fare system so that a purchased pass works on buses, streetcars and light rail. Light rail trains, trams and a transport zone in the City center provide free bus and train travel.

In April 2007, the Portland City Council approved a Green Street **resolution** which is expected to have a variety of benefits including satisfying requirements of federal and state regulations to protect public health and restore and protect watershed health; reducing polluted storm water; diverting storm water from the sewer system and thereby reducing basement flooding, sewer backups and combined sewer overflows (CSOs) to the Willamette River; reducing impervious surface so storm water can infiltrate to recharge groundwater and surface water; reducing demand on the city's sewer collection system and the cost of constructing expensive pipe systems; improving pedestrian and bicycle safety; increasing urban green space; improving air quality and reducing air temperatures. Law and rigorous enforcement also helps support initiatives that make the transit routes safe. Auto drivers are fined heavily for violations and not stopping for pedestrians.

The City of Portland **Green Street Policy** also created a *One Percent for Green* fund. The Bureau of Environmental Services collects one percent of the construction budget of City of Portland projects within the city right-of-way that are not subject

to the requirements of [Portland's Storm Water Management Manual](#). The *One Percent for Green* fund supports construction of Green Street facilities. Projects selected to receive *One Percent for Green* funding must achieve multiple objectives. The fund is available to pay for green infrastructure facilities that manage storm water, preserve or mimic the natural hydrologic cycle, control flow, improve water quality, enhance livability and provide other environmental benefits.

Outreach and information are important components of Portland's "complete streets" initiative, as well as are partnerships with NGO's like the Community Cycling Center which provides free bikes and training for low income citizens and others alike. A user friendly website for the Office of Transformation makes a large amount of information available to the public, no matter what their mode of transit and choice.

The commitment to different population groups includes the aging. Recognizing the insecurity most elderly feel on two wheels, the older adult bike program provides them with three wheeled bikes. There is also a Women on Bikes program. The Smart Trips program, which is devoted to reducing drive-alone trips visits different Portland neighborhoods every year distributing free materials door-to-door and organizing biking activities. The Safe Routes to School and Sunday Parkway programs also make biking more available to a wide segment of the population.

The City uses a range of physical planning and design interventions to achieve their sustainable transportation objectives. Their focus is to build the missing links, such as the lack of sidewalks on arterial roads, in order to create complete networks. For example, the City ties together various kinds of connections, from soft trails to roads and once a section of a network reaches a point of completion the 'trail' is heavily and clearly signed so people use it. Maps are published, identifying important features like bathrooms, water fountains, parks, commercial areas and grocery stores in proximity to the trail networks. The Office of Transportation posts a variety of design guidelines for street lighting, traffic signals, bicycle parking facilities, pedestrian design guidelines, public street design guidelines, and other design guidelines that include green street details.

The City has a rich tool box of traffic-calming techniques and best-practice roadway and intersection design. The diagonal traffic diverter is an example. This is both a curb extension and a cut in the curb/sidewalk which directs pedestrians and bikers to cut through the neighborhood. In some cases, these diverters are also designed to be bioswales to treat storm water and inject plant life for beautification and habitat creation.

Portland is the most bicycle-friendly city in the nation. The City makes bike racks and on-street bike parking facilities widely available. The City makes bus transit accessible to bikers, including spots for at least two bikes per bus. Light rail also has spots for bikes. The bicycle parking facility guide which is also offered online is intended to help interested parties save money by installing bicycle parking facilities.

Experiments with new technology include sensors in the road which detect the presence of bicyclists effectively stopping traffic in all directions, and allowing bicyclists to easily navigate through in any direction, reducing hazards for biker and auto driver.

Designated bike boulevards are another important component of the planning and transportation design. The City uses traffic diverters embedded in the street to force cars to turn, and incorporates one-way access and traffic calming measures like speed bumps and traffic circles. The boulevards are part of a planned and coordinated network aimed at helping bikers get around more easily. Special signage indicating the location of the bike boulevard and its location in the network is part of its success. The result is that cars and bikes travel roughly at the same speed, and the pleasant boulevards actually created a community environment and propped up property values.

Streets are also thought of as true public spaces. In this way streets can make up for a lack of public space in the city and can be hybrid spaces, functioning for parking, throughway traffic and small urban spaces for festivals and street fairs.,

These 'festival streets' are designed with a continuous grade and no curbs and less interruption in the streetscape by light poles and other objects that typically get in the way of full pedestrian street use, including ease of use by the handicapped. The design allows the street to easily be turned off to cars and to transition to an inner plaza space for pedestrians. The Portland festival streets incorporate dual function plinths for art and traffic calming device. Plants are also brought into the streetscape connecting them to surrounding open space gardens.

Habitat Protection / Enhancement

New York City

The Million Trees Project is an ambitious, multi-dimensional, private-public partnership project to plant a million trees in the five Boroughs by 2017. The larger policy context for this initiative is *PlaNYC*, New York City's ambitious sustainability plan.

The goals of the project are to help New York City to become a more sustainable City, and to provide its residents with an amenity that is restorative in spirit. The City posits that trees bring food for wildlife, and function to improve air and water quality, as well as provide a measure of wind-break, noise and temperature abatement. They also act as architectural elements and shapers of public space.

The implementation of the plan is strategic, and will distribute the trees among streets in all possible locations creating 400 new green streets, as well as reforesting 2,000 acres of parkland. The City of New York will plant 60% of the trees, and the other 40% will come from private organizations, homeowners, and community organizations. The Parks Department will plant 220,000 street trees. 380,000 trees will be installed through parks (reforestation), other agencies and zoning regulations, and 400,000 through private partners. To date, over 360,000 trees have been planted in the City, and the project has engaged over 7,000 community volunteers.

The project is a good example of a public-private partnership, and the collaboration of a myriad of partners including community-based non-profits, private property owners, developers, architects and landscape architects, corporations and small businesses, and other city, state and federal agencies. The website for the project acts as a hub for information, action and engagement.

The City encourages a number of easy ways for citizens (as homeowners or developers) to get involved through their website and outreach campaigns, and makes it easy to submit street tree requests and to obtain permits. The City helps people to organize and connect to neighborhood tree planting days, stewardship days or to join the Stewardship Corps and adopt a tree in the neighborhood. An online community calendar of the project allows citizens to find a related event nearby. Another page on the web is reserved for ‘planting stories’ – individuals can post their own pictures and stories, and seems to successfully allow people to be part of a larger community in a way that is recognizable. Yet another area of the site is reserved for input on tree planting opportunities.

On-line material provides the public with facts on existing forest numbers and species types and breakdown. The site explains the environmental benefits of trees including climate, water quality and improved air quality, lower summer air temperature, wildlife habitat, economic benefit, increased property values, and public health.

Outreach and education are centerpieces of this initiative. The City engages educators and encourages the Million-TreesNYC program in the classroom, as a tool for learning about stewardship, green space care and the environment. The City offers educators a range of programs - a combination of those taught and offered by outside organizations and through the NY Restoration Project (NYRP) MillionTreesNYC initiative directly.

NYRP MTNYC programs provide 15 minute downloads of hands-on inquiry-based activity relative to trees, the environment, communities and stewardship, and RespecTree, a 6-month series of lessons and assignments for 5th grade classes to create a greener schoolyard. Talkin’ Trees is a specialized assembly program introducing kids to the Million Trees Initiative and its importance in providing ecosystem and quality of life-functions, while ‘Make Every Day an Arbor Day’ offers a how-to workbook for elementary and junior high teachers to help them incorporate concepts of tree planting into lessons on math, science and other related subjects, and to execute a campus tree planting.

Outside program offerings like Urban Park Rangers and a Seeds-to-Trees program combine standards-based education with hands-on field lessons, which use city parks as an extension of their classrooms to meet DOE performance standards. There is a wide variety of associated programs including grants to community-based caretaker organizations; tree giveaways; merit badges to participating Scout troops; Stewardship Corp trained by New York City Parks Department; an intensive professional preparation training program; and a Trees and Retail initiative that works with improvement districts and merchant associations.

Six neighborhoods, at least one per Borough, were identified as ‘Trees for Public Health Neighborhoods,’ because it was determined that these places had fewer than average street trees and higher than average rates of asthma. It is believed that trees will help to reduce pollutants, which trigger respiratory disease.

The City’s guidelines for restoration include the creation of multi-story forested environments, in proximity to existing forests, on eroded lands, and next to highways and roads. They recommend understanding existing site conditions, planning

the new forest, and preparing the site for planting, and making provisions for maintenance. Tree selection also follows rigorous requirements, and the City recommends particular planting techniques and plant combinations.

The Department of City Planning recently proposed regulations that would require planting of street trees with any new development, major enlargements, or conversions throughout all residential and commercial areas within the City. One street tree must be planted for every 25 feet of street frontage of a zoning lot. Also included were requirements for sidewalk planting strips in lower density residential districts. This language was released in concert with a proposed amendment that prevents paving over of front yards, and encouragement of rear yard garages in order to maximize planting area in the front yard. They expect both amendments in combination would generate an estimated 10,000 new street trees as year, and to ‘change the face of the city more than any single project.’

A key part of the project, which will inform future design, planning and regulatory efforts is the ongoing research component to this initiative. From a community and tracking perspective, citizens are encouraged to register their newly planted trees online. Within the 2000 acres targeted for reforestation, three pilot sites were constructed as public parks to serve dually as urban research projects, ultimately aiming to create an elaborate step-by-step manual for reforestation of the remaining acreage. In addition, through upfront standardization of restoration techniques, the initiative will examine carbon sequestration and species richness and contribute to the ecological management and decision-making practices for establishing healthy functional urban forests. The manual will establish opportunities for long-term research platform where multiple institutions and practitioners can plug in and focus on particular ecological, social or economic research agendas.

Towards a Sustainable Newark: Current Sustainability Initiatives in Newark

Waste Management

The fragmented and decentralized nature of waste management in Newark has led to low recycling rates and improper disposal of hazardous materials. As discovered in the case studies that follow, the City has a major incinerator and several large transfer stations which have led to high levels of diesel truck traffic and high levels of airborne pollutants from the incinerator.

Citywide a relative lack of recycling education and enforcement has continued the trend towards poor recycling rates. Though recycling is mandatory for single family homes this constituency encompasses less than 50% of all Newark residents. For the majority of Newark residents—those living in multifamily housing or public housing—the City has done little to encourage recycling, and in fact, the Newark Housing Authority does not recycle at all nor does the Newark public school system. To help remedy the situation and increase the overall recycling rate, the City has drafted an ordinance that would move towards a single-stream method of recycling.

Water

The City of Newark has a combined sewer overflow (CSO) wastewater management system; which means that when it rains and the sewer backs up, raw sewage mixed with stormwater heads straight for the Passaic River. Unfortunately, retrofitting Newark's wastewater treatment system to accommodate separate pipes for both stormwater and sewage is a multi-million dollar investment that the City cannot afford to make at this time. However, minimizing the level of sewerage overflow into the Passaic River is being pursued by the city on two fronts. The first, an end of pipe solution, where the City attempts to trap and filter as much overflow as possible before it enters the water is a reactive solution to a problem that already exists. The second, to prevent as much water as possible from getting into the system from the start, is a proactive solution and is the kind that Newark must continue to pursue as it heads toward a sustainable future.

Preventing both stormwater and wastewater from reaching the CSO in the first place must be done many times over on a small scale. To that end, upon examination, the City discovered that in many areas stormwater issues lie with the lack of permeable surfaces. The City has discovered that many residents are accommodating parking needs through paving of front yard areas. To alleviate the problem the City now requires a minimum of 40% permeability in front yards. Unfortunately, even with the increasingly stringent stormwater management requirements, such as the requirement that all buildings must have a net zero impact on stormwater; the City lacks sufficient resources or desire to enforce such regulations.

Housing

The City of Newark is among only a handful of cities and towns that do not suffer from a lack of affordable housing. Through various utility, state, and federal programs the City has been retrofitting the affordable housing stock through weatherization programs. While the City continues to pursue increased participation rates, with most Newark residents being renters

In 2006, Regional Plan Association in Coordination with the City of Newark and New Jersey Institute of Technology held a public workshop focusing on developing a new vision for the City. Of the many overarching recommendations the report recommended that the City become a sustainable City. Since then, the City of Newark has been persistently pursuing several initiatives related to sustainability included in the above best practices case studies. However, this is only the start of a brighter, greener future for Newark.

Through the many interviews conducted as part of this report we have found that though many concepts have been developed and pursued, the City lacks a strong, comprehensive sustainability based organizational structure that coordinates City projects and services to allow concepts to be implemented. Nevertheless, the City continues to pursue sustainability initiatives and educate residents and developers about their role in moving Newark toward a sustainable future.

Most recently, the City has been aggressively pursuing a waterfront park redevelopment initiative on the Passaic River including educational boat tours helping to demonstrate to Newark residents the potential for riverfront access. The City is also pursuing new design standards for streetscape improvements including a five-retail-corridor pilot program that will enhance walkability through prioritizing pedestrian movements and increasing canopy cover by planting street trees.

Lack of information sharing throughout the City has also been seen as a major obstacle in developing a greener, more sustainable Newark. Often times materials published for a particular constituency are not fully taken advantage of. For example, a recently published brochure for landlords provided information on window guards, but failed to mention Newark as a "lead safe" city and didn't describe the steps necessary for landlords to ensure they are not exposing their tenants to lead based paints. Similarly, when a recent brochure on recycling was distributed to residents, it listed only the dates and locations where recyclables would be collected with no mention of the items that could be recycled. Other sustainability highlights include the Climate Prosperity Initiative connecting residents, business and the public sector to energy cost savings and supporting growth of clean energy economy. Accomplishments included connecting over 1,000 residents to weatherization, over 60 businesses to energy upgrades, a dozen solar installations and a demonstration 100% electric municipal vehicle fleet.

rather than homeowners, weatherization programs seldom appeal to landlords who see little benefit for their effort. The benefit to landlords is, of course, the increased demand for housing thus the increased income from rent. This, however, is only possible when a block or a neighborhood has reached the massing point where the area-wide improvements are seen as beneficial to the neighborhood as a whole thus increasing desirability and, in turn, rents.

Newark is also encouraging the development of a mix of market rate and affordable housing with the latest strategy in downtown focusing on an 80/20 mix. This of course is not without some controversy and opposition by affordable housing advocacy groups. Yet, given Newark's infrastructure capacity of approximately 442,000 residents at its peak in 1930 versus its current population of approximately 280,000, the City has significant opportunities to develop additional market rate units without displacing low income residents. In order to maintain affordability however, the City is aggressively pursuing its green development strategy by providing tax abatements to qualifying affordable developments with a focus on sustainability.

The City offers an affordable housing tax abatement program which uses Federal Home Program dollars which come to from U.S. Department of Housing and Urban Development (HUD). The City is entitled to distribute the funds to private developers building affordable housing in a manner it sees fit. The City has set minimum standards for applicants which include energy-star requirements to encourage developers to meet LEED standards. The application process is competitive and the projects featuring the greatest sustainability measures are given highest priority. Richardson Loft and Lincoln Park are good examples of Newark's sustainable housing initiatives.

Energy

The City is pursuing various energy efficiency and usage reduction initiatives on several levels. Some programs such as the initiative to hand out over 11,000 compact florescent light bulbs including information on proper disposal have been implemented on the micro level while larger scale programs such as the painting of "white roofs" to reduce the heat island effect and programs that include the installation of roof top solar panels are just beginning. Each of these programs has been a product of large-scale community outreach and awareness programs.

Transportation

The City of Newark is a transit rich city. Newark Penn Station, the State's largest transit hub, provides linkages to most of the City's other transportation systems and to regional systems such as NJ Transit rail, Newark International Airport, and Amtrak. The City operates its own subway system and is working in coordination with NJ Transit on fully developing a limited, if not full, Bus Rapid Transit System (BRT) called Go Bus.

Pedestrianization of the City is also being actively pursued. With roughly 50% of Newark's residents without cars, walkability and bikability throughout the City are major concerns. To that end, the City is working to implement a "complete streets" program though no formal policy exists as of yet. An organization called Brick City Bike Collective is encouraging biking through organized bike trips. Bike lanes are planned along Irvine Turner Boulevard between Branch Brook Park and Weequahic Park.

Health

Newark's industrialized past and present make health concerns a cornerstone issue in many of the City's neighborhoods. Areas such as the Ironbound Neighborhood have considerable air pollution-related asthma problems stemming from the proximity of an incinerator, airport and seaport. To alleviate some air quality issues the City has been actively engaged in the greening the port project as well as optimization of truck routes through certain districts to remove as much diesel truck traffic as possible.

Also, capitalizing on a recent trend in carbon offsets, the City is working with the airport to dedicate funds that air passengers sometimes pay to offset the emissions of their travel to planting trees within the City.

The City of Newark's heavy industrial past has left it with many brownfield and Superfund¹ sites. Work by the Army Core of Engineers to clean and dredge the Passaic River Superfund site is being capitalized by the City through the enhancement of the waterfront into a park system. Many other initiatives such as the use of bioswales and an ordinance requiring buffers around parking lots are helping to restore localized habitat to the City.

Two Newark Neighborhood Case Studies: Lincoln Park and the Ironbound

The Ironbound

The Ironbound in Newark is a four square mile neighborhood of more than 55,000 people surrounded by Newark Airport, the Newark/Elizabeth Seaport, the Northeast Corridor railroad, the Passaic River and Newark Bay, and highways (Routes 1, 9, 21, 78, and the NJ Turnpike). The community is incredibly diverse, with residents hailing from more than fifty-four different ethnic groups; more than two-thirds of the population is foreign born and a third of the population lives below the poverty level. This neighborhood faces significant challenges and opportunities because of its industrial past and diverse present as it tries to move towards environmental, economic, and social sustainability.

The Ironbound Community Corporation (ICC) is the soul of the neighborhood. Founded in 1969, the ICC is a not-for-profit organization whose purpose is to enhance the quality of life in the Ironbound. As an advocacy organization, the ICC is work-

¹ Superfund is the common name for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), a United States federal law designed to clean up sites contaminated with hazardous substances.

ing to improve many measures of sustainability throughout the neighborhood. During interviews with Ana Baptista, Environmental and Planning Projects Director, Claudia Mausner, Environmental Projects Associate, and Kristyna Jones, Community Development Director, the sustainability initiatives currently underway and planned for the future were discussed.

To address some of the challenges in this neighborhood, the ICC went through a Master Planning process with the City of Newark and neighborhood residents in 2001. Many of the ICC's sustainability initiatives stem from this process.

Waste Management

Currently, waste management in Newark is fragmented and decentralized. The Ironbound community has an overabundance of waste management facilities, with one major incinerator and seven waste transfer facilities located within its borders. This creates high diesel vehicular traffic, often on residential streets, as well as air quality issues, which in turn lead to high rates of asthma among community members. The ICC is mounting a campaign to prevent new transfer facilities from locating in its neighborhood, but the permitting process in the City of Newark has created an obstacle. Transfer facilities apply for a permit through the Department of Economic Development, which views transfer facilities as a job generator, rather than through the Department of Environmental Health, which might be more suited to evaluate the environmental impacts of this type of facility on the community.

In response to these challenges, the ICC has initiated a Zero Waste Campaign modeled on San Mateo County's RecycleWorks program (www.recycleworks.org). The goal is to create a closed loop system that reduces waste while providing good, green, unionized jobs with a living wage for community residents.

As a kickoff project, the ICC is actively pushing for the redevelopment of the former Ballantine Brewery. The plan is for this site to become a remanufacturing center that connects streams of raw recycled materials with end users. For instance, recycled glass could be supplied to an artist who works with mosaics. Mixed use housing and commercial spaces are envisioned for the surrounding area.

Water

Located on a former wetland, the Ironbound community experiences particularly severe problems with flooding and stormwater management. The high prevalence of brownfields sites has led many to be capped with concrete or other impermeable surfaces, which in turn leads to increased flooding and runoff problems. The ICC would like to see the City of Newark require contamination cleanup and remediation rather than allowing the current capping process to continue. The ICC believes that areas where children live, play and are educated should be prioritized.

Additionally, the combined sewer overflow (CSO) system in place in this neighborhood dumps stormwater and raw sewage into the Passaic River during particularly heavy rain storms. The Passaic River forms the northern boundary of the Ironbound and is currently classified as a Superfund site.

The ICC believes these issues can be catalysts to encourage more sustainable environmental development in the Ironbound. The ICC advocates for the City to increase stormwater absorption levels by providing incentives for green roofs, bioswales, rain gardens and street tree plantings.

Housing

The City of Newark has recently received an NSP II grant to facilitate the development of 300 units of affordable housing in partnership with Habitat for Humanity. Accordingly, the City is allocating these units to the nonprofit development corporations within the city, and the ICC will be developing nine units in the neighborhood.

Energy

The City of Newark is engaging residents in public outreach campaigns to educate them on ways they can reduce their energy consumption and costs. The ICC is unaware of other measures the City is taking to reduce energy consumption at the city level.

Economy

The ICC believes high quality green jobs that pay a living wage will be very important to the Ironbound's sustainable development. Accordingly, the ICC is pursuing a green manufacturing zoning overlay in some areas. They are also pursuing the Ballantine remanufacturing center, which is discussed in the Waste Management section.

Transportation

With significant bus service, close proximity to both the Newark Broad Street and Newark Penn Station train stations, and a fairly consistent street grid, the Ironbound has the structure to be a successful pedestrian friendly transit-oriented development. The considerable truck traffic the neighborhood experiences has contributed to the fact that the Ironbound has the most pedestrian fatalities of any neighborhood in Newark. Despite these conditions, most residents continue to bike, walk, and use public transportation.

The pedestrian environment was recently improved along Raymond Avenue, where the City strategically narrowed the space devoted to cars with bump-outs at many crosswalks. The ICC believes the pedestrian experience could be further enhanced by adding street trees and bioswales along roadways. This will slow traffic down while providing increased tree cover, reducing carbon dioxide emissions, reducing the urban heat island effect, and decreasing stormwater runoff.

To further improve conditions for pedestrians, truck routes that divert traffic from residential areas and pedestrian corridors could be developed and enforced. Bike lanes could be implemented, particularly as part of a “complete streets” program. The City could also make sure public transit options are accessible and safe. To that end, bus shelters could be added or improved, and frequent transit service should be added to transport residents to the strong job markets at the Port and Airport.

Health

The Ironbound faces many public health challenges, including high rates of asthma and diabetes, noise stress due to heavy truck and plane traffic, and contamination in the surrounding environment due to the neighborhood’s industrial past and present. To ameliorate these issues, the ICC would like to see the City of Newark’s Department of Health and Human Services be funded and staffed appropriately to deal with these significant health challenges.

Noise resulting from high levels of truck and airplane traffic has been shown to increase stress levels in residents. Sound-proofing could be required in residential and community facilities.

High rates of diabetes and obesity among residents makes it a particularly high priority to ensure residents have access to fresh, healthy, and local fruits and vegetables. The ICC is working with Rutgers University on a plan for community gardens. Right now community gardens located on City owned lands are not allowed to sell the products of their labor. Perhaps the City could permit this use to increase the production and availability of locally grown food.

Habitat

Due to the prevalence of contaminated land and brownfield sites as well as the Ironbound’s position over a former wetland that has been largely paved over, the Ironbound community experiences significant environmental challenges. The ICC is concerned that abandoned sites that return to wetlands could cause leaching of hazardous waste. To reduce contamination in the Ironbound, the ICC recommends that the city prioritize the clean up of contaminated properties, particularly along the waterfront and near schools. Formerly industrial properties developed for residential uses must be cleaned up properly so that human health and the environment are protected. To that end, a municipal ordinance could be established requiring developers to test the soil prior to approval. Homeowners and developers could also be required to notify tenants that they cannot use their back yards for growing vegetables where a cement cap exists.

The ICC believes adequate green open space and recreational facilities are major factors in assuring a community is a healthy and vital place to live. The Ironbound has less than 25 acres of usable parkland in a community with more than 55,000 residents. The ICC has created the Ironbound Community Recreation and Open Space Plan, which recommends that the City of Newark create a waterfront park along the Passaic River from

Newark Penn Station to Chapel Street. Revitalizing the waterfront could be a catalyst for the city’s redevelopment. Furthermore, greenways could be added to link green spaces within the city and generally increasing green space available to residents.

Lincoln Park Coast Cultural District

The Lincoln Park Coast Cultural District, Inc. (LPCCD) was formed in 2002 as a result of community recommendations gathered through a multi-year engagement of Regional Plan Association beginning in 1999. The recommendations highlighted the need to “green” the Lincoln Park area and provide new market rate, low income, artist housing and promote the return of economic prosperity to Newark. LPCCD has since evolved into a community development organization working to develop the 11 acre neighborhood into a thriving artist community focused on sustainable development and the creation of green jobs.

Working as a non-profit developer and community organization, the LPCCD annually hosts a music festival for over 20,000 people celebrating the rich musical past that gives the neighborhood its name. In addition, the organization strategically recruits businesses that embody the culture and spirit that once thrived in the neighborhood including the recent addition of a yoga studio, the NAACP, a filmmaker, and an art gallery.

LPCCD has developed a master plan for the area that calls for new construction to meet the US Green Building Council’s Leadership in Energy and Environmental Design (LEED) standards, and the organization is even working to build a net zero energy building by *Passivhaus* standards². This year alone the LPCCD expects 66 residential units to come online. In an in-depth interview with LPCCD’s Director of Sustainable Development, Robert Wisniewski, we explored the many sustainability measures the organization is taking to revitalize and re-green the neighborhood.

Waste Management

Sustainability efforts as they relate to waste management often refer to increasing rates of recycling and the composting of organic materials. In the long term, this is one of the most vital aspects of environmental sustainability and waste stream diversion. Many developers understand that the greater the waste stream the greater the lost revenue; thus the LPCCD has implemented a construction and demolition waste diversion strategy that requires a minimum of 75% diversion or recycled (i.e. not land-filled) and has designed all projects to ensure no overbuilding greater than 5%.

Once developed, the units in the LPCCD will be outfitted with recycling areas either in unit or conveniently located in common areas. It is the LPCCD’s belief that if the recycling is convenient, residents will do it. Unfortunately, as we heard in our interview, the recycling material is not regularly or reliably picked up; sometimes select recyclables are left behind and sometimes the recycling is not picked up at all.

² The term *Passive house* (*Passivhaus* in German) refers to the rigorous, voluntary, *Passivhaus* standard for energy efficiency in buildings, reducing its ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling. The *Passivhaus*-Institut in Darmstadt promotes and controls the standards.

The LPCCD is actively pursuing the collection of organic waste and composting for use in its greenhouse. However, the City of Newark does not provide training, best practices models or plans, education or encouragement to pursue innovative recycling or waste management techniques. For instance, the City has no programs or incentives to support a centralized “chute” system for collecting neighborhood waste and recycling.

Water

Though the *coast* in Lincoln Park *Coast* Cultural District refers to the act of musicians “coasting” from one performance venue to another and not a literal waterfront coast, Lincoln Park’s streets are prone to frequent flooding as a result of Newark’s antiquated combined stormwater/ sewer system. To ameliorate this problem, the LPCCD along with the City pursued the use of green roofs to absorb and slow the release of stormwater into the system and prevent the discharge of untreated effluent into the Passaic River. However, Newark’s limited expertise in such areas and lack of a financial mechanism for recognizing the benefit of stormwater mitigation technologies precluded the LPCCD from pursuing the use of green roofs any further. The use of rain gardens also was discussed. However, given the limited acreage of the area and the requirement to cap brownfield sites, rain gardens were not practical for stormwater mitigation. The LPCCD, in an effort to mitigate stormwater as much as possible, does plan to use dry cisterns to divert stormwater from existing overburdened infrastructure.

As the designated (re)developer for the neighborhood, the LPCCD is taking specific measures—where cost effective—to ensure that new units contain low-flow fixtures and that any landscaping in the neighborhood uses native plantings which do not require irrigation. The LPCCD also explored outfitting buildings to reuse gray water as a possible sustainability measure; however, the cost of additional plumbing and lack of financial incentives from the City and the State made this option too expensive to implement.

Housing

Unlike many New Jersey neighborhoods, Lincoln Park does not suffer from a lack of affordable housing. Thus, the LPCCD is developing a mix of owner-occupied and rental units some of which will be affordable, artist-only, and some market rate, all at LEED standards. In the current economic downturn, limited financing has been available to build market rate housing and there is concern in the community that over-development of affordable housing will discourage the mixing of market rate housing. The LPCCD is actively pursuing subsidies from the federal government administered through the states to build both affordable and artist housing where possible while striving to build as much at market rate as possible.

In order to meet LEED standards in new construction—and in some cases surpass them—the LPCCD is building new units with recycled materials, high efficiency mechanical equipment, photovoltaic solar electricity, solar shading, CFL lighting, advanced air sealing and insulation, low Volatile Organic Compounds (VOC) materials, PEX plumbing, and advanced framing techniques that require up to 20% less lumber than typical construction. Many of these features provide not only for a sustainable construction, but also reduce costs to the developer and future owners through reduced direct heating and cooling needs, longer material life, and reduced materials cost.

During the rehabilitation of existing buildings in the neighborhood, the LPCCD is working to calculate the units’ carbon dioxide output in the hope of reducing them. Where direct intervention is not possible, output will be offset through new construction. An energy efficiency block grant that New Jersey is pursuing could help fund such projects.

Energy

The LPCCD has established plans to build a zero energy building that will follow the *Passivhaus* standards. The zero energy building will be built with superior insulation and windows so it will likely not require a heating or cooling unit for climate control. Instead, the building will require only an air exchange unit that can be powered through solar panels installed on the structure. However, the City currently requires all affordable units to include heating and air conditioning units, making it likely that such systems will need to be installed.

The LPCCD is utilizing solar panels on the majority of its new construction and is actively investigating the use of photovoltaic solar shades. In addition to the “big ticket” items, LPCCD will be using compact fluorescent lighting (CFL) controlled by motion sensors, energy star appliances, and high grade insulation in all buildings. Common areas will be powered by solar cells.

Economy

In coordination with the efforts to develop a sustainable neighborhood, the LPCCD is actively engaging the community and Essex County in green jobs training. Trainees and graduates of the programs are hired to work on buildings in the neighborhood, ideally providing two years of job security.

As previously mentioned, the LPCCD has also targeted several specific businesses that serve as anchors to the neighborhood. The organization has successfully increased the level of police presence and hired a security officer to patrol the streets, making the neighborhood safer for residents and businesses alike.

Transportation

Lincoln Park is walkable with convenient access to frequent bus service—eight neighborhood stops provide approximately 9,000 trips per week. However, bicycle transportation is not adequately supported with bicycle lanes.

Train service at Newark Penn Station is about a 20 minute walk away from Lincoln Park, which is farther than most pedestrians are willing to walk. However, in some conceptual plans the Port Authority of New York and New Jersey has debated establishing PATH service directly to Newark Airport. Doing so would connect Lincoln Park to PATH service, New York City, and other potential employment centers.

To discourage personal vehicle use and ownership the LPCCD has no plans to provide parking facilities for any new construction.

Health and habitat

The Lincoln Park neighborhood contains a large expanse of shaded lawn along its border. Additionally, the LPCCD has taken extensive efforts with regard to urban farming through the creation of a large urban farm located behind the façade of a church. The LPCCD has plans to restore the façade and permit public access to the area as a community garden or other natural public space.

The LPCCD is also taking significant efforts to increase the tree canopy cover and reduce the heat island effect.

Findings and Recommendations

As with other older cities in the Northeast, the City of Newark is in many ways perfectly positioned to take advantage of the growing toolbox of sustainability initiatives: It is a transit oriented city organized around a grid of streets, which provides many opportunities to find sustainable alternatives to the automobile; an extraordinary portfolio of urban landscapes create opportunities for exceptional opportunities for habitat and creative storm water management; a diverse economy anticipates a new generation of green businesses; a diverse building stock invites a myriad of green building opportunities from energy retrofits to adaptive re-use.

Together these assets position Newark to be a model sustainable city. The successes of comparable older industrial cities such as Bridgeport and Philadelphia suggest that Newark could be the perfect laboratory for a variety of potentially transformative flagship initiatives. The selection of Newark as one of the International Council for Local Environmental Initiatives better known as ICLEI's pilot communities to test the Sustainability Planning Toolkit reinforces this fact. Building off of the success of PlaNYC 2030 in New York City, ICLEI – Local Governments for Sustainability developed a climate action planning toolkit based on this model. ICLEI then selected three cities of varying size to pilot this toolkit, refine it, and increase its potential for success by use of communities from across the country. The three pilot communities were New Rochelle, NY; Miami, FL; and Newark.

Newark has a great opportunity here to partner with the cluster of institutions that are in the city such as NJIT, UMDNJ and Rutgers. Large institutions can help support green business pilot projects such as the Green Laundry project in Cleveland. Clustered institutions also make feasible creative waste recycling strategies and so-called single-stream recycling. For example, in

cities as diverse as Los Angeles, CA and Bridgeport, CT, large institutions such as hospitals, universities, and schools can jump start city wide composting and recycling programs by creating the critical mass with little coordination to get green businesses up and running.

But these are challenging times, and while there is ample evidence that sustainability initiatives have, over the long term, a significant positive fiscal impact, in the short term some of these initiatives require new investments. In this context, it is essential that Newark lead by example with anything it controls directly including the practices of its own agencies regarding recycling, efficiencies of building stock and vehicles and procurement practices. Newark must find new public-private partnerships, civic partners, and alternative sources of funding from state and federal programs to fund these initiatives. At the very least, a sustainability assessment should be done of any new capital program because the city can leverage this money for projects that support sustainability goals often at only marginal cost.

In cities like Newark that are struggling with scarce resources, there is no need to position the sustainability agenda as an entirely new initiative requiring extensive new resources because, as described earlier, there is a great deal of overlap between sustainability and good town planning practice in general. Rather, the city should take advantage of the fact that sustainability can be defined in a way that is broad enough to capture many of the city's larger on-going initiatives – in other words to find and amplify the sustainability dimensions of what the city is doing anyway. For example, the city's on-going efforts to revitalize the Passaic River waterfront are completely complementary with sustainability goals for habitat restoration, best-practice storm water management and brownfields reclamation. In that context, sustainability can help bolster other arguments for waterfront revitalization as well as point the way towards other strategies that support both sustainability and better designs for portions of the waterfront.

Using Sustainability to Build Civic Participation and Capacity in Newark

Perhaps the most important opportunity to align sustainability with Newark's larger needs is to recognize the role that sustainability initiatives can play in building local civic capacity, one of Newark's most important challenges. Newark has made a start in this area. The Institute for Social Justice and the Greater Newark Conservancy are partnering on a Clean and Green program to train former prison inmates to help with the clean-up work. The Passaic River is a Superfund site and because federal monies for clean-up will be available, there is an opportunity for some of the jobs that will be created to go to local residents.

As experience from around the nation shows, sustainability initiatives provide a wealth of opportunities for education, training and community outreach. In Philadelphia, as described in the case study above, community partnerships and community involvement are a central focus for the city's storm water initiative. A well-developed user-friendly website enables community stakeholders to access maps with information and history on a person's own watershed. This 'What's in It for You' website com-

municates specific and useful actions to the everyday homeowner, businessperson, community group, public or private institution, including schools, so they can become actively involved, and be part of a cumulative and positive effect on the watershed.

The Million Trees Project in New York City, described in detail at the beginning of this report, is a great example of a sustainability initiative that is very multi-dimensional involving public-private partnerships and collaboration among many partners like community-based non-profits, private property owners, developers, architects and landscape architects, corporations and small businesses, and other city, state and federal agencies. The website for the project acts as a hub for information, action and engagement.

Far more than planting trees, a program like this could help to build the kind of civic infrastructure Newark desperately needs.

Start with Trees and Water: Looking North and Looking South

Newark has a unique opportunity to exploit its position in the Northeast corridor. Its proximity to New York and to Philadelphia gives it extraordinary access to two of the most significant sustainability initiatives in the nation. Across the river, New York City's Million Trees project is a national model for civic engagement and implementation. To the south, Philadelphia is leading the nation on creative urban storm-water management. Newark should forge partnerships with both cities around these initiatives. This would give Newark access to exceptional intelligence about strategies and techniques. The partnership could involve several forms of communication. One possibility is to convene several "sustainability exchanges" in which interdisciplinary teams would travel between cities for intensive workshops not unlike the American Institute of Architecture's Regional/Urban Design Assistance Team (R/UDAT) Program or the Urban Land Institute's Real Estate Development Workshops. And based on the research into what Newark is currently trying to do, Newark has plenty of experience and ideas to offer as well.

Sustainable Newark Today

City Wide, The City of Newark is actively pursuing sustainability measures on many fronts. City based initiatives including the restoration of the Passaic River Waterfront and development of green affordable housing stock are all helping to create a greener, more sustainable Newark. Community outreach efforts have resulted in a more engaged, more educated Newark where residents are seeking out opportunities to participate in subsidized weatherization and energy reduction programs. By engaging the previously incarcerated population the City has helped to provide green job opportunities to individuals who otherwise may have little to no job training while cleaning abandoned sites and providing new public amenities. The City has also been involved in the greening the port initiatives vying for new green jobs for Newark's residents while improving air quality throughout the City. Continuing the momentum forward to move Newark

towards a sustainable future requires a City government that is dedicated to comprehensive cooperation throughout all facets of City government in broad based collaboration with neighborhood based sustainability efforts. These efforts should focus on gaining the critical sustainable mass needed to clearly represent the City as one whose priorities are seen as directed towards creating a livable green community inside of New Jersey's largest city.

General Recommendations

Build the Neighborhood Sustainability Efforts

Despite some frustrations and some false starts of specific initiatives, the Ironbound and Lincoln Park case studies show the essential role that community-based organizations can play. Both the Ironbound Community Corporation (ICC) and the Lincoln Park Coast Cultural District (LPCCD) have developed sustainability strategies and action plans for their respective neighborhoods. In the Ironbound, the ICC is pursuing many exciting initiatives including efforts to promote green jobs, reduce asthma levels, remediate brownfields, slow stormwater runoff, improve safety for all road users, and create more and better parks. In Lincoln Park, the LPCCD has developed a master plan for the area with a focus on sustainability. The master plan calls for LEED standards for new construction. The organization is also working to build a net zero energy building using recycled materials, high efficiency mechanical equipment, photovoltaic solar electricity, solar shading, CFL lighting, advanced air sealing and insulation, low VOC materials, PEX Plumbing, and advanced framing techniques that require up to 20% less lumber than typical construction.

The City of Newark should continue to support these efforts by coordinating sustainability efforts internally; providing incentives for innovative stormwater management techniques like green roofs, bioswales, and rain gardens; promoting complete streets legislation; and developing a high quality waterfront park that is accessible and useful to residents. And this is not just because these organizations build community support, but because many sustainability initiatives need to be implemented at the neighborhood scale. This includes issues related to energy, mobility and storm water that require district-wide strategies. In addition, the neighborhood is a good scale for the kinds of capacity-building and community-building outcomes described above.

Find New Partners

In terms of information-sharing, we have suggested above that the City of Newark should partner with New York City and Philadelphia on landscape and water issues. But as the national case studies reveal, specific sustainability initiatives create opportunities for new public-private partnerships as well as partnerships with institutions and civic groups.

Newark has a great opportunity here to partner with the cluster of institutions of higher education based in the city such as NJIT, UMDNJ and Rutgers. Large institutions can help support green business pilot projects such as the Green Laundry project in Cleveland. Clustered institutions also make feasible creative waste recycling strategies and so-called single-stream recycling.

Leverage Industrial Strength Sustainability

While it is true that industry in Newark creates a variety of land use conflicts, Newark's extensive industrial landscape offers a variety of opportunities. Space consumptive initiatives including wind harvesting, solar arrays, green roofs and storm-water capture and reclamation are all possible in this landscape. More complex, but more exciting, are the many opportunities for green jobs and sustainable practices related to what is sometimes called "eco-industry": in this approach, industrial processes taking place in Newark's industrial districts would be studied in aggregate to see if there were opportunities to match inputs and outputs – to find those opportunities for the waste from one industry, either in the form of energy or materials that could be used as inputs for other manufacturers. Obviously, this takes some creativity and detailed analysis to find the agglomeration of economies among all of these businesses but Newark could exploit its still strong industrial base to become a model of this kind of sustainability.

Work Together

Several interviewees felt that perhaps the biggest obstacle to a comprehensive Sustainable Newark initiative was the fragmentation that exists between city agencies and policy-makers. Many sustainability initiatives require a comprehensive approach that addresses the many dimensions of complex problems.

For example, best-practice storm water management in a neighborhood will involve coordinating a variety of strategies which are under the jurisdiction of different city agencies:

- Green streets that incorporate bio-swales, permeable pavements, continuous trenches for street trees or special basins for retaining and filtering run-off need to be reviewed by the Engineering Department;
- Landscaping strategies in parks that are meant to retain and clean storm water would have to be approved by the Division of Parks and Grounds in the Department of Neighborhood and Recreational Services;

- Green Building strategies such as green roofs that are meant to capture storm water or reuse storm water for building purposes would need to be reviewed by the Newark State Uniform Construction Code Enforcing Agency.

Ideally, there would be a governance model for having a coordinated and expedited review for all of the components of a sustainable neighborhood initiative. But this does not happen typically. There is a feeling that the Department of City Planning in particular needs to be more involved.

This challenge is recognized by the Booker Administration and there is a proposal pending to create a "Green Team" that would bring all of the agency and policy stakeholders together to coordinate actions. The Green Team is planned as an on-going and active inter-departmental coordination to pursue local initiatives and actions that will lead to Sustainable Jersey Municipal Certification and continued demonstration of leadership in realizing a sustainable Newark. The Environmental Commission approved in March 2010 a resolution for this initiative and it is waiting to be submitted for review by the City Council.

In addition, the City of Newark already has an Environmental Commission which has the jurisdiction to protect and develop or use natural resources, including water, located within Newark. The Commission has the power to conduct research into the use and possible use of open land areas in the municipality and may coordinate with State and County environmental officials for similar purposes. The Commission can study and make recommendations concerning open space preservation, water resources management, air pollution control, solid waste management, noise control, soil and landscape protection, environmental appearance, marine resources and protection of flora and fauna.

This study strongly recommends that these governance initiatives should be implemented as soon as possible.

Get the Word Out

The Newark case studies suggest that there could be better communication between the communities and the City, both in terms of what each is trying to achieve for sustainability and what each is struggling with. Experience in other cities suggests the role that information and outreach play. The green business initiative in Washington DC includes distribution to businesses of a pollution prevention guideline. In Portland Oregon, the Smart Trips Program visits different neighborhoods every year and delivers free materials door-to-door. In Boulder, university students do a "Neighborhood Sweep" to visit neighborhoods with Climate Smart info kits. In New York City, key elements of the Million Trees initiative include a user-friendly web site, integration with curriculum, training programs, "Scouts for a Million Trees" and a Stewardship Corps trained by the city.

Re-Focus on Health

Newark is beset by a host of health-related issues including asthma and obesity.

Surprisingly, the ordinances as well as the current sustainability initiatives are almost completely silent on this issue. The city should raise the profile of the health dimensions of sustainability. The Active Living Research work, sponsored by the CDC, describes the essential role that increased connectivity, access to transit and “complete streets” that enable biking and walking, can play in promoting physical activity. The promotion of urban farming and the accommodation of farmers markets can enable healthier food choices. Mentioned elsewhere, the imposition of stricter emissions standards for industrial operations as well as waste transfer and incineration can help Newark address issue related to asthma and emphysema. In short, many of the initiatives identified within other categories of sustainability have a huge impact on health.

Make It The Law of the Land

The survey of the Newark ordinances, described in more detail in Appendix I suggests that in general the existing regulations are broad enough so that they do not prohibit most of the best practice initiatives described in this report or listed below as specific recommendations. However, nor do the ordinances create incentives to implement these best practices. In several cases, such as storm water management best practices, more specificity would facilitate application of the broader policies.

There is also the matter of enforcing the regulations that are already in place. The interviews with neighborhood stakeholders suggested that some sustainability goals could be accomplished by enforcing the regulations and policies that already exist. Newark is still an industrial city, and so there are the inevitable conflicts between manufacturing and residential activities. The noises and odors associated with waste transfer were cited, as were the noise, safety and air quality impacts of truck idling. In many cases, this is a matter of enforcing existing standards and enforcing existing truck routes. Some reconsideration of truck routes might also be helpful.

There are other regulations in other areas that, if enforced, would begin moving Newark towards sustainability goals. One specific regulation mentioned above that provides ample opportunities to deepen the stewardship in the city is to activate the authority of the Environmental Commission and make it truly serve as an umbrella of Newark’s sustainability ensuring that its activities are elevated to city policy.

Specific Recommendations

The broader findings and recommendations described above create the larger context for the more specific recommendations below. This list is in no way meant to be either comprehensive or definitive. Rather, this list reflects considerations emerging from this study including the assessment of what the neighborhoods and the city are currently planning or have under way; consideration of relevant initiatives from the national case studies; and the screening of the city’s land-use and other regulations and procedures. After identifying specific recommendations we provide a brief summary of Newark’s regulatory context for these

initiatives. We explain briefly how the regulations can be clarified or enhanced to promote sustainability as a matter of law or policy. These brief summaries are derived from a comprehensive audit of the City’s regulations that describes how the existing Newark ordinances relate to each of the eight categories of sustainability initiatives. (This is described in detail in the appendix and the full audit is available in a separate appended volume).

Waste

- Expand re-cycling to all parts of the city and implement in a more consistent way.
- Clarify recycling categories and include electronics recycling.
- Re-use materials from demolished buildings where possible and minimize construction waste.
- Bring incinerators and waste transfer facilities up to federal and state standards. Enforce struck routes and idling regulations.
- Work with the cluster of educational institutions to link centralized composting and food production and job training.
- **The Regulatory Context:** Waste management in Newark already identifies refuse collection generally but there is a need to further define and enforce the recycling process in particular. This could be done by providing guidance and education to ensure that residents participate actively, and by providing facilities and systems to deal with specific wastes such as building debris and electronics. As a matter of policy, meeting more stringent regulations and leveraging activities such as recycling for jobs creation are also important initiatives to pursue.

Water

- Create more specific standards for storm water management.
- Clarify requirements for larger properties.
- Bring Newark into conformance with state and federal requirements.
- Clarify jurisdictional issues between different city departments.
- Require water-saving fixtures in all new construction.
- Comprehensive best practice storm water management around Newark lakes.
- Passaic river water front restoration and revitalization.
- **The Regulatory Context:** Overall, the regulatory context for water and sustainability already provides the general outline for most of the recommendations suggested above. These actions should build on the existing regulatory framework and define more clearly specific standards for water management and look to be in conformance with

more stringent regulations at the State and Federal level. More explicit policies for managing the water bodies in the municipality can also provide opportunities for stewardship and civic participation.

Housing Design and Construction

- Change building and site plan regulations to reflect sustainability objectives.
- Retrofit campaign.
- Clarify mixed-use to promote adaptive re-use of existing buildings.
- Passaic River water front restoration and revitalization.
- **The Regulatory Context:** Within the scope of housing design and construction in Newark the need to go further in clarifying and defining specifically the sustainability standards and requirements for building is an important step that will build on the current regulations. By expanding and detailing regulations for green buildings such as retrofitting and other building measures, the municipality will be able to leverage resources and provide a better environment to its residents.

Energy

- Complete the city's investment-grade audit.
- Investigate opportunities for district-wide generation.
- Investigate feasibility of an 'energy improvement district.'
- Aggressively retrofit buildings.
- Implement management strategies to reduce power-outages.
- **The Regulatory Context:** Energy is another area of sustainability that is not currently reflected in the city ordinances aside from building requirements and consumer standards for electricity provision. The recommendations identified above are all policies or initiatives that could be pursued beyond the existing regulations but that fall within the scope of the Newark Environmental Commission, for example, and can be addressed by the city as a whole. Nevertheless the ordinances could be revised to reflect current practices for energy savings and management more clearly.

Green Business and Economy

- Use recycling as a business development/employment opportunity (reentry issue).
- Resolve current conflicts related to the community farm enterprises.
- Develop an eco-industrial park model.
- Create a green manufacturing overlay district to enable light industrial mixed-use districts.
- Provide training for future jobs in this sector.

- **The Regulatory Context:** Green businesses and economic activities are not currently reflected specifically in the ordinances but are pursued by Newark through other initiatives and efforts. Regulatory areas to be addressed to promote a more sustainable Newark could include clarifying the requirements for urban farming in the city, promoting green-industries around the port area through zoning or other land use regulations and generally through initiatives and other programs for workforce development and other green businesses that are not part of the city ordinances but can be identified in them.

Transportation

- Implement a Complete Streets Campaign.
- Develop a comprehensive bike/bike plan to prioritize investments.
- Enforce truck route.
- Take aggressive parking reduction/travel demand management measures.
- Redesign parking lots.
- **The Regulatory Context:** As with other sustainability areas Newark provides the basis for sound transportation regulation but new policies and initiatives need to be authorized and identified in the ordinances more clearly to set legal precedents that provide the authority to consistently pursue them. Of these initiatives complete streets that provide a balanced and multimodal right of way use are important ideas that could be developed as initiatives but that can also be supported through current reporting of the Newark Transportation Commission.

Public Health/Food

- Set more aggressive standards for noise etc. associated with industry/waste management, etc
- Promote urban farming
- Launch a Healthy Foods Initiative: choice, school foods, supermarket locations, farmers markets,
- Create community gardens.
- Mitigate noise through sound proofing.
- **The Regulatory Context:** Health is the least represented area of sustainability in the ordinances mostly as a result of other regulations, especially state wide. Nevertheless, industrial conflicts and the potential for urban farming and other green adaptive reuse of land need to be more clearly defined and pursued by the regulations.

Habitat

- Undertake an aggressive greening initiative modeled on the NYC program.
- Reinforce roles of Shade Tree Commission and Environmental Commission on this issue.

- Facilitate more community-based stewardship for parks
- Create more parks on vacant land.
- Waterfront and water body restoration and revitalization.
- **The Newark Regulatory Context:** Habitat within the scope of the Newark regulations is currently regulated in some detail, but policies that go beyond this legal framework can provide deeper engagement by different constituents in the municipality through stewardship and other civic efforts. The need to make sure that these policies are backed by the ordinances is important to make sure that emerging efforts are codified and give imprimatur to sustainability efforts in the municipality.

Appendices

For the purposes of this study, and in particular the appendices presented in the following pages, sustainability practices have been organized into eight categories as described above:

- **Waste Management:** The practices of collection, disposal and recycling of organic and non-organic waste and the citizen's participation in the relation of communities to the byproducts of their activities and their impacts.
- **Water Resources:** Measures for provision, conservation and use of water resources in landscape installation and maintenance, reclamation and harvesting including clean water, storm water and wastewater and gray water management.
- **Housing Design and Construction:** Standards for residential building practices that aim to create energy efficient structures and make the optimal use of resources and have the least ecological impact.
- **Energy:** Strategies for conservation and efficient use of resources to operate the needed systems for community life that can affect landscape impact on temperatures and other climate issues from buildings to the regions.
- **Green Business and Economy:** Business practices that embed environmental principles in economic development, such as strategies for green business attraction and retention and green workforce jobs initiatives.
- **Transportation and Connectivity:** Policies and plans to reduce auto-dependency and improve mobility and promote transit-oriented development, car sharing, diverse modal transport and pedestrian friendly spaces.
- **Public Health and Local Food Production:** Programs and policies that look to provide environments that promote healthy living by increasing pedestrian and other physical activity and that encourage access to quality food to reduce morbidity.
- **Habitat:** Standards that promote the ecological diversity in any given area, such as a municipality or other political unit that is inhabited by a particular group of flora and fauna and other species that contribute to the environment.

Each category can be further organized around tree kinds of interventions – Policy Objectives, Governance and Physical Planning/Regulation/Design. These are defined as:

- **Overall Policy Objectives:** These are the broadest statements that capture the long-term goals of the political and civic communities. They are aspirational, and in general they do not prescribe a method for implementation. These apply to all levels of government and have been developed with the support of the larger community. For instance, “Encourage the conservation of water by city residents and businesses” is an example of a sustainability policy.
- **Governance:** These are actions that agencies and units of government can take to promote the policy objectives. In addition to making policy itself, the agencies of government can take a wide variety of actions to implement sustainability policies. For example, governments control the capital programs of their agencies or the procedures by which projects are reviewed and approved. For instance, “Establish a public education program around sustainable use of water resources” is an example of sustainability *governance*.
- **Physical Planning, Design and Regulation:** This category describes sustainability initiatives that are in the built environment. This category includes the land-use and design regulations that control the form of buildings and the form of the city in response to sustainability objectives. This is the intersection of sustainability and the practice of town planning and design. For instance, “For parking lots, require best practice Low Impact Design (LID) passive storm water management strategies and landscaping” is an example of sustainability *physical planning, design and regulation*.

Of course the distinctions between these categories are not absolute. A statement that begins with the words “encourage” may be considered a policy, whereas the same statement, if it begins with “require” may be considered a regulation. Nevertheless, imperfect and subjective though it is, this classification was adopted to help the City of Newark make sense of the almost limitless range of actions that it can take to support sustainability. Also to that end, this list emphasizes those policies, actions and physical interventions that go beyond what would be considered good town planning practice in the general sense and focuses instead on actions that are most closely associated with resource sustainability.

Appendix I. Newark Ordinances Sustainability Audit

This audit surveyed the city ordinances in their entirety and identified those sections in the laws that relate to sustainability. As stated above, because sustainability encompasses almost every aspect of good city planning practice, this audit reflects an emphasis on resource sustainability.

After selecting over 200 pages of regulations (based on the Revised General Ordinances of the City of Newark Amended through July 14, 2009) that provide a framework for sustainability in Newark, we classified each section by the type of regulation (policy, governance, physical design) and by the eight different areas of sustainability described above (waste management, water, housing, energy, economy, transportation, health and habitat).

In what follows, we summarize how the existing Newark ordinances relate to each of the eight categories of sustainability initiatives. This is done first by synthesizing the policy, governance and design characteristics of each sustainability area and then by identifying specific sustainability measures that can be promoted beyond the current Newark legal framework. The purpose of this exercise is to help the City identify where within the current regulatory framework the most strategic opportunities exist for enhancing sustainability initiatives. In the preceding section, the summaries of the Newark Regulatory Context for each of the specific recommendations, are based on this analysis.

Observations

The audit suggests generally that the scope of sustainable best practices found in contemporary planning, architecture, engineering and construction are not precluded in the statutes. As with other areas of environmental, land-use and control law, the Newark ordinances are very open and permissive of the most diverse activities. In this respect, an assessment of the possibility of implementing sustainability projects and initiatives in Newark suggests that these types of activities are allowed.

Nevertheless, from a more textual interpretation of the ordinances, there exist challenges in the application of the regulations for specific cases such as zoning applications or other permits for development. Thus, the same broad character of the law that allows most contemporary sustainability practices is not assertive or clear enough about specific standards or requirements. In this context, the need for the ordinances to provide a set of definitions and clear regulations for dealing with sustainability seems to be needed for the proper interpretation of the statutes. Although the ordinances don't preclude sustainability they don't require or incentive it with clearly defined and prescriptive language.

This situation suggests that sustainability is within the spirit of the Newark ordinances but that further refinement and clarification of specific requirements will be needed to face the increased importance of sustainable practices in the XXI century. Beyond the need for more clarification of specific requirements and standards, the ordinances should also reflect the importance

of sustainable values and lay the foundation for a greener Newark by including sustainability as a key principle for interpretation of these statutes and for setting a precedent for other initiatives in the city.

Waste Management

Waste management in the City of Newark is for the most part the **Department of Neighborhood and Recreational Services'** duty. The Department oversees the physical maintenance of neighborhoods and the city in general, including street cleaning, refuse collection and disposal, snow removal on all city streets, administering the city's recycling operations, care of all city parks and public grounds including trees, lawns and landscaping of public buildings. The Division of Sanitation at the Department of Neighborhood and Recreational Services is specifically responsible for these activities, plus removal of debris and refuse and maintenance of all vacant land owned by the city and private property when owners fail to maintain it.

As part of its environmental stewardship of the city, the **Newark Environmental Commission** has the power to study and make recommendations concerning solid waste management. Other stewardship provisions suggest that although the City of Newark has an ongoing common law obligation to maintain streets, medians, sidewalks and walkways, the "Adopt-A-Median Program" allows volunteer profit and non-profit organizations to assist the city in maintaining these areas as a form of public service.

The Solid Waste Management provisions of the Newark Ordinances specify the requirements for persons accumulating solid waste to be collected by the municipality. Requirements include the need to use refuse containers and to keep them functional, the location of these containers and number required based on the number of dwelling units. It is also considered unlawful for any residential or commercial property owner to permit open or overflowing containers.

Other laws identify the time of placing and removal of refuse receptacles varying by season, as well as the provisions for contracting private authorized collectors other than the city. The preparation of solid waste for collection and specifications for receptacles and regulation of mechanical refuse container equipment and storage permits, fees and deposits are also identified in the Ordinances.

The Housing Code of the City calls for having exterior and interior areas of the premises and accessory structures and common areas free from filth, ashes, rubbish, refuse, junk, slop, wood, paper or other materials. The Ordinances also identify certain substances on land to be detrimental and hazardous including brush, weeds, dead and dying trees, stumps, roots, obnoxious growth, solid waste, reuse and debris. These items should be removed by owners.

As part of the Land Subdivision Site Plan elements for review, the Central Planning Board considers that garbage disposal shall be adequate to prevent vermin and rodent infestation and efficient collection. The Land Subdivision code also specifies how to manage garbage and refuse collection disposal and recyclable materials according to Department of Neighborhood and Recreation Services standards.

Finally, according to the regulations there shall be included in any new multi-family housing development that requires subdivision or site plan approval an indoor or outdoor recycling area for the collection and storage of residentially generated recyclable materials. Dimensions, location, signs and landscaping around the recycling area are also specified. Guidelines for sufficient space to recycle are identified for single family homes, condominiums, townhouses and apartment buildings. Commercial establishments generating waste are required to have a plan for recycling these materials.

Water

As part of the regulation of water in Newark, the **Newark Environmental Commission** is established for the protection, development or use of natural resources, including water resources in the city. The Commission keeps an index of all open areas, publicly or privately owned, including open marshland, swamps and other wetlands and has the power to study and make recommendations for water resource management.

The **Department of Water and Sewer Utilities** directs and supervises the functions and activities for the design, condition and performance of the city's water, sanitary and storm sewerage systems and develops and maintains methods to account for water consumption and usage. It is also charged with the implementation of revenue collection systems and preparation of plans, specifications and construction of sewers and water systems.

Within the Department, the **Division of Sewers and Water Supply** manages, administers, operates, maintains, improves and extends lands, reservoirs, aqueducts, distribution mains, hydrants, valves and other structures owned by the city for supplying water to city's customers. The Division also constructs, operates and maintains the city's sanitary and storm sewerage systems and is responsible for the treatment of wastewater and storm water. The improper disposal of waste into the municipal storm sewer system is prohibited and no other substance than storm water shall be spilled, dumped or disposed into this system except certain discharges such as potable water sources air conditioning condensation, water flows from springs and other water bodies. No person shall discharge any storm water, surface water, ground water, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

It is a purpose of the Newark Ordinances to minimize public and private losses due to flood conditions in specific areas through laws for flood damage prevention. This is accomplished by restricting and prohibiting uses dangerous to health or vulnerable to flooding, controlling the alteration of natural water bodies and controlling filling, grading, dredging, and other development which may cause flood damage. The areas of special flood hazard and floodways are identified and defined by FEMA and adopted by Newark to regulate any development in these areas. Any development in these areas requires a permit to ensure that the development complies with the terms of the Ordinances. By meeting certain conditions, a variance may be issued for new construction or improvements.

Anchoring of structures, construction materials and utilities requirements are also determined by the Flood Damage Prevention laws of the city, as well as subdivision proposals and specific standards for residential and nonresidential construction. New residential construction shall have the lowest floor, including basement, elevated to or above the base flood elevation whereas nonresidential construction shall either have the lowest floor elevated to base flood elevation or be flood proofed.

The Newark Ordinances also control soil erosion and sedimentation and prevent related environmental damage by requiring adequate provision and protection for surface water retention and drainage and by requiring protection of exposed soil surfaces. Development of a site of 5,000 or more square feet requires a soil erosion and sediment control permit. Any applicant desiring to engage in land distributing activities shall also submit soil erosion and control plan. Activities exempted from these plans are the construction of a single-family detached unit, unless such unit is part of a proposed subdivision or other project involving two or more single family units. The use of land for gardening primarily for home consumption is also exempted from a soil erosion and sediment control plan.

For obtaining a soil erosion and sedimentation permit, control measures to minimize these impacts shall be demonstrated by the applicant and include all aspects of the proposed site development that involve any site disturbing activity. For example, stripping of vegetation, grading or other soil disturbance shall be done in a manner which will minimize soil erosion and natural vegetation shall be retained, protected and supplemented when feasible through seeding or other stabilization. Other regulations specify that drainage shall accommodate increased runoff, that water runoff shall be minimized, and that sediment shall be retained on site. All permanent soil erosion and sediment control measures installed shall also be adequately maintained by the property owner in a manner which doesn't create an erosion problem.

As part of the Land Subdivision regulations the site plan needs to include storm drainage, sanitary waste disposal and water supply elements. Particular emphasis is to be given to the adequacy of existing and proposed systems or improvement of utilities on-site, off-site, on-tract and off-tract to adequately carry storm water, runoff, sewage and to ensure an adequate supply of water at sufficient pressure for potable, commercial, industrial or fire prevention uses. All sanitary utilities shall be separately conveyed from on-tract storm water facilities, and shall be separately connected to the municipal sewerage system.

The regulations also mandate that no land area shall be developed by any applicant such that the volume and rate of storm water runoff occurring from the property is increased over the volume and rate which occurs under existing predevelopment conditions, or the drainage of the adjacent properties is adversely affected or storm water runoff from impervious areas such as parking lots, driveways or loading zones, flows over or across sidewalks, or out of driveways.

In order to accomplish the above objectives the design of storm water drainage and storm water storage facilities may include: roof-top storage, oversized sewers with restricted outlet pipes, underground storage tanks, surface detention basins, French basins, planted swale areas, bermed areas, or where acceptable soil and ground water conditions exist, recharge basins, dry

wells, porous pavement, or any other innovative techniques, or combination of the above. On-tract storm water facilities shall be designed to contain the amount of storm runoff, which is equal to the maximum difference in runoff between existing conditions and post development conditions.

Zoning regulations require for the Second and Third Residence Districts, the First Business District, Second Business District, Third Business District, Fourth Business District and First Industrial District specific yard impervious area for development. On lots with 5,000 or less square feet and/or 50 feet or less width in the previous districts and for all Four Residence Districts the impervious surface shall consist of a maximum of 55% of front yard lot area, and only one driveway in the front yard whereas at side yards, a paved walkway is only permitted along one side of a dwelling.

Finally each factory, workshop, office, retail store, restaurant, service station, public garage, or other place of employment shall be provided with a water closet (toilet), urinal and washing facilities for use by its employees. Every owner of property with a house or other building therein shall connect the sewage line from his/her house or building to the nearest city sewer line or authorized private sewer connection.

Housing

The **Department of Economic and Housing Development's** purpose affects housing as it assists and encourages the timely and proper improvement to real property within the city and studies market conditions to recommend to the Municipal Council a minimum price for the sale of city-owned real estate for the construction of low income and market rate housing units. These functions include at a minimum the acquisition of real property, the development of maps and standards governing the development of the city, the management, maintenance operation, and disposition of property owned by the city but not needed for public use and the management of incentive programs as may be established by the city to assist and encourage the development of property.

Within the Department, the **Division of City Planning** advises the **Central Planning Board** and performs other duties related to land use and zoning regulations including the Master Plan, blight investigations and conducts studies and performs research and delivers reports to assist in the determination of proper standards governing the physical development of the city.

Other entities that review or control housing in the city include the **State Uniform Construction Code Enforcing Agency** that has been established in Newark to oversee plan reviews, applications for construction permits, minor emergency work and certificates of occupancy. At the same time the **Newark Housing Authority** acts as the redevelopment agency for slum clearance and urban redevelopment in the city for the purpose of carrying out the provisions of the Local Housing Authorities Law.

The regulation of housing in Newark includes the following stipulations that can have sustainability impact as they regulate the construction and maintenance of residences in the city:

It shall be the responsibility of the purchaser of any 1 to 4 family residential city owned property to repair, alter and improve the building in accordance with the requirements of the Newark Housing Code and the Uniform Construction Code of the State of New Jersey. The city shall have the right to seek a reversion of the title where the purchaser fails to comply with rehabilitation requirements.

All roofs, gutters, leaders, drains, side walls, windows, window frames, doors and other parts of a dwelling shall be kept structurally sound and reasonably free from evidences of apparent defects. The ceilings, walls and floors of the interior of the premises, the basement and cellar shall be kept dry and free from dampness. The structural soundness and safety of all dwellings shall be maintained.

All habitable rooms, bathrooms and water closet shall be heated by central heating or by a system that accommodates heating fixtures and by air conditioning. All sinks, basins, showers and baths shall have supplied hot and cold running water while all toilets, urinals and water closets shall have supplied cold running water in adequate quantity.

Every dwelling unit shall contain a flush water closet, lavatory and a shower or bath. The facilities shall be connected through pipes to a water and sewer system in accordance with all applicable codes.

No dwelling unit shall be permitted to be occupied unless there shall be separate self-contained cooking facilities with a kitchen and an attached drain board.

Every habitable room, bathroom, hall, water closet, compartment, laundry and communicating corridor shall be equipped with safe artificial lighting.

Every dwelling unit shall be occupied by persons composing not more than 1 family and 2 other persons.

The duties and responsibilities of owners, operators and occupants of housing in Newark include maintenance and appearance of exterior premises and structures and upkeep of landscaping, signs and billboards or advertisements, windows, awnings and marquees.

The City of Newark is divided into zoning districts for the purpose of limiting and restricting to specified districts, and regulating therein buildings and structures according to their construction and the nature and extent of their use of land and to regulate and restrict height, number of stories, and size of buildings and other structures, the percentage of lot that may be occupied, the size of yards, courts and other open spaces, the density of population, and the location and use and extent of use of buildings and structures and land.

The Urban Homestead Program sells to Newark residents for their residence for a minimum of 10 years and requires rehabilitation of the property. Title to the property reverts back to the city in the event the purchaser fails to close title, commence or complete rehabilitation within the time period or meet the residence requirements.

Energy

Within the Housing Code for Newark different aspects of energy provision are regulated including lighting and electrical receptacle outlets that are required such that every habitable room shall be equipped with lighting and be sufficiently illuminated by or equipped with safe artificial lighting service, and in also that in every room receptacle outlets shall be installed. Other systems are regulated as part of the construction requirements in the city:

Gas appliances are prohibited in sleeping rooms except ones that employ a sealed combustion system connected to the outside air, while heating facilities are required in all habitable rooms. Central heating systems shall be approved by the Chief Inspector of the Bureau of Fire Prevention and Fire safety and located in a an area or space which is ventilated and completely separated by fire retarding walls or partitions containing also means of ingress and egress.

All new installations of any individual or collective system of refrigeration or air conditioning equipment for a single consumer it shall be installed with specifications for equipment over 6 tons to be equipped with water conserving devices such as economizers, evaporative condensers, water cooling tower or similar apparatuses. Equipment below 6 tons not using re-circulated water shall be provided with an automatic water supply regulating device.

Rooftop mechanical structures are allowed in the zoning regulations and include solar panels or similar equipment required to operate and maintain the building. These structures may be erected up to the greatest of 12 feet or 20% of building height, and set back from the edge of the roof at least 1 foot for each 1 foot projection above the roofline. Architectural screening of any rooftop mechanical structures shall be installed so as to screen the mechanical equipment from view from all sides from which it may be visible.

All screening devices shall be of a height equal to the rooftop mechanical equipment and the material, finish and design shall be architecturally compatible with the exterior façade of the principal structure on top of which it is situated. No additional screening shall be required where the parapet wall is at least as tall as the rooftop mechanical structure.

Economy

Within the **Department of Economic and Housing Development** the **Division of Property Management** maintains a complete registry of all real property owned by the city, including information as to its use and condition, as well as on leaseholds and other encumbrances, manages the maintenance and operation of all real property owned by the city which is not needed for municipal use, recommends local ordinance and administrative policy and those properties to be offered for sale or lease and the terms and conditions of the transactions and serves as the redevelopment agency for the city. This positions the Division as an important player in the sustainable redevelopment of property in Newark.

The city contains a large number of vacant buildings that have been abandoned by their owners, and that are in state of disrepair and neglect. A public officer has been designated by the Mayor to identify abandoned properties within the municipality, place these properties on an abandoned property list. By creating this list the municipality expects to address the conditions created by these buildings and further their reuse for productive purposes.

In terms of retail and within the zoning regulations the First, Second, Third, Fourth Business Districts and First Industrial District lots with 5,000 or fewer square feet and/or 50 feet or less of width the minimum area on exterior walls devoted to transparent glazing (windows or doorway areas) should be a minimum of 30% for the primary façade, 20% for the street facing side or rear walls of structures on corner lots or through lots, and about 10% for non-street facing walls. All transparent glazing areas on door panels count toward this requirement, but door panels themselves do not count. For the first floor façade on commercial rows and for commercial spaces, the minimum required area of wall devoted to transparency is 45%. Additionally, any security gates, grills, or roll-down barricades shall have a minimum transparency of 75%.

Many improvements and landscape features have a special character or a special historical or aesthetic interest or value and representing the finest architectural products of distinct periods in the history of the city exist in Newark. It is determined a matter of public policy in the ordinances of the city that the protection, enhancement, perpetuation and use of improvements and landscape features of special character or special historical or aesthetic value area public necessity and are required in the interest of the health, prosperity, safety and welfare of the people.

The City of Newark has also identified the need to create new and additional funding for the arts in the city in order that a coordinated city-wide policy for public art may be implemented that incorporates all arts and disciplines for the cultural benefit of the city, its citizens and its visitors. A percent-for-arts program related to all future public works construction in the city provides significant added financial support toward the city's ability to create effective processes for the commissioning of new visual arts components for capital projects. All appropriations for city public works capital improvement projects, including all bond projects and all other capital projects funded from other sources should include an amount equal to 1% of the total public works capital improvement cost to be dedicated to the program account.

Finally another area of regulations related to economic sustainability is the regulation of public markets. The Director of the Department of Finance is authorized to establish rules and regulations for the control of public markets. A market needs to be located in and it shall have a fence, wall or other barricade of any conventional building material. The fence or barricade should be at least 7 feet high, installed along all property lines and provide gates, door chains to prevent entrance into the property when not in use.

Transportation

The statement of policy of the **Newark Transportation Commission** designates it as a standing body to advise the Mayor on all transportation issues including both individual and mass transit needs. Its goals are to ensure that the continued economic growth

is dependent on its ability to utilize mass transit access to business districts, that mass transit must be accompanied by improvements to the city's road network, that a greater proportion of the Federal and State monies fund roadways surrounding the city. The ordinances also find that there is a need for a city-wide transportation plan and program of action which is updated annually and that the program is needed to foster continued economic growth and development of the city.

This annual report includes an assessment of priority needs for transportation improvements and submits an annual report and plan addressing all transportation matters, issues, needs and projects vital to the city. The Commission also monitors on an ongoing basis the effectiveness of proposed transportation programs and all actions taken for their implementation and assists the Mayor and Council in obtaining the financial resources required for implementation of transportation improvements including an annual legislative recommendation for submission to the Federal and State governments.

Other governance bodies for transportation include the **Newark Department of Engineering** with responsibilities that include traffic regulation, design, planning and control, maintenance and repairs of traffic signals and traffic signs and markings and installation and maintenance of parking meters. In addition the Department investigates every street which is adjacent to a school and has installed rumble strips on every street which is adjacent to a school, in such locations as to serve to maximize the safety of the children attending each school or educational institution.

The Department of Engineering may designate a curb loading zone upon the special request of any person/business when, on the basis of a site inspection conducted it is determined that such curb loading zone is necessary and justified by traffic conditions at the proposed location. The days and hours of curb loading zone will be designated by the Department of Engineering based on the needs of the applicant and the current parking restrictions.

All streets or parts of streets in the city shall be graded, curbed, flagged, paved, or otherwise improved and designed or modified by special ordinance. Also, every public street in the city shall have a crowned roadway in the center whose width shall be 3/5 of the width of the street, and shall have on each side of such a street a sidewalk whose width shall be 1/5 the width of such street. The permissible unflagged or unpaved portions of the sidewalk of any public street in the city shall be properly graded and neatly and sufficiently covered and maintained with gravel, broken stone screenings, grass or sidings. Where any driveway crosses the sidewalk it shall be paved with a smooth pavement to join in and be continuous with the abutting sidewalk pavements.

Certain exclusive bus lanes have been established in Newark between the hours of 6:30 AM to 9:00 AM and from 4:00 PM to 6:00 PM, Monday through Friday on Broad Street and Market Street. At all times an exclusive bus lane is located along the curb lane of Raymond Boulevard and between 3:30 PM and 6:30 PM, Monday through Friday on the center lane of Raymond Boulevard.

Considering site plans as part of the land subdivision the **Central Planning Board** requires that applicants provide a pedestrian and vehicular traffic element. This element includes pedestrian and vehicular traffic movement within and adjacent

to the site with particular emphasis on the provision and layout of parking areas, off-street loading and unloading, movement of people, goods and vehicles from access roads, within the site, between buildings and between buildings and vehicles. The site plan shall provide a safe and efficient circulation system for movement of people, whether on foot or vehicle into, out of, and within the site. The circulation system shall have minimum adverse impact on surrounding areas. Sufficient off-street parking shall be required to ensure minimum curb parking.

Within the zoning regulation for the city requirements for off-street loading berths for merchandise, supplies and equipment are determined for different commercial uses. In all districts for all required off-street parking spaces as defined herein whether or not parking space is an enclosed or open area, each parking stall shall be no less than 8.5 feet in width and 18.5 feet in length and the defined area shall be considered 1 parking space. If stalls are located with one side adjacent to a wall or high curb, an additional 0.5 feet of width is needed. If walls are on both sides of the parking area the minimum stall width shall be 9.5 feet. Requirements and the number of spaces for off-street parking are also determined for each zoning district and provision shall be made on the premises, either in the open or enclosed area of any new building. In the Central Business District and on arterial roadways, the ground floor/street level of all structured parking facilities must be designed to encourage and complement pedestrian-scale activity. Angle parking is required in certain section of the following streets: Bergen St., Hudson St., Lincoln Park, Mount Prospect Ave., Mulberry St., Porter Ave., Raymond Plaza.

Parking regulations for the Hospital District zoning regulations specify that the minimum amount of off-street parking shall be one space for each licensed bed. Such off-street parking shall be provided either on the lot containing the principal use or in the Hospital District within 200 feet of the principal use lot. All accessory uses shall have access to at least a portion of the spaces designated for the principal use. The minimum amount of loading shall be one berth for each 100,000 square feet of gross floor area rounded to the nearest 100,000 square feet.

Automobile Parking Lots' licenses and renewals are considered by the **Division of Tax Abatements/Special Taxes** and if the application meets the dimension and zoning requirements. Dimensions specified require that for all automobile parking the minimum space shall be 8 ½ feet wide and 18 ½ feet long. An 8 ½ foot stall width assumes a clear space on adjacent stalls of the same dimension on both sides. If a stall is located with one side adjacent to a wall or high curb, an additional 6 inches of width is needed. The minimum stall width, if walls are on both sides, shall be 9 ½ feet. In addition, each parking space shall be delineated by yellow or white surface paint lines. Parking operators shall keep the sidewalks surrounding the parking lot free from dirt, ice, sleet and snow and shall keep the sidewalks in safe condition for the travel of pedestrians. Also parking lots shall be paved with a smooth, hard surface which shall be maintained in good and safe condition. Each facility shall be adequately drained so that it will not retain water. Driveways to parking lots shall provide adequate access to the parking area without the necessity of motor vehicles unnecessarily blocking streets or sidewalks.

Health

The **Newark Environmental Commission** has the power to study and make recommendations concerning air pollution and noise control among other topics. Also, as part of the governance of health in Newark, the **Department of Neighborhood Recreation Services**' duties include demolition of structures which are hazardous to the health or safety of citizens and the general public.

Air pollution from incinerators is controlled and prohibited in the Newark ordinances. The regulations state that no person should construct, install or use an existing incinerator unless it is of the multiple chamber type or of a type approved. It is also stated that no person shall cause, suffer, allow or permit smoke from any incinerator the shade or appearance of which is darker than No. 1 on the Ringelman Smoke Chart or greater than 20% opacity exclusive of water vapor. Also, no person shall construct, install or use any incinerator which will result in odors being detectable by sense of smell in any area of human use or occupancy. Unburned waste and ash should also not be emitted in quantities large enough to be visible while suspended in the atmosphere.

Retail vendors of fruits and vegetables or flowers and other plants are allowed when their sole and primary business venture is the sale of the merchandise for profit, and limits its use of the sidewalks for displays outside and in front of an ongoing commercial establishment and when such use if the sidewalk is an integral part of the business, provided that in no event shall the sidewalk be encumbered or obstructed as to impede the flow of pedestrian traffic and no more than 2 feet of sidewalk shall be otherwise obstructed by the display of the merchandise.

Habitat

The **Newark Environmental Commission** is established for the protection, development or use of natural resources within the territorial limits of Newark. The Commission has the power to conduct research into the use and possible use of open land areas of the municipality and may coordinate with State and County environmental officials or unofficial bodies organized for similar purposes. The Commission may also advertise, prepare, print and distribute books, maps, charts, plans and pamphlets which in its judgment it deems necessary for its purposes. It shall keep an index of all open areas, publicly or privately own.

Within the powers and responsibilities of the Newark Environmental Commission are included development of a contaminated site clean up plan and accompanying grant strategy, an open space plan proposal for adoption by the Planning Board and accompanying grant strategy and a Green City Plan which addresses the need for sustainable development and the reduction of air pollutants in the city. The Newark Environmental Commission has the power to study and make recommendations concerning open space preservation, soil and landscape protection, environmental appearance and protection of flora and fauna.

Within the **Department of Neighborhood and Recreational Services** the **Division of Parks and Grounds**' duties include care of all city parks and public grounds including trees, lawns and landscaping appurtenant to public buildings and the

care for the pruning, trimming, removal and planting of shade trees in the streets and all other public places in the city. No person shall cut, break, climb or injure any tree or plant growing or planted in any public street or city park, or cause, authorize or procure any person to do any of these actions without written permission of the Director of the Department of Neighborhood and Recreational Services. It is also prohibited to plant or set out any shade tree in or on any part of any public street or city park without a permit.

The Newark Housing Code specifies duties and responsibilities of owners, operators and occupants including maintenance of landscaped lawns, hedges, and bushes that should be kept trimmed and free from becoming overgrown and unsightly where exposed to public view and where the same constitute a blighting factor depreciating adjoining property.

As part of the Land Subdivision elements, landscaping shall be provided as part of the overall site plan design and integrated into building arrangements, topography, parking and screening requirements. Landscaping shall include trees, bushes, shrubs, ground cover, perennials, annuals, plants, sculpture, art and the use of building and paving materials in an imaginative manner. All landscaping in subdivisions should meet the following objectives: architectural, engineering and aesthetic.

It is considered that the presence upon lands, lying within the corporate limits of the city of brush, weeds, dead and dying trees, stumps, roots, obnoxious growth, solid waste, refuse and debris is considered in the ordinances detrimental to public health, safety and the general welfare and is required to be eliminated in vacant and other properties in Newark.

Appendix II: A Master List of Best Practices

Waste Management

Overall Policy Objectives

- Increase the municipal solid waste recycling rate and overall recycling rate.
- Reduce per capita solid waste generation.
- Increase recycling rate for municipal and private construction and demolition waste.
- Increase the diversion of organic material from the waste stream.
- Increase rates of electronics recycling and proper disposal of household hazardous waste.

Governance

- Implement curbside or centralized electronics and hazardous waste pickup.
- Conduct waste stream inspection and fines for improper disposal.

- Adopt a 'pay as you throw' program for municipal trash collection that encourages recycling by charging users for the trash they generate by volume and collecting recyclables for free.
- Institute a comprehensive recycling program in all municipal offices.
- Adopt purchasing and procurement guidelines that favor recyclable products and those with high post consumer content in municipal buildings.
- Permit small-scale recycling facilities in residential zone districts

Physical Planning, Regulation and Design

- Allow centralized composting facility

Water Resources

Overall policy Objectives

- Encourage the conservation of water by city residents and businesses.
- Promote best-practice passive storm water management strategies.
- Maximize the revenue generated from water resources and water infrastructure. assets, including watershed lands for reinvestment in the system to reduce leakage.
- Support the restoration of the Passaic River to an ecologically sound state and encourage economically and environmentally beneficial development on the waterfront.
- Limit vulnerable populations in floodplains.
- Protect the water quality by controlling exposure to potentially contaminants and non-point-source pollution.
- Reduce combined sewer overflow.

Governance

- Encourage/Permit water harvesting.
- Encourage/Permit grey water recycling.
- Define water related sustainability features in the code (such as storage basins like rain barrels or cisterns, irrigation systems including pumping equipment, and infiltration systems like rain gardens or porous water channels).
- Establish public education program around sustainable use of water resources.
- Reduce/eliminate permit fees for installation of water storage tanks.
- Incorporate green infrastructure into street design engineering

Physical Planning, Regulation and Design

- Permit rain barrels, rain gardens and other sustainable water interventions to project into setbacks subject to size limits.

- Restrict uses in floodplains in order to reduce risk of injury to vulnerable populations, contamination during flood events (child and adult care facilities, senior housing facilities, dry cleaners, gas stations, auto repair facilities, facilities with underground tanks, facilities using industrial chemicals) so that development in floodplain is designed to be floodable rather than prevent it altogether.
- Establish tree protection regulations for all residential zones.
 - Possible Standard: Protect trees greater than a particular age or thickness (i.e. 8" diameter dbh or 25" circumference or 35 years old)
- Specify native and low-water demand plant species.
- Allow alternate porous paving materials consistent with the use intensity and traffic load of the vehicular use area.
- For parking lots, require best practice Low Impact Design (LID) passive storm water management strategies and landscaping:
 - Require new and redeveloped parking lots to produce stormwater runoff similar in quantity and quality to runoff from the same property in an undeveloped state.
 - Maximize natural stormwater management techniques land treatment via parking lot landscape standards, regulations and/or requirements.
 - Standardize requirements for parking lots which include design and distribution parameters for water conserving landscaping.
 - Use permeable paving where possible.
 - Permit/incentivize use of landscape strips for planting areas which run the length of a row of parking spaces, for the collection and retention of water
 - Require smaller lots, and/or more broken up and dispersed through use of water conservation landscaping.
 - Allow the car overhang area of parking spaces to aid in stormwater management.
 - Permit permeable curbs that allow water flow into bio-swale landscape areas.
- Permit/incentivize vegetated roofs.
- Permit/incentivize water conservation landscaping.
- Grant extra landscaping credit for landscapes that have a stormwater management function.
- Include optional low-water landscaping or plant list as part of landscaping code.
- Allow integral aspects of vegetated roofs exemption from height limitations

Housing Design And Construction

Overall Policy Objectives

- Use best-practice construction and design to minimize environmental impacts and to maximize resource efficiency in new construction.

- Retrofit the existing building stock to be more energy efficient.

Governance

- Encourage rehabilitation of housing units to maximize use of existing resources.
- Certify green buildings through incentives or mandates of professionally accepted standards.
- Require/Allow historic resource preservation for older housing stock.
- Implement Passive House Standard (90% reduction in energy use) by removing obstacles and providing incentives for houses that achieve it.
- Implement Green Affordable Housing Land Trusts

Physical Planning, Regulation and Design

- Require energy efficient building measures.
- Site planning regulations should require context-appropriate designs.
- Use regulations should be flexible enough to encourage adaptive reuse.

Energy

Overall Policy Objectives

- Reduce greenhouse gases.
- Reduce urban heat island effect.
- Reduce government's energy use to 7 percent below 1990 levels by 2012.
- Retrofit 25 percent of the municipal building stock by 2025.

Governance

- Define clearly which rights exist for solar access to solar or hot water panels or systems.
- Require energy audits for non-residential buildings at point of sale.
- Expressly permit district energy systems in all districts, including any accessory buildings or machinery included in the system itself.
- Promote Renewable Energy Demonstration Projects
- Hybrid Vehicle Excise Tax Exemption providing an excise tax exemption and reduced registration fee for owners of qualifying hybrid and clean fuel vehicles that achieve 40 miles per gallon during city driving.

Physical Planning, Regulation and Design

- Allow wind turbines, solar panels and other energy technologies to be installed on structures subject to building department review.

- Coordinate the dimensional requirements of sustainable technologies with site and development standards such as yard requirements, roof structure requirements and height restrictions.

- As appropriate, allow energy-related sustainability features (such as light shelves and photovoltaic panels) to project into setbacks and yards or exceed standard roof coverage limitations. Ensure that such projections meet a minimum vertical clearance above the ground.
- Define a category of accessory uses and structures for energy conservation and renewable energy production and allow such uses to exceed standard yard and rooftop setbacks

- Adopt the standards of a Model Lighting Ordinance such as those suggested by the New England Light Pollution Advisory Group, International Dark-Sky Association or others.

- Permit wind and solar generation accessory in selected zones and as a primary use of land in other zones such as industrial, high density and government areas (with limitations to protect historic districts or national monuments from visual and other impacts).

- Identify energy generation as an allowable use and define the zones where it is appropriate.

- Limits on accessory and stand alone facilities should be tailored to limit height as well as visual, noise and safety impacts, and to ensure compatibility with surrounding neighborhoods through performance zoning for distributed generation.

- Address conflicts with solar arrays on the ground and impervious cover regulations.

- Allow for district cogeneration of heat and power, including geothermal.

- Permit district co-op for alternative energy generation & neighborhood distribution.

- Allow solar power plants in appropriate zones.

- Prohibit heated sidewalks/driveways.

Green Business And Economy

Overall Policy Objectives

- Elevate the profile of the city as a regional green hub.
- Increase the number and quality of green jobs.
- Develop goals and achieve strategies by building coalitions with community stakeholders, and by engaging the public in the search for smart-growth solution.

Governance

- Promote training in green practices for particular sectors as prerequisite for permit or licensure.
- Support a diversity of businesses in community centers.
- Incentivize new green businesses with attention to financing.

- Ensure that new, broader land use categories include all types of anticipated businesses in support of environmental programs and technologies.

Physical Planning, Regulation and Design

- Permit mixed-use development and complete communities to minimize motorized transport of people and goods.
- Enable incubator-sized light industrial uses in compatible commercial and mixed-use zones. Strict size, grouping, and location and performance standard limits should ensure compatibility with surrounding commercial uses
- Permit use of accessory structure for home-based business: crafts, arts, food, and 'stock in trade' commodity selling.

Transportation And Connectivity

Overall Policy Objectives

- Create a sustainable transportation infrastructure that encourages swift transit, efficient freight movement, and pedestrian-friendly streets.
- Reduce CO2 emissions and energy costs from transportation activities.
- Improve freight movement to and from the seaport.
- Encourage non-automobile forms of transportation.
- Reduce emissions from city vehicles and operation.
- Make the city a model city of Complete Streets.

Governance

- Require municipal car-share programs.
- Identify and require basic Transportation Demand Management features in large new buildings to address trip generation and encourage alternate transportation (to include, but not be limited to: carpool, vanpool parking, free car-share parking spaces, onsite business center for use by residents, free residential membership in car-sharing program, complementary metro fare for initial residents/employees, display of alternative travel information, smart bike stations).
- Enact density and peak time use parking and metered fee schedule.
- Enable pre-tax public transit pass purchases through employers.
- Improve resident mobility to jobs: support long-range transit projects and policies that improve resident access to employment opportunities, as well as community and business development.
- Identify and enforce truck routes and reroute diesel truck routes away from residential school and park areas.
- Enact strict City vehicle and operations emissions standards.
- Allow flexible parking strategies of land release, phased in parking, standard waivers and cash-outs.

- Implement a "Complete Streets" program to insure that roadways are multi-modal.
- Allow greater flexibility for shared parking, perhaps in zones, with guidelines that acknowledge the reality of shared parking and provide incentives to participate.
- Create infill opportunity zones; areas where projects are encouraged with incentives to developers (tied to transportation)
- Use incentives for transit alternatives—discourage individual parking options.
- Promote self-service public bike rental program with stations in numerous locations designed to facilitate alternative mobility to the car and convenient urban transportation. Bikes are available for rent through user-friendly pick-up and drop-off technology to facilitate user access and usage.

Physical Planning, Regulation and Design

- Include car sharing as a zoning requirement in large redevelopment projects or Planned Unit Developments.
- Require bike lanes.
- Require other kinds of bicycle accommodation including requiring bike parking for all municipal facilities, at multifamily developments, commercial developments above a certain size and at hotels.
- Require frequent crosswalks.
- Require sidewalk access to public transit.
- Require connections between developments.
- Enforce truck idling regulations.
- Provide flexible parking strategies:
- Allow for "woonerf district" where pedestrians and cyclists share the road with cars. The technique of shares spaces, traffic calming, and low speed limits intended to improve pedestrian, bicycle, and automobile safety.
- Give priority parking for vans, hybrid vehicles, and bicycles in parking standards

Public Health/ Local Food Production

Overall Policy Objectives

- Reduce outdoor air pollutants to increase air quality, lower greenhouse gas emissions, and reduce asthma rates.
- Increase the availability and affordability of fresh and nutritious food, particularly in neighborhoods with limited access.
- Reduce obesity and diabetes rates and improve cardiovascular fitness by supporting activities and changes to built environments that promote physical activity and wellness.
- Improve the health of indoor environments to reduce rates of asthma, bronchitis, and lead poisoning.
- Strengthen and protect farm and forest Industry.
- Increase the number of urban farms and community gardens.

Governance

- Designate or establish safe routes from schools to neighborhoods
- Sustain / promote working natural landscapes.
- Specify vending machine regulations.
- Identify areas for urban forestry and farming.
- Preserve and develop urban land for biomass production.
- Allow for farmers markets as permitted use in different zones.
- Create incentives and enact standards which reduce noise pollution.
- Allow larger food production and distribution operations within city limits.

Physical Planning, Regulation and Design

- Make 'greenhouses' and other urban farming-related structures permitted uses/structures.
- Permit farmers markets.
- Establish protective agriculture-only zone districts.
- Permit/incentivize community gardens, private gardens, roof-top gardens, and composting.
- Apply impact limits as necessary and allow gardens to count toward landscaping and open space requirements or incentives.
- Allow produce sales stands in residential and mixed use districts as a temporary use.
- Define farmers markets and explicitly allow in appropriate districts. Apply location size and time standards to the use to limit impacts on nearby residential uses. Coordinate standards with other city regulations.
- Allow gardening on vacant lots and rooftops.
- Allow agriculture related accessory structures.
- Define mixed use to include urban agriculture, commercial gardens and vertical farms.
- Allow green roofs to count towards open space requirements.
- Make community gardens a permitted use.
- Provide urban agriculture (soil) overlay on zones / districts.
- Use permit process to limit number/density of fast food outlets and drive-through windows (similar to fast cash businesses, etc.).

Habitat Protection / Enhancement

Overall Policy Objectives

- Protect habitat.
- Protect the natural environment and natural resources.

Governance

- Encourage bio based landscape maintenance products and integrated pest.
- Manage large public landscapes holistically
- Create regulatory provisions for protection of natural areas, wetlands, rare plants.
- Substantially increase the amount of tree cover.
 - Possible objective: Plant at least 100,000 trees through a public-private partnership initiative.
 - Possible objective: Plant 3 trees per urban inhabitant
- Use trees and the urban forest to mitigate parking area impacts.
- Do not allow tree removal without permit. Require extra protection and consideration for plants of significant rarity, beauty, historic background, landmark character, cultural value.
- Provide incentives for preserved vegetation (consider point system.)
- Adopt a performance standard with tree or energy conservation landscape ordinance, such that over a particular period of time, a particular percentage of shade cover must be achieved.
- Require a maintenance plan and covenant that guarantees maintenance by property owners or their agents as a condition of building permit approval.
- Dedicate sensitive parcels of city-owned land to permanent conservation.
- Require developers to hire an arborist to study the trees on site and help determine what percent should be preserved (Identify and map critical habitat) sites where development is discouraged
- Require developers to provide adequate funding to undertake wildlife habitat impact analysis for large projects.
- Adopt open space impact fees
- Retain on-staff or on retainer an arborist to determine impact of development on trees.
- Conserve agricultural lands.
- Identify and protect endangered species and ecological communities.
- Promote habitat and corridor creation and restoration.

Physical Planning, Regulation and Design

- Preserve public access to both informal and formal open spaces, including town greens, bodies of water, forests, parks, playgrounds.
- Adopt overlay protection for particular areas in order to protect existing trees.
- Establish tree protection standards for all residential zones.
- Enact tree replacement standard, and replace trees in amounts and size based on carbon sequestration levels.

- Minimize impervious material within drip-line of preserved/trees.
- Protect natural resources on sites during construction.
- Establish canopy cover targets by land use (percentages varying per area).
- Require trees be retained or planted in new development to meet variable tree canopy cover goals within ten years, ranging in percent per type of zoned area (10 percent in commercial, 20 in low density residential etc.)
- Apply canopy cover regulations specifically to parking lots.
- Include recommended tree lists in code or in separate guideline or manual document with attention to climate and soil conditions, growth characteristics, and intended application and use of plantings, longevity, crown size, aesthetics, and nuisance factors (sap, debris drop potential for drain clogging, expansive roots which could disrupt paving), tolerance of road salt and de-icing compounds
- Incorporate a recommended plants list in Code or in separate guideline or manual document.
- Institute a diversification formula for site planting design to help reduce the spread of tree disease and the effect of a disease on the overall tree cover (no planting shall contain more than 10 percent of one family or 5 percent of one species; also a deciduous ratio of x percent to x percent evergreen).
- Require innovative parking lot construction methods to provide parking lot trees with a larger rooting area.
- Provide detail standards for landscape maintenance in code.
- Protect Steep Slopes
- Discourage development in floodplains.
- Allow green roofs as open space credits.
- Require new development to offset any loss of critical habitat by requiring purchasing conservation rights or lands elsewhere
- Adopt development setbacks from all sensitive natural areas (wetlands, riparian areas, critical wildlife areas)
- Regulate domestic pets in developments near sensitive wildlife habitat
- Require removal of exotic vegetation on development sites
- Encourage berms and bioengineered green wall techniques over constructed walls for noise barriers, which provide 1-3 decibels more sound reduction than a wall of similar height
- Use zoning to direct development away from sensitive ecological areas

Sustainable Newark

Place Based Case Studies

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