BROOKLYN NAVY YARD

An Analysis of Its Economic Impact and Opportunities for Replication

Pratt Center
for Community Development

“Helicopter Shot” 2011 © BNYDC

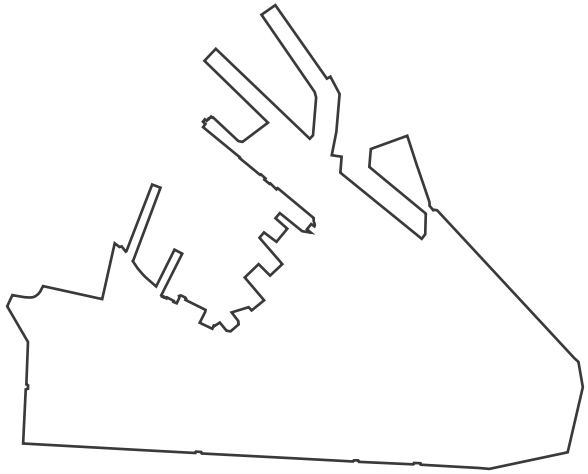
Acknowledgments

The Pratt Center for Community Development is grateful to Surdna Foundation, The Rockefeller Foundation, and the Brooklyn Navy Yard Development Corporation for their support in the development of this report. The Center would also like to acknowledge the following organizations for their general operating support: Deutsche Bank, The Bernard F. and Alva B. Gimbel Foundation, The Scherman Foundation, M&T Bank, and Mertz Gilmore Foundation.

This report would not have been possible without the collaboration of many people. We appreciate the work of primary contributors Jen Becker of Eco-Strategies Consulting, Eve Baron of the Pratt Center, and Sean Neill of Cycle-7, collectively referred to as the "Pratt Center team" in the report. In addition, several additional Pratt Center staff members were instrumental in the development of the study: Amy Anderson, Jessie Braden, Joan Byron, Paula Crespo, Adam Friedman, and Vicki Weiner. And we thank the Pratt Center Graduate Fellows who assisted significantly with this project: Rebecca Crimmins, Kalle Covert, Andrea Devening, Elisabetta Di Stefano, Lauren Gellatly, Inna Guzenfeld, Lee Miller, Sadra Shahab, and Nechama Winston. Finally, we thank Serena Leigh Krombach for her copyediting of this report.

We would also like to thank the leadership and staff at the Brooklyn Navy Yard Development Corporation, who gave us extraordinary access to senior staff and board members as well as to their files and were essential in facilitating communications with the tenants. Finally, we would thank the Navy Yard tenants themselves, many of whom contributed their time and support to this study.

—February 2013



Executive Summary

"Community Mural at Brooklyn Navy Yard" 2011 © Elisabetta Di Stefano

Revitalizing American manufacturing is increasingly recognized by leaders across the political spectrum as a core economic strategy to create well-paying jobs and restore our nation's prosperity. Cities throughout the United States are testing new and varied ways to advance these objectives, for example, modernizing long-underused industrial space, launching local branding and sourcing campaigns, and undertaking industry-guided workforce development. In many ways, the success of national policy regarding the manufacturing sector depends on our cities' ability to pilot new initiatives, share experiences, learn from each other, and identify ways to replicate successful efforts.

New York City's Brooklyn Navy Yard ("the BNY," "the Navy Yard," or "the Yard") presents such an opportunity. The BNY is an active industrial park that occupies 300 acres along the Brooklyn waterfront. It houses over 330 businesses and 5,800 employees and supports several of New York City's key industries, including film, media, arts and culture, architecture, and design.

"Steiner Studios" 2012 © Elisabetta Di Stefano

"Sustainable Bike Racks by Sculptor Michelle Greene" 2012 © Elisabetta Di Stefano

"Satellites" 2012 © Elisabetta Di Stefano

"Architecture & Engineering at BNYDC" 2012 © Elisabetta Di Stefano

City-owned and managed by the Brooklyn Navy Yard Development Corporation (a nonprofit organization with a board of directors appointed by the mayor), the Yard has emerged as a successful model for urban industrial development, with an emphasis on sustainability, that other cities can evaluate and use to inform their own efforts to retain and grow industrial jobs. The New York City Regional Economic Development Council, established by Governor Cuomo, recently identified the Navy Yard as a "transformative project" that is a model for 21st-century advanced manufacturing.

Nowhere are the challenges to urban manufacturing more evident than in New York City, which has high labor and utility costs, strained transportation and waterfront infrastructure, an extraordinarily dense urban fabric, and porous zoning and land-use policies that aggravate real estate speculation. Nonetheless, in the past 15 years, the BNY has emerged as a major economic force, with Yard tenants taking advantage of the City's major assets: a prime location, a diverse and talented workforce, and a large and sophisticated local consumer base.

The BNY's annual economic output, that is, its "gross domestic product" for New York City, is nearly $2 billion. It is responsible for 10,350 direct and indirect jobs and $390 million in earnings. That economic activity in turn induces another $2 billion in earnings in the local economy and another 15,500 jobs. By 2015, these impacts are expected to increase to $2.35 billion in recurring annual output; over 30,000 direct, indirect, and induced jobs; and $2.37 billion in induced additional earnings.

The formidable economic impact the BNY has achieved despite its high-cost environment provides insight into the future of manufacturing in cities in which high costs or other conditions pose similar challenges. In this report, the Pratt Center team identifies and evaluates the factors that have driven the BNY's success and discusses how these factors might be applied in other cities. We describe the particular cases of Philadelphia, Chicago, and Detroit to illustrate how city leaders can assess the possibility of replicating the Yard's key features, identify relevant local assets and opportunities, and consider what resources they would need to similarly catalyze urban manufacturing efforts.

"Brooklyn Navy Yard: Birds Eye view showing barracks and men doing exercises, harbor in the background" 1909 © Library of Congress

"Perry Building" 2012 © Elisabetta Di Stefano

From Naval Shipyard to Modern Industrial Park

The Brooklyn Navy Yard, a naval institution dating back to 1801, served as a key defense facility in the mid-20th century but was decommissioned by the federal government in 1966. The City of New York purchased the Yard in 1969 and an Urban Renewal Plan was approved for the site in 1971, codifying the City's goal to create a "modern industrial district, which will retain and attract manufacturers to the City."[1] Originally managed by the Commerce Labor Industry in the County of Kings (CLICK), the Yard came under the management of the then newly formed Brooklyn Navy Yard Development Corporation (BNYDC), after a 1981 City comptroller audit found widespread mismanagement practices at CLICK. Despite the management change, the City invested little or no capital each year in the Yard to improve its buildings and infrastructure. The Yard's infrastructure continued a steady decline until an initial 1996 capital allocation under the Giuliani Administration.

BNYDC then completed a capital-needs assessment that highlighted the dire need to upgrade the Yard's subsurface infrastructure and antiquated buildings.

BNYDC put in place a new leasing strategy, focusing on attracting small, light industrial firms and niche manufacturers rather than chasing the large manufacturers and warehouse distributors who were unlikely to locate in New York City. By 1998, the Yard had grown to 200 businesses and had fully leased its 4 million sq. ft. of available space. Based on this evidence of success, in 1999 the City began to fund a multiyear capital dollar investment plan to modernize the Yard's buildings and basic infrastructure.

When the Bloomberg Administration came into office in 2002, there was a deliberate effort to professionalize BNYDC's board of directors and staff and to actively pursue real estate development opportunities within the Yard. (The importance of strong governance and on-the-ground leadership relatively free of the inefficiencies of government bureaucracy and independent of outside political pressure as major factors in the Yard's successful growth cannot be overstated.)

At the same time, industrial tenants were increasingly attracted to the Navy Yard because of the City's challenging real estate conditions; porous zoning and multiple rezonings sparked real estate speculation that both drove up land costs and destabilized the industrial areas. New York City's manufacturing zones permit a wide variety of nonindustrial uses such as hotels, superstores, and offices, all of which can typically pay higher land costs than manufacturers. Numerous zoning changes, strong residential demand, and lax enforcement to prevent illegal residential conversions all signaled to owners of industrial space that the rewards from conversion were great while the risks were modest.

In this environment, the City's investment in the Yard and BNYDC's efforts to develop additional industrial space demonstrated to many industrial firms a commitment to industrial retention in the Brooklyn Navy Yard. This commitment was critical to creating the stability that the Yard's industrial tenants needed to make their own investments in their businesses.

In fact, under the Bloomberg Administration, annual City capital investment has averaged over $15 million per year, which positioned BNYDC to leverage over $500 million in private investment since 1996. As the Yard revitalization gained momentum, additional public capital funding was invested by the New York City Council, the Brooklyn Borough President, the State of New York, and the Federal Economic Development Administration.

In addition to serving as landlord and property manager, BNYDC is an active real estate developer. BNYDC has used a variety of financing tools to underwrite real estate development, from conventional debt financing to the Immigrant Investment Program (also known as EB-5). BNYDC's nonprofit status, however, differentiates it from a private developer, because its bottom line is measured not solely by its profitability but also by the extent to which it is able to foster tenant reinvestment and job growth while rebuilding the Yard's aging infrastructure, yet maintain the Yard's financial stability. BNYDC works with its tenants in ways that a private developer or landlord likely would not: building multitenanted buildings on spec

BNYDC works with its tenants in ways that a private developer or landlord likely would not: building multitenanted buildings on spec with returns on investment much lower than the private market would tolerate, readily working with tenants to right-space as their operations contract or expand, procuring goods and services from tenant companies, maintaining an extended eviction process affording tenants opportunities to pay back-rents, and encouraging business-to-business activity among Navy Yard companies.

BNYDC's entrepreneurial culture is just as critical to its success as is its nonprofit, mission-oriented status, and today the Yard is in the midst of a significant expansion effort. In addition to the ongoing campus-wide infrastructure improvements such as surface transportation and building upgrades, BNYDC, in partnership with several large tenants, is planning several new construction and building rehabilitation projects. Notable developments include the future phases of Steiner Studios to create a Media Campus on the site of the former Naval Hospital, a 220,000 sq.–ft. Green Manufacturing Center, the renovation of the 1-million sq. -ft. Building 77, and an adaptive reuse of Building 268 for Duggal Visual Solutions.

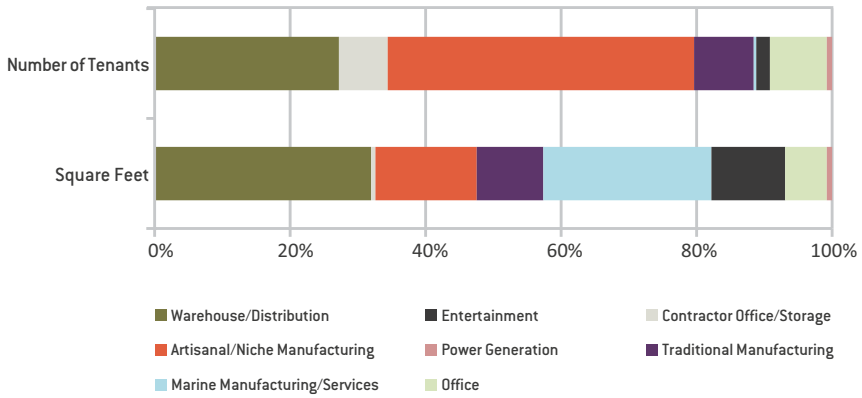
An underlying feature of BNYDC's expansion efforts is a commitment to sustainable development. Over the past several years, BNYDC has begun to market itself as an eco-industrial park, striving to become the choice location for green manufacturers and other businesses. To this end, BNYDC has already put in place a number of sustainability initiatives, including a commitment to pursue LEED Silver certification for all new construction projects, the adaptive reuse of historic structures and materials, and the implementation of wind and solar street lights, a rooftop farm, hybrid and low-emission vehicles for the management's fleet, a waste-management program to encourage recycling, and setbacks along the Yard's perimeter to enable the first phase of the Brooklyn Waterfront Greenway for bicyclists and pedestrians. The vast majority of BNY tenants support these efforts; in fact, many tenants report that the Yard's sustainability initiatives have influenced the greening of their own operations.

BNYDC has also recently increased public access to the Yard with the opening of BLDG 92, a new $25 million, LEED–Platinum–certified exhibition and visitor center. BLDG 92 also houses the Yard's Employment Center, which every year places 200 job seekers—particularly residents of local public housing, veterans, and formerly incarcerated individuals—in well-paying industrial jobs in the Yard.

BNY Tenants

The Brooklyn Navy Yard today is a thriving hub of businesses of all types that together illustrate the future of urban manufacturing: from small, artisanal manufacturers to very sophisticated medium-sized manufacturers who integrate design and production, and from large fulfillment enterprises to movie studios. The Yard's approximately 330 tenants do not easily fall into a single category (e.g., manufacturing or office; see sidebar, "Dynamic Clusters at the BNY"). Rather, many firms integrate varying types of activities under a single business, creating business models that add sufficient value to overcome the obstacles to an urban location. The tenants can be generally classified as one of eight main business types:

FIGURE ES1: BNY Tenants by Number of Tenants and Square Footage, 2011



1. ARTISANAL/NICHE MANUFACTURING: Companies that produce either one-of-a-kind or customized products, often with very limited production runs, including manufacturing of sets and custom installations for the entertainment industry and fine-art pieces. These companies often have in-house design capacity and use high-tech manufacturing equipment to help their clients take a new product from a concept to production.

2. TRADITIONAL MANUFACTURING: Companies that produce standardized products, often in larger production runs.

3. MARINE MANUFACTURING/SERVICES: Companies engaged in ship repair and other marine services serving the wide range of vessels essential to sustaining activity in the Port of New York & New Jersey.

4. POWER GENERATION: Principally the cogeneration plant at the Navy Yard that produces power and steam for the New York City grid and the Navy Yard.

5. ENTERTAINMENT PRODUCTION: Studios and related services for the production of motion picture and sound as well museum-based entertainment.

6. CONTRACTOR SHOPS/STORAGE: Companies involved in the construction trades such as electricians, plumbers, and general contractors.

7. STANDARD OFFICE: Companies that use their space for administrative back-office services or for general office uses.

8. WAREHOUSE/DISTRIBUTION: Companies that use their space primarily for the storage and distribution of goods

Since 2000, the Navy Yard has seen a rise in the number of artisanal/niche manufactures that today account for 45% of tenants, but—due to their smaller footprints—only 15% of the leased space. The opening of Steiner Studios in 2005 marked the start of a burgeoning entertainment production sector, which—while only accounting for 2% of tenants—commands 10% of the leased space. This number is expected to grow with the planned expansion of Steiner Studios in the next few years. Most recently, there has been an influx of food-related businesses as well.

As part of this study, 170 direct BNY tenants and 17 subtenants completed an extensive survey that was used to better understand the BNY companies. Over 50% of respondents are artisanal/niche manufacturers, almost 10% are traditional manufacturers, and 2.7% are companies serving the entertainment and media sector. Altogether, manufacturing-related tenants account for 63% of survey respondents.

DYNAMIC CLUSTERS AT THE BNY

A dynamic mix of companies is operating and generating a creative buzz at the Navy Yard. From manufacturers of custom lighting fixtures to set designers for the City's film and TV industry, Navy Yard tenants are part of the supply chain for two of the City's most important industries: architecture and design, and film and media. Just under 60% of surveyed tenants fit into one of these clusters. Brooklyn Navy Yard tenants also fall into clusters related to the goods and services they produce: 65% of surveyed tenants fit into one or more of the artisanal, green, and/or high-tech clusters.

Key survey findings include:

BUSINESS TENURE AND LOCATION CHOICE

64% of respondents have been located in the Yard for 10 years or fewer, and 16% have been located in the Yard since business inception. Overall, artisanal/niche manufacturers make up the youngest category of firms.

94% of respondents cited affordable rent as a key factor in locating at the Yard, followed by 24/7 entry/accessibility (89%), parking (85%), size/pace of rent increases (79%), 24/7 security (75%), and fenced perimeter (70%).

EMPLOYEES

44% of respondents have hired employees in the past year and 64% expect to hire within the next five years. Hiring plans are relatively consistent across all types of Navy Yard tenants.

GROWTH PROJECTIONS & BUSINESS ACTIVITY

42% of respondents anticipate requiring additional space in the next three to five years, 94% of which would look to expand within the Navy Yard.

88% of respondents sell goods and services inside New York City, representing a 71% average of total company sales.

44% of respondents sell to the surrounding region, 44% sell nationally, and 25% sell internationally.

SUSTAINABILITY

19% of firms market themselves as green or environmentally sustainable; 53% of these believe this helps increase sales.

Economic Impact

The Navy Yard is an engine of economic activity that has a significant impact on New York City's economy. Using the Regional Input-Output Modeling System (RIMS II),[2] the Navy Yard's economic output for 2011 is $1.93 billion. It is responsible for 10,350 direct and indirect jobs and $392 million in earnings. That economic activity in turn induces another $1.96 billion in earnings and another 15,500 jobs. The Navy Yard also contributes construction-related, economic impacts that vary from year to year depending on construction activity. In 2011, the Navy Yard was responsible for an additional $100 million in economic activity and 454 direct and indirect jobs and over $21 million in earnings. These annual impacts are expected to significantly grow in the coming years as new developments come on line.

The City's contribution of approximately $250 million in capital dollars over the past 15 years was a major catalyst to the Navy Yard's success and economic output. In general, roughly 75% of the Yard's economic impact on the City economy would likely not have occurred without that injection of City capital. In terms of direct and indirect effects on the NYC economy and its supply chains, taking one-time construction and ongoing impacts together, each dollar of City investment drives on average more than $10 in economic output, $2 in direct earnings to employees, and $7.50 in induced earnings.

The economic output of the Brooklyn Navy Yard has corresponding fiscal impacts on the New York City budget. In 2011, the Navy Yard generated $139 million in taxes to New York City.

FIGURE ES2: Economic Impact of the Brooklyn Navy Yard on the NYC Economy in 2011

IMPACTS	Economic Output	Jobs (direct & indirect)	Earnings (direct & indirect)	Induced Earnings	Induced Jobs
Ongoing Impacts	$1,934,000,000	10,350	$392,000,000	$1,960,000,000	15,479
Construction-Related Impacts	$100,500,000	454	$21,425,000	$29,800,000	611

The Brooklyn Navy Yard Model

Eight core elements emerged as fundamental to the successful functioning of the Brooklyn Navy Yard:

1. MISSION-DRIVEN, ON-THE-GROUND NONPROFIT MANAGEMENT

Property management provided by an organization whose primary goal is to retain and grow industrial jobs not only protects the long-term industrial use of the property but also enables the nonprofit manager to make strategic decisions about tenant selection, capital improvements, rents, and services that encourage growth. Manufacturing tenants have the long-term security they need to reinvest and grow. In addition, the presence of a nonprofit, mission-driven manager can facilitate adaptive reuse of historic buildings as well as new green construction. Infrastructure combined with tenant-support services such as workforce development, local procurement, and tenant-to-tenant business activity can also create a unique sense of community within the Yard campus.

2. PUBLICLY OWNED PROPERTY

The Navy Yard has benefited greatly from its City ownership. The Yard is free of property taxes; government can easily invest in it; and BNYDC can leverage private investment by providing long-term leases for its tenants. While the City can invest in private property owned by a nonprofit, it likely would not have invested as deeply or consistently as it did in the publicly owned Navy Yard. Similarly, the powerful combination of public ownership with nonprofit management ensures long-term security for companies to invest. (In the absence of public ownership, a nonprofit-owned and -managed property would provide a similar level of assurance for tenant companies.)

3. CONSISTENT CITY CAPITAL

The steady financial support the Navy Yard has received from the City since 1996 has been a major catalyst for the Yard's evolution to the successful industrial park it is today. This capital infusion has enabled BNYDC to successfully plan and implement comprehensive infrastructure improvement and redevelopment plans, leverage private investment, and free up the Yard's surplus to be directed to expansion efforts and tenant services that would be more limited if basic infrastructure maintenance was not otherwise covered.

4. ABILITY TO REINVEST ITS SURPLUS AND LEVERAGE ITS RENT ROLLS

BNYDC's contract with the NYC Department of Small Business Services permits the Yard to reinvest its surplus and pledge its rental income as collateral for private debt. This has been a key component of the Yard's expansion efforts.

5. CAMPUS SETTING

BNYDC achieves management efficiencies through a single, albeit large, project area. The Navy Yard's walled perimeter, a vestige from the federal government, supports the provision of 24/7 entry and 24/7 security—two critical features for industrial and other tenants that operate multiple shifts and/or house expensive equipment.

6. INDUSTRIAL LAND USE & PRIORITY

The manufacturing zoning and political will to retain that zoning, as well as the campus's walled perimeter, ensure that the BNY will remain a home for industrial uses. Inside the Yard's walls, it is clear that the needs of the industrial tenants are the highest priority. They can make noise, load and unload trucks, and generally operate industrial businesses free of complaints from neighbors and burdensome ticketing that they might otherwise encounter on City streets.

7. DIVERSE TENANT BASE

The Navy Yard's diverse tenant base fosters a vibrant, creative environment. The mix of tenants enables BNYDC to rent out the totality of its portfolio (which includes some space no longer suited to manufacturing uses) and to offer rents at levels the market will bear by tenant type and/or space size. The diversity that leads to success at the Yard would, in an unregulated situation, lead to real estate speculation, in which private property owners change the tenant mix in favor of high-rent nonindustrial tenants and exceed a tipping point that actually undermines growth. The Yard's mission acts like a check on speculation, which preserves a diverse balance of uses.

8. GREEN DEVELOPMENT

BNYDC's commitment to sustainable development supports a resource-efficient management approach and encourages tenants to manage their own companies with efficiency and long-term goals in mind. In addition, a focus on green development garners public support for the Yard in particular and for a new image of manufacturing in general that turns its back on the old smokestack factory and toward an environmentally and fiscally healthy enterprise.

Recommendations for Replicating the Navy Yard Model:

A Look at Philadelphia, Chicago, & Detroit

As cities across the country develop new strategies for revitalizing their economies, they should consider the Brooklyn Navy Yard model. This report includes a preliminary analysis of how the eight core characteristics described above could be applied to three major cities: Philadelphia, Chicago, and Detroit. All three cities have either recently completed or are in the process of completing comprehensive studies of their own industrial bases and are actively looking to identify strategies to grow industrial development. This study offers the Brooklyn Navy Yard model as one such strategy that can be implemented to meet their goals. This study does not suggest that these particular cities should create a Navy Yard-type facility but rather offers a tool to consider opportunities to build upon the BNY experience and replicate some or all of its key elements.

Figure ES3 summarizes which of the eight major elements of the BNY already exist or could be created relatively easily and quickly in each of the three cities and where gaps might have to be addressed. It is important to note that the presence or absence of a check mark does not conclude that element's viability; missing elements will likely require more attention as part of the planning or development process.

FIGURE ES3: Comparison of Opportunities to Replicate the Brooklyn Navy Yard

Replication Opportunity	Philadelphia	Chicago	Detroit
Mission-driven, non-profit organization	✓	✓	✓
Publicly-owned property			✓
Consistent city capital	✓	✓	
Ability to reinvest surplus and leverage rent roll	✓	✓	
Campus setting	✓		✓
Industrial land use and building character	✓	✓	✓
Diverse tenant base		✓	✓
Green development	✓		

PHILADELPHIA

Philadelphia's established support for the industrial sector combined with its experience with the Philadelphia Navy Yard (a similar development to the Brooklyn Navy Yard) is a strong foundation for exploring the BNY model in the Lower Schuylkill River District, a 4,000-acre area that contains 68% of the city's underutilized industrial land.[3] The Lower Schuylkill's history as a hub for major oil refineries and heavy manufacturing has left a legacy of environmental contamination on large parcels with limited interior road access. Building off the structure, experience, and resources of the nearby Philadelphia Navy Yard, all but two of the eight core BNY elements—public ownership and a diverse tenant base—can be readily applied to the Lower Schuylkill. The area is likely to attract, at least initially, large, heavy manufacturers, and its lack of existing building stock will not drive tenancy of a mix of smaller, artisanal firms. Philadelphia is also a relatively weak market city; as such, building spec industrial development in the Lower Schuylkill area may be difficult, especially given the level of remediation required.

CHICAGO

Chicago's strong political support for industrial retention and growth and its sound financial and policy tools make the BNY model an intriguing strategy to explore. The initial hurdle will be to form a nonprofit or quasi-public entity with the ability to acquire land with the mission to foster industrial development with terms and conditions for it to be successful. While a specific neighborhood that could accommodate a campus setting was not identified in this study, Chicago's active evaluation for land assemblages could result in the identification of publicly owned properties able to support that type of environment. Conversely, a group of scattered, but proximate, buildings, if managed effectively and collectively, could approximate many of the elements of the BNY model—except, of course, the benefits of the campus setting.

DETROIT

Detroit is a great candidate for the BNY model as it has a burgeoning creative sector, numerous, underutilized industrial properties, and strong political support for industrial employment. While land assemblage is difficult to complete in Detroit, the Milwaukee Junction neighborhood, an area adjacent to both I-75 and I-94, is relatively "off the radar" of current development efforts and therefore may be more affordable than other similar properties. The neighborhood's current mix of publicly owned land and properties in tax foreclosure creates an environment in which a city-owned campus may be built in multiple phases. In addition, its location, in close proximity to anchor institutions such as the Russell Industrial Center and local art schools, supports opportunities to develop a cluster of artisanal manufacturing developments.

Additional Recommendations

As discussed above, the success of a BNY-type initiative absolutely depends on the leadership of a mission-driven nonprofit manager combined with public or nonprofit ownership, or other measures to insulate leasing decisions from real estate speculation. Rent revenues must be reinvested in buildings and infrastructure; individual companies must be assured real estate stability to invest and keep competitive; and management must engage with the companies to facilitate business decisions that advance public objectives.

Unfortunately, the industrial nonprofit sector generally does not today have the capacity to play the role of a real estate developer and manager in economic development as it does in other sectors such as affordable housing. Therefore, it is recommended that governments at all levels look for ways to nurture and expand a nonprofit industrial development sector. Toward this end, governments should:

1. **Establish an "Industrial Development Fund" for nonprofit acquisition and development of industrial space.**

One of the biggest hurdles nonprofit developers face is obtaining the upfront capital needed to purchase privately and publicly owned sites. A fund should be established that nonprofits can access to use as equity when acquiring sites. While it is envisioned that this fund will primarily provide grants, in some instances the grants could be replaced by permanent financing and recovered by the fund to be lent again. In addition to grants, a funding pool could include soft loans and loan guarantees or other credit enhancements that could leverage additional private and philanthropic capital.

2. **Consider net leasing publicly owned industrial sites, rather than selling them outright.**

Many governmental entities, particularly cities, choose to invest in infrastructure and site remediation efforts for their publicly owned industrial properties so that the parcels are "market-ready" and then sell them to private developers. An alternative approach would be to offer long-term leases that recover the city's investment through the lease and reinforce cities' industrial development goals. The leasing strategy gives the city a degree of control over the ongoing operations of the building, allowing the city to enforce policy well beyond measures typically available through land-use regulations or other disposition alternatives. By retaining ownership and providing a long-term lease, the city can implement default provisions if the developer is not managing the property effectively. Lease terms can also enable developers to preserve capital for needed improvements, rather than for acquisition, lowering a key barrier to nonprofit industrial development.

3. Encourage partnerships between for-profit & nonprofit developers.

Cities that continue to dispose of industrial properties should require or give preference to proposals that include partnerships with nonprofit organizations. Such partnerships should include providing the nonprofit partner equity in the project in exchange for economic development services and linkages to the surrounding community—giving the nonprofit partner the opportunity to develop experience and build equity toward future projects.

4. Adapt traditional economic development tools such as tax credits, loan guarantees or other credit enhancements, and bonds so that developers of industrial rental space are eligible.

Currently, many public incentives and programs that stimulate real estate development are not readily applicable to industrial developers, whether nonprofit or private. For example, Industrial Revenue Bonds (IRBs) are only available for owner-occupied buildings, inhibiting both private and nonprofit developers from renovating older single-tenant industrial buildings for reuse as multi-tenanted rental industrial buildings.

Additionally, to qualify for the New Market Tax Credit, a program designed to spur investments that will serve low-income communities, a project must meet certain income criteria for the population in the project's census track. However, industrial projects often need to locate in areas with few residents (to comply with local zoning and/or to avoid undesirable local impacts) and therefore are not always able to meet the program's requirements, despite fulfilling the intent to provide economic opportunity for low-income residents.

5. Align zoning & land-use policies and infrastructure investments to advance economic development strategies.

Greater coordination is needed among zoning, land-use policies and infrastructure investments for cities to derive the maximum public returns and catalyze industrial development. Coordinated and geographically targeted strategies can improve access to workforce and transportation, avoid conflicts between incompatible uses and promote clusters of similar companies to generate even greater economic development activity.

Conclusion

The Brooklyn Navy Yard has been transformed from a naval shipyard to a modern industrial park fueled by a culture of innovation, entrepreneurship, and increasing sustainability. As demonstrated in this report, the Yard has proved successful in providing a stable environment for manufacturers and a variety of other types of industrial firms to grow and succeed in New York City, and it offers a viable model for other cities to consider as a strategy to cultivate a strong, local industrial base.

The Yard's transformation and success is also a reminder of the evolving nature of manufacturing—a sector that is fundamentally linked to New York City's most prominent and creative industries, that continues to provide employment opportunities and career ladders, and that should be nurtured through city, state, and federal policies.

"Construction Workers" 2012 © Pratt Center

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[1] New York City Board of Estimate, "Urban Renewal Plan for the Brooklyn Navy Yard Urban Renewal Area," City of New York, 1971, p. 9

[2] The RIMS II Input-Output model was developed and is maintained by the U.S. Bureau of Economic Analysis.

[3] Philadelphia Industrial Development Corporation

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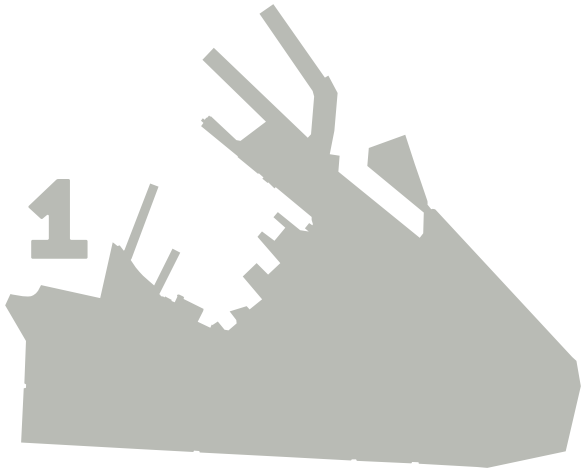


Introduction

As the U.S. economy slowly rebounds from the Great Recession, there is renewed national interest in domestic manufacturing. Decades of decline created a tremendous public misperception that manufacturing has no future, particularly in cities where land and labor costs are higher than in the surrounding areas. But that decline was not universal, and there have been success stories. Deeper analysis of these successes can provide the seeds for new national, state, and local policies supporting the broader revitalization of manufacturing that has become one of the nation's highest economic priorities.

Manufacturing has changed considerably since the days when the U.S. was primarily an exporter of goods. The sector is increasingly made up of loose networks of smaller manufacturers that are highly productive, innovative, more sustainable, and pay good wages.[1]

THE BROOKLYN NAVY YARD IS RESPONSIBLE FOR

IN ECONOMIC OUTPUT.

To a great extent, small manufacturers are concentrated in cities where they are often "hidden in plain sight." On average, over 70% of manufacturers in the country's top largest cities employ fewer than 20 people.[2] There are many obstacles faced by small urban manufacturers across the country, some shared by other types of small businesses, such as difficulty accessing capital. There are also challenges more specific to the nature of industrial businesses in cities, such as legacies of environmental contamination, location in areas where infrastructure is obsolete or poorly maintained, real estate pressure that undermines business investment, and close proximity to residents who may complain about the noise and the trucks necessary for manufacturing operations.

Addressing the unique challenges of small urban manufacturers is essential to create jobs, increase exports, and create a 21st-century economy. In some ways, federal policy objectives to strengthen manufacturing depend on collaboration with localities that determine land-use policies, run the schools, maintain the infrastructure, and provide the direct services manufacturers need to upgrade and reposition into the new green economy.

This study of the Brooklyn Navy Yard was undertaken because the Yard has emerged as a successful model for urban manufacturing, and it may be one of the seeds for new public policy.

Nowhere are the challenges to urban manufacturing more evident than in New York City, which has high labor and utility costs, strained transportation and waterfront infrastructure, an extraordinarily dense urban fabric, and porous zoning and land-use policies that aggravate real estate speculation.

The Brooklyn Navy Yard (also referred to as "the BNY," "the Navy Yard," or "the Yard"), a 300-acre City-owned, nonprofit-managed industrial park located close to lower Manhattan, is nevertheless growing manufacturing jobs. The BNY's annual economic output, that is, its "gross domestic product" for New York City, is nearly $2 billion. The Yard is responsible for 10,350 direct and indirect jobs and $390 million in earnings. That economic activity in turn spurs another $2 billion in earnings in the local economy and the creation of another 15,500 jobs. Construction activity adds another $100 million in economic output; 450 direct and indirect jobs; $50 million in direct, indirect and induced earnings; and 600 induced jobs to these figures—these are one-time rather than annual impacts but will persist as long as the Yard continues to grow and expand.

At its peak during World War II, the Navy Yard employed 70,000 people. Changes in shipbuilding and national military policy led to the closing of the Yard in 1966 and its transfer to New York City three years later. Over the following three decades, the Yard's buildings, roads, and power grid deteriorated, and employment dropped off.

At its least productive point, the Navy Yard had just 30 tenants and employed 1,000 people.

But since 1996, the Navy Yard, managed by the nonprofit Brooklyn Navy Yard Development Corporation (BNYDC), has been reborn as a successful urban industrial park. Its buildings are 98% leased to approximately 330 businesses employing 5,800 people, and there is a long waiting list of companies looking to rent. In fact, the Yard is planning an expansion that will add 1.8 million sq. ft. of industrial space, and the workforce is expected to increase by at least 50% in the next five years.

Our analysis was designed to shed light on the factors contributing to the Yard's unique success, to help other cities, states, and the federal government craft new strategies to strengthen manufacturing. The study includes an examination of the existing economic impact of the Navy Yard tenants on New York City's economy and of the projected impacts of future development plans. We investigate how BNYDC coordinates and manages urban manufacturing activities, particularly policies regarding leasing, business retention, job growth, and the creation and rehabilitation of industrial space. Critical to BNYDC's management practices has been its status as a mission-driven nonprofit organization with the obligation to balance the need to earn income with the goal to create manufacturing jobs. To identify growth trends and opportunities in urban manufacturing, we investigate the mix of Navy Yard tenants in detail.

Our hypothesis is that urban manufacturing can thrive, for many reasons: because it is integrated into other economic sectors such as design and the arts and entertainment; it is in close proximity to a large consumer market; and it benefits from a pipeline of graduates from local colleges and universities. In addition, an urban location provides incentives for businesses to experiment with and invest in new "green" manufacturing, in which both product and process are engineered to reduce carbon footprints, conserve resources, and improve efficiencies.

To identify and evaluate core features of the Navy Yard's success, we solicited a variety of perspectives. From the results of surveys and discussions with BNY tenants and management and other stakeholders, as well as from our own experience working directly with manufacturers, we describe a model that includes the amenities and characteristics that make the BNY attractive to businesses. These include the land-use features and characteristics that allow for growth of manufacturing and creative industries, the management and administrative policies that have attracted investment, and the ways in which the BNY has been able to leverage City capital dollars for greater private investment.

Following our deep analysis of the Brooklyn Navy Yard, we explore how other cities might replicate or refine the model and pursue similar strategies to create manufacturing jobs for their residents. Rather than recommend a rigid duplication of the Yard, we analyze the extent to which its core features are already present in other cities and discuss how missing elements might be found and implemented.

Small urban manufacturers have a critical role to play in creating a vibrant national manufacturing sector that generates well-paying manufacturing jobs consistent with a healthy environment. All levels of government must collaborate to achieve these objectives, and the Brooklyn Navy Yard model is one of the strategies that can advance these important goals.

2 Methodology

Brooklyn Navy Yard Tenant Survey

The Pratt Center team employed a case-study approach for our analysis that relied on both primary and secondary sources. We conducted in-person interviews with board members, staff members, BNYDC executives, and elected officials for information on the history, management, current operations, and political context of the Yard. Detailed information about current tenants was collected through a survey instrument developed by the project team. The survey was modeled on earlier business surveys produced by the Pratt Center and other organizations, such as the Greenpoint Manufacturing and Design Center, including those administered to businesses in other industrial and commercial districts such as Sunset Park and the Diamond District. The instrument was vetted multiple times with the project team and BNYDC. Finally, prior to implementation, a test version of the survey was conducted with four tenants in the Navy Yard. The results triggered an additional round of revisions to ensure clarity and consistency in the finalized questionnaire. A confidentiality agreement was created to ensure tenants that information collected via the survey would be reported only in the aggregate. In July 2011, BNYDC convened a series of tenant meetings to raise awareness of the survey and generate interest among tenants.

The Pratt Center team worked to train a team of surveyors, who administered the questionnaire between August and December 2011. Nearly all of the surveys were conducted in person, but in some cases special arrangements were made to accommodate tenants who could not be reached in person.

Fifty-seven percent of the Yard's 330 tenants, or 187 firms, completed surveys conducted by the Pratt Center team. Additional information on rents and square footage was collected from BNYDC's board records. Follow-up interviews were conducted with the Navy Yard's biggest employers for more detailed financial information.

Economic Impact Analysis

For the economic impact analysis, the project team used the Regional Input-Output Modeling Systems II (RIMS II; developed and maintained by the U.S. Department of Commerce Bureau of Economic Analysis) to estimate the impact of the Brooklyn Navy Yard on the New York City economy. This tool is designed to estimate the total economic impact of a one-time or sustained increase in economic activity on the economy of a whole region.

The majority of the inputs for the economic impact analysis come from primary data, specifically firm-level revenue provided by the in-depth survey described above. For firms that did not respond to the survey, the team normalized revenue by leased square footage and applied the average revenue per square foot for firms in the same North American Industry Classification System (NAICS) code.

The analysis separates the Navy Yard's impacts on New York City into two main types: one-time (construction-related) and recurring. Millions of dollars of construction take place in the Navy Yard each year, but the projects themselves represent one-time rather than recurring revenue. To estimate these one-time impacts, the team used data from BNYDC for historical construction costs, planned infrastructure, and new development through 2015, and annual BNYDC capital expenditures.

We used survey data for tenant fit-out expenditures extrapolated using the same method described above pertaining to company-specific revenue (assuming similar fit-out costs per square foot for firms that share the same NAICS code).

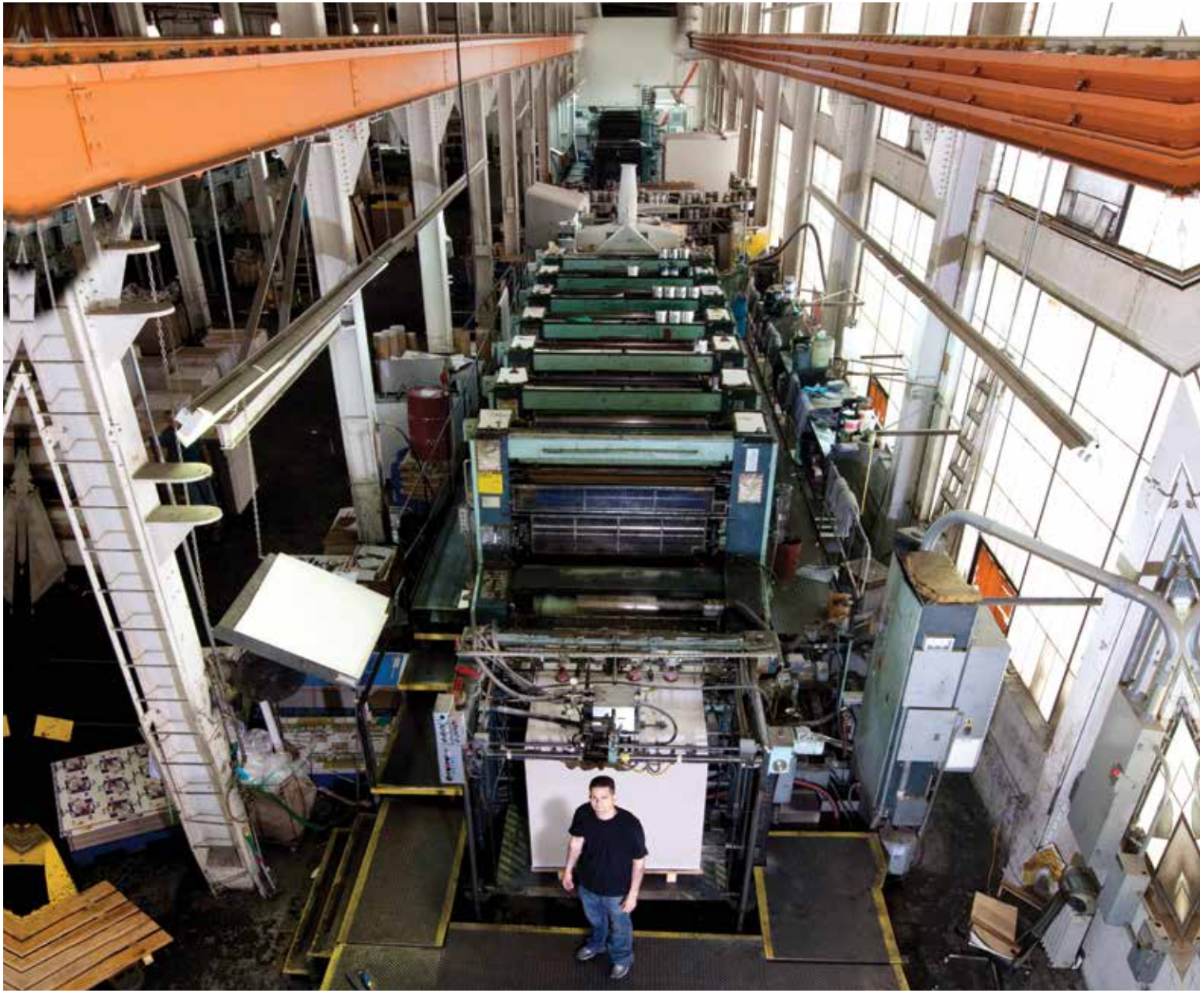
A more detailed methodology for the economic impact analysis is available in Appendix 9.1.

Areas to Replicate the Brooklyn Navy Yard Model

To identify cities where the BNY model might be replicated, we first looked at 12 major U.S. cities where the Pratt Center had contacts or knew of pro-industrial policies and programs.

For each of the 12 cities, we completed detailed profiles of its industrial sector based on publicly accessible information, including data from the U.S. Census, the U.S. Bureau of Labor Statistics, and local media sources, and we conducted interviews with city agencies, local nonprofit organizations, and/or academics to better understand the politics, zoning, and key real estate developments impacting industrial activity.

To identify large federal defense properties that had the potential for economic redevelopment, the team consulted the Base Realignment and Closure (BRAC) list, but ultimately determined that none of these sites closely enough mirrored Brooklyn's urban context and assets (for more information on BRAC, see Appendix 9.2). The list of 12 cities was ultimately narrowed to Philadelphia, Chicago, and Detroit in order to showcase a range of increasing/decreasing population, geography, and existing elements of the BNY model that could be replicated. Most important to our selection, these three cities all have recently completed or are in the process of completing a comprehensive study of their industrial sector to identify strategies to retain and grow industrial activity. It is our hope that they will consider the Brooklyn Navy Yard model as a viable strategy in this effort.



"Ares Printing" 2011 © Robert Clark

Manufacturing in New York City

3.1. NYC's Manufacturing Profile

New York City is not often thought of as a manufacturing town yet it remains a significant employer in the city today. During the 1960s, approximately 1 million people worked in the City's factories, on its docks, and in other industrial sectors. The enormous decline that hit the manufacturing sector during the 1960s and 1970s, and the ascendance of other sectors including finance, insurance, real estate, education, tourism, the arts, and health care not only eclipsed the importance of manufacturing in the City but in fact created the misperception that all manufacturing had left.

But manufacturing has not disappeared, and a more accurate characterization of New York City's manufacturing sector today is that it has evolved into flexible networks of relatively high-value-added small firms, many of whose products are essential to the functioning of the City's more visible sectors.

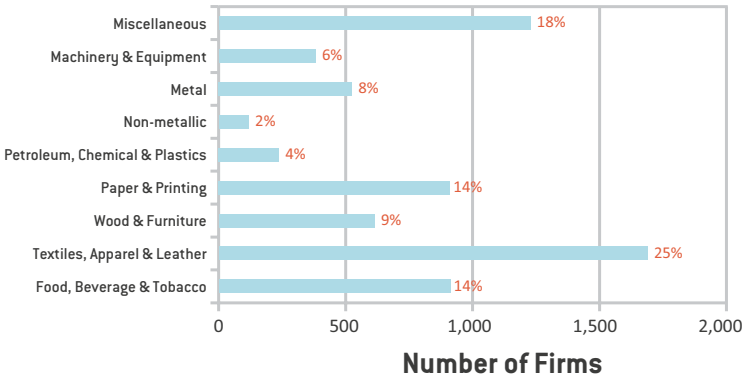


FIGURE 1
NYC Manufacturers by Type of Establishment, 2007

Source: Economic Census, 2007

NYC manufacturing firms operate in a range of industries and produce predominantly custom items that support the City's high-profile sectors: media (publishing, advertising, film), real estate (architecture, construction, interior design), and leisure/tourism (restaurants, museums, theater). According to the latest U.S. Economic Census, which maintains a strict definition of manufacturing, New York City is home to almost 75,000 manufacturing jobs.[1] The apparel industry remains the largest manufacturing subsector, followed by miscellaneous manufacturers (approximately half of which comprises jewelry manufacturers), food and paper and printing.[2, 3] NYC's manufacturing jobs remain a particularly important source of employment and entrepreneurial opportunity for minority residents and immigrants.

However, traditional business statistics sources, such as the Economic Census, do not always count artisanal manufacturers—a growing crop of predominantly small firms that have merged design and fabrication under one company and are uniquely tied to other sectors in the city, namely real estate development, entertainment, media, and arts. In fact, if just film and video production was included in manufacturing employment, the total would include another 13,246 jobs.[4] In addition, the City is seeing an increased number of green manufacturing firms, especially in the areas of food, furniture, apparel, and building products related to energy efficiency (such as lighting and heating and cooling equipment).[5]

For the purposes of this report, we define green manufacturing as production that results from a business strategy that integrates environmental, economic, and social objectives or returns on investment.

Manufacturers in New York City are predominantly small businesses, with 68% of firms employing fewer than 10 employees each and 93% employing fewer than 50 employees. Comparatively, 55% of all U.S. manufacturers employ fewer than 10 employees and 84% employ fewer than 50.[6] That small firms predominate in New York City is not surprising, as the number of creative and artisanal firms producing low-bulk, high-value products has recently grown—in part due to their fit with the City's industrial building stock of older, multi-storied buildings.

New York City's manufacturing sector experienced a dramatic decline over the past several decades. According to the Bureau of Labor Statistics, at the end of 2010, there were 6,243 manufacturing firms employing 74,980 employees.[7] (It is important to note that readily available data sets, including those from the Bureau of Labor Statistics, define manufacturing very narrowly as NAICS codes 31–39.) This decline in manufacturing employment largely mirrors losses seen at the national level with one major exception: the years between 2004 and 2007 (*See Figure 2*). During this time, manufacturing jobs nationally were declining at a minimal rate.

In New York City, however, the decline was significantly more dramatic and can be at least partially attributed to the large number of rezonings of manufacturing-zoned land to allow for residential and commercial development, which greatly reduced the supply of industrial land—most notably in the neighborhoods of Greenpoint-Williamsburg in Brooklyn and Long Island City in Queens, but in other areas as well.

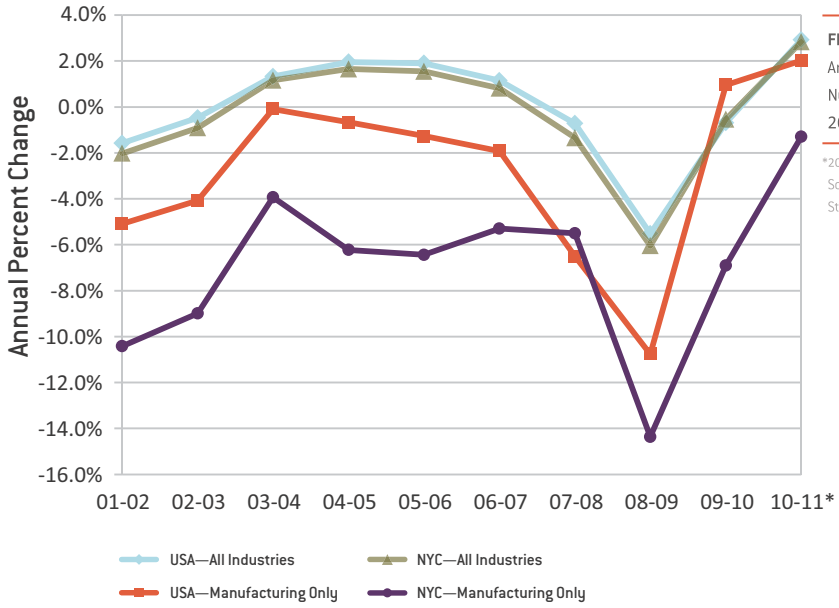


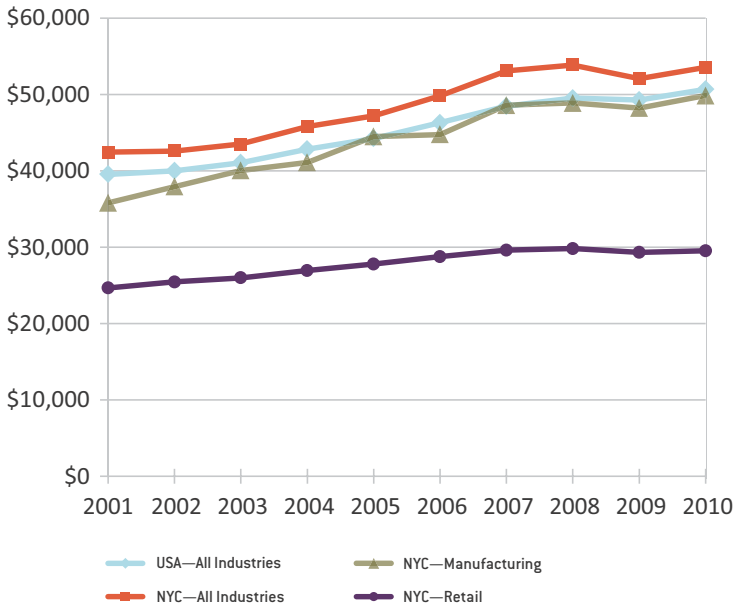
FIGURE 2
Annual Change in Number of Employees, 2001–2011

*2011 numbers are preliminary
Source: Bureau of Labor Statistics, QCEW

Despite these losses, manufacturing remains a source of relatively well-paying employment, especially compared to wages in the retail sector (*See Figure 3*). In fact, in 2010 the average annual wages for manufacturing jobs in New York City was $49,842, $20,333 more than wages in the retail sector ($29,509) and only $3,727 less than average annual wages for all industries including finance, information, and real estate ($53,569).[8] New York City wages are also comparable to national wages.

FIGURE 3
Average Annual Wages, 2001–2010

Source: Bureau of Labor Statistics, QCEW

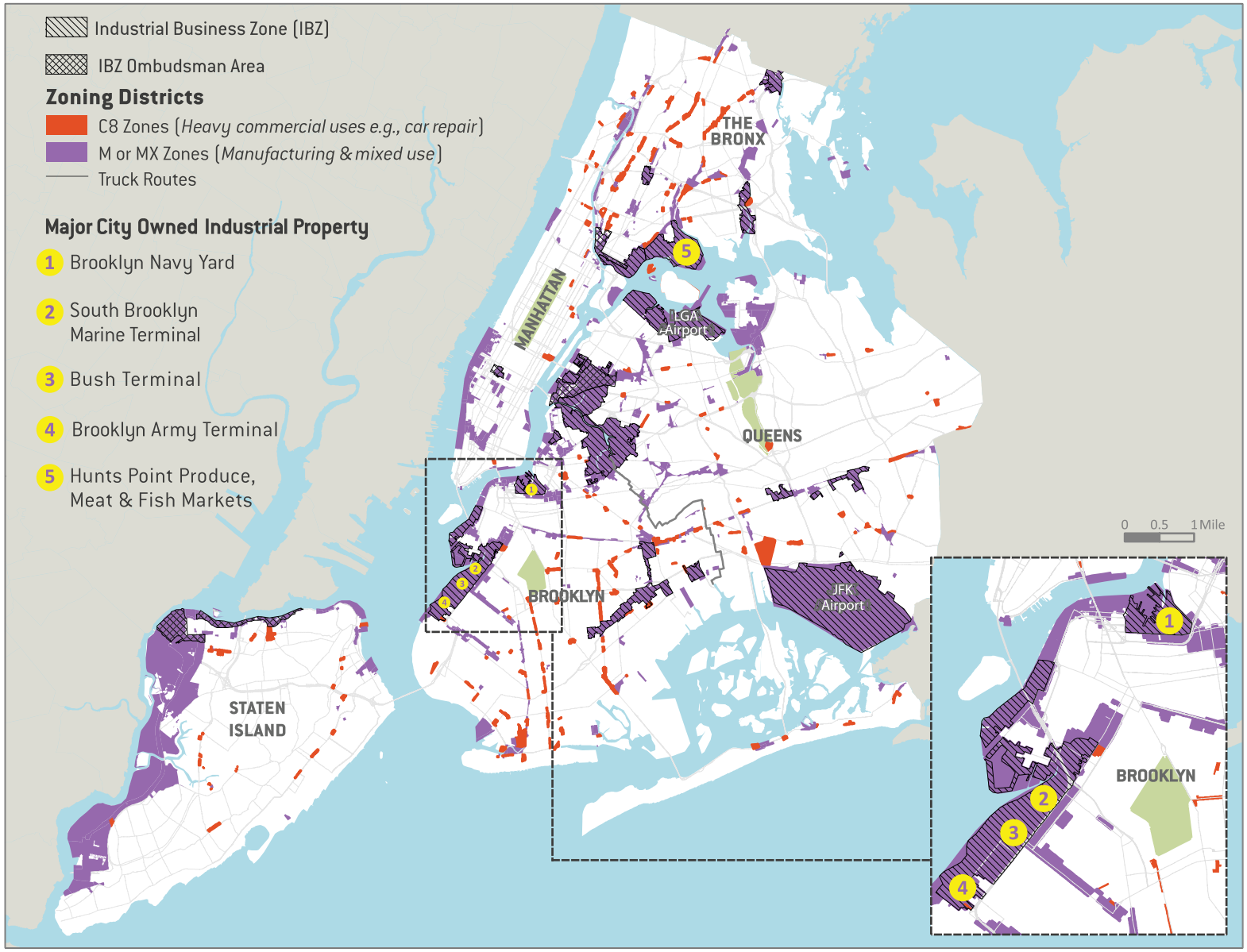


3.2 NYC's Industrial Land Use

The Pratt Center estimates that as of 2009, New York City had approximately 10,000 acres of land where zoning regulations allowed manufacturing and industrial businesses to legally operate (exclusive of industrially zoned land occupied by permanent transportation and utility infrastructure).[9] Industrial areas are clustered in the South Bronx and eastern Bronx, the west side of Manhattan, the Brooklyn waterfront and eastern Brooklyn, western Staten Island, and northern and southeastern Queens (*See Figure 4*). The districts are served by major truck routes including the Brooklyn-Queens Expressway, the Van Wyck Expressway, and the Major Deegan Expressway, as well as major bridges: the Verrazano linking Staten Island and Brooklyn, the East River bridges, and the Robert F. Kennedy Bridge that connects Queens to the Bronx and Manhattan. These districts are also served by the area's three commercial airports: LaGuardia Airport in Queens, JFK Airport in Queens, and Newark International Airport in Newark, New Jersey.

Most but not all of the city's manufacturing districts (including the Brooklyn Navy Yard) line the waterfront, reflecting the importance that shipping once had for manufacturing. (Although waterfront access does not play a significant role in goods movement today, the potential for increasing water-borne trade in the future could be important.)

FIGURE 4 NYC Industrial Zoning & Designations



Prepared by Pratt Center for Community Development
Data sources: NYC DCP 2012, NJDEP 2005, NYS CSCIC 2000

The City's three primary manufacturing zoning districts (M1, M2, and M3; collectively, "M zones") accommodate a range of uses from light manufacturing to more noxious uses and employ performance standards as a guide to which uses belong in which districts. Some commercial uses are allowed in M1 districts; heavy commercial uses, such as car repair, are allowed in C8 zones. Whereas residential uses are generally prohibited in M zones, the NYC Department of City Planning has introduced MX zones, which allow a mix of housing and light manufacturing. However, without any stipulations to balance the mix of uses in MX zones, higher rents afforded by residential uses have placed significant real estate pressure on existing industrial uses, and these areas are rapidly shifting towards predominantly residential. Nonconforming M uses are also found scattered in non-M zones.

Overall, New York's industrial land base is shrinking—since 2001, approximately 2,000 acres of manufacturing land have been rezoned, primarily for residential use.[10] Outside of the City's official rezoning actions, variance requests granted through an appeals process have resulted in the loss of more manufacturing space. In addition, the city's manufacturing zones allow a number of nonindustrial uses as-of-right, such as hotels and self-storage facilities that also tighten the industrial real estate market.

3.3. NYC's Industrial Policy

The City's current industrial policy was introduced in 2005, at the same time that the City was engaged in numerous large rezonings of industrial land for residential and commercial uses. The policy focused on the creation of 16 Industrial Business Zones (IBZs)—geographic districts served by local development organizations that administer business assistance services and offer tax credits for industrial companies moving into these areas. In addition, the City designated 6 Ombudsman areas, which focused business assistance but without the tax credit. The IBZ designation occurred after a lengthy study concluded that real estate instability was one of the major challenges facing City manufacturers, and the Bloomberg Administration committed to not rezone these areas for other uses. The IBZs are not codified in the zoning resolution, and although the City under Mayor Bloomberg has not made significant land-use changes within an IBZ, the policy could be changed without public or legislative oversight at any time by this or subsequent administrations. The 2005 policy was a marked improvement from the situation at the time, but it has fallen short of stabilizing the extreme real estate speculation occurring in the City's industrial areas. The policy did dampen speculation for residential development, but it did little to curb conversions to nonindustrial uses such as hotels, big-box retail, self-storage operations, and community facilities, including homeless shelters that are allowed as-of-right in manufacturing zones.

In 2011, the City announced 22 initiatives to further support the industrial sector, including a fund to renovate space, a loan pool for food manufacturers, a proposal to create a new IBZ in Staten Island, and a commitment to increase financing for industrial firms through the City's Industrial Development Authority. At the same time, however, the City continued to cut funding to the IBZ administrators, severely limiting these organizations' capacity to deliver on-the-ground support for the City's industrial companies.

Also in 2011, the City released Vision 2020, its comprehensive waterfront development plan, which strives to strike a balance among various waterfront priorities including industrial, public recreation, and access and environmental justice issues. Although the plan acknowledges the importance of public investment to improve waterfront infrastructure that supports job creation, its substantive provisions prioritize the conversion of industrial land to residential and commercial uses. New York City's coastline remains a focus of residential and other types of nonindustrial development—despite the historic and current presence of manufacturing firms in waterfront communities.

3.4. NYC's Public Industrial Properties

The vast majority of the City's industrial land is privately owned and spread out among the five boroughs. However, the majority of City-owned industrial land that is leased to industrial business is located along the Brooklyn waterfront, including the Brooklyn Navy Yard. The City's produce, meat, and seafood markets in the Bronx are the notable exceptions. All of the City's industrial properties, with the exception of the Brooklyn Navy Yard, are managed by the New York City Economic Development Corporation (NYCEDC) and its subsidiary, Apple Industrial Development Corporation. NYCEDC is a nonprofit corporation that holds an exclusive contract to provide real estate and economic development services for the City of New York. Its board of directors is appointed by the mayor. Its operating budget is supported by rental income from its portfolio of City-owned industrial properties managed by Apple Industrial Development Corporation and from the proceeds of City-owned land administered by NYCEDC. It receives no tax dollars for its operating budget, which is separate and apart from the City's budget, but it does receive capital dollars for projects it develops and/or manages on behalf of the City of New York.

The Brooklyn Navy Yard, by comparison, is managed by the Brooklyn Navy Yard Development Corporation (BNYDC), a separate nonprofit corporation whose board of directors is also appointed by the mayor and which also maintains a budget separate and apart from the City operating budget. Since 1996, the City has consistently provided capital dollars to the Brooklyn Navy Yard for infrastructure improvements. These funds peaked with an average of $17.5 million per year between 2004 and 2012. As we demonstrate in this study, public investment has been one of the key catalysts for attracting additional private investment and thus for the Navy Yard's evolution into a successful, modern industrial park.

The Brooklyn Army Terminal (BAT), also a former defense property, is the most similar to the Brooklyn Navy Yard in that it is also managed by a nonprofit organization (NYCEDC/Apple), has 24/7 security, and offers a variety of amenities for tenants including parking.

However, the key difference between BNYDC and BAT (and all NYCEDC/Apple properties) is that the Navy Yard's profits can be, and have been, readily reinvested in the Yard (BNYDC's contract with the NYC Department of Small Business Services includes this stipulation).

Rent revenues from BAT and the City's other industrial properties are not directly reinvested into these properties but support NYCEDC's overall operating budget, which covers a wide range of economic development activities across the City, from initiatives to attract foreign investment to the development of new commercial centers in downtown Brooklyn, Queens, and the Bronx, as well as the operation of the industrial properties. NYCEDC/Apple has invested in its industrial properties over the years, but those investments must compete for priority in NYCEDC's City capital asks. As a result, some of these properties have suffered from years of deferred maintenance and underinvestment as the City has pursued nonindustrial economic development initiatives.

As part of the City's recently announced 22-point plan, investments in these properties have increased.[11] The City has recently made significant investments in many of its industrial assets and has outsourced leasing at BAT to private brokers to increase tenancy. However, the properties will continue to be managed as part of a much larger portfolio of initiatives and will continue to compete against other projects for capital funding.

3.5. NYC's Private Nonprofit Industrial Development

New York City is also home to a private, nonprofit industrial developer: the Greenpoint Manufacturing and Design Center (GMDC).[12] Located in Greenpoint, Brooklyn, GMDC started in 1992 with one building and the mission of providing affordable space to small and medium-sized manufacturers. GMDC has a small staff and dedicated board of directors and currently owns and manages four separate buildings totaling just under 500,000 sq. ft. that is leased to over 100 businesses. GMDC tenants are predominantly small manufacturing enterprises, a majority of which are woodworkers, artisans, and artists, that together employ over 500 people.

GMDC offers an important and viable model for urban industrial development, especially in neighborhoods with a mix of manufacturing and residential uses. The Greenpoint neighborhood where GMDC projects are located has changed rapidly over the past decade, as first illegal residential conversions, and then—after a city rezoning in 2005, legal conversions—have placed significant real estate pressure on local manufacturers. As a mission-driven organization, GMDC has played a critical role by providing stable industrial space at affordable rents in the neighborhood and has remained committed to doing so for the long term.

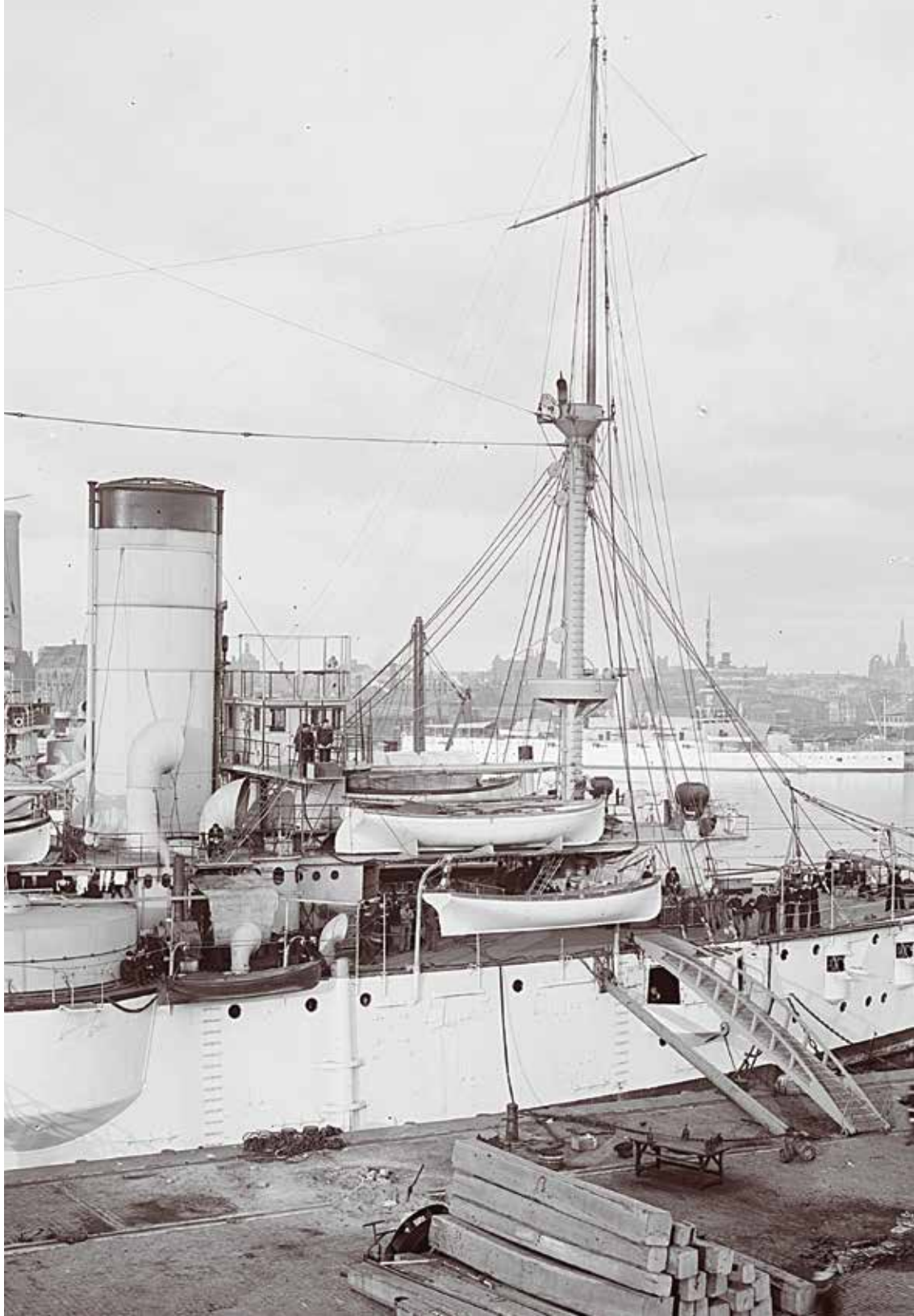
However, because its buildings are scattered across a mixed-use neighborhood, it lacks a secure campus similar to the BNY's. Additionally, it must contend with changing land-use patterns, particularly increased residential uses in the surrounding neighborhood.

As a private nonprofit, GMDC has financed its building acquisitions and renovations through a combination of relatively small and occasional government subsidies and private debt, leveraging its rental income. While this financing strategy is similar to that of BNYDC, unlike BNYDC, GMDC operates in neighborhoods with privately owned land threatened by gentrification. As a result, it is often challenged by the impact of real estate speculation and inflated land acquisition costs that often make the acquisition of a project financially infeasible.

Despite these challenges, GMDC remains a premier industrial landlord and fills an important role in the City's industrial land base. It serves as a model for nonprofit-owned buildings in mixed-use neighborhoods. GMDC is now replicating its model in Philadelphia (See Section 7.3) and St. Paul, Minnesota.

"Dry Dock" 2011 © Robert Clark

The Brooklyn Navy Yard: History & Management



4.1. The Brooklyn Navy Yard in the Local Context

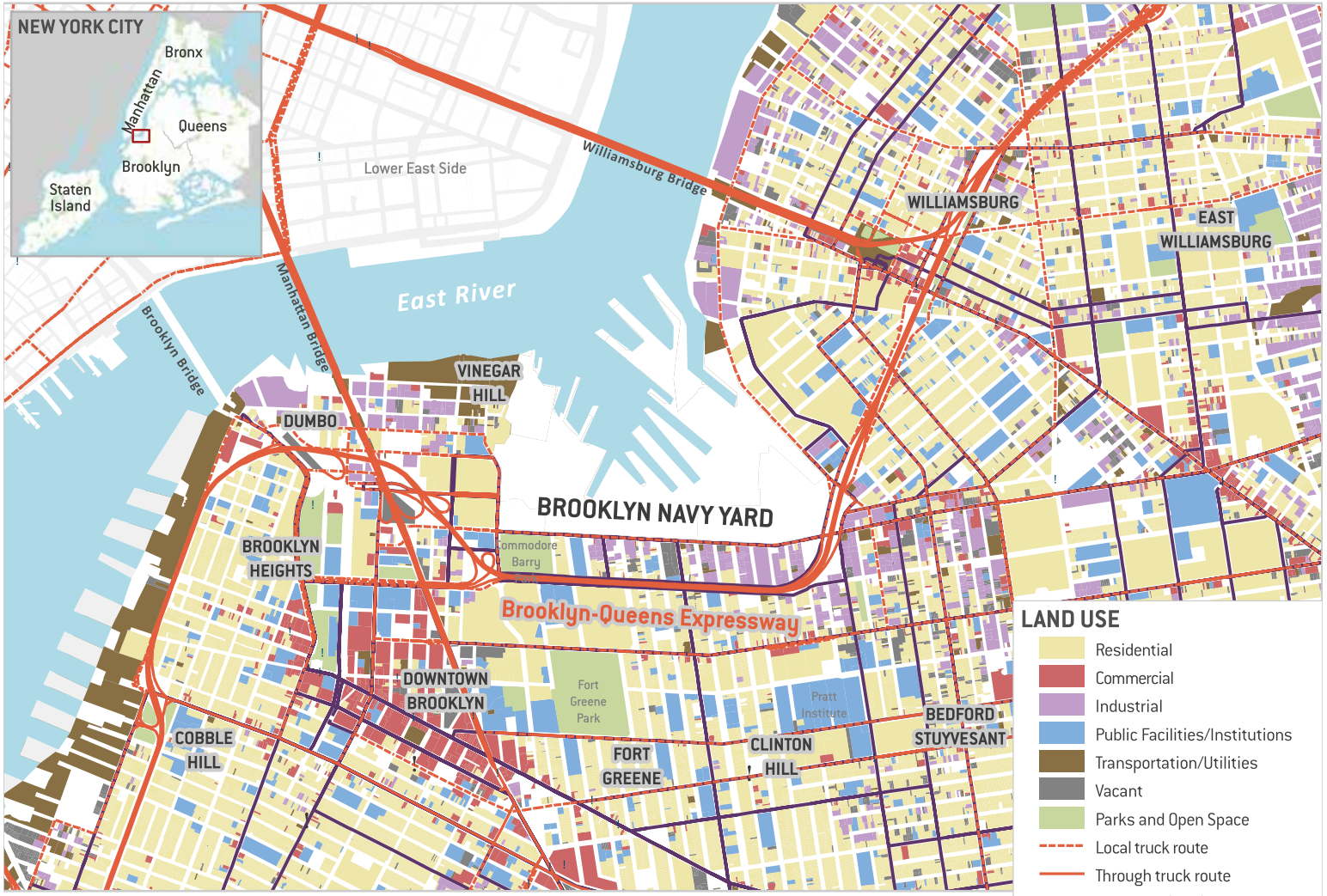
The Brooklyn Navy Yard is located on Wallabout Bay, which is straddled by the Manhattan and Williamsburg Bridges, two important truck crossings linking the Yard to Manhattan and its substantial customer base. The Brooklyn-Queens Expressway, a major arterial linking all of waterfront Brooklyn to Queens and the Bronx, is also located one block from the Navy Yard. Local subway lines, built in the early part of the 20th century and designed primarily to transport commuters into Manhattan, are far from the Navy Yard gates, but the Yard's management provides free shuttle service to major subway stops. Although the Navy Yard is situated along the waterfront, only four firms currently use the water itself as a critical resource: the Navy Yard's cogeneration facility and three industrial firms engaged in ship repair and the production of construction materials that rely on the water for transport.[1]

The Navy Yard is located directly south of one of the City's main industrial districts, Greenpoint-Williamsburg, and across the river from Manhattan's Lower East Side. Surrounding proximate uses are primarily residential: Vinegar Hill to the west, Fort Greene and Clinton Hill to the south, Bedford Stuyvesant to the southeast, and Williamsburg to the north (*See Figure 5*).

These neighborhoods reflect a fine-grained mix of high-rise public housing developments (some built in anticipation of housing Navy Yard workers in the 1950s) with approximately 11,000 residents, two to four-story brownstones, and multi-unit residential buildings, as well as active commercial corridors. Pratt Institute, which has incubated several BNY tenants and is a driver of the relationship between the BNY and the industrial arts, is a few blocks south. Downtown Brooklyn, the borough's civic center and home to eight colleges and universities, including Brooklyn Law School and the Polytechnic Institute of NYU, is just west of the Navy Yard. DUMBO, once itself an active industrial waterfront district but increasingly now home to a mix of high-end residential, office space for technology-based businesses, and arts-related retail, is located just to the west. Consequently, BNYDC is now part of an effort to brand the area between the Yard, DUMBO, and Downtown Brooklyn as the "Tech Triangle" and attract more technology-based firms, many of whom are also manufacturers.

The Navy Yard serves an important role in stabilizing the local industrial land base. Tenants have moved to the Navy Yard from areas such as Greenpoint-Williamsburg, Bushwick, DUMBO, Prospect Heights, Bedford Stuyvesant, Red Hook, and Manhattan's West and Lower East Sides, areas that have experienced either formal rezonings or more ad hoc conversions to residential and commercial uses.

FIGURE 5 Brooklyn Navy Yard in the Local Context



Prepared by the Pratt Center for Community Development, October 2012
Data Sources: NYC DCP: PLUTO 2011, LION 2011, Borough Boundaries 2011, Tax Blocks 2010; NYC MTA Subway Stops and Bus Routes 2010.

The Yard's current waiting list of over 145 firms is an additional indicator that some firms may be increasingly priced out of other areas. More than 20 firms on the waiting list noted current addresses in Williamsburg, Long Island City, and Bushwick—three neighborhoods experiencing mounting pressure for conversion to residential uses.

4.2. History of the Brooklyn Navy Yard

The BNY's adaptations over time reflect the changing needs of, first, a young country at war, then a national economy primarily rooted in production and export of goods, then a surrounding municipality struggling to retain jobs at the onset of global economic restructuring. Today, the Navy Yard must meet the need for specialized, high-value-added manufacturing that sustains both niche demand and key local and regional economic sectors.

Early Years as a Navy Installation

The federal government purchased the initial 42 acres of marshy land along the shoreline of Wallabout Bay from a private owner in 1801 and established the New York Naval Shipyard the same year. The Yard quickly became an important site for ship construction and maritime medicine, as well as a munitions depot. Although the Yard served crucial ship building and repair functions throughout the Civil War, its fate was uncertain by the early 1900s, as the federal government sought to consolidate production elsewhere. Brooklyn civic groups and trade boards protested, and the Yard continued to serve its naval functions. By World War I, the Yard had grown to 300 acres and employment had increased from 6,000 to 18,000.

The height of Yard activity, however, took place during World War II. The Yard's workforce increased to 70,000, and six dry docks operated continuously. Women were employed for the first time at the Yard as technicians and mechanics. The Korean War launched another active phase in production; aircraft super-carriers were built at the Yard between 1955 and 1960. However, changes to the shipping trade requiring deeper harbors and newer infrastructure led to the start of the decline in the Yard's maritime activity.

In a wave of military base closings, the Brooklyn Navy Yard was shuttered by order of Defense Secretary Robert McNamara in 1966. At that point, 9,000 workers were still employed by the Yard.

The closing was a sharp blow to many Brooklynites. Writer Bernard Malamud reflected that "the Dodgers leaving, the folding of the Brooklyn Eagle and the closing of the Navy Yard" meant that the world had changed forever.[3]

"Dry Dock Brooklyn Navy Yard"© Detroit Photographic Co. (Library of Congress)

Transition to an Industrial Park

Shortly after the Yard's closing, in 1969 the City of New York purchased it from the federal government for $24 million. An Urban Renewal Plan was approved for the site in 1971, codifying the City's goal to create a "modern industrial district which will: retain and attract manufacturers to the City; create 15,000 jobs upon its completion; provide [a] relocation resource for other firms displaced by other, urban renewal projects."[4] (New York City was at the time actively employing urban renewal as a tool to upgrade, modernize, and transform large portions of the City. Dislocation of existing businesses and residences were often the result.) A 99-year lease was signed between the City and the Commerce Labor Industry in the County of Kings (CLICK) as the management entity, with the responsibility of leasing and developing the City-owned property and buildings for industrial purposes.

At the time, only 10 of the Yard's existing 54 buildings were considered fully usable for the stated purposes; all other buildings had deteriorated and were subject to redevelopment planning. Infrastructure including streets and energy utilities also needed substantial upgrades as stormwater and wastewater were dumped untreated into the bay. Uses were restricted to those permitted by the City's industrial zones, public uses, and only those commercial uses deemed appropriate to support industrial uses. As the authorized redevelopment corporation, CLICK was responsible for carrying out the demolitions, site clearances, and upgrades specified in the Urban Renewal Plan.

However, the Navy Yard continued to decline. In 1979, Seatrain Shipbuilding Corporation, the Yard's largest employer and the City's largest employer of minorities, closed and took with it 2,500 jobs.

In 1981, after a City comptroller audit found widespread mismanagement, the City replaced CLICK with the Brooklyn Navy Yard Development Corporation (BNYDC), whose board of directors was appointed by the mayor. Nonetheless, in 1986, another shipbuilding firm, Coastal Dry Dock, closed, and another 1,400 jobs were lost.

Coastal Dry Dock and Seatrain Shipbuilding were not easily replaced. The Yard's large buildings were built for naval and shipyard activities and were ill suited to alternative uses. Freight elevators were frequently nonfunctional and were generally far too few to serve the interior spaces of large buildings for multiple tenants. No modern telecommunications infrastructure existed. Roofs of aging buildings leaked and threatened to undermine entire structures. Bulkheads, piers, and dry docks had fallen into disrepair and were in jeopardy of washing away entirely. Roads were pitted and barely navigable. Pipes for water and sewer were inadequate even to the existing, limited usage of the Yard's available square footage.

The contraction of the domestic market for shipbuilding and repair coupled with the loss of the two anchor tenants triggered strategic thinking about changes to building configurations to allow for a broader mix of tenants. As a result, BNYDC began to cut up large floor plates into smaller units to meet the demand for smaller industrial spaces. At the time, outside the Yard, these businesses would have had to compete for retail or commercial office space at an unaffordable rent.

From 1983 to 1996, BNYDC had an agreement to pay ground rent to New York City for use of the Yard, rising from about $400,000 in 1983 to more than $1.1 million in 1995. During that period, the City invested little or no capital annually in the Yard to improve its buildings and infrastructure, and BNYDC was nearing bankruptcy. The Yard thus continued a steady decline until an initial 1996 capital allocation under the Giuliani Administration. BNYDC then completed a capital-needs assessment that highlighted the dire need to upgrade the Yard's subsurface infrastructure and antiquated buildings, as well as provided both a framework for stabilizing the Yard's existing industrial base and a pathway toward expansion.

Public Investment Builds an Economic Engine

By 1998, with 200 businesses, the Yard was again growing and had fully leased its 4 million sq. ft. of available space. However, the considerable infrastructure improvements identified in the capital-needs assessment were required for the Yard to accommodate the needs of existing and future businesses. Based on the BNYDC's track record of success, the City began to fund a multiyear capital-dollar investment plan to modernize the Yard's building and basic infrastructure. As Figure 6 shows, the first sizable expenditures took place in 1999 with an investment of more than $15 million. The City has averaged slightly more than that in capital-dollar allocations every year since.

Given the inevitable lag between expenditure and completion of improvements, the program did not begin to yield significant changes in occupancy and rents until 2001.[5] The steady rise over time reflects the growing capacity of the Yard to develop and implement projects. When the Bloomberg Administration came into office in 2002, there was a deliberate effort to professionalize the board of directors and to actively pursue real estate development opportunities within the Yard. As such, an updated Development Strategy was created in 2005 to guide development plans and outline multiple options for development scenarios for new construction and major rehabilitations of buildings—this is the underlying road map BNYDC uses today.

Yard infrastructure posed challenges in many ways more difficult and costly than those presented by new development of comparable raw land. At the time when the City began allocating capital dollars, the interior road network and the sewer systems had reached the end of their useful lives and required wholesale demolition and replacement. The Yard's prior military uses left environmental contaminants, both in the ground (e.g., on the site of a former manufactured gas plant) and in its buildings, including large amounts of asbestos and lead paint. A variety of improvements were necessary to modernize the Navy Yard's spaces and prepare them for a new generation of uses.

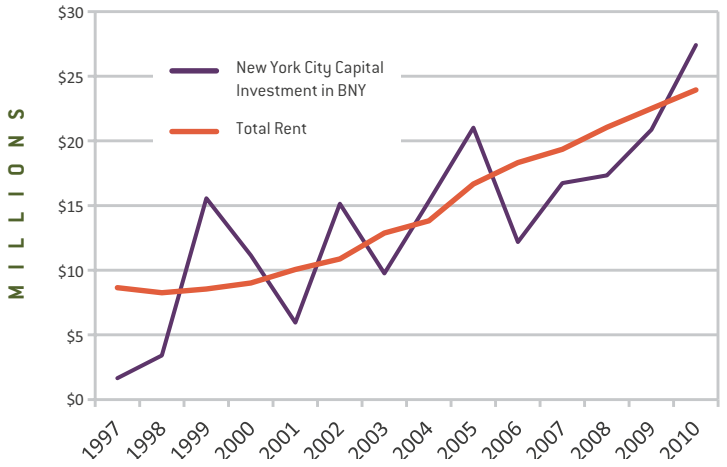


FIGURE 6
NYC Capital Investment in the Brooklyn Navy Yard, 1996–2011

Figure 7 presents capital expenditure at the Brooklyn Navy Yard from 2001 through 2009 by use, reflecting all sources of capital (BNYDC itself, local, state, and federal), although the majority was City capital. The capital program consisted of a variety of infrastructure investments, namely building construction and rehabilitation (particularly roofs, elevators, HVAC, windows, sprinklers, and wiring), electric and steam infrastructure, roads and parking, water mains and sewerage, waterfront stabilization, rehabilitation and dredging, and environmental cleanup. Additional funds were spent before 2001 and after 2009, but this eight-year period is an illustrative snapshot of capital needs and priorities within the Yard. (*See Figure 8 for a map of completed investments.*)

It is worth noting, however, that had the Navy Yard been treated as one of the City's other industrial parks in which the buildings are privately owned, the City would have been responsible for maintaining the basic infrastructure and making certain capital improvements including constructing and maintaining roads, sewers, and street lights. Therefore, providing capital funding so that BNYDC assumed responsibility for City functions has arguably no marginal cost to the city. The benefit, however, is that these infrastructure projects were prioritized and tailored to meet the tenant companies' needs. In addition to these investments, BNYDC also put resources into technology and communications systems, security, administrative systems, vehicles, and equipment.

To many of those firms facing competition for space with new residential uses, the City's investment in the Yard and BNYDC's efforts to develop additional industrial space signaled a commitment to industrial retention, at least at the Brooklyn Navy Yard. This commitment was critical to creating the stability that the Yard's industrial tenants needed to make their own investments in their businesses. Since 1996, tenants have invested approximately $573 million in their spaces.

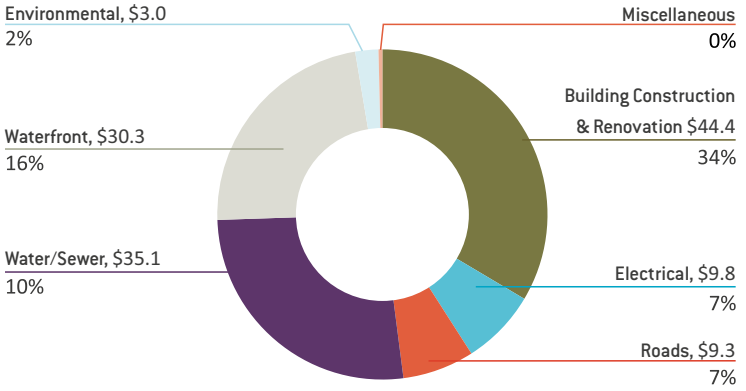


FIGURE 7
Capital Expenditure by Use at the Brooklyn Navy Yard 2001–2009

FIGURE 8 Brooklyn Navy Yard Completed Investments, 1996-2012

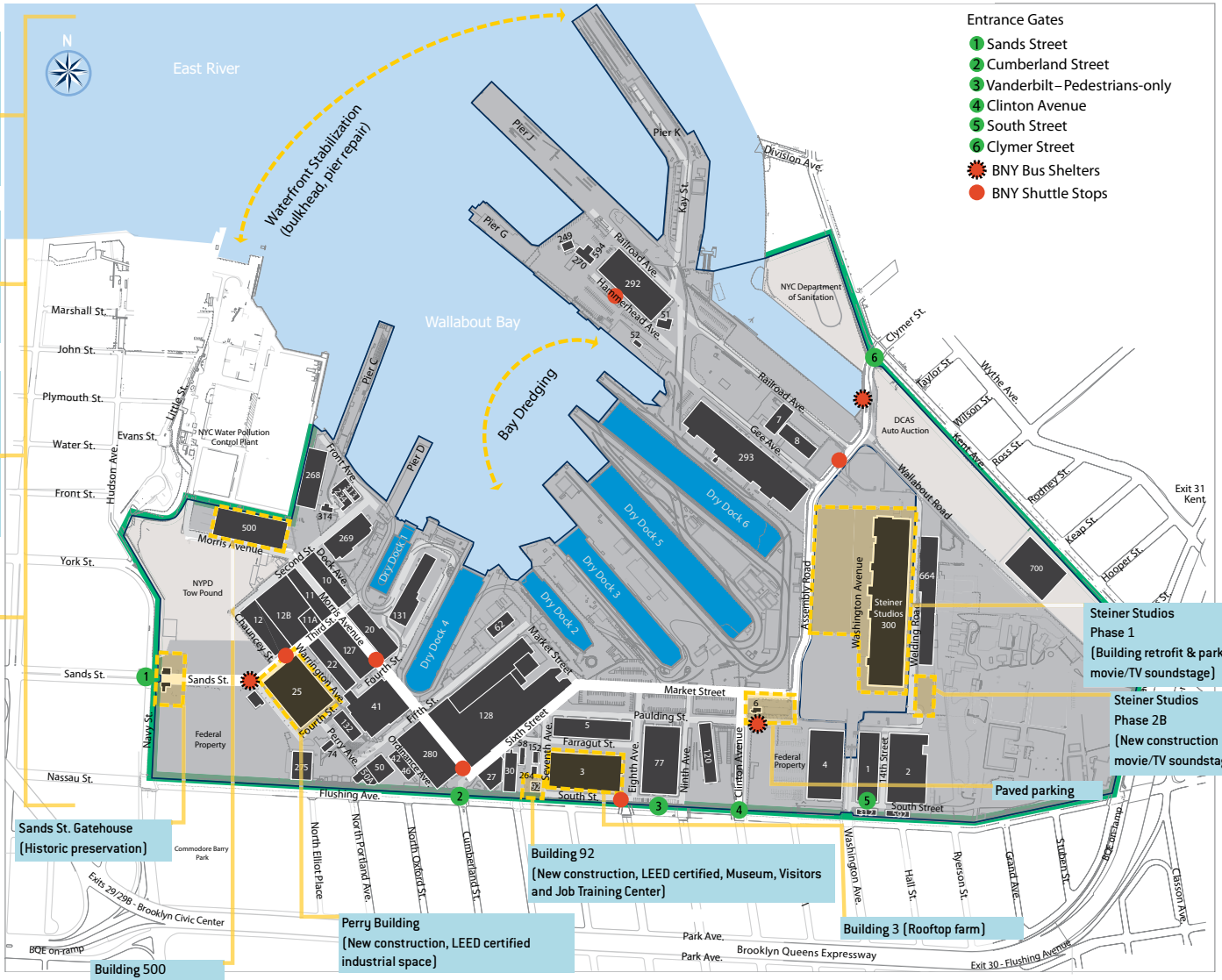
Campus Wide

BASIC INFRASTRUCTURE
- Sewers
- Utilities
- Telecommunications
- Stormwater management
- Street lighting (incl. solar/wind powered)

SURFACE TRANSPORTATION
- Road repair
- Paved parking
- Bike lanes
- Bike racks
- BNY shuttle bus

BUILDING UPGRADES
- Environmental remediation
- Electrical systems
- Elevators
- Roofs
- Sprinklers
- HVAC
- Windows

OTHER
- Landscaping
- Security cameras
- Post Office Construction



Prepared by the Pratt Center for Community Development
Data Sources: BNYCD, DOT LION 2010 Street Names
Note: This is not an exhaustive list of all Brooklyn Navy Yard investments

4.3. The Brooklyn Navy Yard Development Corporation (BNYDC)

Structure

The Brooklyn Navy Yard Development Corporation (BNYDC) is a nonprofit, mission-driven organization that manages and administers the Brooklyn Navy Yard, under the terms of both a lease and a management contract with the City of New York's Department of Small Business Services. Like other development corporations, it provides programs and services to support development.

Core functions include leasing and providing maintenance for properties, developing underutilized buildings and properties, and undertaking general modernization and upgrading projects. Key staff functions include administration, legal services, external affairs, design and construction, utilities and maintenance, operations, planning and development, technology, financing, leasing, security, human resources, and research.

To execute its development plans over the last decade, BNYDC has added staff in development, engineering, community and external affairs, and operations. Key executive staff positions include the president and chief executive officer, the executive vice president and chief operating officer, and the executive vice president and chief financial officer. Staff members report that the overall decision-making process is collaborative and inclusive.

There is a strong team culture that supports existing tenants, appreciates efforts to make the Navy Yard more sustainable, and would like to expand the Yard's available square footage through renovation and expansion into underused areas.

Senior executive staff members report to a 30-member board of directors appointed by the mayor.[6] The Brooklyn Borough President and two local City Council members also nominate representatives, with approval from the mayor. The board comprises individuals with expertise in real estate development, banking, economic development, law, business, government, community development, and community relations. The board must approve all leases, financial arrangements, and contracts over $25,000. Members report that it is a very practical, "hands-on" board that holds itself accountable for upholding and implementing the mission of the Navy Yard, generally agreed upon as the maintenance and expansion of an industrial district that creates jobs.

Management

Substantial credit for the success of the Brooklyn Navy Yard is due to the quality of its professional management. Large quantities of City capital investment were a necessary but not sufficient condition for the Yard's growth. As demonstrated in Section 5.3, 70% of surveyed BNY tenants cited the Navy Yard's on-site management as critical or important. BNYDC's successful management of large, complex construction projects and financial transactions has been key to the Yard's development growth.

BNYDC maintains a large staff dedicated to classic real estate management, from leasing to maintenance and snow removal. In a city where real estate is a leading industry, these skills are never in short supply. But although the role of manager seems relatively straightforward, BNYDC strikes a delicate balance. Generally speaking, BNYDC seeks to provide an atmosphere for the Yard in which industrial businesses can grow and prosper; it allows businesses to start with leases for a very small amount of space and helps them to expand into larger spaces over time.

Rent concessions are occasionally made to accommodate the needs of high-employment tenants that are expanding and investing large amounts of their own capital in space improvements and that show promise of continued growth.

BNYDC also moderates demands for rent increases at renewal to avoid destabilizing the firms it is mission-bound to serve. Unlike most private sector landlords, who typically begin an eviction once a tenant is 30 days late, BNYDC's policy is to wait 90 days.[7] Often an eviction process is dropped, and the 90-day clock reset, if a tenant pays a substantial portion of back-rent. The net effect of this policy is that BNYDC has filled a void created by commercial banks that stopped providing affordable lines of credit during the recession. This float has been critical in supporting viable manufacturers, especially the smaller tenants, who experience a lag in payments from their clients. A comparable private developer with a waiting list of firms eager to lease space would not contemplate such forbearance.

Despite this flexibility, BNYDC maintains rents roughly in line with market prices based on the particulars of the space (e.g., size, floor number, quality of elevator access, light, etc.). It documents its leasing policy in regular submissions to the board and updates asking rents to reflect market conditions.[8] In many ways, BNYDC has turned the traditional leasing model on its head, often getting higher rents for upper-floor space, for example, from artisans and small, light-industrial businesses who value the natural light over ground-floor access. Tenants priced out of the rest of New York City's industrial market, however, can also be priced out of the Navy Yard. Indeed, in 2011, the Yard declined to accept a below-market rent from a large (>100,000 sq. ft.) tenant, fully aware that this tenant would leave the Yard as a result.

Rebuilding a 300-acre campus with infrastructure and buildings in constant need of improvement presents a complicated set of challenges. The Yard's professional capital program managers must assess existing conditions and develop strategies for phasing in improvements that serve the needs of existing tenants, as well as provide the framework for future development. Each contract must be managed and its relationship to other activities in the Yard coordinated. Funding restrictions and the City's procurement policy, which BNYDC follows, have tended to complicate these tasks still further. BNYDC must pay prevailing wages for construction involving BNYDC or City capital. This requirement substantially increases the cost of development to the Yard and reduces the amount of additional industrial space and supporting infrastructure it can build. In response, BNYDC has developed strategies for enabling BNY tenants to finance construction directly, including offering ground leases of duration long enough to secure debt and helping to identify flexible financing programs for job-creating new development.

Whenever possible, BNYDC procures goods and services from its tenants, as illustrated by its creation of an internal stimulus program in early 2009 to use its capital program to help small firms threatened by the recession. The board approved, and BNYDC implemented, a strategy to engage tenants within the Yard in the construction of building upgrades that might typically have gone to firms outside the Yard.

Contractors and woodworkers that under ordinary circumstances would not have sought such work were able to take advantage of the program to stay afloat during extraordinarily difficult economic times. The board approved a program to redirect up to $1 million in capital expenditure, and ultimately some 25 BNY firms benefitted from roughly a half-million dollars in contracts.

BNYDC also contracted with tenants, as well as other local firms, for goods and services required for the development of BLDG 92, a visitor center designed to educate tourists and students not only about the historic role of the Yard, but also about the evolution of the manufacturing sector and its continued importance in a modern economy.

In addition to local procurement, BNYDC emphasizes in all its projects the importance of Minority and Women Owned Businesses (MWBE) and Local Based Enterprises (LBE) contracting. In each of the last three major BNYDC-managed construction projects in the Yard, 40% of the construction dollar value has gone to MWBE and LBE firms. This commitment not only has helped businesses in the Yard and in the local community grow, but also has generated enormous good will from local elected officials.

BNYDC as a Real Estate Developer

Perhaps the most significant factor distinguishing BNYDC from other managers of City-owned property is its role as a developer. In some cases, BNYDC acts as an administrator of development activity, crafting strategies for specific sites, gauging developer interest, investing in the necessary enabling infrastructure, crafting requests for proposals (RFPs), and negotiating leases. A good example is BNYDC's effort to identify a supermarket developer for the Admirals Row site on Flushing Avenue, where the developer will be required to build over 100,000 sq. ft. of upper-floor industrial space that will ultimately be turned over to BNYDC to manage and collect rent.

In other circumstances, BNYDC has played the role of direct developer, blending together various sources of financing, commissioning the design, and contracting the construction.
The Perry Street building constructed in 2008, discussed later in this section, is an example of this direct development. For this project, BNYDC sourced private finance from Chase Bank and used the Immigrant Investor Program, or EB-5. (EB-5 provides a U.S. work visa, and ultimately a method to obtain a green card, in exchange for a foreign national's investment in a job-creating development in the U.S. The EB-5 program was a little-known and underused resource at the time in New York City, although it has since been tapped for major developments including Atlantic Yards in Brooklyn and the expansion of the Battery Maritime Building now under construction in Lower Manhattan.)

BNYDC then facilitated Steiner Studios' access to the EB-5 program for its Phase 2A of studio development, scheduled to begin in 2012. The City's capital investment did enable the rehabilitation of some obsolete property, but the development activity of BNYDC is substantially responsible for increasing the Yard's rentable square footage by over 1.5 million sq. ft. since 1996. BNYDC is also responsible for the atmosphere of dynamism and growth that pervades the Yard.

BNYDC's status as a mission-driven nonprofit developer rather than a profit-maximizing private developer has been critical to its overall success. Without the imperative to distribute earnings to investors or to pay rent to the City, BNYDC is able to devote virtually every penny earned in excess of expenses to additional tenant services and infrastructure for the Yard. It has reinvested on average approximately $5 million in its own capital expenditure (in addition to the City's capital investments) each year since the late 1990s (*See Figure 9*).

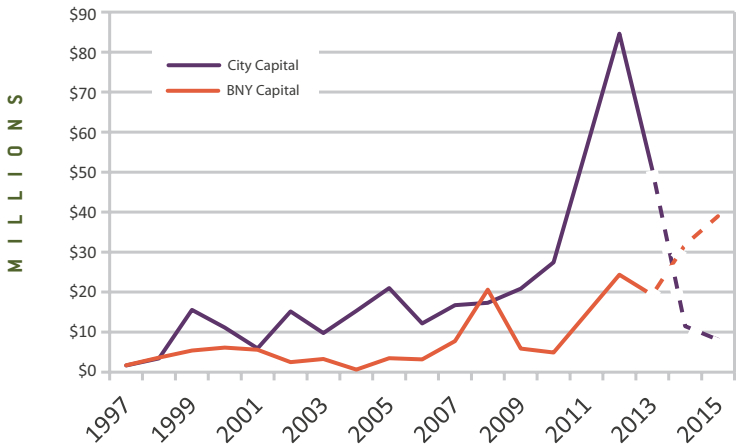


FIGURE 9
Annual Capital Investment by BNYDC, 1996–2015

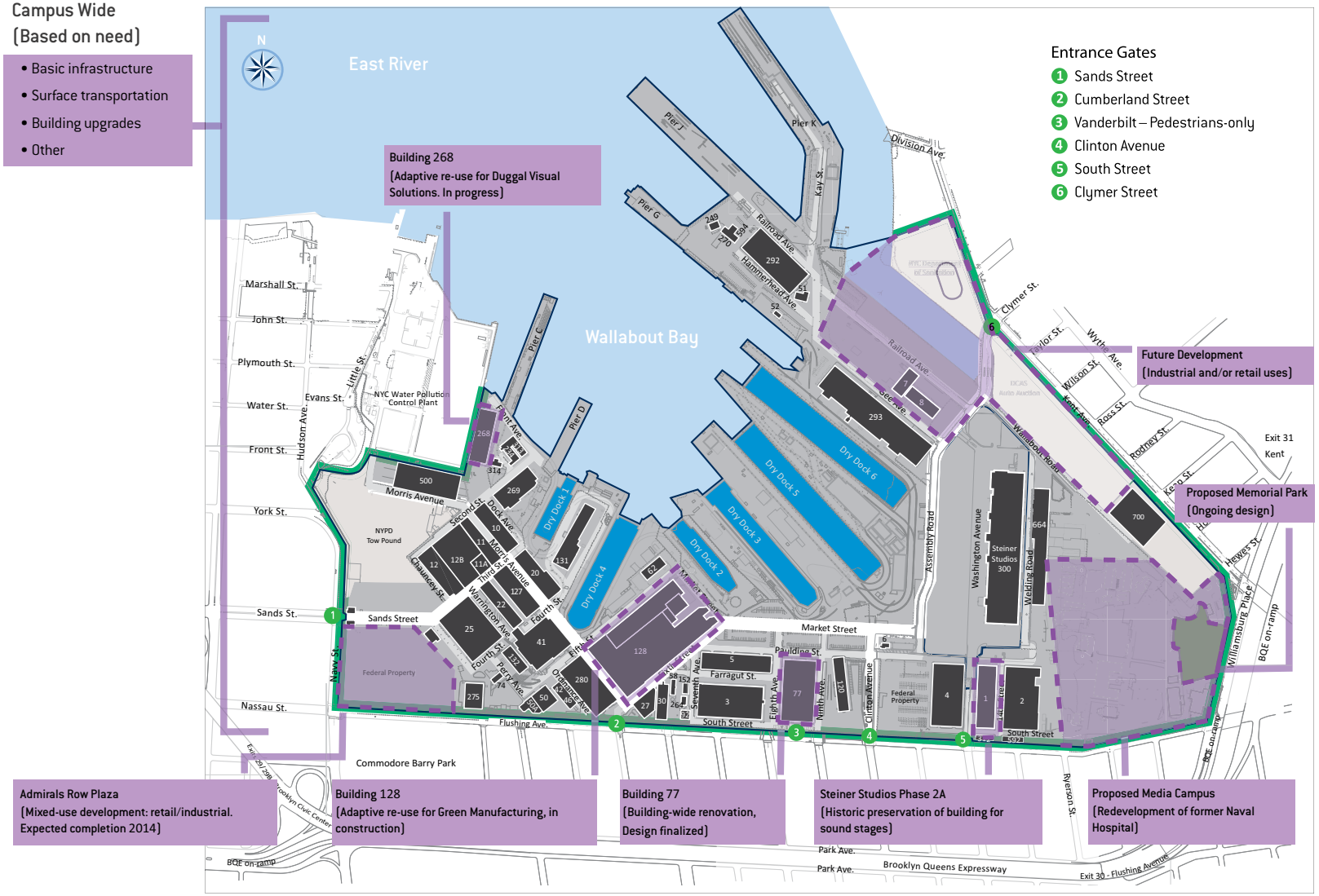
Its nonprofit status allows BNYDC to take risks that private developers would not. For example, the Perry Street building, an 89,000 sq.-ft. industrial building, was built on spec and financed through leveraging of internal Navy Yard assets. BNYDC's initiative to provide space without an identified tenant from the outset was entirely in keeping with its mission. During construction, the building was fully leased, proving the demand for light-industrial space in the Navy Yard.

Today, the Yard is in the midst of its most significant expansion effort since the Navy-led buildup to WWII. In addition to ongoing campus-wide infrastructure improvements such as surface transportation and building upgrades, BNYDC, in partnership with several large tenants, is planning several new construction and building rehabilitation projects. Notable projects include the future phases of Steiner Studios, including a proposed Media Campus on the site of the former Naval Hospital; a 220,000 sq.-ft. Green Manufacturing Center; the renovation of the 1 million-sq.-ft. Building 77; and an adaptive reuse of Building 268 for Duggal Visual Solutions, among others. (*See Figure 10* for a map illustrating future development projects.)

This is an ambitious amount of development. It is made possible to a great degree because BNYDC has the flexibility to test different models for development of space. Having this flexibility has allowed BNYDC to leverage its own tenants' resources, both financial and managerial, to construct, finance, and manage space, as in the case of Steiner, Duggal, and the eventual supermarket developer. These leveraged resources have allowed BNYDC to develop space, and consequently to advance its mission, faster than otherwise would have been the case.

Furthermore, BNYDC may be "priming the pump" for industrial development. Within the past three years, private developers have stepped forward in Sunset Park at the Federal Building and in North Brooklyn at the Pfizer building with plans to renovate those properties for industrial reuse. It is too soon to say whether these developers will be able to achieve a balance of uses similar to that achieved by BNYDC as they rent up their space, but they have certainly expressed similar goals.

FIGURE 10 Brooklyn Navy Yard Planned Investments



Prepared by the Pratt Center for Community Development

Data Sources: BNYCD, DOT LION 2010 Street Names

Note: This is not an exhaustive list of all planned or proposed Brooklyn Navy Yard investments

"Community Mural via Pratt Center BNY tour" 2011 © Elisabetta Di Stefano

BNYDC and the Surrounding Community

The Yard administration works to promote positive community relations in a variety of ways. Although the campus is a walled and gated industrial park, physically separate from the adjoining community, efforts are made to allow the public to visit under controlled circumstances for tours and scheduled visits. Acknowledging public desire to know more about the Yard's history and current operations and to create a more accessible presence for its Employment Center, in November 2011 BNYDC opened BLDG 92, a new $25 million exhibition, visitor, and employment center in a renovated Navy Yard historic building, which is open daily to the public.

In 2012, the Army National Guard transferred the area known as "Admirals Row," located in the southwestern corner of the campus directly across from high-density residential buildings, to the City of New York to become part of the Yard. This area contained ten 19th-century buildings that housed senior officers and a timber shed built before the Civil War. After a contentious public-review process about the fate of the historic buildings, plans have been adopted to rehabilitate two of the historic buildings and to allow BNYDC to redevelop the site to include a 74,000-sq.-ft. supermarket (a long-standing desire of the community) as well as 79,000 sq. ft. of additional retail space and 127,000 sq. ft. of new industrial space. The addition of retail is new to the Navy Yard, and it reflects an important shift in the Yard's development. First, it reflects the Navy Yard's increasing integration into the surrounding neighborhood. The opening of BLDG 92 is the first real public access in the Yard's history, and the inclusion of a publicly accessible grocery store on Flushing Avenue will further the public's relationship with the historically cut-off campus. These new uses, however, must be managed so as not to infringe on the delicate balance that currently exists and that has proved so beneficial to the Yard's targeted industrial tenants.

BNYDC is also developing new programs to help residents in the surrounding community to find employment at the Yard. Brooklyn's 10.4% unemployment rate is high in comparison to the rest of New York State.[9] The Yard's neighbors to the west and south—Farragut, Whitman, and Ingersoll Houses—house a population vulnerable to chronic unemployment and underemployment, and the Navy Yard is an important source of local jobs. An on-site employment center was created in 1999 and since then has placed approximately 1,000 people in jobs, primarily in the Yard, over the last six years. Special efforts are made to place residents of local public housing, formerly incarcerated job seekers, and veterans. BNYDC has recently expanded its employment center and jobs training program by hiring a workforce development partner. The intention is to work with tenants and job seekers in apprenticeship and skills-acquisition programs, in anticipation of the addition of new business leveraged through overall expansion plans, concomitant business growth, and the need for more workers.

"BLDG 92" 2011 © Elisabetta Di Stefano

The private and corporate philanthropic community has taken notice of the employment services offered primarily to the local community and high-need populations, as well as educational programs focused on City public schools (offered in partnership with the Brooklyn Historical Society). For the first time, Yard management is in a position to raise significant private support.

In addition to these outreach efforts, BNYDC staff stays in close contact with local elected officials, the local community board, and civic groups. Stakeholders report that the BNYDC board decision-making process has opened substantially in recent years to input from elected officials; BNYDC organizational structure includes an office of external affairs, supervised by a senior staff member specifically tasked with interfacing with government agencies and elected officials. Due to the legal strictures on local development corporations in New York State, BNYDC is permitted to seek discretionary capital dollars but may not lobby elected officials on legislation.

Staff members have expressed interest in more directly contributing to the development of City-wide and statewide policy decisions that would promote the Yard's ability to uphold its mission.

"BLDG 92 interior exhibit" 2011 © Elisabetta DiStefano

BNYDC and Sustainability

Sustainability is an integral component of the Navy Yard's development and expansion plans. Over the past several years, BNYDC has begun to market itself as an eco-industrial park and is striving to become the choice location for green manufacturers and other businesses. To this end, BNYDC has already implemented a number of sustainability initiatives, including a commitment to pursue LEED Silver certification for all new construction projects; the adaptive reuse of historic structures and materials; and the implementation of wind and solar street lights, a rooftop farm, hybrid and low-emission vehicles for the management's fleet, a waste management program to encourage recycling, and setbacks along the Yard's perimeter to enable the first phase of the Brooklyn Waterfront Greenway for bicyclists and pedestrians.

Two of the Navy Yard's current projects exemplify this commitment. BDLG 92, the new Visitor's Center, is on track to receive LEED Platinum certification that involved contracting with nearly 20 Yard tenants, including a BNY-based modular building manufacturer. The Green Manufacturing Center, currently in construction and designed to meet LEED Silver certification, is a $55 million, 220,000 sq.-ft. adaptive reuse of a former machine shop that will be a multitenanted building targeted for lease by green manufacturers.[10]

By and large, board members, staff, and tenants favor these sustainability efforts. Some board members were initially concerned that tenants would perceive the management's strategy to "green the Yard" and to encourage sustainable business practices as an effort to gentrify the Yard, yet 84% of surveyed tenants stated they were in favor of the BNY's goal of becoming an eco-industrial park. Additionally, 47% rated the investment in green infrastructure as either critical or important to their business. Furthermore, BNYDC's focus on sustainability has helped attract new sources of funding. For example, the Green Manufacturing Center attracted $18 million in grants from a wide range of sources including the New York State Empire State Development Corporation, New York State Research and Development Authority, the New York City Council, and the Brooklyn Borough President. The diversity of funding reflects the project's attractiveness in creating green manufacturing jobs.

While BNYDC has put in place these green features for the infrastructure and services it controls, the corporation has also begun to encourage BNY tenants to incorporate sustainability principles into their spaces and operations, both directly and indirectly, and these efforts are having an impact. Of surveyed tenants, 33% stated that being a tenant at the BNY has influenced their company to adopt more sustainable businesses practices, and 91% follow or plan to follow at least one green practice (e.g., use minimum packaging, recycle paper/cardboard, use energy-efficient equipment or lighting, etc.).

"Solar Wind Street Lamp" 2011 © Elisabetta Di Stefano

Furthermore, 19% of firms currently market their company as "green" or environmentally sustainable, and of those companies, 53% believe this helps increase sales. While there is still room for improvement in terms of greening the businesses at the Yard, companies seem to be moving in a positive environmental direction.

BNYDC has taken a proactive approach toward helping companies as well. In 2009, BNYDC partnered with the New York Industrial Retention Network (NYIRN)[11] to publish the Green Business Directory featuring 30 companies that had incorporated sustainability and green business practices in one way or another. In March 2011, BNYDC also partnered with the Industrial and Technology Assistance Corporation (ITAC) to pilot a solid-waste and recycling program. The pilot project focused on Building 3, and participating tenants experienced an average decrease in their monthly waste bill of 27% and significantly increased recycling and decreased carter truck traffic in the Yard. The program is now in place in two other buildings, and there are plans to expand it throughout the Yard.

BNYDC and tenants Icestone and EcoLogic Solutions have repeatedly been recognized for their sustainability efforts, including receiving awards from the U.S. Environmental Protection Agency and the Brooklyn Chamber of Commerce.

The Brooklyn Navy Yard: Tenants

Brooklyn Navy Yard Tenants

The Brooklyn Navy Yard today is a thriving hub of businesses of all types: from small, artisanal manufacturers to very sophisticated medium-sized manufacturers who integrate design and production, from large fulfillment enterprises to movie studios. Many firms do not easily fall into a single category (e.g., manufacturing or office) but rather straddle many types of activities under a single business (See sidebar, "Dynamic Clusters at the BNY"). In many ways, tenants at the Brooklyn Navy Yard illustrate the changing face of manufacturing: Blurred lines between artists, artisans, designers, larger-scale producers, and movie studios defy traditional data sources that calculate employment trends based on a single NAICS code. However, for the purposes of detailing the BNY's portfolio over time and analyzing the survey data, tenants were classified as one of eight main business types:

1. ARTISANAL/NICHE MANUFACTURING: Companies that produce either one-of-a-kind or customized products, often with very limited production runs, including manufacturing of sets and custom installations for the entertainment industry and fine-art pieces. These companies often have in-house design capacity and use high-tech manufacturing equipment to help their clients take a new product from a concept to production.

2. TRADITIONAL MANUFACTURING: Companies that produce standardized products, often in larger production runs.

3. MARINE MANUFACTURING/SERVICES: Companies engaged in ship repair and other marine services serving the wide range of vessels essential to sustaining activity in the Port of New York & New Jersey.

4. POWER GENERATION: Principally the cogeneration plant at the Navy Yard that produces power and steam for the New York City grid and the Navy Yard.

5. ENTERTAINMENT PRODUCTION: Studios and related services for the production of motion picture and sound as well museum-based entertainment.

6. CONTRACTOR SHOPS/STORAGE: Companies involved in the construction trades such as electricians, plumbers, and general contractors.

7. STANDARD OFFICE: Companies that use their space for administrative back-office services or for general office uses.

8. WAREHOUSE/DISTRIBUTION: Companies that use their space primarily for the storage and distribution of goods.

5.1. Pre-1996 trends

In the 1980s and early 1990s, BNYDC struggled with the decline of its infrastructure and facilities, which substantially limited the nature of the tenant base for the Yard. In light of the aging energy, sewer, and road systems, tenants used spaces primarily to store goods and equipment. In 1996, warehousing and distribution exceeded 60% of the rented square footage, and contractor storage space accounted for another 5% (*See Figure 11*). The marine elements of the Navy Yard were particularly in jeopardy during this period as piers and bulkheads fell into disrepair, and the Yard was unable to rent any of its dry docks.

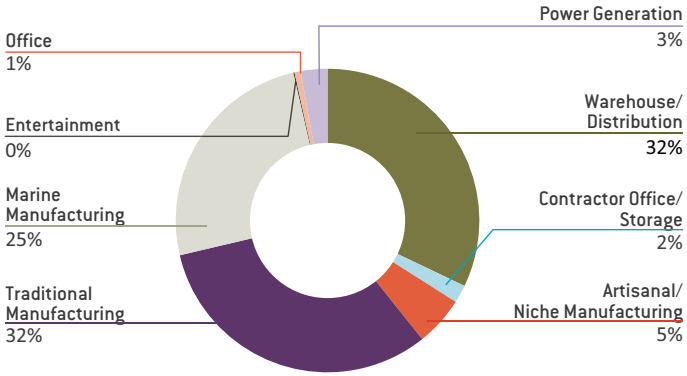


FIGURE 11
Tenancy of the Brooklyn Navy Yard by Rented Square Footage, 1996

The rental income in 1983 of around $3 million equated to about $1 per square foot at the time, compared with a City average for industrial space of $5 per square foot. Rental income rose steadily, to about $9 million by 1995, but at less than $4 per square foot remained well below the City average. The year 1995 proved an inflection point at which rents stagnated. By this time, the Yard had reached the limit of its ability to attract tenants and drive higher rents given the available infrastructure. It would remain at or below 1995 levels for the next five years, until the City investment enabled the Yard to attract higher paying tenants and, thus, diversify its tenant base.

5.2. Tenant Mix Over Time

By 2000, as a result of the City capital dollars that had been invested since 1996, the Navy Yard was starting to modernize. Several trends in the Yard's rental patterns started to become apparent.

First, the rented space in the Navy Yard increased by just over 1.5 million sq. ft. since 1996 (*See Figure 12*). In some cases the Yard rehabilitated buildings to make them usable, but in others BNYDC demolished older, obsolete buildings and built new structures in their place.

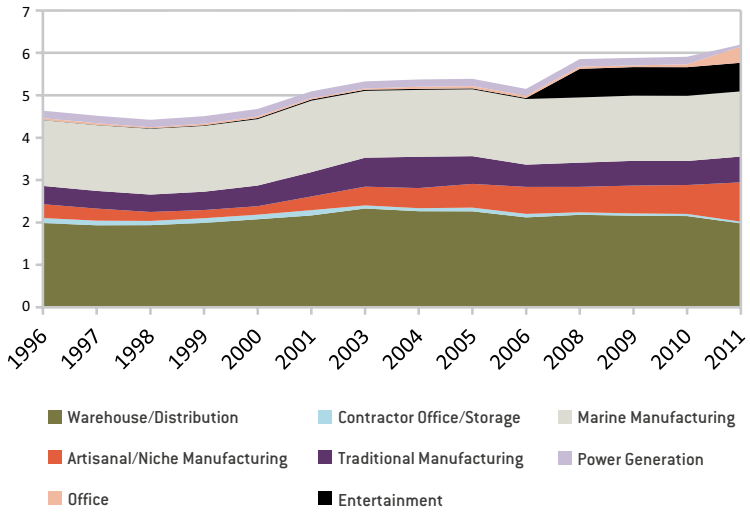


FIGURE 12
Change in Rented Square Footage at the Brooklyn Navy Yard by Type of Tenant, 1996–2011

The rise of small, niche manufacturers during this time compensated for the relative decrease in traditional manufacturing, particularly apparel. Taken together, the Yard added approximately 760,000 sq. ft. of additional manufacturing space that currently comprises about 60% of all rented space. The other marked trend is the emergence of the entertainment production sector, primarily movie production, which was nonexistent in the Yard in 1996 and now makes up 9% of its rented space. The amount of space allocated to office uses, particularly medical back-offices, also increased by more than 300,000 sq. ft. during this time as well.

Second, roughly the same trend is evident with respect to the share of each firm type in the Yard. The number of manufacturing firms increased from 69 to 136, with the vast majority of the increase among niche, artisanal manufacturers (*See Figures 13 and 14*).

The increase in manufacturing and the entertainment production industries has not come at the expense of warehouse and distribution, which have dropped only slightly in square footage terms. However, with the development of the additional 1.5 million sq. ft. since 1996, warehousing and distribution have since fallen from 32% of the total rented square footage to 25% in 2011. However, changes under way in Building 77, one of the larger warehousing buildings, will lead to a net decline in warehousing space when that redevelopment is complete.

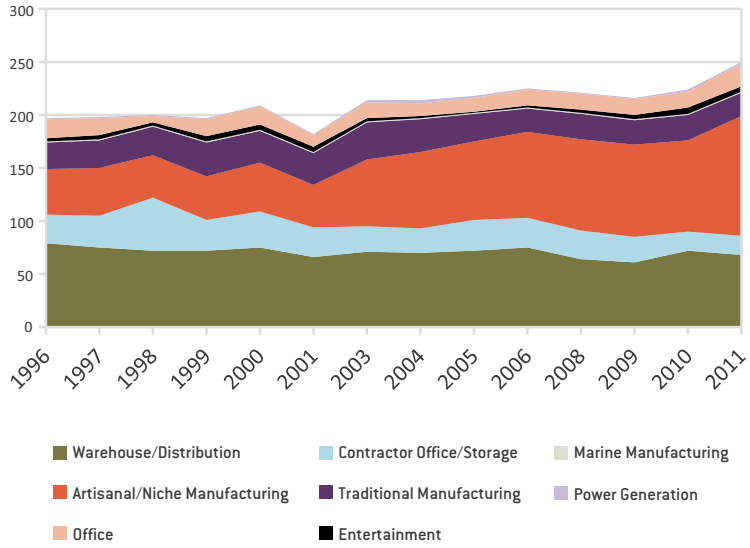


FIGURE 13
Change in Number of Tenants at the Brooklyn Navy Yard by Type of Tenant, 1996–2011

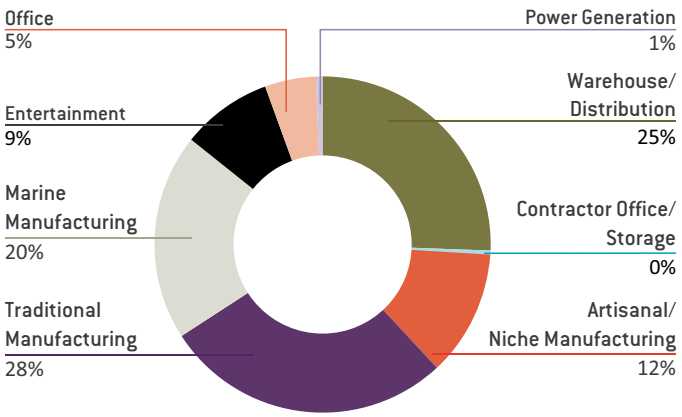


FIGURE 14
Tenancy of the Brooklyn Navy Yard by Rented Square Footage, 2011

This transformation of the Yard's tenancy also occasioned a dramatic rise in rental income over the same period. Following the period of stagnation ending in 2000, rental income at the Yard increased by more than 150%, from $9 million to more than $23 million (*See Figure 6*). The Yard now leases new space at or near market rate for industrial space in Brooklyn.

Over the past decade, the manufacturing taking place at the Yard (and in many cases across New York City) has evolved from traditional mass production to artisanal, custom production. These firms require close proximity to their end-use client, because custom changes during the course of production can be frequent. These firms also commonly employ proprietary systems, technologies, or techniques, and thus they benefit from the high degree of security in the Yard.

These factors define a high-value-added manufacturing sector in New York that represents a new model of urban production. Its products are harder to manufacture abroad, and its jobs are more difficult to export. The high degree of value added makes firm owners willing to pay higher rent and wages, because these factors of production consume a lower proportion of total revenue than in traditional manufacturing, where margins are extremely thin. Moving operations away from New York City for lower rent or wages might save a few dollars, but would sacrifice the proximity to the client and the process and the ability to tailor in real time, to keep techniques closely held, and to tap a highly skilled workforce. Thus the proximity and security provided by the Yard are essential parts of the business strategy being pursued by these firms.

"Justin Paul High End Bag MFG" 2011 © Robert Clark

5.3. Current Tenant Profile

There are currently 264 direct tenants at the Yard, approximately 25% of which have one or more subtenants, for an estimated total of 330 firms. Representatives from 187 firms responded to the Pratt Center team's survey. The BNY also has four City agency tenants—a vehicle tow pound, a wastewater treatment plant, a Department of Sanitation salt pile, and the Fire Department's Marine Division—that have been located at the Yard since the 1970s and 1980s and account for approximately 15 acres of space. These tenants do not pay rent to BNYDC and were not part of the report survey.

Basic Characteristics

COMPANY TYPE

The overwhelming majority of surveyed firms fall into the artisanal/niche manufacturing category, followed by warehouse/distribution firms.

FIGURE 15
Surveyed Firms by Primary Activity

Primary Economic Activity	Number of Firms
Artisanal/Niche Manufacturing	94
Traditional Manufacturing	18
Marine Manufacturing/ Services	1
Power Generation	1
Entertainment	5
Contractor Shops/Storage	26
Standard Office	11
Warehouse/Distribution	31
TOTAL	187

TENANCY

Ninety-one percent of the survey respondents are the primary leaseholders, of which 25% sublet part of their space. Those that sublet space tend to sublease spaces smaller than 2,500 sq. ft. and have done so since the beginning of their lease. There is a fair amount of business activity taking place between leaseholders and subtenants, with 49% stating that subtenants played an additional role besides paying rent, ranging from buying or selling goods and services to sharing staff or services.

MINORITY- AND WOMEN-OWNED BUSINESSES

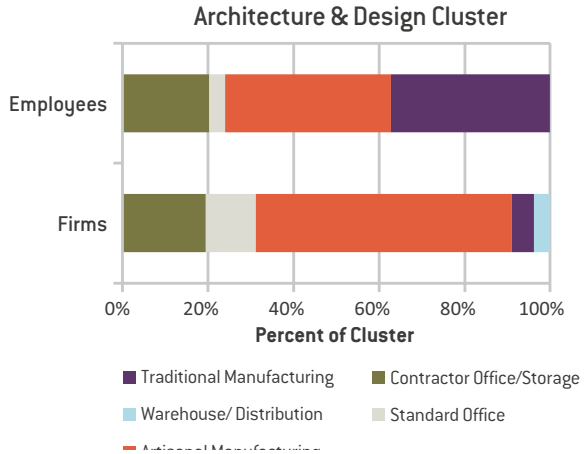
Twenty-two percent of survey respondents are Minority-Owned Businesses, 20% are Women-Owned Businesses, and 4% are both Minority- and Women-Owned Businesses (MWB). MWB certification programs exist at the city, state, and federal level but only 30% of BNY MWB survey respondents are certified as such by a government jurisdiction.

Dynamic Clusters at the Brooklyn Navy Yard

There is a dynamic mix of companies operating and generating a creative buzz at the Navy Yard. From manufacturers of custom lighting fixtures to set designers for the City's film and TV industry, Navy Yard tenants are part of the supply chain for two of the City's most important industries: Architecture & Design and Film & Media. Just under 60% of surveyed tenants fit into one of these clusters. Overlapping these two industry clusters are three characteristic clusters reflecting overarching firm traits including artisanal manufacturing, green businesses and companies rooted in digital/high-tech processes.

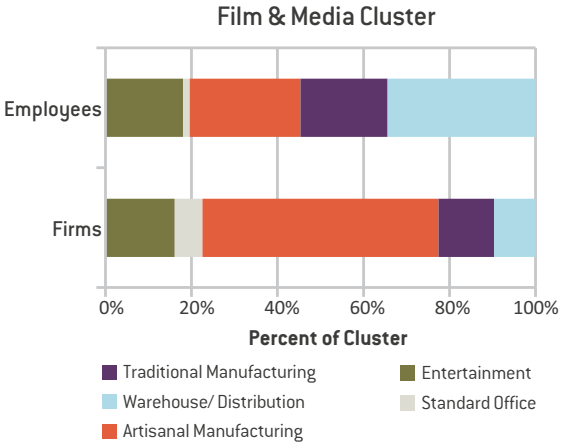
ARCHITECTURE & DESIGN

New York is a real estate town, and the architecture and design of its buildings—inside and out—is one of the major drivers of the city's creative forces. 41% of all surveyed firms are working to support this industry in one way or another from architects, interior and landscape designers, construction and trade contractors, lighting designers and manufacturers, cabinet makers, furniture fabricators and others. **Capsys Corp**., which produces modular homes, **Smalls Electrical Construction**, an electrical contracting firm, and **Superior Consulting Corporation**, a structural and civil engineering firm, are just a few of 77 companies in the Yard involved in architecture and design.



FILM & MEDIA

The Navy Yard's film presence has grown exponentially since the arrival of Steiner Studios in 2005. Supporting Steiner and other film and TV producers are a sizable crop of set designers, sound producers, special effect and prop creators and other related enterprises. **Scenic Corp.**, for example has built sets for Top Chef, while **Thoughts In Grey Circles** has composed music for commercials, documentaries and feature films. In addition, there are several photography studios, publishers and commercial printers that support the city's media and advertising industries such as **Duggal Visual Solutions** and **Sebastian Kim**. All together, these companies comprise 16% of all surveyed firms.



Brooklyn Navy Yard tenants also fall into characteristic clusters related to the good and services they produce. Some of these companies overlap with one of the industry clusters above but unlike the industry clusters where a company was attributed to only one industry, companies can fall into one or more characteristic clusters: artisanal, green and high-tech. 65% of surveyed tenants fit into one or more of these three clusters.

ARTISANAL

Artisanal is the largest cluster in the Navy Yard accounting for 52% of all surveyed tenants and range in size from one-person fine art studios to larger firms with 80 employees. These firms produce custom-made, highly designed products ranging from single paintings by **Colin Thomson** to museum installations by **SurroundArt** to custom stereo speakers by Devore Fidelity. Artisanal tenants overlap with the green and digital/high-tech cluster as well. For example, **Bien Hecho** produces custom-designed furniture from salvaged and reclaimed wood found around New York City and **SMIT**, a start-up company that began as part of Pratt Institute's Design Incubator for Sustainable Innovation, is creating a solar energy product that looks and behaves like natural ivy on buildings. The set designers supporting the media and film industry and the custom furniture makers linked to the architecture and design industry are also considered artisanal.

GREEN

The 19% of surveyed tenants that fall in the Green category do so for a number of reasons: They produce a widely recognized green product such as **IceStone** which manufacturers countertops made from recycled glass; or they incorporate green principles into their service delivery, such as **Gilt Group's** commitment to use packaging that is made from 100% recycled paper and is 100% recyclable. Other tenants in the green category are **BNY Cogeneration Partners**, which recovers waste heat from its power generation to create additional electricity for Navy Yard tenants, and **Green Planet Labs** that provides environmental testing and certification services. The Navy Yard also maintains a directory of green tenants on its web site and in 2009 published the Green Business Directory.

HIGH-TECH

The emergence of high-tech firms in the Navy Yard is solidifying the Yard's role in Brooklyn's Tech Triangle (which also includes Downtown Brooklyn and DUMBO). 10% of surveyed firms fall into this category which includes graphic designers, mixed-media artists, e-commerce companies and testing labs, including **Shiel Medical Labratory**. Other digital/high-tech companies include **Crye Associates**, which manufacturers advanced, engineered protective gear for the Department of Defense and **Atair Aerospace**, a designer and manufacturer of high-precision parachutes.

FIGURE 16
Business Age & Tenancy

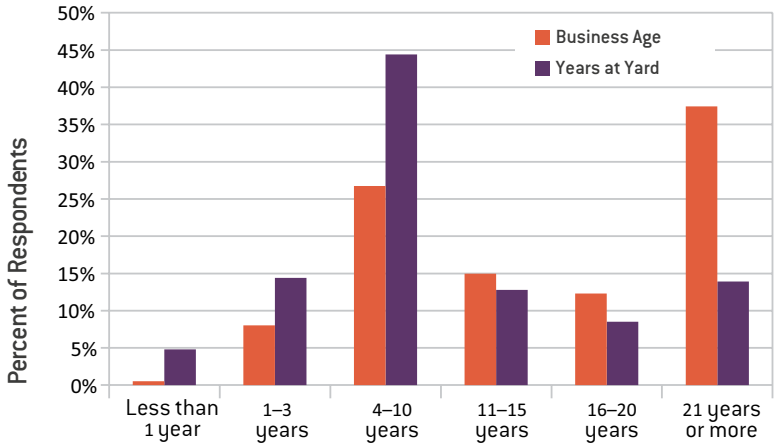
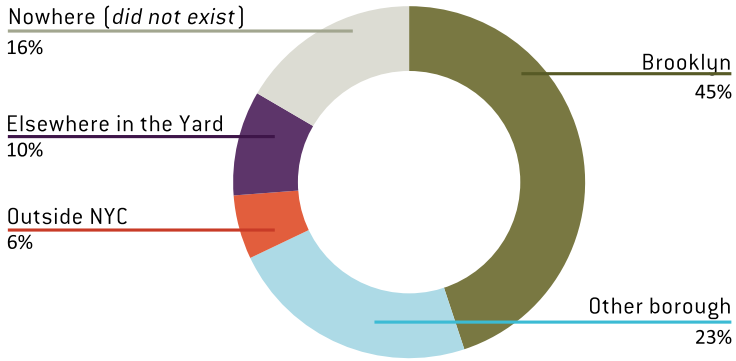


FIGURE 17
Previous Location of Navy Yard Firms



AGE OF FIRMS AND TENURE AT THE YARD

The survey demonstrated a diverse mix of young and established companies. The largest component (37%) of respondents has been in business for 21 years or more, followed by those in business for 4–10 years (27%). Sixty-four percent of respondents have been in the Yard for 10 years or less, with 45% alone located in the Yard for 4–10 years (*See Figure 16*). The Navy Yard is also attractive for start-up firms, with 16% of survey respondents locating in the Yard since business inception. Overall, artisanal manufacturing firms are the youngest firms and one of the newest subsectors locating in the Yard.

Locational Choice

PREVIOUS LOCATION

Most firms moved to the Navy Yard from Brooklyn or elsewhere in New York City (*See Figure 17*). They did so for a variety of reasons: 43% of respondents stated they left their previous location due to insufficient space, followed by rezoning/conversion (14%) and building management (13%). Twenty-nine percent listed "other" as a reason for leaving previous location, and specified issues ranging from security to personal reasons (e.g., worked from home and wanted separate space). Separately, 48% of respondents with a previous lease outside the Navy Yard stated it was for fewer than five years, which may have also led to relocating to the Navy Yard, where leases tend to be for five years with an option to renew.

IMPACT OF BNY CHARACTERISTICS ON LOCATIONAL CHOICE

As a nonprofit developer and manager of a unique industrial property, BNYDC has been able to promote a number of features of tenancy at the Yard that contributed to respondents' decisions to locate there. The factors that tenants cited as important or critical in choosing the BNY affirm its unique role in New York City's industrial market (*See Figure 18*).

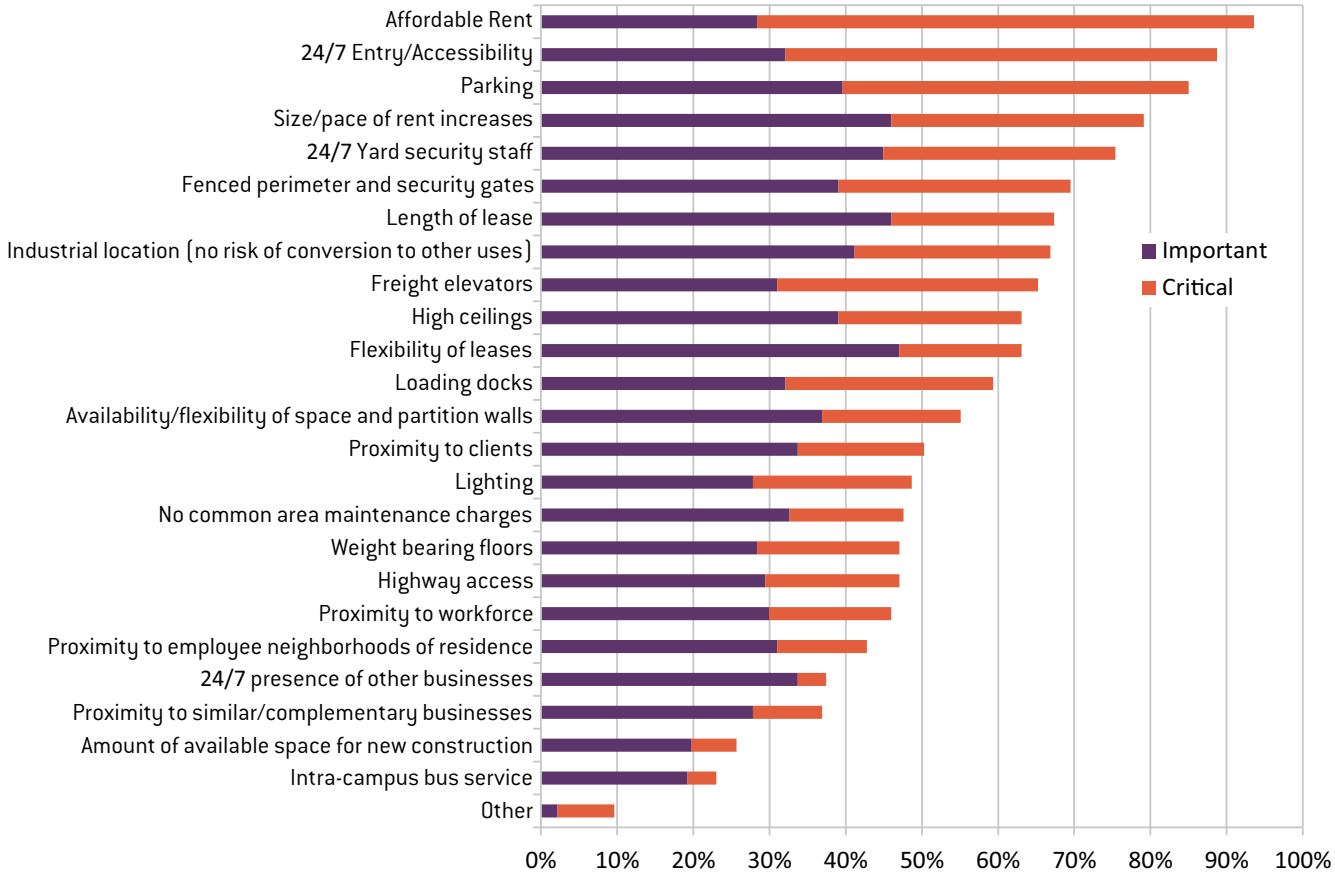


FIGURE 18
Percentage of Firms Ranking Locational Attributes of the BNY as Critical or Important

Nearly 100% of firms listed rent as a key factor, but that should not imply that the Yard rents are dramatically lower than market rate. However, at a rent that is roughly market rate, a tenant additionally receives 24/7 entry and staffed security, parking, and land-use stability—factors reflected in the next seven attributes that are rated important or critical by most tenants.

NAVY YARD SERVICES & AMENTITIES

One of the additional benefits of locating in the Navy Yard is access to a variety of services and amenities provided by the on-site management (*See Figure 19*). Plowed and clean roads ranked highest in terms of importance, with 80% of respondents marking it as critical or important, followed high-speed internet/fiber-optic connection and on-site management (70%). Whereas 70% and 64% of respondents are satisfied with the level of service for on-site management and road maintenance, only 27% are satisfied with the state of the Yard's high-speed internet and fiber-optic connections. Connectivity improvements are currently under way.

Mercedes Distribution Center, Inc.

Mercedes Distribution Center is a family-owned distribution company that was established in **1946** and has been located in the Navy Yard for **42** years. It operates from a **300,000** sq.-ft. facility and employs more than **100** people (mostly local residents) providing fulfillment, inventory management, and warehousing services for both high-volume and "boutique" retailers. Mercedes Distribution Center's clients have changed over the years; initially it supported governmental clients before focusing on publishing distribution. Starting in the mid-**1990**s, the company evolved once again and positioned itself to capitalize on the growing e-commerce industry. Today, Mercedes works with e-commerce companies on packaging, branding, and shipping techniques, specializing in assisting flash-sale sites (also called "deal of the day" sites) in which online retailers market discounted products or services to customers who have signed on as members. Gilt Groupe, one of the leading flash-sale companies, is a Mercedes customer and also a BNY tenant.

"Mercedes Distribution Center, Inc." 2011 © Elisabetta Di Stefano

Intra-Yard Interactions

Operating within a campus setting under single management offers Navy Yard tenants many opportunities to interact with one another. In addition to the tenant/subtenant activity described above, 61% of respondents stated they buy, sell, or buy and sell products and services from other Navy Yard tenants. This intra-Yard commerce accounts for just over $9 million in economic transactions and ranges from office supplies to furniture fabrication to interior design services.

Although the majority of respondents (64%) do not share services with other Navy Yard businesses, a fair number of companies do share at least one service. Such sharing arrangements include equipment, waste collection, materials, staff, and even vehicles.

EMPLOYMENT

The Brooklyn Navy Yard is a major job generator, with approximately 5,800 employees working at the Yard. Many firms employ both full- and part-time employees, and many firms support additional employees stationed outside the Yard. This is especially true for the contractors and distributors that rely on employees who conduct most of their work in the field. However, these jobs are explicitly tied to the Navy Yard facilities. Furthermore, many firms reported they hire seasonally or on a project basis (those numbers are not included here). Overall, approximately 5,800 people are employed at the Navy Yard, with survey respondents alone reporting employing 3,239 employees (2,787 full time and 452 part time) and an additional 1,607 people outside the Yard.

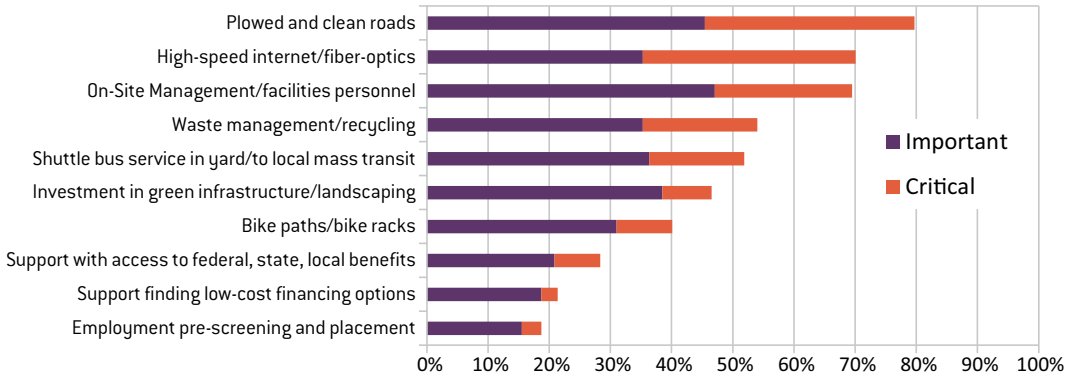


FIGURE 19
Percentage of Firms Ranking Service Attributes of the BNY as Critical or Important

FIRM SIZE

Navy Yard tenants are overwhelmingly small businesses; 60% of respondents employ fewer than five people and 75% of respondents employ fewer than 10. Five percent employ 100 or more people.

FIGURE 20
Employment by Surveyed Navy Yard Firms

TYPE OF FIRM	Full Time Employees		Part Time Employees	
	In Yard	Outside Yard	In Yard	Outside Yard
Artisanal/Niche Manufacturing	351	98	157	1
Traditional Manufacturing	707	346	22	2
Marine Manufacturing/Services	120	0	0	0
Power Generation	37	3	0	6
Entertainment	137	5	0	0
Contractor Office/Storage	110	126	21	7
Standard Office	418	97	135	2
Warehouse/Distribution	907	907	117	6
Totals	2,787	1,582	452	24

FIGURE 21
Number of Surveyed BNY Firms Who Plan to Hire in the Next 5 Years

TYPE OF FIRM	1-5 Staff	6-10 Staff	11-15 Staff	15+ Staff
Artisanal/Niche Manufacturing	40	4	0	3
Traditional Manufacturing	3	2	1	5
Marine Manufacturing/Services	0	0	0	1
Power Generation	0	0	0	0
Entertainment	3	0	0	1
Contractor Office/Storage	3	3	2	2
Standard Office	8	2	0	1
Warehouse/Distribution	20	1	0	4
Total Number of Firms	87	12	3	17

EMPLOYMENT GROWTH

The Navy Yard is poised to experience significant job growth in the next few years. In fact, 44% of respondents have hired employees in the past year and 64% expect to hire within the next five years, with estimates between 480 and at least 600 employees (*See Figure 21*). Hiring plans are relatively consistent across all segments of the Navy Yard industrial economy.

In addition, BNYDC developments already in design or under construction are projected to hire an additional 2,480 employees over the next five years.[2] Even with the conservative 480 employees from survey respondents, these projections equate to a 50% increase in employees over the current 5,800 people working at the Yard today.

WAGES AND BENEFITS

The Navy Yard's diverse tenant base, from company type, size, and age, lends itself to wide salary ranges and wage types. Survey respondents are paying employees in myriad ways. Fifty-nine percent pay at least some of their employees hourly, followed by 44% who have salaried staff and 21% who pay on a commission basis. Tenants were asked about two categories of employees: non-managers and managers.

This very basic division was an attempt to distinguish between production line workers and supervisory staff and is not meant to mask the complexity of job types from skilled contractors to artisans to accountants and bookkeepers to executives.

The largest annual pay range, regardless of wage type, is $30,001–$40,000; 47% of employees earn in this range (*See Figure 22*). This category is the highest for non-managers as well. For managers, however, the highest range is $100,001 or more, indicating that these jobs have career ladders for high-paying employment.

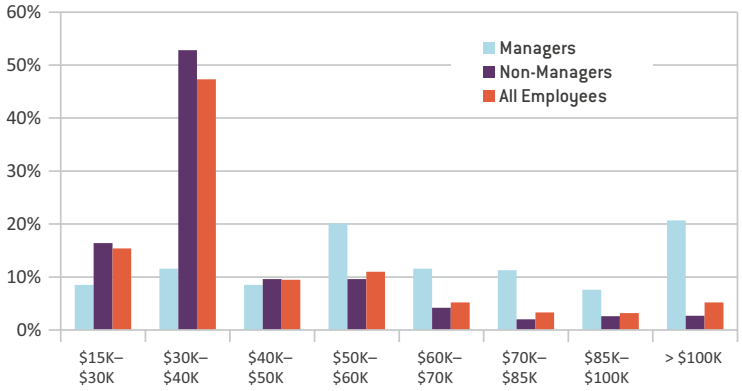


FIGURE 22
Percent of Employees by Annual Wage Category

The average annual wage in New York City for all industries, including jobs from entry level to executive level, is $53,569. Comparatively, managers at BNY tenant companies are paid fairly well; 71% are paid more than $50,000. Compared to the City's average annual wages in manufacturing ($49,842), 52% of Navy Yard managers and 28% of all employees are paid more. The retail sector is often pointed to as an alternative to entry-level jobs in the industrial sector: Compared to the annual average wage for retail ($29,509), 83.6% of non-managers in the Navy Yard are paid more.

BNY tenants also provide a range of fringe benefits. Forty-one percent of survey respondents offer employees at least one nonmonetary benefit (health insurance, 401k, etc.).

Forty percent of firms offer health insurance to full-time employees and 3% offer health insurance to part-time employees. Of those that offer employer-paid health insurance, 49% of firms pay 100% of the health insurance cost, requiring no contribution from employees. This is notably higher than the 36% of national private-sector establishments that offer at least one health plan that is 100% employer paid.[3] Fifty-five percent of surveyed firms have employees partially fund their health insurance, with employee contributions ranging from 10% to 80%.

Surveyed firms offer other types of benefits as well. Eighteen percent offer retirement benefits, 7% offer profit-sharing opportunities, and 5% offer some other type of benefit.

EMPLOYEE RESIDENCE

Navy Yard tenants have strong ties to the local community. Eighty percent of survey respondents have employees that live in Brooklyn, and 52% have employees living elsewhere in New York City. Tangentially, 18% of employees walk or bike to work and 44% take public transit. The remaining 38% drive to the Navy Yard.

"Justin Paul Inc." 2011 © Robert Clark

DUGGAL VISUAL SOLUTIONS

Duggal Visual Solutions has been a leader in the printing and imaging industries for over **50** years. The company is recognized as a minority-owned business that currently employs more than **230** people, with **47** of them working in the Brooklyn Navy Yard.

At its core, Duggal Visual Solutions is an entrepreneurial company—pushing innovation within the printing and computer digital industries while pursuing interests in sustainable development and technologies. For example, the Duggal Greenhouse is a multimillion-dollar endeavor currently under development within the Yard. The **40,000** sq.-ft. former metal foundry will become a "living laboratory" with multiple uses, including an R&D facility, assembly plant, and events hall.

Duggal is planning for its Greenhouse to be completely self-sustainable, with its roof space dedicated to generating its own heating and cooling systems. Duggal also designed and manufactured a wind-solar street lamp known as the LUMI SOLAIR. These street lamps powered by multimodes of alternative energy dot the road system throughout the Navy Yard. According to Duggal, BNYDC has created a supportive atmosphere that embraces business and sustainable design, fostering long-term tenant investment. Duggal has been operating in the Navy Yard since **2003**.

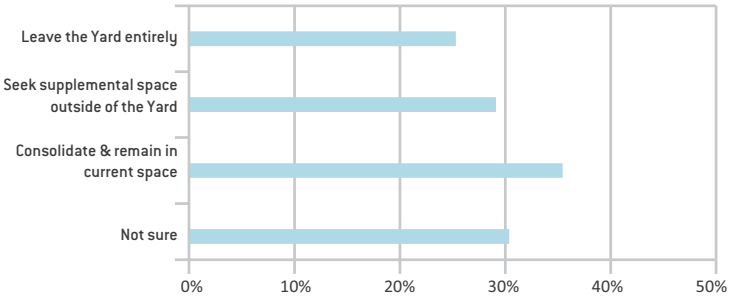
"Duggal" 2011 © Robert Clark

Perceived BNY Capacity to Meet Growth Needs

A significant number of survey respondents, 79, or 42%, stated they would require additional space in the next three to five years; 74 of these companies would look to expand within the Navy Yard. In aggregate, over 2 million sq. ft. of space would be required to accommodate survey respondents' needs, ranging from as little as an additional 20 sq. ft. to as much as 1 million sq. ft.

The Navy Yard's development plans do call for an increase in available space, and BNYDC's ability to build out that space over the next few years will be critical to current tenants' ability to remain in the Yard (*See Figure 23*).

FIGURE 23
Where Surveyed Firms Would Seek Expansion Space if Unavailable at BNY



Of the survey respondents who expect to need more space, 29% would seek supplemental space outside the Yard and 25% would leave the Yard entirely if sufficient space was not available at the Yard. (*Note that respondents had the option to check all that apply for this question, therefore categories are not exclusive and percentages exceed* 100%.)

By and large, however, Navy Yard tenants plan to remain. Only 5% expect to relocate in the next year, and 84% do not expect to relocate at all. When asked what factors would make them relocate outside of the Navy Yard, 27% said none.

Companies also showed very strong preferences to stay in the borough of Brooklyn. If companies relocated, 65% would opt to stay in Brooklyn, with the most likely neighborhoods listed as Sunset Park or Fort Greene/Clinton Hill (two neighborhoods relatively close to the Brooklyn Navy Yard) and 24% in one of the other boroughs. Eleven percent would look to relocate in New Jersey, and 8% would look in another state.

Navy Yard tenants seem satisfied as renters: Fifty-four percent would look to rent again if they relocated. In addition to lack of expansion space, a variety of reasons would incentivize companies to relocate outside the Yard, but the greatest reason (45%) would be high real estate costs. The few tenants who reported seeking closer proximity to companies' product markets, labor markets, or suppliers demonstrates the value of the Navy Yard's existing location.

Sales and Revenues

CUSTOMERS

Forty-four percent of respondents listed individual customers as their largest customer type (*See Figure 24*). The next largest category, other, accounted for 36% of respondents, with museums/galleries/art dealers, government, designers, studio/production houses, and advertising firms as the largest specified subcategories.

The majority (88%) of Navy Yard tenants are selling goods and services inside New York City, with these sales comprising an average 71% of these tenants' total sales. Furthermore, 21% of surveyed firms are selling exclusively within the five boroughs. Firms are selling outside the City as well: Forty-four percent are exporting to the surrounding region (New Jersey, Connecticut, and New York State), 44% nationally, and 25% internationally. Six firms are exclusively selling nationally and/or internationally without any local sales activity.

GMD Shipyard Corp.

GMD Shipyard is New York Harbor's largest dry-dock facility. GMD has been in operation at the Navy Yard since inception in **1987** and is the Navy Yard's largest maritime tenant. The company is an active and successful reminder of the Yard's maritime history. GMD follows in the footsteps of Seatrain Shipbuilding, which before closing in **1979** built four of the largest ships ever to be built at the Navy Yard, and Coastal Dry Dock, which in its heyday employed close to **1,000** people and worked on the repair and conversion of U.S. Naval vessels.

"GMD" 2011 © Elisabetta Di Stefano

GMD offers two **1,090 ft. × 150 ft**. graving docks, in addition to **1,100 ft**. of wet berth, and provides full-service operational capabilities. GMD maintains and operates numerous cranes ranging from **15** tons mobile to **200** tons gantry. The facility is outfitted with all the equipment and services necessary to produce and perform any type of maintenance or repair, including grit blasting, ultra high-pressure water blasting, painting, and steel fabrication. The company offers deep-water pier space and graving docks that are managed by marine fabrication and repair professionals and staffed by skilled craftsmen, technicians, and specialists. GMD tackles repair projects large and small, routine or specialized, on government or commercial vessels. It operates **24** hours per day and is one of the few ship-repair yards in the New York region that can respond to an emergency repair situation.

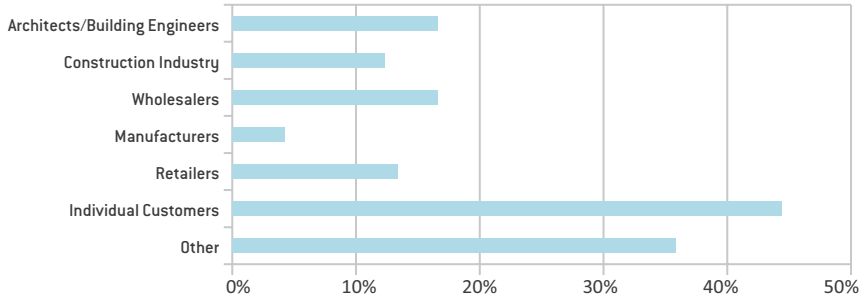


FIGURE 24
Primary Customers of Surveyed Firms

REVENUES

When looking at tenants' revenues from the time they moved to the Yard compared to revenues during the 12 months prior to their completing the survey, the number of firms reporting higher revenues, greater than $2.5 million, has nearly doubled. When comparing the two time periods (moving to the Yard compared to the past 12 months) on a company-by-company basis, tenants have generally maintained their revenue: Seventy-two percent reported similar revenues, 24% reported revenue growth, and only 4% reported revenue loss.

Despite the overwhelming stability and growth of these firms during their Navy Yard tenure, the recent recession beginning in 2008 did take its toll. Fifty-seven percent of firms reported some revenue loss, with an average loss of 30%. Twenty-five percent had layoffs, 21% reduced employee hours, and 5% reduced employee benefits. Twenty-five percent of firms stated the recession did not affect their businesses, and one firm stated that business has been better since 2008.

"Capsys" 2012 © BNYDC

The Brooklyn Navy Yard: Economic & Fiscal Impacts

As described elsewhere in this report, New York City has sustained a multiyear capital investment in the Brooklyn Navy Yard totaling roughly $250 million over about 15 years—capital that could be allocated to any number of other economic development activities. We argue that the City's investment in the Yard has led to increased economic activity that has visibly benefited the City's economy. In this section, we present the results of an economic analysis that determines the "net new" economic impact of the Brooklyn Navy Yard.

The economic analysis establishes a baseline in 1996, the year the City capital program began, and is based on a fundamental assumption that most of the growth in the Yard occurring after that year is a result of that City investment. The conditions prevailing in the Navy Yard in 1996 provide ample justification for this assumption: Prior to 1996, the Yard experienced prolonged disinvestment and was reaching a point resembling abandonment (*See Section* 4.2). It had been paying more than $1 million per year in rent, such that there was a net outflow of funds to the City. The Yard nevertheless managed to find about $1 million each year for capital investment, but this was nowhere near enough to stem the tide of degradation across its facilities. As Figure 25 reflects, rental revenue in the Navy Yard reached an inflection point in 1995, at which point growth stopped. From 1980 until 2000, rent revenue increase at an average of 5% per year, doubling over that 10-year period.

After 2000, when the impact of City investment began to be felt, rent revenue increased 10% per year, tripling in the 10-year period between 2000 and 2010.

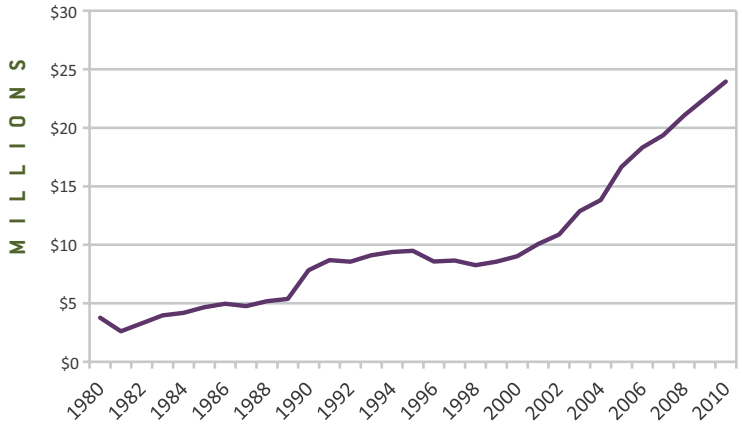


FIGURE 25
Brooklyn Navy Yard Rental Revenue, 1980–2010

The following additional general assumptions underline the framework used in the analysis:

BNYDC CAPITAL BUDGET: The capital budget of the BNY would have remained as constrained going forward as it was in 1996 without the City capital. BNYDC would have been unable to make significant investments in property upgrades, and existing tenants would have required flat rents and/or concessions enabling them to make property upgrades themselves.[1] Without additional revenue, BNYDC would have been unable to make capital expenditures for improvements in the Yard.

FIRM-LEVEL GROWTH: Firms present at the BNY in 1996 that later expanded would not have done so for the obvious reasons that the physical property was in decline and the BNY's longer-term viability was uncertain. The analysis assumes growth at the rate of inflation for these firms, netting it out of actual growth. The difference is attributed to City capital.

MARINE BUSINESSES: All marine businesses at the BNY would have left due to degradation of the piers and bulkheads.[2]

FINANCING: Lenders would not have provided financing for new construction on a static rent roll in jeopardy for lack of capital infusion (the first private lender to new construction in the Yard confirms this assumption).

NEW DEVELOPMENT: Upgrades to power systems, water mains, and roads necessary for developments such as Steiner Studios could not have been accomplished. No new development at the BNY would have occurred.

NEW ARRIVALS: New firms would not have come to the Yard for lack of usable space and due to declining property.

Generally speaking, the figures provided below that reflect the impact of City investment do so by subtracting the economic output of the Yard in 1996, adjusted for inflation (including firm-level output derived from the survey, annual capital expenditures, etc.), from its output in subsequent years.

In addition, the analysis takes great care to ensure that impacts of City capital reflect economic activity that would not have taken place without those public dollars. In assessing the benefit of City expenditure at the Navy Yard relative to other investments, public officials must consider whether the resulting activities might have taken place somewhere else in New York City or would have been lost to the City entirely—that is, whether the economic output at the Yard is "net new" to the City. Appendix 9.1 describes the methods taken to isolate net new impacts.

6.1. Economic Impact Analysis

The tables below separate the economic impact into two types, ongoing impacts and one-time construction-related impacts. The input-output model underlying RIMS II analysis is a static equilibrium model, meaning that it does not capture dynamic changes year over year. It presents a snapshot of the economic impacts of a change in economic activity in a given year.

The difference between the two types of effects is important: Ongoing impacts may be presumed to continue year after year as the firms represented continue to operate and generate economic activity; construction-related impacts would cease if new development and rehabilitation of BNY buildings stopped.

FIGURE 26
Economic Impact of the Brooklyn Navy Yard on the New York City Economy, 2011

IMPACTS	Economic Output	Jobs (direct & indirect)	Earnings (direct & indirect)	Induced Earnings	Induced Jobs
Ongoing Impacts	$1,934,000,000	10,350	$392,000,000	$1,960,000,000	15,479
Construction-Related Impacts	$100,500,000	454	$21,425,000	$29,800,000	611

FIGURE 27
Economic Impact of City Capital Investment in the Brooklyn Navy Yard, 2011

IMPACTS	Economic Output	Jobs (direct & indirect)	Earnings (direct & indirect)	Induced Earnings	Induced Jobs
Ongoing Impacts	$956,390,064	6,839	$210,929,534	$901,854,715	8,498
Construction-Related Impacts	$9,980,845	45	$,2127,917	$2,961,210	66

Figure 26 illustrates the magnitude of the Brooklyn Navy Yard as an economic engine. Its economic output, that is, its "gross domestic product" for New York City, is nearly $2 billion. It is responsible for 10,350 direct and indirect jobs and $390 million in earnings. That economic activity in turn induces another $2 billion in earnings in the local economy and another 15,500 jobs.

Figure 27 nets out economic activities under way before New York City elected to launch its program of capital investment. In other words, following the assumptions described above, City investment resulted in the economic benefits quantified in Figure 27.

In general, roughly 75% of the Yard's impact on the City economy is attributable to City capital investment. For purposes of better understanding the public policy impact of the City's capital program at the Navy Yard, Figure 28 captures the impact on the New York City economy per dollar spent. In terms of direct and indirect effects (See Appendix 9.1 for definitions) on the New York City economy and its supply chains, taking one-time and ongoing impacts together, each $1 of City investment drives, on average, more than $10 in economic output, $2 in direct earnings to employees, and nearly $7.50 in induced earnings as earnings of employees percolate through the local economy.

FIGURE 28
Impacts on the New York City Economy of City Capital Investment, 2011

	Per Dollar of City Capital			Per Million of City Capital	
IMPACTS	Economic Output	Earnings (direct & indirect)	Induced Earnings	Jobs (direct & indirect)	Induced Jobs
Average Annual Impacts* (Ongoing)	$7.29	$1.54	$7	43	62
Average Yearly Construction-Related Impacts (One-time)	$2.52	$0.47	$0.66	10	1.15

*The average annual impact excludes 1997–1999 to account for the lag time between construction expenditure and impact on the real estate market; the exclusion eliminates artificial inflation of the impact of City investment during years when City capital investment was relatively low and newly arriving firms boosted output.

Each $1 million of City capital creates 53 jobs and induces 63 additional jobs as a result of employee expenditures. Most of those jobs are permanent; that is, they will not depend upon further construction investment by BNYDC or capital investment by the City.

Figure 29 captures the impact of the Yard on the Brooklyn economy since 1996. By 2015, the Yard will exceed 30,000 direct, indirect, and induced jobs in the New York City economy; $2.3 billion in recurring annual output; and another $2.37 billion in additional earnings induced in the local economy. Appendix 9.1 includes year-by-year tables of economic impacts attributable to City government investment.

The steady collective growth of firms in the Yard contrasts with the peaks and valleys of major construction programs, shown in Figure 30. For example, the peak in employment and output in 2005 corresponds to the construction of Steiner Studios. The spike in construction at the Yard shown in 2012 is a function of a spike in City allocations for Yard projects—whether the full $84 million allocated in FY2012 will have been spent that year remains to be seen.

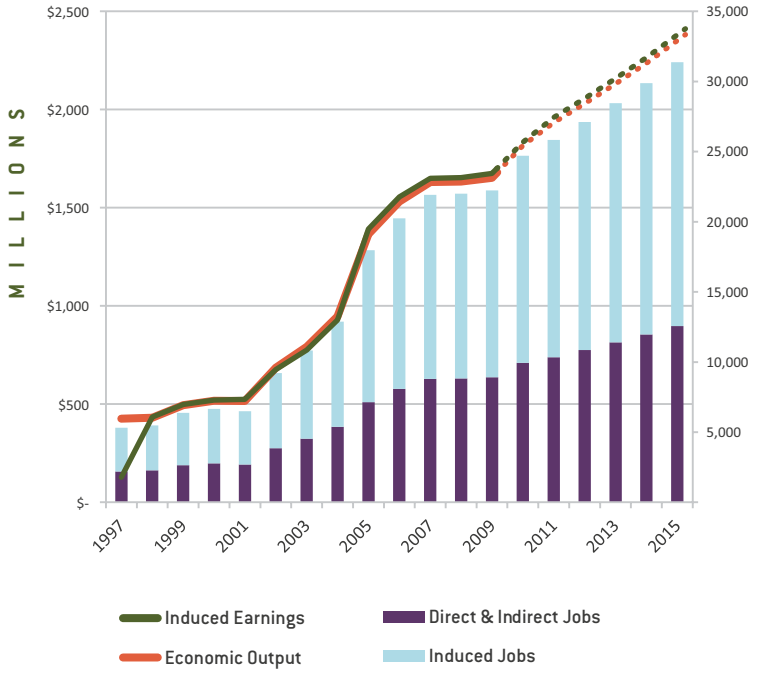


FIGURE 29
Annual (Ongoing) Impact of the Brooklyn Navy Yard, 1997–2015

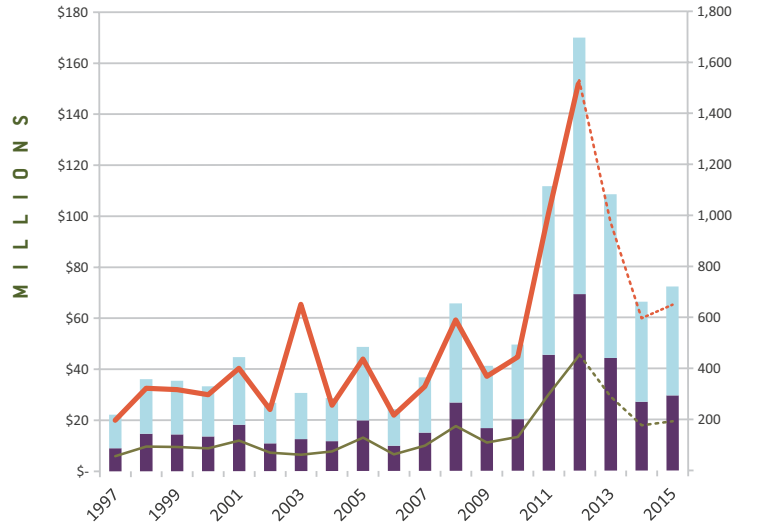
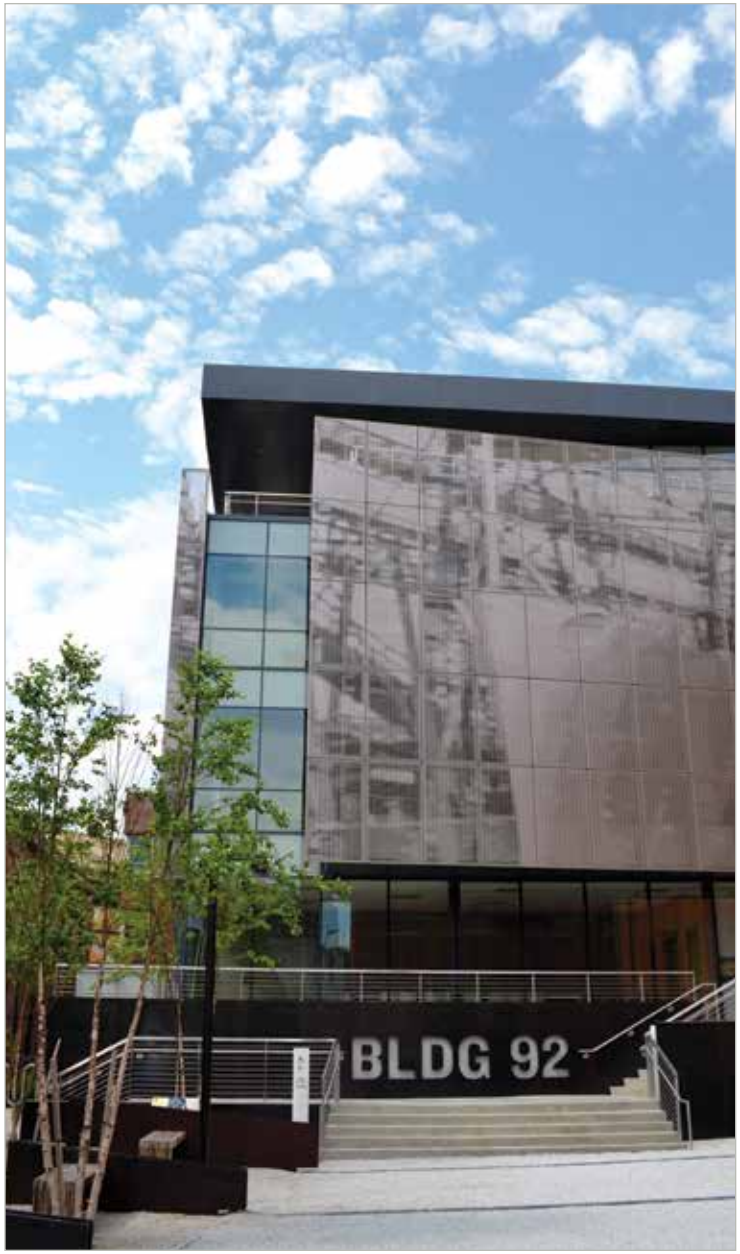


FIGURE 30
Construction-Related Impacts of the Brooklyn Navy Yard, 1997–2015

The chart further demonstrates the importance of separating one-time construction impacts from recurring impacts; it would be misleading to assume that the $150 million in economic output, $50 million in induced earnings, and 1,700 direct, indirect, and induced jobs projected for 2012 will prevail every year. However, it would be reasonable to assume that the impacts presented in Figure 30 for the same year will persist.

6.2. Fiscal Impact Analysis

The economic output of the Brooklyn Navy Yard has corresponding fiscal impacts on the New York City budget. The City of New York collects eight types of business and individual income taxes: real property tax, banking corporation tax, general corporation tax, unincorporated business tax, utility tax, commercial rent tax, personal income tax, and sales tax. The City publishes estimates of these taxes on a per-employee basis, including an estimate that excludes property tax. Accounting for employees of firms within the Navy Yard (because neither BNYDC nor its tenant businesses pay property tax) and applying the results of the RIMS II–based economic impact analysis above, the Navy Yard generated $139 million in taxes to New York City in 2011, $112.6 million of which represents taxes resulting from the City's injection of capital into the Navy Yard and the growth it enabled. In 2015, the annual net new tax benefit to the City is projected to rise to $134 million.



"Building 92" 2011 © Elisabetta Di Stefano

7

Replicating the BNY Model: Opportunities & Recommendations

This section evaluates the opportunities for replicating the Brooklyn Navy Yard model in other U.S. cities. It lays out the eight key components the Pratt Center team believes are essential to the model and provides a preliminary analysis of the extent to which those components are already present in three cities: Philadelphia, Detroit, and Chicago. This analysis is not to suggest that these or other cities should or should not seek to replicate the Brooklyn Navy Yard. Rather, it offers those who make policy in urban areas a guide to help them decide whether or not to pursue a similar initiative, strategies to consider as part of such an initiative, and ways to identify and address gaps in necessary resources.

7.1. Renewed Interest in Manufacturing

A broad national consensus has emerged supporting the revitalization of American manufacturing as critical to rebuilding our middle class. The Obama Administration has placed the strengthening of the manufacturing sector at the core of its economic policies and has articulated a number of ambitious goals, from doubling exports to creating a fuel-efficient automobile industry.

In 2010, after a consistent decline from 1997, manufacturing employment increased by 1% (*See Figure 31*).[1] It jumped another 2% in 2011, and, according to many economists, it is expected to continue to grow.[2] This modest growth is especially noteworthy as the U.S. economy continues to struggle: Total non-farm employment grew only 0.8% between 2009 and 2010 and 1.4% between 2010 and 2011.[3]

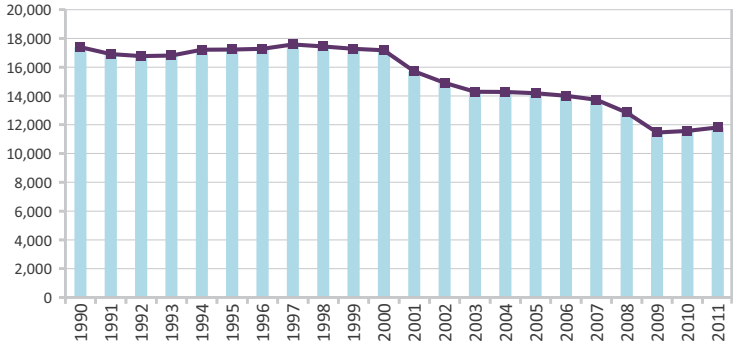


FIGURE 31
U.S. Manufacturing Employees, 1990–2011

Source: U.S. Bureau of Labor Statistics

However, recent federal policies have yet to address the specific needs of small urban manufacturers. As detailed in the Pratt Center for Community Development's and the Brookings Institution's 2011 study *The Federal Role in Supporting Urban Manufacturing*, manufacturers employing fewer than 20 people comprise almost 70% of all U.S. manufacturing firms.[4] These small firms are especially common in urban areas; they not only profit from their urban locations' transportation networks and large customer bases but also provide critical economic benefits to their local economies. Small urban manufacturers are often deeply integrated into the operations of their customers, collaborating with them to design customized products to meet customers' evolving needs. To achieve this level of sophistication and rapid response, they operate through interdependent, collaborative networks that allow them to quickly find the resources most appropriate to the immediate tasks.

Land-use stability is critical to the competitiveness of urban manufacturing. Because competition is strengthened by the presence of a network providing a diverse range of resources, the loss of some network businesses due to displacement can deprive the entire network of a critical resource and undermine its overall competitiveness. For example, the loss of a repair shop serving all the factories in a cluster can undermine the entire cluster.

Land-use policies are important to manufacturers in both strong- and weak-market cities. This is demonstrated in a variety of ways: the increasing conversion of industrial land to other uses (especially in strong-market cities), the widespread vacancy and blight that discourage investment (especially in weaker markets), the prevalence of contaminated urban land, and the mismatch between the specific needs of today's manufacturers and the available building stock.[5]

The Brooklyn Navy Yard is one model that cities across the country can explore as a means to combat these real estate challenges while at the same time supporting a creative, collaborative environment in which small companies can thrive.

7.2. Elements of the Brooklyn Navy Yard Model

In examining the feasibility of replicating or adapting the BNY model, the Pratt Center team solicited input from economic development professionals in several U.S. cities. To facilitate their review, the Pratt Center team identified eight key components of the BNY's success.

Our understanding of the core elements of the BNY model derives from an analysis of stakeholder interviews, Pratt's knowledge of New York City–wide industrial land uses and management practices, and the tenant survey results—specifically, the key attributes of the Brooklyn Navy Yard marked as critical or important to locational decisions by at least 60% of surveyed tenants (*See Section* 5.3). The following characteristics of the Yard emerged as fundamental to its successful functioning:

1. **MISSION-DRIVEN, ON-THE-GROUND, NONPROFIT MANAGEMENT**
2. **PUBLICLY OWNED PROPERTY**
3. **CONSISTENT CITY CAPITAL**
4. **ABILITY TO REINVEST ITS SURPLUS & LEVERAGE ITS RENT ROLLS**
5. **CAMPUS SETTING**
6. **INDUSTRIAL LAND USE AND PRIORITY**
7. **DIVERSE TENANT BASE**
8. **GREEN DEVELOPMENT**

These elements are described in detail below, and they form the basis for an examination of the potential to export the model to other cities.

1. Most important for its success, the Brooklyn Navy Yard is managed by the Brooklyn Navy Yard Development Corporation (BNYDC), a **mission-driven, on-the-ground, nonprofit organization** guided by a professional board of directors. Certainly there are many private landlords who are committed to their tenants' success and the long-term viability of their real estate as industrial assets. However, property management provided by an organization whose primary goal is to retain and grow industrial jobs protects not only the long-term industrial use of the property (and hence provides the security the manufacturing tenants need to reinvest and grow) but also enables the nonprofit manager to trade off higher rents for lower rents and returns on investment (at least initially) in order to meet the organization's public goals such as job creation and sustainable development. It also protects the capital investment made by the municipality to provide the infrastructure needed for a healthy industrial sector and can facilitate adaptive reuse of historic buildings as well as new green construction strategies.

A nonprofit organization, which must cover expenses but not generate profit, is able to offer more affordable rents with tolerable rent increases. Under nonprofit management, rents are driven by costs—not the market potential or speculative value of the land—and are therefore more likely to be at market (or even below market if cross-subsidized by higher-paying tenants or through government or philanthropic grants). A nonprofit might generate income beyond its costs, but that surplus must be invested back in pursuit of the job-creation mission as opposed to withdrawn as profit. To that end, it is unlikely that the rents would be above market and jeopardize the probability of industrial occupancy. (It is worth reiterating that although BNYDC is a nonprofit organization, its effective, entrepreneurial-minded management has generated a surplus that is reinvested, and the Yard operates with the goal of financial stability.)

In addition to the afforded flexibility in regard to setting rents, BNYDC's mission supports the organization's efforts to stay attuned and responsive to the broader needs of tenants in terms of infrastructure and services, and it enables staff to keep an eye on broader industrial trends that might affect tenancy. By contrast, a private landlord has little incentive to provide additional services, especially at no cost.

Finally, as a nonprofit organization, BNYDC can take calculated risks that it believes will yield a greater return in advancing its mission, such as rent concessions that allow a tenant to buy new equipment or otherwise invest in its space.

2. Another important component of the Yard's success is its origin as a **publicly owned property.** Because the Brooklyn Navy Yard was a federal military installation and is now an urban renewal area, the City was able to acquire land and buildings from the federal government at significantly reduced cost. As a result, start-up costs were less than they would have been in a purely market-driven transaction. However, although the fact that the land was originally publicly owned was significant in the Yard's ability to deliver a quicker return on investment, it is not a critical characteristic for other cities contemplating similar efforts, if the real estate market is weaker and the land acquisition costs are low.

As a publicly owned property, the Navy Yard is free of property taxes. Its public status also makes it easier for government to invest and for BNYDC to leverage private investment by providing long-term leases for its tenants. Although the City can invest in private property owned by a nonprofit, it likely would not have invested as deeply or consistently as it did with the publicly owned Navy Yard. Similarly, public ownership in addition to nonprofit management is a powerful combination that ensures long-term security for companies to invest. In the absence of public ownership, a nonprofit-owned and -managed property would provide a similar level of assurance for tenant companies.

3. The importance of **consistent city capital** the Navy Yard has received since 1996 cannot be overstated. As cited at the onset of this study, that financial contribution was a key catalyst for the Yard's evolution to the successful industrial park it is today. The capital influx enabled BNYDC to successfully plan and implement comprehensive infrastructure improvement and redevelopment plans. With New York City as a definitive partner, BNYDC has been able to leverage this public support in its own philanthropic fundraising efforts and has additionally freed up the Yard's surplus to be directed to expansion efforts and tenant services that would be more limited if basic infrastructure maintenance was not otherwise covered.

4. Equally important to the public funding stream is the Yard's **ability to reinvest its surplus and leverage its rent roll** for additional investments. Not only is the Yard's budget separate and apart from the NYC Department of Small Business Services, the City's contracting agency, but its contract permits the Yard to use rental income as collateral. This financial independence is what distinguishes BNYDC from being simply a landlord on behalf of the City and empowers it to be an active industrial developer. This is also the linchpin of the Yard's ultimate independence from its reliance on City capital funding and what will enable it to become self-sustaining. However, the Yard is nearing the end of its ability to use its rent rolls as collateral, unless several new, large tenants are secured. Its current expansion plans will bring new tenants, but as with any developer, limited rent rolls remain a factor.

5. The Brooklyn Navy Yard's **campus setting** has also proved to be a considerable asset to its successful operations. Management efficiencies are found through a single, albeit large, project area as opposed to multiple properties spread out over multiple geographies. The Navy Yard also has a walled perimeter, a vestige from the federal government, that supports the provision of 24/7 entry and 24/7 security—two critical features for industrial tenants that operate multiple shifts and/or house expensive equipment. Finally, the dedicated parking that the campus setting offers is a valuable amenity in an urban area.

6. The political will and land- use regulations that support the Yard's continued **industrial land use and priority** are critical. The frequent tension between residential and industrial uses in close proximity is mitigated by universal acceptance that the area is clearly industrial and universal acknowledgment that it will remain a home for industrial uses. Within the Yard's walls it is clear that the needs of the industrial tenants are the highest priority. They can make noise, load and unload trucks, and generally operate an industrial business free of complaints from neighbors and burdensome ticketing that they might otherwise encounter on City streets. The long-term commitment to industrial use also helps keeps rent affordable by deterring real estate speculation.

If a similar project were to be located in a mixed-use neighborhood, nonprofit management would be all the more critical to ensure a stable area that tenants would feel comfortable investing in over time without the fear that the area, or at least their property, would change and their rent rise.

The Navy Yard's industrial character is protected through a combination of zoning, policy-based industrial area designation, application of the board's mission, and, increasingly, acknowledgment of the Yard as a jobs generator. The general public broadly accepts the Yard's reputation as an industrial area. Several books and countless newspaper articles and student projects point to the Yard's legacy and to its future as an industrial zone, reinforcing public acceptance of its industrial character.

7. Although the focus of this study has largely been on the retention and growth of industrial uses, especially manufacturing, a key component of the Navy Yard's success is its diverse tenant base. Not only does this diversity cultivate a vibrant, creative environment, it stimulates intra-Yard commerce up and down the supply chain. A **diverse tenant base** does not undermine the essential industrial character of the Yard, discussed above, provided the nonindustrial uses do not exceed a tipping point. Maintaining a balance of uses over time is a challenge and rests on the staff's and board's commitment to the manufacturing mission. Ultimately, however, the diversity of tenants enables the Yard to rent out the totality of its portfolio (which includes some space no longer suited to manufacturing uses) and to offer rents at levels that make sense and that the market will bear by tenant type and/or space size.

Many cities, including New York City, have attempted to create mixed-use districts through flexible zoning that permits a greater range of uses. However, zoning alone will likely never yield a balanced mix over time, as higher-paying uses will ultimately push out the lower-paying industrial uses and tip that balance. There must be additional balancing mechanisms put in place, with strict enforcement—a condition that has proven elusive in New York. Ownership by a mission-driven nonprofit organization is a proxy that can ensure the balanced mix over time.

8. The last component, **green development**, is less critical today, but it is likely to prove a major driver for the Navy Yard's continued success in the future. BNYDC's commitment to sustainable development supports a resource-efficient management approach and one that reinforces the Yard's long-term viability. For example, constructing all new buildings to meet LEED certification will lower energy and water use and ultimately decrease the maintenance costs of these buildings. By leading by example and creating a culture that reinforces sustainable business practices, BNYDC also encourages tenants to manage their own companies with efficiency and long-term goals in mind. Equally important, a focus on green development garners public support for the Yard in particular, and for a new image of manufacturing in general, one that refutes the old misperceptions of manufacturing dominated by factories belching smoke and offers a more accurate picture of a modern, environmentally and fiscally healthy manufacturing enterprise.

Some of the strategies BNYDC is pursuing to encourage manufacturers to adopt sustainable strategies could potentially be adapted to situations in which not all the other elements described above are present. For example, BNYDC is working with Yard tenants to aggregate recyclable waste materials and bid them collectively to achieve greater cost-effectiveness. Cities could fund local organizations to undertake similar aggregation projects to encourage recycling, the use of clean distributed energy generation, and other environmentally responsible measures.

The Boston Marine Industrial Park

The Boston Marine Industrial Park (BMIP), created in **1977**, is a key component of Boston's industrial base. Formed from two former defense sites, the South Boston Naval Annex and the South Boston Army Base, the **191**-acre waterfront site is located in close proximity to downtown Boston, Logan Airport, Conley Cargo Terminal, and several interstate highways. The Economic Development and Industrial Corporation (EDIC), a quasipublic entity, owns and operates BMIP and has made significant infrastructure investments to support its **200** businesses. Located in a designated port area, EDIC is required to promote maritime-based activities inside the park and regulates land use to ensure compatible industrial uses with water-dependent activities.

"Boston Marine Industrial Park" August 20th, 2010 © Innovationdistrict.org

BNYDC is also exploring partnerships with nearby design schools to improve product design and packaging with the goal of greater environmental performance. Cities could support these type of design extension services as well even if some or all of the elements described above were not present.

Although its location on the water is a tremendous part of the Brooklyn Navy Yard's history, the waterfront location was not considered an essential component of the BNY's success by interviewees and, therefore, is not a key component for replication. There are other waterfront sites similar to the Brooklyn Navy Yard in operation today, namely the Boston Marine Industrial Park and the Philadelphia Navy Yard, both former defense properties converted to active industrial parks during roughly the same time period as the BNY. These projects' waterfront locations are vestiges of their naval histories; both Boston and Philadelphia have more active maritime uses than Brooklyn. Cities considering waterfront sites for industrial development should note the importance of supporting maritime activities. However, cities exploring the development of projects similar to the Brooklyn Navy Yard do not have to be limited to waterfront sites.

7.3 **A Look at Three Cities**

This analysis includes a preliminary look at three diverse locations where spatial and economic factors could support the growth of small urban manufacturing through application of aspects of the BNY model: Philadelphia, Chicago, and Detroit. Part of what comprises an environment that lends itself to replication of the BNY model is the city government's recognition that industry, particularly manufacturing, is an important component of the local or regional economy. Each of these three cities has either recently completed or is in the process of completing a comprehensive study of its own industrial base and is actively looking to identify strategies to grow industrial development.

Figure 32 summarizes which of the eight major elements of the BNY already exist, or could be created relatively easily and quickly, in each of the three cities, and where gaps might have to be addressed. It is important to note that the presence or absence of a check mark does not conclude that element's viability; missing elements will likely require more attention as part of the planning or development process.

FIGURE 32
Comparison of Opportunities to Replicate the Brooklyn Navy Yard

Replication Opportunity	Philadelphia	Chicago	Detroit
Mission-driven, non-profit organization	✓	✓	✓
Publicly-owned property			✓
Consistent city capital	✓	✓	
Ability to reinvest surplus and leverage rent roll	✓	✓	
Campus setting	✓		✓
Industrial land use and building character	✓	✓	✓
Diverse tenant base		✓	✓
Green development	✓		

Philadelphia

LOCAL SUPPORT FOR AN INDUSTRIAL PRESENCE IN PHILADELPHIA

In 2010, after an update of the city's zoning code and years of increasing pressure to convert industrial land for other uses, the Philadelphia Industrial Development Corporation (PIDC) completed the Industrial Land Use & Market Strategy for the City of Philadelphia, a comprehensive study of the city's industrial land supply, in an effort to expand and retain industry within the city limits.[6] One of the key findings was that Philadelphia has the opportunity to add close to 22,000 industrial jobs over the next 20 years. However, the city has a critical shortage of modern industrial sites and therefore must identify 2,400 acres of land suitable for industrial development.[7] Although in the study the PIDC identified some industrial zoned areas that might ultimately transition to other uses, the city proposed a number of areas to protect existing and encourage new industrial uses to meet this growing need.

A key pillar of the city's industrial development efforts is the Philadelphia Navy Yard (PNY). Similar to the Brooklyn Navy Yard, the PNY was sold to the city by the federal government and is currently under development as a major industrial park. Home to 115 industrial, research and development, and office tenants occupying 6 million sq. ft. of space, the PNY serves as an anchor in Philadelphia's industrial economy.

The official development plan, which is currently in the implementation phase, allows for future residential uses, which is a key difference between the PNY and the BNY. Similar to the BNY, however, the PNY is managed by a city affiliated nonprofit, PIDC, which is able to invest its profits back into the maintenance and further development of the park (See sidebar, "The Philadelphia Navy Yard," for more detail).

Another promising area identified in the land-use study is the Lower Schuylkill River District (the "Lower Schuylkill"), which is currently the focus of a comprehensive planning process. The Lower Schuylkill is one of Philadelphia's oldest industrial corridors. Comprising over 4,000 acres of land, the Lower Schuylkill is centrally located and adjacent to the Philadelphia Airport to the southwest, the Philadelphia Navy Yard to the southeast, University City (home to academic institutions including the University of Pennsylvania, Drexel University, and the University of the Sciences) to the north, and Center City to the northeast, and it is supported by air, freight rail, port, and highway infrastructure. (*See Figure 33*).

Despite its prime location, the area declined significantly in the past several decades and now contains 68% of the city's underutilized industrial land.[8] Its history as a hub for major oil refineries and heavy manufacturing uses has left a legacy of environmental contamination on large parcels, with limited interior road access.

FIGURE 33 Philadelphia's Lower Schuylkill Area

Sunoco currently owns a large portion of the area, spread out over distinct parcels, and operates an active refinery on the west side of the river. The company is in the process of selling its land and has recently received bids to maintain the active refinery.[9] While it remains unclear what will happen to the Sunoco property, the overall Lower Schuylkill is poised for major redevelopment.

INDUSTRIAL PROFILE

Philadelphia, once known as the "Workshop of the World," has always had an extremely diverse industrial economy. Largely due to Pennsylvania's rich coal resources, the growing presence of the railroads, and its deep water port, Philadelphia's industrial base was booming by the turn of the 20th century, with local firms producing a vast array of products, primarily for domestic sales. In fact, according to the 1900 census, 90% of the 300 recognized industrial activities at the time were taking place in Philadelphia.[10]

Although Philadelphia's industrial activity began to decline in the mid-20th century, as it did across the U.S., manufacturing today remains a critical economic driver in the city. Just over 7% of Philadelphia's civilian workforce is employed in manufacturing, and the sector remains especially diverse, with no one subsector comprising more than 1/5 of all firms (*See Figure 34*).[11, 12] Paper and printing is the largest sector (17% of all manufacturing firms), followed by food, beverage, and tobacco (15%).[13]

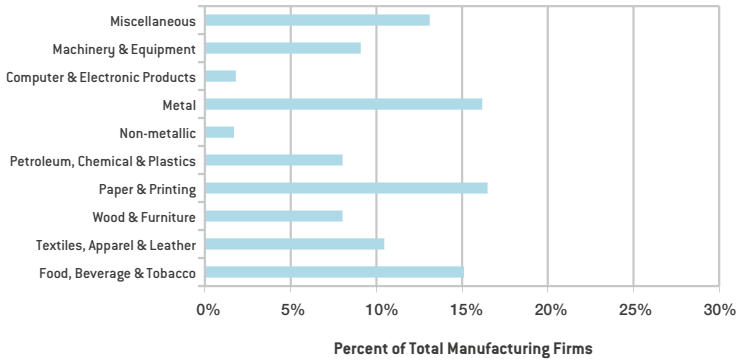


FIGURE 34
Philadelphia Manufacturing Firms by Subsector

Source: U.S. Economic Census, 2007

A number of well-known large manufacturing firms have located in Philadelphia, and 6% of firms employ 100 or more employees.[14] However, the majority of firms are small to mid-sized. Fifty-eight percent of firms employ fewer than 10 employees, and almost 1/3 of all firms employ between 10 and 49 employees.[15]

OPPORTUNITIES TO REPLICATE THE BNY MODEL

Philadelphia has at least two opportunities to replicate the Brooklyn Navy Yard model: on a large scale and on a small, building-by-building scale.

The Philadelphia Navy Yard

The Philadelphia Navy Yard (PNY), located on seven miles of waterfront on the Delaware and Schuylkill Rivers, was the country's first naval shipyard. The Philadelphia Industrial Development Corporation (PIDC) acquired the **1,200**-acre property from the federal government in **2000** and oversees its redevelopment. PIDC is a nonprofit citywide economic development corporation, with a **30**-member board of directors appointed by the mayor, that manages properties and leverages public and private investment to retain and expand Philadelphia's job base.

The master plan for the PNY completed in **2004** divides it into five zones: the Shipyard, the Historic Core (including the nationally registered Philadelphia Naval Shipyard Historic District), the Corporate Center (office space), a research park, and an area for future development. PNY has used public-private partnerships, underpinned by a commitment to sustainability, to foster adaptive reuse of the **233** historic structures as well as new construction to fulfill the master plan's goals. Its primary partner, Liberty Property Trust, a private industrial and office real estate investment trust, was granted an exclusive development option for a **70**-acre portion of the Navy Yard into Class A office space, as well as required to build specific amounts of square footage of other office and industrial space in the yard. Although the PNY is not currently zoned for residential use, the master plan includes the possibility of future residential development.

"Philadelphia Navy Yard"© Naval Historical Center

Marine activity remains prominent at the PNY; the Navy Ship Systems Engineering Station has over **1,800** employees. Other anchor tenants include the Aker Philadelphia Shipyard, the corporate headquarters for Urban Outfitters, and the Tasty Baking Company. The pharmaceutical industry has an expanding presence on the campus, including Iroko Pharmaceuticals and GlaxoSmithKline, which will be relocating its **1,300** employees to the PNY from its current Center City location. Once redevelopment of the PNY is complete, the goal is to employ **20,000** people.

Unlike the Brooklyn Navy Yard where all companies rent space, the PNY has both owner-occupied and rental tenants. PIDC's strategy has been to sell parcels to large tenants such as Urban Outfitters and for high-technology office space, while retaining ownership of and leasing out smaller sites to industrial tenants. Regardless of the land tenure, PIDC is responsible for the overall maintenance and development plan at the PNY. PIDC also manages the Philadelphia Authority for Industrial Development (PAID), which functions as a financing partner by issuing tax-exempt bonds and is responsible for financing many PNY projects. Similar to the Brooklyn Navy Yard, a key to the PNY's successful redevelopment is the provision that all of the net revenue from PNY is reinvested back into the site and does not need to compete for funding priority with other PIDC projects.

LARGE-SCALE DEVELOPMENT[16]

Given its large area, significant environmental contamination, and lack of interior roadways, the Lower Schuylkill will require government investment if it is to be redeveloped and attract private capital. Few major urban areas have such large vacant sites, and Philadelphia, with its current planning process, is right to think broadly about the area's potential. PIDC's successful experience with owning and managing large industrial properties at the Philadelphia Navy Yard opens the door to considering an annex or similar entity in a portion of the Lower Schuylkill.[17]

MISSION-DRIVEN, NONPROFIT MANAGEMENT ORGANIZATION

A nonprofit organization with a mission to retain and grow industrial jobs is well suited to develop industrial property in the Lower Schuylkill. PIDC, in particular, is a prime candidate for this role due to its industrial real estate expertise; it could consider building out a portion of the Lower Schuylkill as an annex to the Philadelphia Navy Yard.

PUBLICLY OWNED PROPERTY

The City currently owns very little land in the Lower Schuylkill area, but given its experience with the Philadelphia Navy Yard, if funds were available, it could look to purchase appropriate sites.

CITY CAPITAL INVESTMENT

The City of Philadelphia currently provides capital investments to the Philadelphia Navy Yard and could contribute funding to a Philadelphia Navy Yard annex. As an extension of the city, a PIDC project is also more likely to receive city capital dollars, similar to the ongoing stream of New York City capital dollars received by the Brooklyn Navy Yard. As it has done in the Philadelphia Navy Yard, Philadelphia could leverage private investment by exploring a public-private partnership to undertake the development in the Lower Schuylkill area.

ABILITY TO REINVEST SURPLUS AND LEVERAGE RENT ROLL

PIDC could explore the viability of using a portion of the PNY's profits to seed initial investments to a PNY Annex.[18] Ultimately, however, the Annex, either independent of the PNY or collectively, could continue to reinvest any surplus for infrastructure maintenance and further development of the Annex. PIDC's investment in the area could also "lead by example" for private investment on adjacent industrial properties in the Lower Schuylkill.

CAMPUS SETTING

Establishing a campus setting could be especially useful in the Lower Schuylkill, as the area has seen few new companies move to the area in the recent past. By creating a campus that unites multiple tenants under a single management entity and in proximity to each other to create a sense of critical mass, the area will be made attractive to companies uninterested in playing "the first one in" role but open to being part of a new, larger initiative; companies may be further encouraged by nonprofit management that might be more willing to take that risk than a private entity. While it may not be necessary to build a gated perimeter like the historic wall surrounding the Brooklyn Navy Yard, the "PNY Annex" could nonetheless establish a distinctive presence that signals a welcomed destination. As a significant portion of the Lower Schuylkill is currently considered blighted and/or brownfields, this campus setting would set it apart as an attractive place for employers, employees, and customers. With or without a physical perimeter, the annex could benefit from 24/7 access and security, adding additional value to tenants.

INDUSTRIAL CHARACTER

The Lower Schuylkill area is unquestionably industrial in character, and, according to the Industrial Land Use & Market Strategy, it is expected to remain primarily for industrial uses. Nonindustrial uses may be introduced, especially in the northern part closer to University City, but it is unlikely that conflicting residential uses will emerge.

When New York City and Philadelphia acquired the Brooklyn and Philadelphia Navy Yards, respectively, the yards came with a number of built structures, some of which were in states of disrepair. Similar building stock is not present in the Lower Schuylkill, and while "starting from scratch" may seem like a daunting undertaking, it presents an opportunity to create both purpose-built and flexible industrial space that distinctly meets the needs of today's modern companies. In addition, it opens the opportunities for public-private partnerships and alternative development scenarios, similar to the development of the supermarket/industrial site planned for the Brooklyn Navy Yard (See Section 4.3).

DIVERSE TENANT BASE

The Lower Schuylkill's heavy industrial history may in fact be a deterrent to the introduction of lighter, artisanal manufacturing uses that seek a more mixed-use area. As it is likely that new buildings would have to be constructed rather than existing ones retrofitted, there is less of an imperative to identify a mix of uses that can occupy a predetermined portfolio. As a result, at least in the short term, industrial development here may likely target larger users that are attracted to the area for its transportation infrastructure and large parcel size.

GREEN DEVELOPMENT

PIDC currently incorporates sustainable development principles into its developments and, if it were to pursue a PNY Annex in this area, it could continue to do so. Especially because the Lower Schuylkill has so many environmental impacts, a project that seeks to grow jobs while at the same time adding environmental value will more readily receive public support.

SMALL(ER) SCALE DEVELOPMENT

Philadelphia has far fewer multi-storied industrial buildings than New York City, as most have long been torn down or converted for residential use. In certain pockets however, these buildings do exist and can be repurposed to serve small, artisanal manufacturers—companies that often seek to locate in a mixed industrial-residential neighborhood and that are willing to trade one-story industrial space to be in close proximity to like-minded businesses with an "artsy" flair.

The Greenpoint Manufacturing & Design Center (GMDC), the nonprofit based in Brooklyn that was a pioneer in developing smaller industrial spaces to serve the needs of small, artisanal manufacturers, is seeking to expand beyond New York City into the Philadelphia market. (See Section 3.5 for more information on GMDC's role in New York City.) GMDC recently secured a long-term lease for the former Lomax Carpet warehouse, a vacant 80,000 sq.-ft. multi-storied industrial building in Philadelphia's North Kensington neighborhood. Deploying its successful model of redeveloping industrial properties in Brooklyn, GMDC is seeking to rehabilitate the Lomax building for 30 small to mid-sized artisanal manufacturers. The GMDC model shares many attributes with the Brooklyn Navy Yard. As a mission-driven organization, it, like BNYDC, is able to offer affordable rents, provide long-term security regarding the industrial nature of the property, and help cultivate a creative environment attractive to artisanal firms. However, as a single-building development, it cannot generate the economies of scale afforded by a campus-scale development.

The cost to redevelop industrial property, even a single building such as the Lomax Carpet warehouse, is not insignificant. As a private nonprofit without a built-in funding stream such as the one a Philadelphia Navy Yard annex could tap into, GMDC requires public subsidies to make the project a reality and to date still has a funding gap for this project. Nonetheless, it serves as a model to advance small-scale, nonprofit industrial development, and it is one Philadelphia could consider as part of its strategy to secure space for light manufacturing.

SUMMARY

Philadelphia is a good candidate city in which to replicate the Brooklyn Navy Yard model, one strategy to satisfy the expected demand for additional industrial land. The City's established support for the industrial sector combined with its experience with the Philadelphia Navy Yard are strong foundations for this model as well. However, Philadelphia is a relatively weak market city, and as such, building spec industrial development in the Lower Schuylkill area may be difficult, especially given the level of remediation required. Nonetheless, there is significant opportunity in the Lower Schuylkill that may be realized through a public-private partnership akin to the PNY/Liberty Property Trust relationship (See sidebar) but focused on industrial development. Similarly, Philadelphia could explore smaller-scale developments along the GMDC model to facilitate artisanal manufacturing uses in mixed-use areas.

FIGURE 35 Chicago's Industrial Corridors

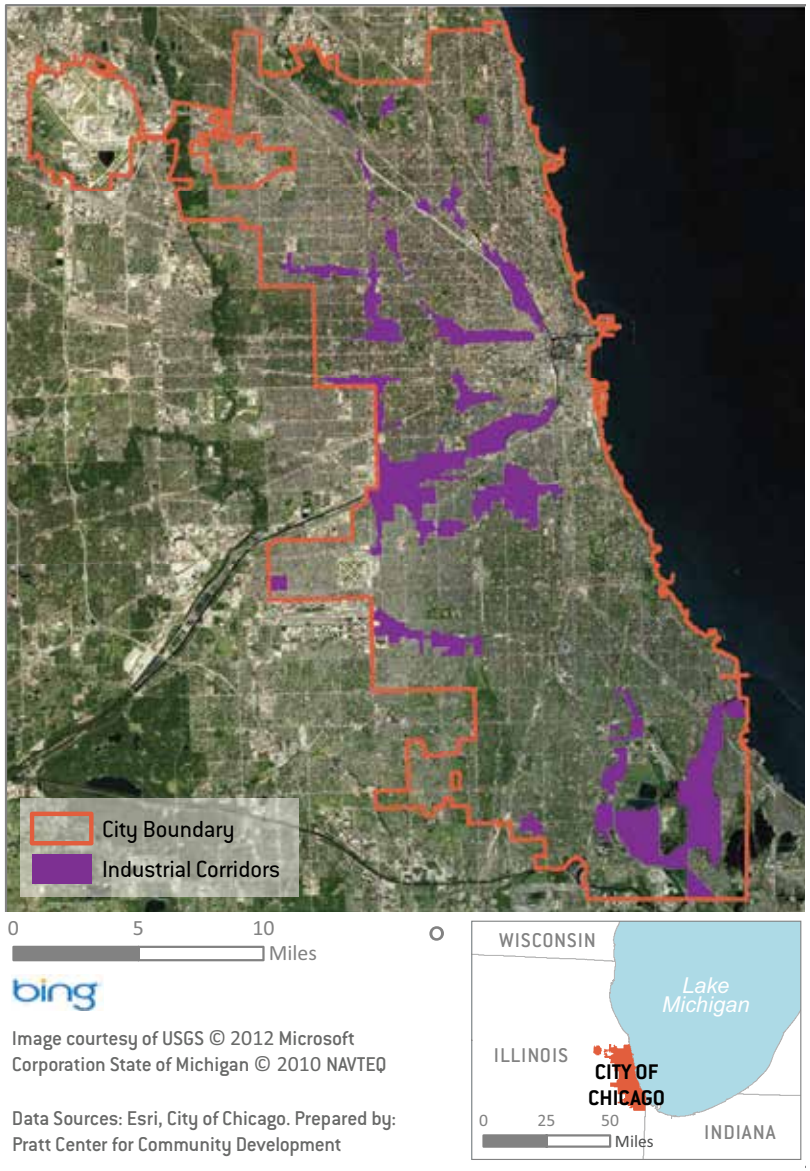


Image courtesy of USGS © 2012 Microsoft Corporation State of Michigan © 2010 NAVTEQ

Data Sources: Esri, City of Chicago. Prepared by: Pratt Center for Community Development

Chicago

LOCAL SUPPORT FOR AN INDUSTRIAL PRESENCE IN CHICAGO

Chicago is often recognized for its efforts to retain and grow its industrial base. In 1988, Chicago adopted the Planned Manufacturing District (PMD), a special zoning district designed to protect manufacturing uses, particularly from encroaching residential uses. Based on the success of the PMDs, Chicago then established a series of Industrial Corridors, larger geographies that include but are not wholly composed of PMD-zoned land. The Industrial Corridors are areas the city expects to remain industrial in character and that provide a citywide framework to guide future public investment and land-use regulation (*See Figure 35*). Chicago also maintains the Local Industrial Retention Initiative (LIRI) program, which, through contracts with local nonprofits, delivers business services and outreach to industrial companies.

Chicago's zoning powers lie at the alderman level; as such, there is often pressure to rezone areas for residential uses that do not comply with overarching city policy. In response, a major zoning reform took place in 2004 that required Planning Commission approval for any use changes of an M-zoned property in an Industrial Corridor. Although some zoning changes have advanced, the Commission has been less receptive to use changes for properties in the PMDs. Chicago is currently developing the Chicago Sustainable Industries Plan, which will outline strategies to alter the image of manufacturing in Chicago and grow its industrial base.

The first phase, released in 2011, detailed Chicago's current manufacturing base and set forth the process by which new strategies would be identified in Phase 2, to be released shortly. One goal for Phase 2 is to "assess the need for industrial land assemblage, and if warranted, develop priorities and an associated management structure/organization."[19]

INDUSTRIAL PROFILE

The completion of the Illinois-Michigan Canal and the arrival of the first railroad in the mid-1800s turned Chicago into a major trade center, particularly for grain and food products. The city also became a leader in the processing of lumber for furniture, buildings, and fencing, and Chicago's prosperity in the early 20th century was founded on an expansion of its industrial and marketing base. Assembly-line techniques were introduced in the meat-packing industry, and technological improvements benefitted the steel and farm machinery makers. The U.S. Steel South Works, based in Chicago, became one of the largest such operations in the world.

Chicago's manufacturing sector remains a significant component of the city's economy. Manufacturing alone employs 9.4% of the civilian workforce.[20] Compared to other large cities, Chicago has a considerable number of larger manufacturing firms: 31.4% of firms have 20 employees or more.[21] Chicago's manufacturing sector is fairly diverse (*See Figure 36*), but metal (both primary and fabricated) is the dominating sector, accounting for 22% of firms, followed by paper and printing (16%) and food, beverage, and tobacco (14%).[22]

OPPORTUNITIES TO REPLICATE THE BNY MODEL

Because the City of Chicago, as part of its Chicago Sustainable Industries Plan Phase 2, is currently identifying specific neighborhoods and/or sites that not only should remain industrial but also could support a nonprofit-managed industrial facility, we will not suggest a particular area. Instead, we evaluate the opportunities to apply the critical components of the BNY model to a generic industrial corridor in Chicago.

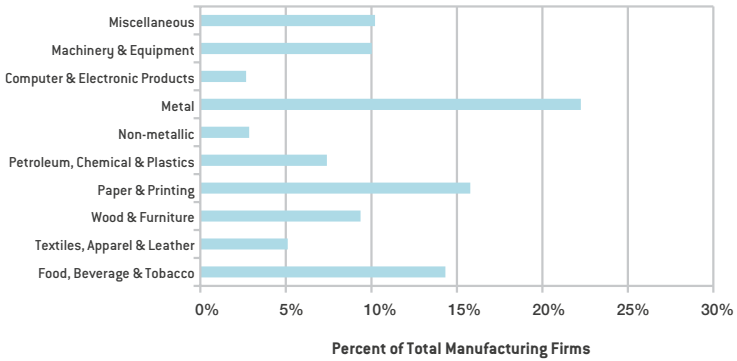


FIGURE 36
Chicago Manufacturing Firms by Subsector

Source: U.S. Economic Census, 2007

MISSION-DRIVEN, NONPROFIT MANAGEMENT ORGANIZATION

Currently, the City of Chicago does not have a citywide entity similar to the NYCEDC or the PIDC that could readily acquire property and manage it for an industrial purpose.

Chicago does have private nonprofits that might be interested in this type of project, but given the recommendation in the Chicago Sustainable Industries Plan Phase 1 to develop a management structure for land assemblages, there may be a willingness to create a quasi-governmental entity to play this role. The benefit of a public or quasi-public organization, rather than a private one, is the potential for greater coordination with the city on investment priorities and ongoing support on a long-term basis.

There is already a precedent in the area of public open space for establishing this type of organization in Chicago: NeighborSpace.[23] In 1996, the City of Chicago, the Chicago Park District, and the Forest Preserve District of Cook County created NeighborSpace in response to a growing recognition that Chicago needed not only more open space but also a nonprofit to manage existing community gardens and protect them from redevelopment. All three governmental agencies remain committed to the initiative and are represented on its board of directors.

NeighborSpace is able to buy public land for $1 and receives ongoing financial support through a 20-year intergovernmental funding agreement enabling city capital funding allocations. Chicago could create a nonprofit entity similar to NeighborSpace, with the mission to retain and grow industrial jobs and the authority to purchase and develop property for these means. As in the cases of the Brooklyn Navy Yard and NeighborSpace, Chicago's mayor could appoint the board of directors.

PUBLICLY OWNED PROPERTY

Currently, the City of Chicago does not own any industrial property and, as stated above, does not have a vehicle to purchase property. Such an entity could be created, but identifying an existing public site for a BNY-like project is unlikely.

CONSISTENT CITY CAPITAL

Chicago has several ways to financially support a BNY-like initiative: It could opt to establish a long-term funding agreement with a new nonprofit organization as it did with NeighborSpace; it could provide project-specific funding on a year-to-year basis; or it could make an arrangement in which the newly created nonprofit receives Tax Increment Financing (TIF) to support industrial development activities.[24]

ABILITY TO REINVEST SURPLUS AND LEVERAGE RENT ROLL

Because Chicago does not currently have a nonprofit entity to take on the owner/manager role, if one was to be formed it would likely benefit from great flexibility in determining its structure and terms. Chicago could consider creating its financial structure so that its budget was independent of the city as a whole, regardless of its political affiliations through its board of directors, and had license to reinvest any surplus for ongoing activities related to its mission. Furthermore, establishing the organization such that it could leverage its rent roll in private debt financing could facilitate new construction and/or major rehabilitation projects, either as spec or in partnership with a tenant company.

CAMPUS SETTING

Chicago's Industrial Corridors are areas composed primarily of privately owned buildings. Depending on the specific corridors identified in the Chicago Sustainable Industries Plan Phase 2 as areas designated for additional investment and/or priority for land assemblage by a new entity, opportunities for creating a campus setting may exist. A more likely option is to develop one or more buildings in close proximity to each other to generate some economies of scale in terms of service delivery and operations. However, the 24/7 gated security afforded to BNY tenants will be more difficult to achieve in this type of development.

INDUSTRIAL CHARACTER

As mentioned above, Chicago has been very successful in articulating and maintaining a long-term industrial retention policy. Despite spot zonings over the years, many of the industrial corridors and PMDs have stayed industrial in character.

When determining a particular industrial corridor for a BNY-like project, Chicago should consider an area that is universally recognized as an industrial zone with minimal to no likelihood of rezonings for other uses in the foreseeable future. Such decisions will not only protect the city's investment but also further reinforce the real estate stability that tenant companies require.

DIVERSE TENANT BASE

The project's tenant diversity will depend on the identified location and the available building stock. Given Chicago's relatively large average company size and the city's primary focus on larger firms, a project could be anchored by one or two larger companies and then offer smaller spaces for companies on either end of its supply chain (suppliers or customers). Nonetheless, Chicago could consider the success the BNY has had in renting out the totality of its real estate portfolio to a wide variety of tenants—who not only have the ability to buy and sell to each other, but also can afford different rent levels, helping to create a vibrant, creative atmosphere.

GREEN DEVELOPMENT

In addition to being a leader in industrial retention, Chicago has also been at the forefront of sustainable development. Although the Sustainable Industries Plan does not focus on the environmental performance of companies, but rather on the overarching sustainability (i.e., ability for companies to remain and thrive), green development principles could be integrated into a BNY-like project. This is especially likely if the City of Chicago was a primary sponsor, because the city's own municipal law requiring public construction to meet LEED Silver standards could apply.

SUMMARY

Chicago's strong political support for industrial retention and growth and its sound financial and policy tools make the BNY model an intriguing strategy to explore. The initial, and large, hurdle will be to create a nonprofit or quasi-public entity empowered to acquire industrial property. This entity would need a mission to foster industrial development with operating terms and conditions that would drive success. The existence and continued support for NeighborSpace will likely be helpful as this demonstrates precedent.

Although a specific neighborhood that could accommodate a campus setting is not identified in this study, Chicago's active evaluation for land assemblages could result in the identification of properties able to support that type of environment. Conversely, an area of scattered but proximate, buildings, if they were managed effectively and collectively, could approximate many of the elements of the BNY model—except, of course, the benefits of the campus setting.

Detroit

LOCAL SUPPORT FOR AN INDUSTRIAL PRESENCE IN DETROIT

In 2010, the City of Detroit launched Detroit Works, a long-term strategic planning effort to establish both short- and long-term goals for the city's revitalization. One of these goals is to develop an industrial strategy that draws on the city's infrastructure assets and provides employment opportunities for Detroit's lower-skilled workers.[25] While Detroit Works is still managed by the City of Detroit, the Detroit Economic Growth Corporation (DEGC) has become increasingly involved in moving the initiative forward.[26]

On behalf of the City of Detroit, DEGC runs the city's major industrial retention efforts including helping manufacturers diversify their customer bases beyond the automotive industry and planning for revitalized industrial sites. Several neighborhoods were analyzed as part of the Detroit Works initiative as areas to focus on for industrial retention. Specific strategies for these areas are still under development, but it is widely recognized that the city is actively identifying ways to strengthen its industrial base.

INDUSTRIAL PROFILE

Detroit has been synonymous with the automobile manufacturing sector and assembly-line production since the early 20th century and served as one of the country's major manufacturing centers. However, just as competition with Japanese auto manufacturers began to increase in the 1970s, Detroit's population dramatically decreased, with residents moving to the suburbs and beyond. Nonetheless, Detroit remains a manufacturing town. As of 2010, over 12% of Detroit residents were employed in the manufacturing sector, and the supply chains for the auto industry—primarily metal, machinery, and equipment—dominate its manufacturing base (*See Figure 37*).[27,28]

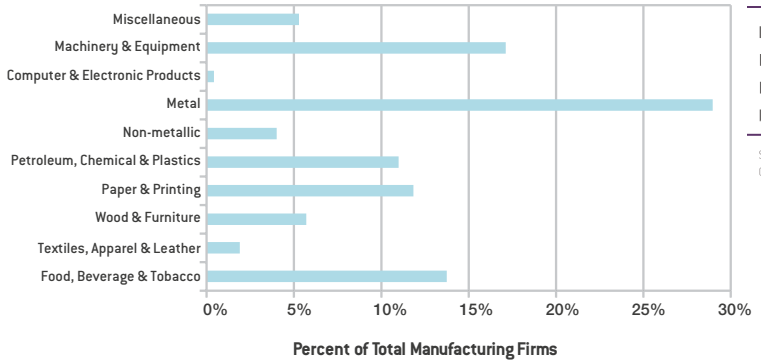
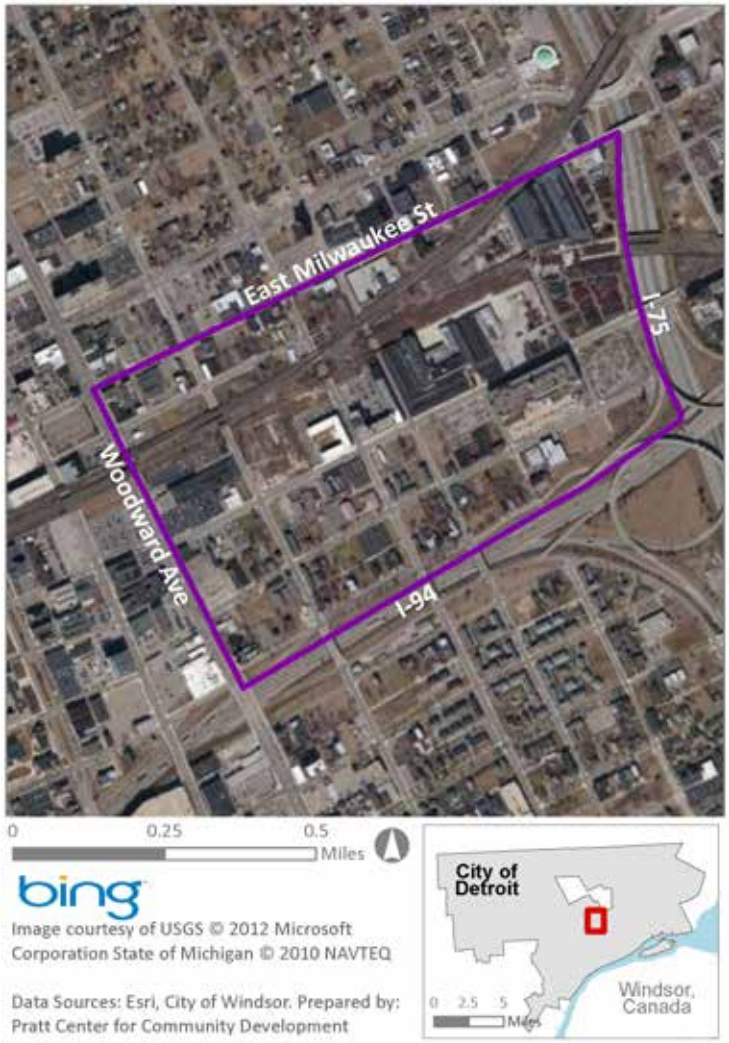


FIGURE 37
Detroit Manufacturing Firms by Subsector

Source: U.S. Economic Census, 2007

FIGURE Detroit's Milwaukee Junction Area



Detroit has several firms employing over 1,000 people, but a significant portion of its manufacturing firms are small; 47% of companies employ fewer than 10 people.[29] These smaller firms have struggled to find right-sized real estate in a city characterized by a legacy of massive industrial structures. There has been some movement in carving out large, multi-storied properties for leases to small artist and creative companies. One example, the Russell Industrial Center (RIC), is a privately owned, for-profit project in a former seven-building auto-supplier complex that has attracted a number of small creative firms. Demand for RIC and similar spaces remains high, and few other options are available.

OPPORTUNITIES TO REPLICATE THE BNY MODEL

As part of the Detroit Works initiative, the City of Detroit conducted a comprehensive land-use study of the Central District, which includes the Milwaukee Junction neighborhood. Milwaukee Junction is predominantly industrial but also home to a mix of commercial and small residential uses. For the purpose of identifying sites that could be considered for a BNY-like project, the Pratt Center team focused on the area generally bounded by Woodward Avenue to the west, E. Milwaukee Street to the north, I-75 to the east, and I-94 to the south (*See Figure 38*). This area has a number of vacant city-owned, manufacturing-zoned properties, as well as a number of privately owned industrial properties currently in tax foreclosure. The area benefits from highway and rail access and is close to the Detroit Institute of Arts, the College for Creative Studies, and the Russell Industrial Center, three entities supporting Detroit's creative sector.

MISSION-DRIVEN, NONPROFIT MANAGEMENT ORGANIZATION

DEGC could act as a nonprofit manager of a BNY-like project in Milwaukee Junction. Its in-house real estate development expertise and close working relationship with the city would help with any necessary land assemblages or turning over of city-owned property. As it has for other projects, DEGC could work with the Detroit Creative Corridor Center (DC3), a nonprofit organization that supports Detroit's creative economy through business acceleration and attraction services and programming tailored to the needs of creative businesses.[30] A DEGC/DC3 partnership could be a powerful combination for a project seeking to retain and grow Detroit's small manufacturers.

PUBLICLY OWNED PROPERTY

The City of Detroit currently owns a number of parcels in the Milwaukee Junction neighborhood already zoned for industrial use. In addition, there are several adjacent parcels in tax foreclosure that the city could assemble to create a BNY-like campus project.

CONSISTENT CITY CAPITAL

It is unlikely that the City of Detroit would be able to provide recurring investment into a BNY-like project. Detroit is currently financially strained, and despite the potential for a significant return on investment as the BNY has demonstrated, it is unlikely that Detroit would be able to provide recurring financial support for a similar project.

DEGC, on the other hand, has provided seed funding (either through its own budget or by facilitating federal grants) for other projects and could use its resources to support the project in its early stages.

The city may not be able to provide capital dollars; however, as mentioned earlier, there are a number of city-owned properties and properties in tax foreclosure in Milwaukee Junction, and the city's support could therefore be provided through land transfers.

ABILITY TO REINVEST SURPLUS AND LEVERAGE RENT ROLL

As a nonprofit organization, DEGC has the ability to reinvest its own surplus. However, it does not currently lease space to businesses, and therefore legal issues may need to be addressed before it is able to leverage rental income to facilitate acquisition, renovation, and expansion efforts.

CAMPUS SETTING

The Milwaukee Junction area comprises individual publicly and privately owned parcels of varying sizes. However, a number of adjacent city-owned properties could be combined, along with other parcels, to create a larger complex. As a starting point, the Fisher Body Plant 21 is a half-million-sq.-ft. multi-storied building now owned by the city. The building stands as a symbol of Detroit's decline and would require significant and costly renovations.

It has been the focus of considerable debate regarding its future; past efforts to rehabilitate it for a productive use were unsuccessful. The plant's rehabilitation, however, could ultimately create an anchor for a future mini-campus that could expand to the surrounding blocks and ultimately attract additional private investment to the area.

Also located in the area are several privately owned properties that are either vacant or in tax foreclosure, two of which are directly adjacent to Fisher Body Plant 21. Despite the large number of vacant and underutilized properties across Detroit, real estate speculation remains a major barrier to all types of development projects, including industrial. However, Milwaukee Junction remains predominantly under the development radar and as a result may find property owners willing to sell for a reasonable price.

INDUSTRIAL CHARACTER

The area is largely industrial in character, despite a few blocks with low-rise residential buildings, and the close proximity to I-75 and I-94 supports continued industrial operations. New Center Stamping, a large auto parts manufacturer and supplier, is located in the northeast corner of the area. There are no plans to rezone the area for nonindustrial uses; as mentioned earlier, it was identified as part of the Central District in Detroit's recent industrial land inventory.

DIVERSE TENANT BASE

A current gap in Detroit's industrial real estate market is small spaces available for lease for small to mid-sized firms. Renovating an existing building or constructing a new one in Milwaukee Junction opens the opportunity to develop a range of spaces to fit a variety of companies in terms of size and type. The area is located near to major art institutions and a growing mixed-use neighborhood west of Woodward Avenue, where DC3 and TechTown (a business incubator managed by Wayne State University) are located, and could serve as a pipeline of interested tenants seeking small spaces in a nurturing, creative environment. DC3's programmatic involvement could also help attract a mix of companies from varying industries in the aim of creating an environment similar to that of the BNY, in which companies buy and sell from one another and work together in a collaborative fashion.

GREEN DEVELOPMENT

Although there are no restrictions to DEGC/DC3 developing a project using sustainable development principles, neither organization currently requires its projects to follow a green framework. Nonetheless, as industrial developments often operate under tight margins, building with energy and water efficiency (as well as other green features) in mind can keep operating costs lower over the long term. As at the BNY, fostering green development can have an added public relations advantage, generating publicity and good will, and Detroit could consider integrating green development at the onset of the project to reap these benefits.

SUMMARY

Detroit is a great candidate for the BNY model as it has a burgeoning creative sector, numerous underutilized city-owned industrial properties, and strong political will for supporting industrial employment. Land assemblage is difficult to complete in Detroit, but the Milwaukee Junction neighborhood is relatively off the radar of current development efforts and therefore may be more affordable than other similar properties.

In addition, the current mix of publicly owned land and properties in tax foreclosure creates an environment in which a campus may be built in multiple phases. Finally, Milwaukee Junction's location, in close proximity to anchor institutions such as the RIC and local art schools, supports opportunities to develop a cluster of artisanal manufacturing developments.

7.4. **Additional Recommendations**

The following recommendations suggest ways cities, including New York City, as well as federal and state governments, can facilitate the replication of the Brooklyn Navy Yard model in New York City and other urban areas across the country.[31]

As discussed above, having a mission-driven nonprofit manager combined with public or nonprofit ownership or other measures to insulate leasing decisions from real estate speculation is absolutely critical to the success of a BNY-type initiative: Rent revenues must be reinvested in buildings and infrastructure, individual companies must have real estate stability to invest and keep competitive, and management must engage with the companies to facilitate business decisions that advance public objectives.

Unfortunately, the nonprofit sector does not today have the capacity to play the role of a real estate developer and manager in economic development as it does in other sectors, such as affordable housing. The Brooklyn Navy Yard is a notable exception. In the affordable housing field, an extensive infrastructure of organizations, tax credits, financing tools, land-use incentives, and human capital has developed to construct and manage affordable housing. Many of these organizations also want to engage in economic development but report that the tools available to support housing are not available to support economic development.

"Crane at the Brooklyn Navy Yard"

2011 © Elisabetta Di Stefano

Therefore, we recommend that governments at all levels look for ways to nurture and expand a nonprofit industrial development sector. Toward this end, governments should:

1. Establish an "Industrial Development Fund" for nonprofit acquisition and development of industrial space.

One of the biggest hurdles nonprofit developers face is obtaining the upfront capital needed to purchase privately or publicly owned sites. A fund should be established that nonprofits can access to use as equity when acquiring sites. Helping nonprofit developers at the acquisition stage facilitates their ability to offer more affordable rents to end users. Eligible uses for the fund proceeds should include covering expenses to undertake engineering, environmental, and other preliminary assessments that are required as part of the acquisition process. The fund should also include upfront funding needed to obtain temporary site-control so the nonprofit developer has time to undertake the assessments and arrange permanent financing. While it is envisioned that this fund will primarily provide grants, in some instances the grants could be replaced by permanent financing and recovered by the fund to be lent again. In addition to grants, a funding pool could include soft loans, loan guarantees, or other credit enhancements that could leverage additional private and philanthropic capital.

2. Consider net leasing publicly owned industrial sites, rather than selling them outright.

Many cities have acquired significant portfolios of industrial land and buildings, more often through tax foreclosure than by design. Lacking either a mandate or the capacity to manage such properties, most cities seek to dispose of them, even if this requires some investment in infrastructure and site remediation to make the sites "market-ready" and return them to the tax rolls by selling them to private developers. While this strategy might allow the city to recover its financial investment, the property could nevertheless be land-banked or used in ways that generate very few jobs, such as self-storage facilities.

An alternative approach would be to offer long-term leases that recover the city's investment through the lease and codify the city's industrial development goals.

The leasing strategy gives the city a degree of control over the ongoing operations of the building and the ability to enforce city policy that is well beyond that which is typically available through other disposition arrangements or under zoning and other regulations. Retaining ownership and providing a long-term lease creates the ability to implement default provisions if the developer is not managing the property effectively.

The leasing strategy can be combined with the nonprofit manger model to provide an even greater degree of control to advance city policy through the selection of tenants, capital improvements, linkages to workforce development and resident employment programs, and collaborative activities such as the use of renewable energy, recycling, and even waste-match–type programs.

3. Encourage partnerships between for-profit and nonprofit developers.

Cities that continue to dispose of industrial properties should require or give a preference to proposals that include partnerships with nonprofit organizations. Such partnerships should include providing the nonprofit partner equity in the project in exchange for economic development services and linkages to the surrounding community—giving the nonprofit partner the opportunity to develop experience and build equity toward future projects. In addition, industrial nonprofits should explore partnerships with local nonprofit affordable-housing developers that have property development and management experience; this experience can be leveraged for projects that seek to provide employment opportunities for affordable-housing residents.

4. Adapt traditional economic development tools such as tax credits, loan guarantees, or other credit enhancements and bonds to expand eligibility to include developers of industrial rental space.

Currently, many public incentives and programs that stimulate real estate development are not readily applicable to industrial developers, whether nonprofit or private. For example, Industrial Revenue Bonds (IRBs) are only available for owner-occupied buildings, inhibiting both private and nonprofit developers from renovating older single-tenant industrial buildings for reuse as multi-tenanted rental industrial buildings. In addition, to qualify for the New Market Tax Credit, a program designed to spur investments that will serve low-income communities, a project must meet certain income criteria for the population in the project's census tract. However, industrial projects often need to locate in areas with few residents (to comply with local zoning and/or to avoid undesirable local impacts) and therefore are not always able to meet the program's requirements, despite fulfilling the goal to provide economic opportunity for low-income residents.

5. Align zoning, land-use policies, and infrastructure investments with economic development strategies.

Greater coordination is needed among zoning, land-use policies, and infrastructure investments so that cities can create synergies that advance industrial development. These can include greater access to workforce and transportation, and avoiding conflicts between incompatible uses. Promoting clusters of similar companies will generate even greater economic development activity.

"Hard Hat Area" 2012 © Jenifer Becker

8

Conclusion

"Paymaster of the Navy Yard Sign" 2012 © Elisabetta Di Stefano

The sign on the Cumberland Avenue entrance to the Brooklyn Navy Yard reads, "We used to launch ships. Now we launch businesses."

Elected and economic development officials at all levels of government and in every jurisdiction across the country are searching for ways to stimulate economic growth and create jobs. While some may have an ideological preference for certain strategies, everyone wants a strategy that is proven successful on the ground and that can be replicated in cities across the country.

We think the Brooklyn Navy Yard is one such successful strategy. The Yard has created a stable environment for manufacturers and a variety of other types of firms to grow and create jobs in New York City. While not every element of the yard could, or should, be replicated in other urban areas, the BNY nonetheless offers a viable model for other cities to consider as a strategy to cultivate a strong, local industrial base. In New York City, the Yard's presence is a reminder of the evolving nature of manufacturing—a sector that is fundamentally linked to the City's most prominent and creative industries, that continues to provide employment opportunities and career ladders, and that should be nurtured through city, state and federal policies.

9

Appendix

9.1 Detailed Methodology and Additional Results for Economic Impact Analysis

The Regional Input-Output Modeling System (RIMS II), developed and maintained by the Bureau of Economic Analysis (BEA) at the U.S. Department of Economic Analysis, is a popular input-output model for estimating economic impacts. BEA designed the tool to estimate how much a one-time or sustained increase in economic activity in a particular region will be supplied by industries located in that region. The Pratt Center team used RIMS II input-output multipliers to estimate the impact of the economic activities within the Brooklyn Navy Yard on the New York City economy.

DIRECT AND INDIRECT EFFECTS

The RIMS II model separates the direct and indirect effects of economic phenomena from the induced effects. Direct effects are the immediate impacts on the firm or firms exposed directly to the economic change being studied. For example, a producer of sets for television and movies based in the Navy Yard receives a contract to build scenery for a new series and must hire 30 more employees. The additional hiring is a direct effect, as are the earnings of employees from that contract. Also to fulfill the contract, the set producer must purchase a variety of intermediate goods—such as design software, construction materials, equipment, trucks, and other inputs—from firms outside the Yard. Indirect effects are the impacts on the firms that provide these intermediate goods: They must hire additional staff to meet the new demand resulting from the scenery contract; they may also buy intermediate goods themselves. Because the RIMS II multipliers used for the Navy Yard analysis are specific to the five counties of New York City, they reflect the extent to which the firms indirectly affected lie within the five counties or outside it.

INDUCED EFFECTS

Induced effects refers to the impacts of an economic phenomenon on a region's economy as the dollars from direct and indirect effects are re-spent. To continue the example, when the additional employees of the set producer (and of the suppliers to the set producer) spend their income in the local economy buying or renting homes and purchasing local goods and services, those funds percolate through the economy. Impacts of this re-spending of income are the induced effects.

METHODS AND ASSUMPTIONS SPECIFIC TO THE BROOKLYN NAVY YARD

The majority of the inputs for the economic impact analysis come from primary data, that is, the in-depth survey implemented by the Pratt Center team. Still, a series of additional assumptions and calculations were necessary to derive a complete set of numbers to which to apply the RIMS II multipliers.

FIRM-LEVEL REVENUE

To determine firm-level revenue, also called final demand, as part of the survey firms were asked to indicate their revenues both in 2011 and in the year they came to the Yard. In light of the sensitivity of the question, firms could select one of six revenue ranges. Subsequent analyses used the midpoint of those ranges as the actual revenue. For each firm, the Pratt Center team interpolated a growth curve (and in a few cases a decline) from the year of arrival in the Yard up to 2011 in order to establish revenue for surveyed firms each year since 1996. For the approximately 20 firms that indicated revenues that exceeded $10 million annually, the Pratt Center team followed up individually with the financial officers of these firms to ascertain actual revenues for each year since they arrived in the Yard. These firms would have the greatest impact on the New York City economy relative to the other firms in the Yard, warranting greater precision.

Although the response rates to the survey were very high, the Pratt Center team had to estimate revenue figures for firms that did not respond as well as for firms present in the Yard in 1996 that are no longer present today. In general, the team assumed that the missing firms performed much like comparable surveyed firms. The team assigned NAICS codes to each firm based upon the descriptions of its primary activities and then normalized annual revenue by the leased square footage of the firm. Missing firms were assumed to produce the same average revenue per square foot as other firms within the same NAICS code in that year.

The team applied this method to missing firms from 2011 as well as to any missing firms from the historical rent rolls dating to 1996.

To estimate revenue for five of the largest 20–30 firms that did not report average annual revenue, the team used RIMS multipliers to extrapolate. However, final demand was assumed to correspond to the level of direct employment reported by these firms—a conservative approach, because RIMS II multipliers reflect both direct and indirect employment.

EXCEPTION FOR WHOLESALERS AND RETAILERS

For retailers and wholesalers, the Pratt Center team used wholesale and retail margins supplied by RIMS II rather than raw revenue numbers as their final demand. Retailers and wholesalers in the Yard trade a wide variety of goods. Even within a given firm, for example, an electronics distributor such as B&H Photo, the margin associated with a small camera may be quite different from that of a large TV. A "rough justice" approach to margins is inevitable. The Pratt Center team applied the following approach:

- B&H Photo is treated as a retailer. Its Yard operations mirror those of a wholesaler, but unlike the wholesale firms in the Yard, its business is direct-to-consumer sales. Retail margins in the electronics business range from 24%–32%.

- The team applied a 30% figure to B&H revenue, a number closer to the high end because B&H purchases in such volume that it probably captures part of the wholesale margin for those goods as well.

- For B&H specifically, the team further reduced the revenue applicable to the Yard by a proportion equal to that between Yard and non-Yard employees. The non-Yard employees reflect the retail sales and front-office staff members who work in Manhattan.

- A 15% wholesale margin was applied to wholesalers. Wholesale margins vary from 5% for some goods to 20% for others. Given the often niche nature of many Yard wholesalers (e.g., spices, jewelry, rare furniture and fixtures, etc.), a number of 15% was chosen.

One-Time (Construction-Related) Versus Recurring Economic Impacts

The Pratt Center team analysis separates the Navy Yard's impacts on New York City into two main types, one-time and recurring. Each year New York City, the Navy Yard, and the tenant firms spend millions of capital dollars on new systems and structures and the rehabilitation of old ones, interior modifications, roads, and other infrastructure. The Pratt Center team used the following sources for annual construction activity in the Navy Yard:

- Construction cost numbers provided by BNYDC for new buildings;

- Annual New York City capital expenditures in the Yard provided by BNYDC;

- Fit-out expenditures reported by the firms in the survey and extrapolated using the same method described above with respect to extrapolation of revenue to missing firms (assuming similar fit-out costs per square foot for firms that share the same NAICS code); fit-outs are assumed to occur in the year the firm moved to the Yard;

- Annual capital improvement and equipment expenditures reported by the very largest firms; and

- Capital costs supplied by the Brooklyn Navy Yard for planned infrastructure and new development considered reasonably certain to take place in the years 2012–2015.

Although new developments and fit-outs take place each year, their impact is "one-time," that is, a construction project takes place and ends; it does not have ongoing effects on the economy in subsequent years. New projects may occur, but the impacts on the economy of capital expenditures cannot be said to *recur*.

On the other hand, annual revenues are a snapshot of performance for firms that are ongoing. With some adjustment up or down based upon the broader economy and sector-specific changes, the economic impacts of firm output can be said to recur each year, and therefore the economic impacts of those firms on New York City are ongoing. For the years 2012–2015, the analysis conservatively assumes growth of economic output of 5%, relative to the 1996–2011 average of about 9%.

Establishing Impacts That Are "Net New" to New York City

From the New York City government's perspective, it is not sufficient to express the impact of its dollars on the growth of the Yard; if that growth would have happened elsewhere in Brooklyn or some other part of New York City, absent City investment in the Yard, it would represent no net benefit to the City. The economic impact analysis must address the question "Where would the tenants of the Brooklyn Navy Yard have located absent New York City's investment in Yard infrastructure?"

Assessing such a counterfactual is not straightforward. Until very recently there has been steady attrition in manufacturing across New York City as in the rest of the country. That trend has been more pronounced in New York City as asking rents have risen, a result of the conversion of industrial buildings to residential (taking space off the market) and the carving up of large-format industrial space for smaller, boutique manufacturing (500–5,000 sq. ft.) that commands higher rents per square foot. Demand for these smaller spaces for boutique firms is strong, and the Yard had a large number of them before the City investment. It would not be credible to suggest that these firms would have left New York City, therefore, the analysis will not consider their presence a net benefit of City investment.

It does, however, consider their growth since 1997 a net benefit. The Yard offered these firms stability and flexibility (including, in many cases, rent adjustments and accommodations that would have been unthinkable in a purely private profit-motivated landlord) that were not available elsewhere in New York City. During the height of the recession, the Yard contracted with some of these firms to perform work within the Yard itself that kept them solvent.

The Yard is home to 20–30 large firms (lessors of >10,000 sq. ft.), some of which selected the Yard for its unique attributes. The Pratt Center team consulted the senior leadership of these firms to discuss the reasons they choose to locate in the Navy Yard. They cited characteristics that were, in their view, simply unavailable elsewhere in New York City:

- On-site, professional management in whom they have great trust.
- Stability, limited or no risk that the Yard might be devoted to other uses, such as residential.
- Security, important particularly for those that employ proprietary technologies or house high-value equipment.
- Flexibility to grow, expand, or reduce space in response to changing business conditions.
- Proximity to Manhattan unavailable from other sites.

Additional evidence, albeit somewhat anecdotal, that the alternative to the Yard for larger firms is out of state comes from a large tenant that could not afford to renew its lease and chose to leave the Yard for New Jersey in early 2012.

The analysis considers "net new" to the City those large firms that:

- Cited the Yard's unique characteristics and lack of alternatives in New York City.
- Actively looked for property in New Jersey, Connecticut, or upstate before coming to the Yard or in the course of lease renewal negotiations.
- Lease space and conduct operations in areas outside New York City to which they could shift from the Yard.

These firms are large enough that the Yard's infrastructural decline, absent City money, would have dramatically reduced the appeal of the Yard and the pull of cheaper, out-of-state industrial space. It should be added that not all of the 20–30 large firms indicated they would have left the Yard absent City investment; some indicated that they would have had to find other space in New York City. For those firms, the analysis considers only their growth net new.

Two additional caveats are in order. Film production companies have come to the Yard for several reasons, including tax-related reasons tied to the motion picture industry that go well beyond the Yard. Likewise, the marine uses are able to use the Yard only because New York City has chosen to make investments that make marine industry possible, some of them in the Yard but some of them outside it—for example, dredging channels. The analysis considers both of these uses net new to New York City precisely because the City has made other investments to attract or keep these uses within its geographic boundaries.

Investments Leveraged by City Capital

The implications of the proposed baseline methodology are as follows. To the investment of City capital the following can be attributed:

- All capital expenditure 1990–1996 by the BNY itself (i.e., out of its own funds) in excess of the average annual capital budget.
- All tenant investment 1996–2011, including investment in new development.
- All firm-level revenue growth in excess of 1996 figures.
- All financing and grants leveraged by the BNY 1996–2011.
- All operating expenditure increases for BNYDC in excess of the 1990–1996 average.

Quantifying City Capital, New Development, and Future Impacts

City capital budgeted for the BNY has not been fully expended yet. The analysis considers only City capital expended to date and such budgeted expenditure for developments at a stage of predevelopment execution and financing to justify their consideration as more than speculative. For lack of any alternative, the analysis reflects the BNY's own projections for total cost and resulting jobs for these new developments. The analysis separates impacts of capital spent to date from projected impacts in the future.

Fiscal Impacts

Tax impacts per employee were taken from the City of New York Annual Report on Tax Expenditures, Fiscal Year 2011. The Pratt Center team applied a proportion of 68% to the direct and indirect employment estimated in the RIMS II analysis and applied the lower tax-revenue figure that excludes property tax. This approach is very conservative because it excludes the tax on real property in the Yard as well as taxes on real property that employees working in the Yard own or occupy. The higher tax figure (including property tax) is applied to all other employees, those in excess of the 68% proportion and all induced employment. Figure A1 below shows the fiscal impacts of the Navy Yard on New York City, both net new and all inclusive, since 1997.

Additional Results

The figures below present the ongoing and one-time impacts that are attributable to capital investment by the New York City government, in other words, net new.

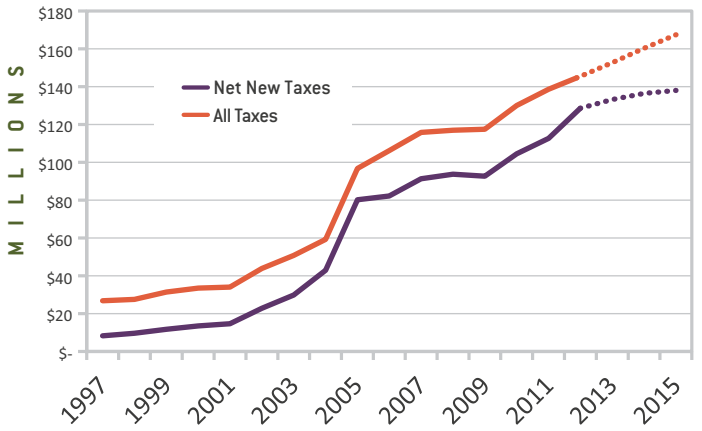


FIGURE A1
Fiscal Impacts of the Navy Yard on New York City, 1997–2015

FIGURE A2
Ongoing Economic Impacts—Net New to New York City, 1997–2015

Year	Economic Output	Earnings	Jobs	Value Added	Induced Earnings	Induced Jobs
1997	$94,116,433	$20,720,623	635	$58,857,396	$28,814,340	810
1998	$96,046,054	$21,572,628	700	$62,003,821	$88,645,856	861
1999	$150,751,369	$33,667,145	1,037	$92,173,735	$141,091,596	1,323
2000	$161,996,065	$35,717,166	1,114	$100,368,339	$151,576,077	1,404
2001	$52,244,784	$9,968,134	993	$89,474,262	$146,775,639	1,256
2002	$314,601,165	$71,728,381	2,110	$187,839,947	$290,128,686	2,785
2003	$413,714,607	$94,041,623	2,765	$244,885,960	$381,795,346	3,655
2004	$558,805,776	$125,192,883	3,555	$322,969,677	$524,491,726	4,797
2005	$963,044,490	$196,698,377	5,253	$574,135,145	$971,430,409	8,044
2006	$1,117,769,474	$230,231,096	6,140	$655,509,681	$1,122,412,746	9,291
2007	$1,201,359,749	$249,096,001	6,785	$715,120,332	$1,199,886,336	10,153
2008	$1,182,428,455	$245,119,690	6,732	$706,902,369	$1,180,069,374	10,060
2009	$1,203,590,942	$249,350,517	6,826	$715,021,230	$1,203,101,194	10,225
2010	$1,363,443,474	$283,638,280	7,831	$815,097,098	$1,359,571,025	11,648
2011	$1,473,420,380	$300,017,274	8,201	$871,608,476	$1,479,469,485	12,289
2012	$1,553,191,633	$315,539,787	8,630	$919,236,576	$1,563,068,370	12,933
2013	*$1,631,147,796*	*$331,342,138*	*9,062*	*$965,395,194*	*$1,641,689,755*	*13,581*
2014	*$1,712,958,440*	*$347,930,902*	*9,516*	*$1,013,832,995*	*$1,724,173,847*	*14,261*
2015	*$1,798,863,002*	*$365,349,393*	*9,993*	*$1,064,694,933*	*$1,810,787,486*	*14,975*

FIGURE A3
One-time Economic Impacts—Net New to New York City, 1997–2015

Year	Economic Output	Earnings	Jobs	Value Added	Induced Earnings	Induced Jobs
1997	$13,996,936	$2,984,148	63	$7,419,991	$4,152,741	92
1998	$20,315,794	$4,331,330	92	$10,769,715	$6,027,478	134
1999	$10,252	$2,186	0	$5,435	$3,042	0
2000	$3,242,831	$691,372	15	$1,719,074	$962,113	21
2001	$21,690,581	$4,624,434	98	$11,498,511	$6,435,363	143
2002	$7,461,300	$1,590,750	34	$3,955,350	$2,213,688	49
2003	$52,047,858	$1,776,048	65	$3,955,350	$2,471,549	94
2004	$93,957,728	$20,031,798	425	$49,808,438	$27,876,250	618
2005	$99,909,763	$21,300,773	452	$52,963,704	$29,642,155	657
2006	$-	$-	-	$-	$-	-
2007	$-	$-	-	$-	$-	-
2008	$17,233,115	$3,674,102	78	$9,135,540	$5,112,881	113
2009	$17,528,133	$3,737,000	79	$9,291,933	$5,200,409	115
2010	$10,493,193	$2,237,150	47	$5,562,603	$3,113,218	69
2011	$10,493,193	$2,237,150	47	$5,562,603	$3,113,218	69
2012	$61,064,227	$13,018,900	276	$32,371,087	$18,117,101	401
2013	*$73,428,667*	*$15,655,000*	*332*	*$38,925,667*	*$21,785,498*	*483*
2014	*$126,723,667*	*$27,017,500*	*573*	*$67,178,167*	*$37,597,553*	*833*
2015	*$81,719,000*	*$17,422,500*	*369*	*$43,320,500*	*$24,245,151*	*537*

9.2 **Decommissioned Navy Yards as Context**

Base Realignment and Closure (BRAC) is a process used by the federal government to dispose of unneeded military, naval, and air facilities throughout the United States. BRAC is authorized by the Defense Base and Closure Realignment Act, adopted in 1990. Since the first commission met in 1988, there have been five rounds of closures, with over 350 bases closed or realigned to lower costs and increase the efficiency of the Armed Forces.

The Secretary of Defense initiates BRAC by forwarding a list of proposed closures and realignments to a BRAC Commission, an independent panel of experts appointed by the President. The Commission evaluates the feasibility of closing these installations and submits final recommendations to the President. The most recent BRAC round was completed in 2005. The National Defense Authorization Act of 2005 modified the Defense Base and Closure Realignment Act to include eight criteria for closure, including military value and community and environmental impacts. Per the 2005 Commission's recommendations, Congress may authorize the next BRAC Commission in 2015.

Many of the disposed military installations have been redeveloped by Local Redevelopment Authorities (LRAs), through a participatory planning process. BRAC typically results in a loss of economic activity for affected municipalities. LRAs have achieved innovative ways to convert large military sites into civilian developments.

The feasibility of redeveloping defense infrastructure is determined by a number of factors including installation type, configuration, and location. Communities must also grapple with environmental issues endemic to defense sites.

Isolated forts in several states have been redeveloped as mixed-use communities. Naval shipyards located in former port cities represent prime waterfront property. With the exception of the Philadelphia Navy Yard, most facilities in large urban areas were or are in the process of being developed as mixed-use projects, for example, the former naval base in Charleston, South Carolina (where plans include housing, space for arts and culture, offices, and commercial uses), and in San Diego, California (where a naval station was redeveloped as a mixed-use development with residential, retail, business, cultural, educational, and recreational uses and a hotel).[1] In Washington State, former shipyards such as Naval Station Puget Sound have been converted to parklands using federal incentives. Air Force bases designed to handle very large aircraft have been successfully redeveloped as civilian and cargo airports in Southern California; Jacksonville, Florida; and Austin, Texas.

Chapter 1: Introduction

[1] What Works Collaborative, The Federal Role in Supporting Urban Manufacturing, April 2011

[2] Ibid, p. 15

Chapter 3: Manufacturing in New York City

[1] U.S. Economic Census, 2007

[2] Ibid

[3] Bureau of Labor Statistics, Quarterly Census of Employment & Wages, 2010

[4] U.S. Economic Census, 2007 NAICS Code 512110

[5] Pratt Center for Community Development, Green Job Creation Potential in NYC's Manufacturing Sector, January 2012

[6] U.S. Economic Census, 2007

[7] Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2010

[8] Ibid

[9] Pratt Center for Community Development, Protecting New York's Threatened Manufacturing Space, April 2009, p. 1

[10] Ibid

[11] NYCEDC, Mayor Bloomberg and Speaker Quinn Announce 22 New Initiatives to Help Small Businesses Stay and Grow in New York City (press release), June 7, 2011, *www.nycedc.com*

[12] GMDC is the oldest, largest, and best known of the City's nonprofit developers but other smaller entities, including the East Williamsburg Valley Industrial Development Corporation and the Queens Economic Development Corporation, have pursued industrial real estate initiatives as well.

Chapter 4: The Brooklyn Navy Yard: History & Management

[1] The Navy Yard's waterfront location was deemed not critical to the Pratt Center team's replication analysis.

[2] New York City Housing Authority, Development Data Book, 2011

[3] Quoted in The New York Observer, "The Secrets of Building 92," October 27, 2010

[4] Board of Estimate, City of New York, Urban Renewal Plan for the Brooklyn Navy Yard Urban Renewal Area, 1971, p. 9

[5] The numbers in Figure 6 are taken from BNY audited financial statements. The apparent increases and decreases of City capital dollars are a result of the particular capital projects planned and executed in a given year, when funds were spent, and when the funds appeared in the Navy Yard's ledgers. They should not be viewed as indication of inconsistent City support.

[6] The Director of the Pratt Center for Community Development is a member of BNYDC's board of directors.

[7] BNYDC has three to four tenants in eviction proceedings each month, on average.

[8] Although a comparison of the leasing policy from 2007 with that of 2011 reveals only small changes, average rents for new leases over that same period climbed steadily. In practice, rent at the Yard generally approximates a market average, but it does not reflect the fact that Yard tenants do not pay real estate taxes (worth perhaps $1–$2 per square foot per year), nor does it reflect the amenities in the Yard, unparalleled in the NYC industrial market.

[9] New York State Department of Labor, Labor and Unemployment Data, March 2012

[10] BNYDC does not have a set definition of green businesses for the Green Manufacturing Center, but the two anchor tenants are Crye Precision, a premier designer and manufacturer of body armor and apparel for the U.S. military that will develop a new product line made from recycled materials, and Macro Sea, which will operate a cutting-edge co-working facility for companies that use environmentally conscious processes and machinery.

[11] NYIRN is now officially a program of the Pratt Center for Community Development.

Chapter 5: The Brooklyn Navy Yard: Tenants

[1] For the most part, tenants with license agreements—as opposed to leases—are not included.

[2] These developments include the Admirals Row supermarket and industrial space, the Steiner Studios expansion, the Green Manufacturing Center, Building 77, Building 293, and three other company-specific expansion projects.

[3] U.S. Dept. of Health & Human Services, Medical Expenditure Panel Survey, 2010

Chapter 6: The Brooklyn Navy Yard: Economic & Fiscal Impacts

[1] Further evidence for this assumption comes from other City-owned property on the waterfront. While Bush Terminal and other properties in Sunset Park, Brooklyn, are not as ideally positioned with respect to Manhattan, they are comparable in terms of industrial protections, highway access, building type, physical conditions, and degradation. Absent City investment, rents have remained relatively flat at Bush Terminal, and new development is virtually nonexistent.

[2] The Yard's land acreage and several existing buildings would likely have been undermined without the marine investment.

Chapter 7: Replicating the BNY Model

[1] U.S. Bureau of Labor Statistics, Current Employment Statistics, 1990–2011

[2] Ibid

[3] Ibid

[4] Pratt Center for Community Development and the Brookings Institution, The Federal Role in Supporting Urban Manufacturing, 2011, p. 14

[5] Ibid, p. 20

[6] The Philadelphia Industrial Development Corporation was founded in 1958 as a nonprofit joint venture between the City of Philadelphia and the Greater Philadelphia Chamber of Commerce to plan and implement real estate and financial transactions that attract investment and jobs to the City of Philadelphia.

[7] Industrial Land Use & Market Strategy for the City of Philadelphia, 2010, p. 9

[8] Philadelphia Industrial Development Corporation

[9] Philadelphia Inquirer, "Report: At Least Four Bidders for Sunoco Refinery," April 2, 2012, *http://articles.philly.com/2012-04-02/business/31275723_1_oil-refinery-jet-fuel-production-delaware-city*

[10] Philip B. Scranton, "Workshop of the World—Philadelphia: Overview," *http://www.workshopoftheworld.com/overview/overview.html*

[11] U.S. Census Bureau, American Community Survey 2010, 1 Year Estimates

[12] U.S. Census Bureau, Economic Census 2007

[13] Ibid

[14] Ibid

[15] Ibid

Chapter 7: Replicating the BNY Model (Cont'd)

[16] While there may be additional areas for large scale industrial development in Philadelphia, this study looked at such opportunities primarily in the Lower Schuylkill River District.

[17] A recommendation to expand the Philadelphia Navy Yard was briefly mentioned in the Industrial Land Use & Market Strategy for the City of Philadelphia, 2010, p. 72

[18] Allocating a portion of the PNY's profits to another geographic area will likely give rise to legal issues that will have to be addressed.

[19] City of Chicago, Chicago Sustainable Industries, Phase 1: A Manufacturing Workplan for the 21st Century

[20] U.S. Census Bureau, American Community Survey, 2010 1 Year Estimates

[21] U.S. Census Bureau, Economic Census, 2007

[22] Ibid

[23] See *http://www.neighbor-space.org*

[24] TIF is a popular economic development tool in Chicago and has been successfully used in concert with Industrial Corridors. In a TIF district, the city establishes a baseline for property taxes and any increased tax dollars generated from the district are captured and used to support designated projects. If Chicago were to develop a nonprofit managed industrial project, TIF-generated funds could be used for seed money for an initial project and to finance future building development and infrastructure needs.

[25] See: *http:// www.detroitworksproject.com*

[26] DEGC is a nonprofit organization created in 1978 to provide technical, financial, and development assistance to the City of Detroit. It staffs several of the city's public development authorities.

[27] U.S. Census Bureau, American Community Survey, 2010, 1 Year Estimates.

[28] U.S. Census Bureau, Economic Census, 2007

[29] Ibid

[30] DC3's headquarters are located just east of the focus area.

[31] The recommendations contained in this report are based on the lessons learned from the study of the Brooklyn Navy Yard. Other recommendations for ways federal, state, and local governments could support manufacturing more generally are contained in The Federal Role in Supporting Urban Manufacturing, a study by the Pratt Center and Brookings Institution.

Appendix

[1] The Brooklyn Navy Yard and Boston Marine Industrial Park were developed for industrial purposes pre-BRAC

Photography Credits for Chapter Photographs

Executive Summary Photograph:
"Green Mfg. Building in Construction" 2012 © Elisabetta Di Stefano

1 "Untitled" © Robert Clark

2 "Brooklyn Navy Yard Building 292" Elisabetta Di Stefano © May 2012

3 "Scott Jordan" (BNY Tenants) 2010 © Robert Clark

4 "Brooklyn Navy Yard" © Library of Congress

5 "Anchor with Rope" 2012 © Elisabetta Di Stefano

6 "New York City" 2012 © Elisabetta Di Stefano

7 "Sculptor: Michelle Greene" 2011 © BNYDC

8 "Cumberland Gate Entrance with Signage " 2013 © Jenifer Becker

9 "Duggal Warehouse" 2012 © Jenifer Becker

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