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DVRPC

WHITE PAPER

# Rightsizing Police and Fire Facilities: Lessons Learned from Five Cities



Prepared for:  
City of Philadelphia



*The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy.*

*We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.*



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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## Executive Summary

Despite population growth between 2000 and 2015, Philadelphia continues to struggle with aging public facilities. Assets that were built decades ago require extensive maintenance in a city that cannot adequately cover the costs. The Philadelphia City Planning Commission (PCPC) asked the Delaware Valley Regional Planning Commission (DVRPC) to conduct interviews with other cities about their aging facilities and rightsizing efforts prior to the release of their Public Safety Facilities Master Plan. This report describes the lessons learned from interviews with city officials in five cities about their aging police and fire facilities. The comparison cities for this study are Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; New York, New York; and Washington, DC.

The report begins with an overview of the Philadelphia departments most involved in public safety facilities management: the Philadelphia Police Department, the Philadelphia Fire Department, and the Department of Public Property. Next, the report provides an overview of the comparison cities, including information about their size, population, and relevant agencies. Chapter 4 covers lessons learned from the interviews of comparison cities.

While the initial premise of this study was to find out how other cities have gone about closing public facilities, few of the comparison cities in this report reduced the number of public safety facilities they manage. Chicago closed one facility that was too small. The New York Police Department has a 10-year Facility Replacement Plan, but facilities are normally replaced, not closed entirely. Similarly, New York Fire Department said closing facilities is atypical—they have only relinquished five of their approximately 250 stations in the past 20 years; those five stations were all built in the 1870s or 1880s.

Perhaps the best model for Philadelphia to emulate is that of Washington, DC, which has shrunk its police building portfolio from approximately 36 to 28 buildings over the past decade. In this same timeframe, they were also able to build or renovate several facilities, such as a new operations center and evidence warehouse. One way Washington, DC has been able to accomplish this is by renovating other public facilities, such as vacant schools, into District Headquarters. Washington, DC has also been adept at using public-private partnerships, including land swaps with developers for developable rights. Baltimore has also been extremely successful at bringing in foundation funding and private funding from businesses, such as Under Armour, to renovate police facilities.

While closing aging public safety facilities might seem like it would result in budget savings, the largest percentage of a police and fire department's budget is made up of personnel expenses so closing facilities without a corresponding decrease in personnel would not result in major savings. A 2012 study by the Pennsylvania Intergovernmental Cooperation Authority (PICA) found that reallocating resources and discontinuing 69 positions at the Philadelphia Fire Department would result in a savings of \$11,657,000. If two stations were closed in combination with relocating two additional stations, the department would be able to discontinue 101 positions, resulting in an estimated savings of \$14,196,000.

Closing fire stations in particular could increase response time to incidents and medical emergencies. The 2012 PICA report documented that the Philadelphia Fire Department's response time to fire emergencies falls slightly short of the standard established by the National Fire Protection Association (NFPA), and response times to medical emergencies were significantly worse. Fewer stations might increase response time even more, as fire apparatus and ambulances have to travel even farther to reach incidents. Additionally, fewer

stations could potentially result in changes to the Fire Department's ISO rating, which might result in higher insurance premiums for homeowners and business owners.<sup>1</sup>

Urban police and fire departments face a plethora of challenges on a daily basis. Many struggle with cramped, outdated facilities in cities that do not have the capital funds to renovate them or replace them. Despite these challenges, many of the city employees we spoke with were willing to share their time and expertise to explain how they have found ways to maintain and upgrade facilities through a variety of methods, including prioritizing preventative maintenance, exploring public-private partnerships, co-locating facilities, and creating building prototypes, to name a few. Public safety facilities management is a complex and evolving field, which works best when multi-disciplinary teams align their efforts to find creative solutions to challenging problems. This report catalogs many public safety facility management strategies from comparison cities that Philadelphia should consider adopting. These ideas can help the city keep the public safe and enable police and firefighters to do the hard work that they do on a daily basis.

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<sup>1</sup> Through its Public Protection Classification program, ISO provides information about property/casualty insurance risk.

## CHAPTER 1:

# Introduction

In the 1960s and 1970s, the City of Philadelphia expanded its portfolio of recreation centers, libraries, police and fire facilities, and other municipal assets in anticipation of a projected population of 2.5 million by the turn of the century; by the year 2000, Philadelphia had instead lost over 550,000 residents. Despite population growth between 2000 and 2015, the city continues to face an aging public facilities crisis: assets that were built decades ago require extensive maintenance in a city that cannot adequately cover the costs. This crisis has profound impacts on the city's ability to budget and program capital improvement funds in strategic ways, and to deliver services to its population. Philadelphia is not the only city in the nation to face this issue. This report describes the lessons learned from interviews with city officials in five cities about their aging police and fire facilities. These lessons will be helpful background information for Philadelphia's forthcoming Public Safety Facilities Master Plan, which is scheduled to kick off in August 2016.

Other municipalities in the DVRPC region, particularly older, core cities, boroughs, and townships surrounding Philadelphia, are struggling with similar issues. There were 46 municipalities in the DVRPC region that lost population between 1950 and 2000; 20 communities were in New Jersey, while 26 were in Pennsylvania. The four core cities in the region—Philadelphia, Camden, Trenton, and Chester—lost the most population in absolute terms (554,055; 44,651; 42,606; 29,185 people, respectively). In terms of percentage change, six communities lost more than 40 percent of their population between 1950 and 2000: Audubon Park Borough (Camden County, New Jersey), West Conshohocken Borough (Montgomery County, Pennsylvania); Chester City (Delaware County, Pennsylvania), New Hanover Township (Burlington County, New Jersey), Pine Valley Borough (Camden County, Pennsylvania), and South Coatesville Borough (Chester County, Pennsylvania).

## Methodology

The Philadelphia City Planning Commission asked DVRPC to conduct interviews with other cities about their aging facilities and rightsizing efforts. DVRPC staff created a list of potential comparison cities. Sources used to create an initial universe of potential case study cities included The Brookings Institution's *Restoring Prosperity: The State Role in Revitalizing America's Older Industrial Cities*, Alan Mallach and Lavea Brachman's *Regenerating America's Legacy Cities*, DVRPC's *Rating the Region*, Pew Charitable Trusts' *Closing Public Schools in Philadelphia: Lessons from Six Urban Districts*, and Pew Charitable Trusts' *The Library in the City: Changing Demands and a Future Challenge*. Data—including 1950 population, 2010 population, percentage change in population, absolute change in population, land area, and population density—was gathered for the potential case study cities. Data about the number of public facilities was gathered for a smaller subset of potential case study cities. Initial research was conducted to see if any of the cities had rightsized their public facilities.

DVRPC and PCPC eventually decided to narrow the scope of the project to focus only on police and fire facilities. The final cities selected for interviews were Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; New York, New York; and Washington, DC. DVRPC also conducted interviews with the Philadelphia Police Department and Philadelphia Fire Department to understand their current facilities and future facility needs, as well as their internal policies related to maintenance and capital programming. Interviews were conducted between March 2016 and July 2016.



CHAPTER 2:

## Philadelphia Overview

The Philadelphia Police and Fire departments collectively occupy more than 100 buildings and facilities across the city, which is home to over 1.5 million residents spread over 134 square miles.

### Philadelphia Police Department (PPD)

#### Staff

The Philadelphia Police Department is one of the largest and oldest law enforcement agencies in the United States. The Department polices an area of approximately 140 square miles, which is home to approximately 1.5 million residents. There are 6,526 sworn officers and 834 civilian staff, totaling 7,360 personnel.<sup>2</sup> There are 11 ranks from entry-level police officer through police commissioner.

#### Facilities

Geographically, the Philadelphia Police Department is broken up into 21 districts, which are grouped into six divisions, which are divided into two Regional Operations Commands (overseen by chief inspectors). The districts range in size from 0.79 square miles (District 77) to 17 square miles (District 8).<sup>3</sup> There are 65 police



facilities throughout Philadelphia.<sup>4</sup> The facilities include: police stations and substations, barn/stables, laboratories, multi-use/office buildings, parking lots, police operations/units, the Public Safety Training Center, sheds, warehouses, and trailers. The oldest building in the police portfolio is from 1873, while the newest was built in 2013. The Philadelphia Police Department's Chief Inspector Michael Cochrane described the current police facilities as "aging, outdated, and obsolete," but hopes that facilities in the future will be "improved, livable, and functional."<sup>5</sup>

#### Budget

The Police Department is funded out of the city's General Fund, and has a Fiscal Year (FY) 2017 Proposed Budget of \$650,176,870, the majority of which is expected to go to personnel (\$629,443,111), with an additional \$13,270,952 towards Materials, Supplies, and Equipment, and an additional \$7,462,807 toward Purchase

**Figure 1:** Decade of Construction for Philadelphia Police Facilities

Source: Philadelphia City Planning Commission, 2016

<sup>2</sup> U.S. Department of Justice. "An Assessment of Deadly Force in the Philadelphia Police Department." Community Oriented Policing Service (COPS). March 23, 2015. <http://ric-zai-inc.com/ric.php?page=detail&id=COPS-W0753> (accessed March 16, 2016).

<sup>3</sup> Philadelphia Police Department. Districts and Units. 2016. <https://www.phillypolice.com/districts-units/index.html> (accessed March 16, 2016).

<sup>4</sup> Philadelphia City Planning Commission. Master Public Facilities Database . Philadelphia, February 26, 2016.

<sup>5</sup> Cochrane, Michael. Interview by Christina Artl, Tamara Mittman, and Karin Morris. In person interview. Philadelphia, April 18, 2016.

of Services. The Police budget is the second largest category in Philadelphia's General Fund behind Employee Benefits.<sup>6</sup>

## Philadelphia Fire Department (PFD)

### Staff

The Philadelphia Fire Department has approximately 2,100 employees. The Fire Commissioner supervises all operations of the Philadelphia Fire Department. He is assisted by four Deputy Commissioners responsible for supervising operations, technical support, administrative services, and emergency medical services. Each Division Chief is responsible for overseeing fire department operations in half of the city, which is subdivided into 11 subsections, each supervised by a Battalion Chief. In 2015, the Philadelphia Fire Department responded to 49,993 fire incidents and 253,609 medical incidents.<sup>7</sup>

### Facilities

There are 65 Philadelphia Fire Department facilities,<sup>8</sup> which are maintained by Philadelphia's Department of Public Property.<sup>9</sup> The majority are fire stations, but there are also facilities for the Fire Station Marine unit, as well as fuel sites, warehouse space, and the Fire Administration Building at 240 Spring Garden Street.<sup>10</sup> The oldest fire station was built in 1894, while the newest was built in 2006. The average age of Philadelphia's fire facilities is 58 years old. There are five active facilities that are over 100 years old.

### Budget

The Fire Department is funded out of the city's General Fund and has a FY 2017 Proposed budget of \$221,812,329, the majority of which goes toward personnel (\$201,369,162), and \$7,647,000 in Payments to Other Funds; \$7,421,014 to Materials, Supplies, and Equipment; and \$5,375,153 in Purchase of Services. The Fire Department budget is the fifth largest expense in Philadelphia's General Fund, behind Employee Benefits, the Police Department, Debt Service, and the Prison System.<sup>11</sup>

## Philadelphia Department of Public Property (DPP)

### Staff

Philadelphia's Department of Public Property was established in 1951 to acquire, dispose of, lease, design, construct, renovate and maintain city properties. The department is divided into three divisions: Capital Projects, Facilities Management, and Real Estate. Facilities Management is comprised of a Building Services Division, which has over 100 direct tradespeople and administration employees, and a Contract Services Management Unit within Building Services, which oversees 125 full-time contracted maintenance, security, and custodial employees. The Real Estate Division is responsible for lease negotiations and contracting for the city both as tenant and as landlord, the disposition of surplus properties, the acquisition of property for city projects, the renovations for new facilities, and implementing space allocation decisions.<sup>12</sup>

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<sup>6</sup> City of Philadelphia. *Open Budget*. 2016. <http://www.phila.gov/openbudget/> (accessed March 16, 2016).

<sup>7</sup> Philadelphia Fire Department. "General Memorandum #16-00." *2015 Annual Responses*. Philadelphia: Philadelphia Fire Department Headquarters, March 2, 2016.

<sup>8</sup> Philadelphia City Planning Commission. *Master Public Facilities Database*. Philadelphia, February 26, 2016.

<sup>9</sup> City of Philadelphia. "Request for Proposals for a Public Safety Facilities Master Plan for the City of Philadelphia." Philadelphia: Department of Public Property, March 2016.

<sup>10</sup> Philadelphia Fire Department. *Main Contacts*. 2014. [http://www.phila.gov/fire/about/about\\_contact\\_main.html](http://www.phila.gov/fire/about/about_contact_main.html) (accessed March 16, 2016).

<sup>11</sup> City of Philadelphia. *Open Budget*. 2016. <http://www.phila.gov/openbudget/> (accessed March 16, 2016).

<sup>12</sup> Philadelphia Department of Public Property. *Public Property*. n.d. <http://www.phila.gov/property/Pages/default.aspx> (accessed July 13, 2016).

## Facilities

The Department of Public Property is responsible for over 1,100 facilities comprising 11 million square feet and 11,000 acres of parks and recreation areas for 15 public agencies.<sup>13</sup>

## Budget

In any given fiscal year, there are roughly 250 capital projects. The total annual budget for all of the projects averages between fifty million and sixty million dollars.<sup>14</sup> The FY 2017 Proposed Budget for the Department of Public Property is \$113,227,759, the majority of which goes to the Purchase of Services, followed by Payments to Other Funds, Personal Services, and Materials, Supplies, and Equipment.<sup>15</sup>

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<sup>13</sup> Philadelphia Department of Public Property. *Public Property*. n.d. <http://www.phila.gov/property/Pages/default.aspx> (accessed July 13, 2016).

<sup>14</sup> Philadelphia Department of Public Property. *Public Property*. n.d. <http://www.phila.gov/property/Pages/default.aspx> (accessed July 13, 2016).

<sup>15</sup> City of Philadelphia. *Open Budget*. 2016. <http://www.phila.gov/openbudget/> (accessed March 16, 2016).



CHAPTER 3:

## Overview of the Comparison Cities

The comparison cities for this study are: Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; New York, New York; and Washington, DC (see Figure 2). All of the cities are older East Coast or Midwest cities with more than 600,000 residents. The largest city in terms of both land area and population is New York City; the smallest in population is Baltimore, while the smallest in terms of land area is Boston (see Table 1). Most of the comparison cities have housing stock of similar ages (see Figure 3).

**Figure 2:** Map of Comparison Cities

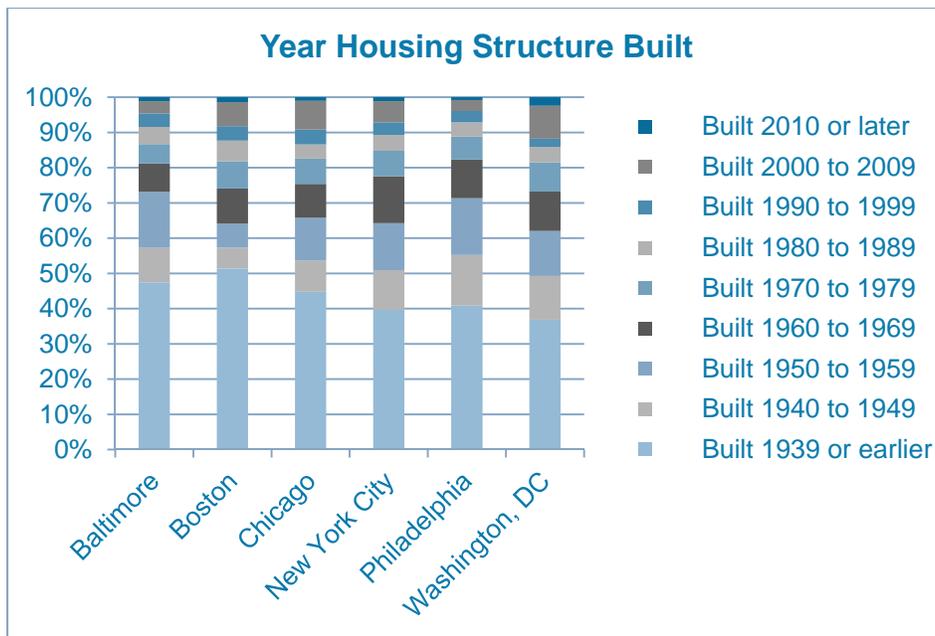


**Table 1:** Comparison City Populations, Land Area, and Population Density

City	2014 Population	Land Area in Square Miles	Population Density
<b>Boston, MA</b>	655,884	48.3	13,579
<b>Baltimore, MD</b>	622,271	80.9	7,691
<b>Chicago, IL</b>	2,722,389	227.6	11,961
<b>New York, NY</b>	8,354,889	304.8	27,411
<b>Philadelphia, PA</b>	1,560,297	134.1	11,635
<b>Washington, DC</b>	658,893	61.0	10,802

Source: U.S. Census Bureau, American Community Survey 2014

**Figure 3: Comparison City Year Housing Structure Built**



Source: 2014 American Community Survey 1-Year Estimates; CP04: Comparative Housing Characteristics

## Baltimore

Baltimore is smaller than Philadelphia in both number of residents and land area, but with numerous brick rowhouses, it has a similar building stock, which is important when making comparisons for fire departments.

### Relevant Agencies

- Baltimore Police Department (BPD)**

The BPD is the eighth largest municipal police force in the United States, staffed by nearly 4,000 civilian and sworn personnel.<sup>16</sup> There has been very little improvement to seven of the nine police district stations since the late 1950s and early 1960s. Ideally, Baltimore would like to replace these seven stations with new facilities, however, it would take seven to eight million dollars to build one structure, and annual capital budget is about seven to eight million dollars.<sup>17</sup>
- Baltimore City Fire Department (BCFD)**

Baltimore City Fire Department has over 1,700 members divided into three branches: Emergency Operations, Safety and Member Services, and Community Risk Reduction. Operations personnel work out of 39 neighborhood fire stations. These units include 35 engine companies; 17 ladder companies; 24 first-line medic units; five critical alert medic units; one heavy rescue; and specialty units, such as hazmat trucks, collapse rescue vehicles, mobile command vehicles, and various fire boats.<sup>18</sup> Baltimore also has the Frank J. Trenner Fire Training Academy in eastern Baltimore and a Public Safety Academy in northwest Baltimore. On average the department responds to more than 235,000 calls for service per year.<sup>19</sup>

<sup>16</sup> Baltimore Police Department. *About Us*. 2016. <http://www.baltimorepolice.org/> (accessed June 28, 2016).

<sup>17</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>18</sup> Baltimore City Fire Department. BCFD Leadership Team. 2016. <http://fire.baltimorecity.gov/fire-bcfd-leadership> (accessed June 22, 2016).

<sup>19</sup> Baltimore City Fire Department. *Fire Stations*. 2016. <http://fire.baltimorecity.gov/fire-stations> (accessed June 22, 2016).

- ***Baltimore Department of General Services (Baltimore DGS)***  
Baltimore DGS is a small agency that exists to support other public agencies. The Fleet Maintenance Division has approximately 250 employees who take care of every city vehicle. The Facilities Maintenance Division has approximately 100 personnel (including administrative personnel, building managers, staff, shop location, and mobile maintenance shops) who take care of all city buildings. Baltimore DGS directly manages 32 buildings, including nine Police Districts, the Fire Headquarters, and the Northwest Training Center, but not the neighborhood fire stations or the East Training Center. Agencies pay Baltimore DGS “rent,” and Baltimore DGS maintains the buildings. Some agencies have their own maintenance programs.<sup>20</sup>

## Boston

Boston has approximately half as many residents as Philadelphia and a slightly higher population density than Philadelphia.

### Relevant Agencies

- ***Boston Police Department (BPD)***  
Boston is divided into three police zones. Zone 1 comprises Areas A and D, Zone 2 comprises Areas B and C, and Zone 3 comprises Area E. There are 11 district buildings, as well as the headquarters building.<sup>21</sup>
- ***Boston Fire Department (BFD)***  
Boston’s Fire Department has 1,611 total personnel, of which 1,467 are uniformed, 76 are civilian, and 68 are fire alarm personnel. The department has 70 fire companies and units. There are two divisions and 11 districts.<sup>22</sup> In terms of apparatus, the Boston Fire Department has 33 engines; 20 ladder trucks; two heavy rescues; and an assortment of approximately 150 small vehicles, such as chiefs’ cars. The last firehouse that the city built was built in 1984. There was also one firehouse built in 1989 through a public-private partnership.<sup>23</sup> Boston firefighters responded to more than 75,000 calls in 2014.<sup>24</sup> Boston has 40 fire department facilities, including 34 firehouses, a headquarters, a maintenance garage, a marine unit, a training academy, a fire alarm building, and a high pressure pump station, which amount to approximately 552,000 square feet of maintainable space.<sup>25</sup>
- ***Boston Property and Construction Management Department***  
The Property and Construction Management Department oversees the management, maintenance, security, and repair of the city’s municipal buildings, including City Hall, Faneuil Hall, and the Old State House. The department performs facility layout and space planning analysis for city departments, building security, events management, and the coordination of capital improvement projects.<sup>26</sup> The Capital Construction Division of the Property and Construction Management Department has 58 staff involved in planning, programming, designing, and constructing capital-

<sup>20</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>21</sup> Boston Police Department. *Districts*. 2016. <http://www.bpdnews.com/districts/> (accessed June 28, 2016).

<sup>22</sup> Boston Fire Department. *Overview*. 2014. <http://www.cityofboston.gov/fire/about/> (accessed June 28, 2016).

<sup>23</sup> O’Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>24</sup> Last Call Foundation. *Help Fund Industrial Washers*. 2014. <http://www.lastcallfoundation.org/programs/industrial-washer/> (accessed July 11, 2016).

<sup>25</sup> Matrix Consulting Group. *DRAFT Operational Audit/Review of the Boston Fire Department*. Audit/Review, Boston, Massachusetts: Matrix Consulting Group, June 23, 2015.

<sup>26</sup> City of Boston. *Property & Construction Management*. 2014. <http://www.cityofboston.gov/propertymanagement/> (accessed July 11, 2016).

funded building projects. The Property and Construction Management Department recently underwent an audit, the results of which were released in 2016.<sup>27</sup>

## Chicago

With over 2.7 million residents, Chicago is the United States' third largest city. At nearly 230 square miles, it has the second largest land area of all the cities included in this analysis. Chicago and Philadelphia experienced a similar percentage decline in their populations between 1950 and 2000 (25.6 percent and 26.3 percent, respectively), and today the cities have similar population densities.

### Relevant Agencies

- **Chicago Police Department (CPD)**  
Chicago has the second largest municipal police agency in the United States behind New York City. As of August 2016, the Chicago Police Department had 13,729 members, including 11,987 sworn members. The city is divided into 22 police districts, each of which is split into police beats of several square miles. In total, there are 274 beats throughout the city. Each district houses its own office building, occupied by a CPD unit devoted to conducting patrol activities within the district. Each building includes administrative, case processing, and meeting facilities. Many of the district offices are relatively new, and some were built within the last decade. In addition, each district houses a community policing office, devoted to implementing Chicago's long-standing community policing program. Several of the district offices also act as hubs for units whose activities are not confined to a single district. Besides district offices, various additional buildings house units devoted to key administrative and operational functions, including central headquarters and organized crime prevention.<sup>28</sup>
- **Chicago Fire Department (CFD)**  
Michael Callahan of the Chicago Fire Department describes Chicago's fire facilities as "aging." Of Chicago's 96 firehouses, more than 10 active firehouses are over 100 years old. The oldest is 135 years old; the second oldest is 130 years old. In the next two years, the number of facilities over 100 years old will double. Ten new firehouses have been built since 2006.
- **Department of Fleet and Facility Management (2FM)**  
The Department of Fleet and Facility Management supports other city departments' operations by providing fleet and facility services. 2FM manages 10,000 pieces of equipment and vehicles, as well as more than 425 leased and owned facilities. The department employs 1,063 tradespeople and administrative staff and has an annual operating budget of approximately three hundred thirty million dollars.<sup>29</sup>
- **Public Building Commission of Chicago (PBC)**  
Since 1956, PBC has professionally managed Chicago's public construction projects. PBC has built or renovated hundreds of schools, city colleges, libraries, parks, firehouses, police stations, and other facilities. Through such ambitious initiatives as Neighborhoods Alive 21 and Modern Schools Across Chicago, PBC has built and continues to build new facilities in every neighborhood of the City of

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<sup>27</sup> Grant Thornton LLP. "City of Boston--Property and Construction Management Department Operational Audit/Review." *Property and Construction Management*. March 22, 2016. [http://www.cityofboston.gov/images\\_documents/City%20of%20Boston%20Property%20and%20Construction%20Management%20Report%203-22-16\\_tcm3-53204.pdf](http://www.cityofboston.gov/images_documents/City%20of%20Boston%20Property%20and%20Construction%20Management%20Report%203-22-16_tcm3-53204.pdf) (accessed July 11, 2016)

<sup>28</sup> Timothy Lavery, Ph.D., Chicago Police Department, e-mail message to author, August 10, 2016.

<sup>29</sup> City of Chicago. *Fleet and Facility Management*. 2016. <http://www.cityofchicago.org/city/en/depts/dgs.html> (accessed July 14, 2016).

Chicago and Cook County. PBC's staff manages each project through planning, financing, land acquisition, site preparation and remediation, design, construction, and furnishing, functioning as a single point of responsibility for "turnkey" development.<sup>30</sup>

## New York

While New York City as a whole is much larger than Philadelphia, some of the boroughs, like Brooklyn and Queens, are similar to Philadelphia. For example, both Brooklyn and Philadelphia had over two million residents in 1950.

### Relevant Agencies

- *New York City Police Department (NYPD)*  
NYPD has 34,500 uniformed personnel.<sup>31</sup> There are 77 precincts, of which 23 are in Brooklyn, 22 are in Manhattan, 16 are in Queens, 12 are in the Bronx, and four are in Staten Island.<sup>32</sup> There are also other officers assigned to the Transit Bureau and the Housing Bureau, which patrols 1,567 buildings that make up 176 developments in the City of New York.<sup>33</sup>
- *Fire Department of the City of New York (FDNY)*  
FDNY<sup>34</sup> has 217 firehouses (198 engine companies, 143 ladder companies, 17 special operations units, 49 battalion commands, nine division commands, five borough commands) and 37 EMS stations. Over 60 percent of FDNY's facilities were built prior to 1960. FDNY described their facilities as "old, small, and challenging" but hope that in the future they will be "improved, larger, [and] robust."<sup>35</sup> FDNY has its own capital construction program and staff, who are currently working on over 75 capital renovation projects, including apparatus floor replacements, roof replacements and waterproofing, kitchen and bathroom renovations, and electrical upgrades. FDNY's Director of Design/Chief Architect and Director of Construction are responsible for the work of FDNY's contractors and consultants.<sup>36</sup>
- *New York City Department of Design and Construction (DDC)*  
New York City's DDC—the largest municipal capital construction agency in the nation—has managed the city's capital construction projects since 1996 and currently has a seventeen billion-dollar capital budget with over 1,200 projects for 26 client agencies.<sup>37</sup> In addition to building the civic facilities that serve New Yorkers every day, the department also builds infrastructure like roadways, sewers, water mains, sidewalks, and pedestrian ramps. The Public Buildings Division has 350 staff members who manage the design and construction of a large range of civic buildings.<sup>38</sup> As both NYPD and FDNY

<sup>30</sup> Public Building Commission of Chicago. *Welcome to the Public Building Commission of Chicago*. 2016.

<http://pbcchicago.com/> (accessed July 14, 2016).

<sup>31</sup> New York Police Department. *FAQ*. 2016. [http://www.nyc.gov/html/nypd/html/faq/faq\\_police.shtml#1](http://www.nyc.gov/html/nypd/html/faq/faq_police.shtml#1) (accessed July 14, 2016).

<sup>32</sup> New York Police Department. *NYPD Precincts*. 2016. <http://www.nyc.gov/html/nypd/html/home/precincts.shtml> (accessed June 28, 2016).

<sup>33</sup> New York Police Department. *FAQ*. 2016. [http://www.nyc.gov/html/nypd/html/faq/faq\\_police.shtml#1](http://www.nyc.gov/html/nypd/html/faq/faq_police.shtml#1) (accessed July 14, 2016).

<sup>34</sup> Fire Department of New York. *NYC Fire Department*. 2016. <http://www1.nyc.gov/site/fdny/index.page> (accessed July 14, 2016).

<sup>35</sup> Fire Department of the City of New York (FDNY). Interview by Christina Artl. Written interview. E-mail, June 23, 2016.

<sup>36</sup> Fire Department of the City of New York (FDNY). Interview by Christina Artl. Written interview. E-mail, August 3, 2016.

<sup>37</sup> New York City Department of Design and Construction. "STATE OF THE AGENCY: 2014-2016." *State of the Agency*. 2016. <http://www1.nyc.gov/assets/ddc/downloads/publications/about-ddc/ddc-state-of-the-agency.pdf> (accessed June 8, 2016).

<sup>38</sup> New York City Department of Design and Construction. *Public Buildings Division*. 2016. <http://www1.nyc.gov/site/ddc/about/public-buildings.page> (accessed June 8, 2016).

have their own capital construction units in house, DDC is only responsible for gut renovations and new construction of public safety facilities.

## Washington, DC

Washington, DC is smaller than Philadelphia in both number of residents and land area. Washington, DC, and Philadelphia experienced similar percentage declines in their populations between 1950 and 2000 (25.0 percent and 26.3 percent, respectively). DC has a slightly lower population density than Philadelphia.

### Relevant Agencies

- **Metropolitan Police Department (MPD)**  
The MPD has 32 facilities.<sup>39</sup> DC's Police Department has 4,000 officers and 435 civilian personnel. The MPD received 502,317 calls for service in calendar year 2014. The FY 2014 budget was \$540,462,696.19, of which 84 percent went toward personnel expenses. They had 1,687 total vehicles, which include marked cruisers, unmarked cruisers, scooters, motorcycles, boats, and miscellaneous vehicles.<sup>40</sup>
- **DC Fire and Emergency Medical Services Department (FEMS)**  
FEMS has 1,827 total employees, including 1,252 uniformed firefighters and 575 civilian personnel.<sup>41</sup> There are 36 facilities. In 2013, FEMS received 168,842 calls, of which the majority were EMS calls, while the remaining 18 percent were fire calls.<sup>42</sup>
- **Department of General Services (DC DGS)**  
DC DGS deals with all facilities (schools, police, fire, corrections, etc.), except libraries. DC DGS has four divisions: Capital Construction, Facilities Management, Real Estate, and Energy. DC DGS maintains approximately 750 properties total. They have a staff of approximately 100 boiler plant operators, and 125 tradespeople, who deal with carpentry, dry wall, plumbing, and electrical. Prior to centralizing all facilities management in the DC DGS, the MPD had 15 engineers, six project managers, and one administrative assistant who oversaw a fifteen million-dollar repair budget for police facilities.<sup>43</sup>

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<sup>39</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>40</sup> Metropolitan Police Department. "Annual Report 2014." *Annual Reports*. 2014. <http://mpdc.dc.gov/page/mpdc-annual-reports> (accessed July 12, 2016).

<sup>41</sup> DC Fire and EMS Department. *Frequently Asked Questions*. 2016. <http://fems.dc.gov/page/frequently-asked-questions-about-fems> (accessed July 14, 2016).

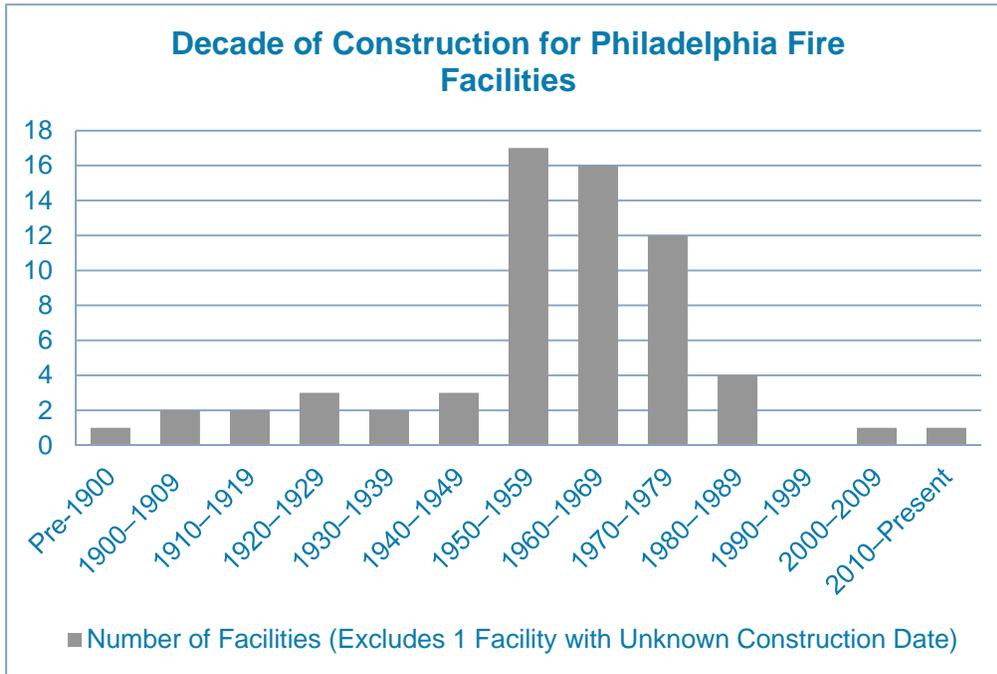
<sup>42</sup> DC Fire and EMS Department. "FEMS Highlights - Performance Charts." *Publications List*. February 24, 2014. [http://fems.dc.gov/sites/default/files/dc/sites/fems/publication/attachments/FEMS%20Highlights\\_Charts.pdf](http://fems.dc.gov/sites/default/files/dc/sites/fems/publication/attachments/FEMS%20Highlights_Charts.pdf) (accessed July 14, 2016).

<sup>43</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

## Decade of Construction for Fire Facilities

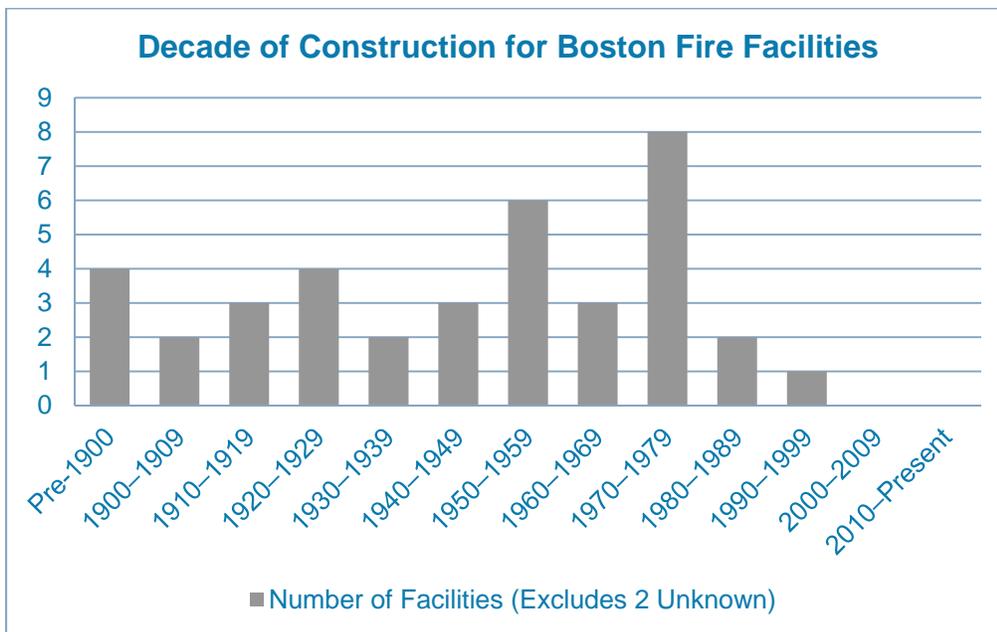
The following four graphs show the decade of construction for fire facilities in Philadelphia, Boston, Chicago, and New York. The majority of Philadelphia's fire facilities were built in the 1950s–1970s, while Boston and Chicago saw a peak in the 1970s, and many of New York's firehouses were built before 1940.

**Figure 4:** Decade of Construction for Philadelphia Fire Facilities



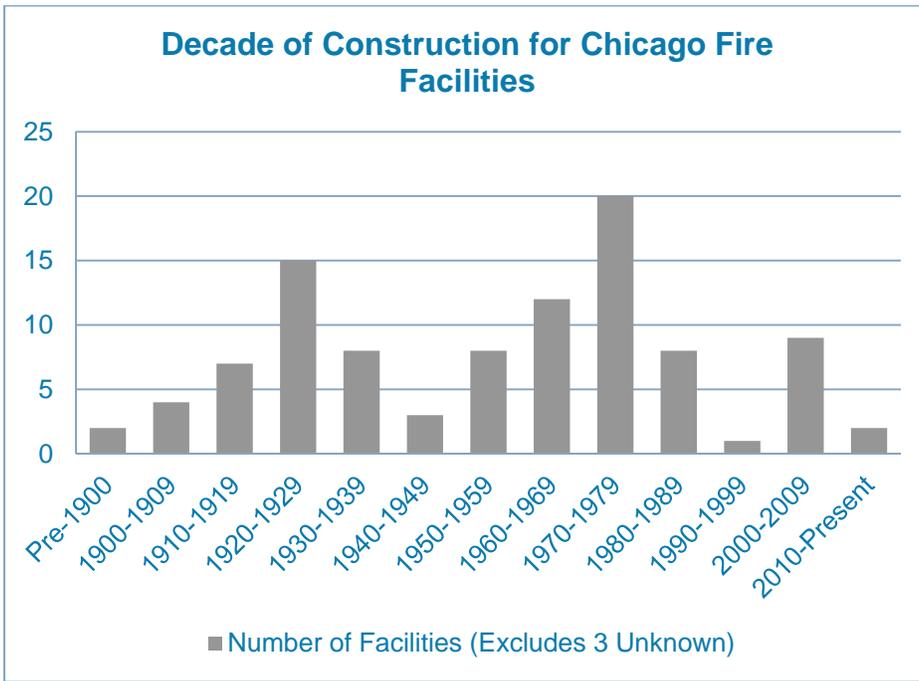
Source: Philadelphia Planning Commission, Philadelphia Fire Department, 2016

**Figure 5:** Decade of Construction for Boston Fire Facilities



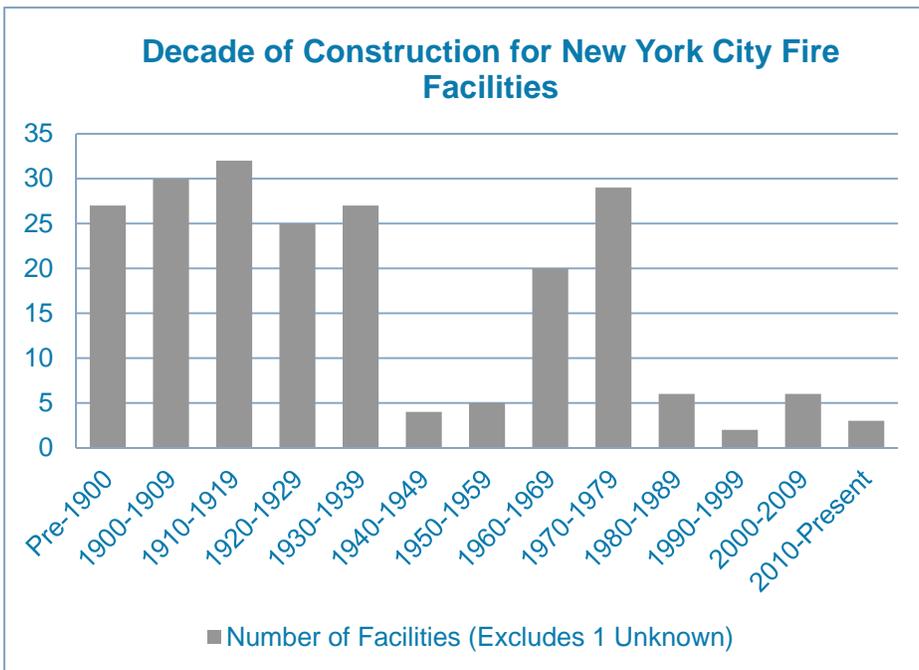
Source: Boston Fire Department, 2016

**Figure 6:** Decade of Construction for Chicago Fire Facilities



Source: Chicago Fleet and Facilities Management, 2016

**Figure 7:** Decade of Construction for New York Fire Facilities



Source: FDNY, 2016

## Lessons Learned

### Police and Fire Facilities Have Different Needs

As Battalion Chief Jim Mueller of the Philadelphia Fire Department pointed out, “Police and Fire are two completely separate entities. Police has certain needs, fire has certain needs. They are very different in terms of needs, personnel, and response criteria.”<sup>44</sup>

Typically, police facilities in large cities consist of police stations spread throughout a city, with several larger stations that might house detectives or larger lock-up facilities, as well as a headquarters. Police facilities are generally larger than firehouses. They are frequently used by more staff on a daily basis, particularly at shift change, which means that they often require additional parking. Members of the public often come to police stations to file or pick up police reports, and people who have been arrested can be in the facilities as well, so security is a greater concern.

Bonnie Amado of the Chicago Police Department recommended thinking about the following things when designing a police facility: a secure vestibule and hallways, a sally port for vehicle access control, parking, separate entrances for staff and the public, Americans with Disabilities Act (ADA) accessibility, a roll-call room, lock-ups for prisoners, a large processing room to separate offenders from officers, “man down” pagers/alarms with light that send a signal to the front desk, an elevated front desk, window film so people are not blinded by the sun, enough large lockers to accommodate gear/helmets, back-end infrastructure for body cameras (such as charging stations and network drops), a secure room for servers so they cannot be tampered with, Uninterrupted Power Supply (UPS), a backup generator, a bidirectional amplified communication system (BDA), and heating, ventilation, and air conditioning (HVAC)/mechanical rooms.<sup>45</sup>

There are typically more firehouses in a city than there are police stations, due to the need to reach fires in as little time as possible. As the Philadelphia Fire Department noted, “Response time—getting to the people on time—is the most important factor. There is a geographic component to response time.”<sup>46</sup> Fire facilities generally consist of a headquarters, firehouses, and training facilities, which may include a burn town, virtual city, driving course, and classroom space. Cities might also have marine or rescue facilities. Some cities combine EMS with the Fire Department, while others have a separate department.

Professional firefighters live in the firehouse 24 hours a day while they are on call, which makes a professional firehouse a unique facility. John Cavaleri of the Boston Fire Department described it as an industrial use and a living area in the same building. Modern firehouses are often designed using “Hot Zone Design,” which includes three areas:

- the **Hot Zone**, such as the bays for storing and maintaining apparatus and reserve apparatus, where there is a great deal of exposure to carcinogens, particulates, and vehicle exhaust;
- the **Cold Zone**, which are living spaces intended for extended occupancy; and

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<sup>44</sup> Mueller, James. Interview by Christina Arlt and Tamara Mittman. In person interview. Philadelphia, April 1, 2016.

<sup>45</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>46</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

- the **Transition Zone**, where personnel and their gear are cleaned to limit the crossover of contaminants.<sup>47</sup>

Firefighters tend to work long shifts and therefore need cooking facilities in their houses. In Chicago, the Fire Department is contractually obligated to provide cooking facilities. Most professional firehouses also contain sleeping quarters, as well as some sort of recreational facility, such as a TV room or pool table, and a gym for firefighters to maintain their physical conditioning.

Parking is often more of an issue for police stations than it is for fire stations. The Philadelphia Police Department's 12th District is located in Southwest Philadelphia at 65th and Woodland. It is connected to a firehouse. There is no parking for either the Police Department or the Fire Department. Police and fire personnel sometimes park in a nearby strip mall parking lot, but because the facility is not secured, police cars have been broken into or had their tires slashed.<sup>48</sup> The Boston Fire Department also mentioned lack of secured parking as an issue; they have sometimes found needles from a nearby methadone clinic in their reserve trucks.<sup>49</sup>

## Space Needs Change Over Time

Public safety needs change over time—both within the walls of a single building, as well as the distribution of those buildings across a city. Nearly all of the cities we spoke to felt they did not have enough space. The cities we interviewed mentioned undertaking changes to their facilities due to changes in department initiatives, technology, gender diversity, changing equipment, and storage needs, among others.

### Initiatives

When police tactics change, their space needs change too. The move to consolidate Chicago's Police and Fire headquarters into one building happened simultaneously with a big push to put more uniformed officers back on the street. Since the police officers were out on the street, they no longer needed their desk space, which meant that there was space available to move in the Fire Department, which had been leasing space in a building across the street.<sup>50</sup>

### Technology

Advances in technology can also change a department's space needs. For example, the Philadelphia Police Department is moving toward body cameras for every police officer. The body camera pilot project brought 300 cameras to the 22nd Police District near Temple University. Space is needed to store not only the cameras, but also the servers needed to house the hours of video footage that are collected, as well as computers to review the footage. Additionally, the servers need to be stored in cool rooms, so air conditioning is required. The Philadelphia Fire Department is not collecting as much data, and therefore currently does not need as much space for servers, data storage, and video reviewing.

Bonnie Amado, the Chicago Police Department's Director of Facilities, recommends having as much unprogrammed space—that is connected to outlets and data ports—as possible when building a new facility. This gives the department room to grow and shift as needs change.

<sup>47</sup> Lemay Erickson Willcox Architects. "Hot Zone Design--Contain the Contaminants." *Firehouse 2016 Station Design Conference*. May 19, 2016. <http://www.fhstationdesign.com/#!handouts/yag9d> (accessed July 11, 2016).

<sup>48</sup> Cochrane, Michael. Interview by Christina Arlt, Tamara Mittman, and Karin Morris. In person Interview. Philadelphia, April 18, 2016.

<sup>49</sup> O'Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>50</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

## Gender Diversity

Gender diversity is driving many public safety facility renovations. Over the last several decades, the gender of police and fire forces across the country has diversified. Many existing police stations and firehouses were built with only male bathrooms and locker rooms. As more female police officers and firefighters have joined the forces, there is the need to add, renovate, and/or reconfigure facilities. For example, the Philadelphia Fire Department mentioned that there has been a huge increase in female firefighters since the first female firefighter joined the department in the 1980s. There are not enough restrooms, showers, and locker rooms for female firefighters. For example, the Fire Training Facility on Pennypack Avenue—which trains not only the Philadelphia Fire Department but also the Chester City Fire Department, Upper Darby Fire Department, and Philadelphia Prison System firefighters—only has one toilet for females.<sup>51</sup> Baltimore is adding “updated restrooms that reflect gender diversity” in their Western District station upgrade.<sup>52</sup> FDNY is in the process of installing female firefighter bathroom/locker facilities; by December 2016, all 217 firehouses will have female firefighter toilets/lockers. Female firefighters must be able access to all common areas (such as offices, officer’s bunk rooms, firefighter bunkroom, weight room, sitting room(s), laundry rooms, and study rooms) without transiting through the men’s locker room and/or toilet, which makes these renovations challenging.<sup>53</sup>

## Modern Firefighting Equipment

Firefighting equipment today is “longer, wider, higher, and heavier” than in the past.<sup>54</sup> The heavier firefighting equipment causes the apparatus floor of firehouses to crack and corrode, often exposing the reinforcing bars in the concrete. Furthermore, the aprons and sidewalks outside of firehouses crack, spall, and crumble over time. Almost every city that we spoke with mentioned equipment floor replacements as a necessary capital project. Philadelphia is currently replacing deteriorated apparatus floors at three of its firehouses. The average age of the three facilities is 90 years, and they each still had their original floors.<sup>55</sup>

The Philadelphia Fire Department mentioned encountering issues with historic preservation and neighborhood opposition when trying to widen Engine 37’s doors in the Chestnut Hill neighborhood. Chicago has widened several doors to accommodate their needs. They have not encountered historic preservation issues when they undertook these changes.<sup>56</sup>



**Philadelphia Fire Department's Engine 37 in Chestnut Hill**

Source: Philadelphia Fire Department

## Health and Safety

Boston’s Fire Department has been especially concerned about updating their facilities for health and safety reasons. The Boston Fire Department has an extremely high cancer rate: 2.5 times that of the general population of Boston.<sup>57</sup> Prolonged exposure to diesel exhaust from firetrucks can increase the risk of

<sup>51</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>52</sup> Fenton, Justin. *\$2.4M private investment hopes to turn Western District police station into community hub*. May 3, 2016. <http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-new-western-district-plan-20160503-story.html> (accessed June 20, 2016).

<sup>53</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>54</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>55</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>56</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>57</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

cardiovascular, cardiopulmonary, and respiratory disease, as well as lung cancer. Furthermore, in the course of normal operations, firefighters' protective gear—known as turnout gear—is exposed to life-threatening carcinogens, chemicals, biological agents, and particulate matter.<sup>58</sup> None of Boston's firehouses currently have decontamination rooms for clothing and equipment.<sup>59</sup> Boston Fire Department's Safety, Health, and Wellness Division is only a year and half old; it came into being under the new administration, which is two years old. Since then, the Fire Department has had a health symposium and several health fairs. They are also partnering with the Dana-Farber Cancer Institute on a cancer study and an air quality study.<sup>60</sup> The Last Call Foundation, which was started by the mother of a Boston firefighter who died in the line of duty on March 26, 2014, has raised money to equip every Boston firehouse with industrial washers for turnout gear (see Appendix A for a list of foundations that support police and firefighters).<sup>61</sup>

#### Increased Demand for Emergency Medical Services (EMS)

In recent years, there has been additional demand for EMS across the country. This creates a need for additional ambulances and EMS trucks, and a corresponding crunch in space at existing facilities. Philadelphia has added at least 10 medic units, which require at least 16 landing spots. As a short-term solution to the space crunch, the Philadelphia Fire Department has taken reserve equipment out of certain fire stations and parked it outside. With the current price of a ladder truck at approximately one million dollars and the cost of a truck at approximately five hundred thousand dollars, it is unwise to store these expensive apparatus outside, where they are exposed to the elements. Having more demand for EMS will not reduce the need for fire protection and prevention.<sup>62</sup> Removing trucks or closing firehouses could negatively impact response times to fires.<sup>63</sup>

#### Storage

Both Baltimore and New York brought up the issue of storage. While firehouses sometimes run into storage issues, this seems to be more of an issue for police stations. The Philadelphia Police Department mentioned that there are 130,000 police reports coming into the 15th District alone,<sup>64</sup> which is a lot of paperwork to process and store. Baltimore had gone so far as to close the lobbies of some of their police stations to use them for storage.<sup>65</sup> The NYPD has been working to clear out and outsource storage. There is now a city-wide contract with a private vendor for off-site record storage.<sup>66</sup>

#### Making Public Safety Facilities More Welcoming

Both Baltimore and New York spoke about the need to make police stations more welcoming to community members. NYPD is focusing on making their station vestibules friendlier and more welcoming. Notes Lt.

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<sup>58</sup> McClure, Jim. "Particulars on Particulates: Air Quality Systems." *Firehouse 2016 Station Design Conference*. May 18-19, 2016. <http://www.fhstationdesign.com/#!handouts/yag9d> (accessed July 6, 2016). (accessed July 6, 2016).

<sup>59</sup> Matrix Consulting Group. *DRAFT Operational Audit/Review of the Boston Fire Department*. Audit/Review, Boston, Massachusetts: Matrix Consulting Group, June 23, 2015.

<sup>60</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

<sup>61</sup> Last Call Foundation. *Help Fund Industrial Washers*. 2014. <http://www.lastcallfoundation.org/programs/industrial-washer/> (accessed July 11, 2016).

<sup>62</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>63</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>64</sup> Cochrane, Michael. Interview by Christina Arlt, Tamara Mittman, and Karin Morris. In person Interview. Philadelphia, April 18, 2016.

<sup>65</sup> Fenton, Justin. *\$2.4M private investment hopes to turn Western District police station into community hub*. May 3, 2016. <http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-new-western-district-plan-20160503-story.html> (accessed June 20, 2016).

<sup>66</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

Andreano of NYPD: "It's a public facility, but it can induce a lot of fear. The goal is to defuse that fear."<sup>67</sup> Baltimore's efforts to make police facilities more welcoming are described in greater detail in the Public-Private Partnership section of this report.

Fire stations are also trying to become more welcoming. FDNY's new Rescue Company No. 2 facility features a sidewalk-friendly seating alcove and vibrant red terra cotta trim in an effort to welcome interactions between firefighters and local residents and connect the building to the surrounding community. Dr. Feniosky Peña-Mora, the commissioner of New York's DDC, is working to ensure that public resources, like police precincts and firehouses, are equitably distributed and equally welcoming to all.<sup>68</sup>



### **FDNY's Rescue Company No. 2**

Source: New York City DDC

## **Clean, Well-Maintained Facilities Improve Morale**

One of the most common reasons cited for improving facilities was to improve the morale of police and firefighters. Lt. Brian Pearson of Baltimore's Police Department said: "Many of the district buildings are rundown, with poor ventilation systems, inadequate fitness facilities, restrooms, dining and meeting facilities. This compounds the strain on officers, with the already incredible demand to respond to a high volume of citizen concerns and crime. These poor working conditions are adversely affecting officer morale. ... We ask a lot from our officers each and every day and they rise to meet the challenge, but we must also invest in our officers, both mentally and physically. When we invest in our officers, we are investing in Baltimore City."<sup>69</sup>

Michael Callahan of Chicago's Fire Department asserts that the aging facilities do not constrain the delivery of services, "but it does affect quality of life. Chicago works on a 24 hour platoon system (firefighters work a 24

<sup>67</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>68</sup> New York City Department of Design and Construction. "Building One City for You." 2015. <http://www1.nyc.gov/assets/ddc/downloads/one-city-for-you/BuildingOneCityforYou.pdf> (accessed July 14, 2016).

<sup>69</sup> Police magazine. *Baltimore PD Teams with Local Businesses to Renovate Police Stations*. September 14, 2014. <http://www.policemag.com/channel/patrol/news/2014/09/18/baltimore-pd-teams-with-local-businesses-to-renovate-police-stations.aspx> (accessed June 20, 2016).

hour shift and then have 2 days off). Aging facilities mean there are problems with HVAC systems and sometimes with hot water heaters, so fire personnel sometimes can't take a shower after they get back from a call."<sup>70</sup>

The NYPD echoed these concerns: "If you come to work in an aging facility, it doesn't do much for morale. Being a police officer is difficult. You want them to be able to get their work done, but also be able to decompress."<sup>71</sup> The Philadelphia Police Department has started contracting out maintenance of all new facilities to private contractors because the city was hiring fewer and fewer maintenance personnel. "It's a morale issue," says Chief Inspector Michael Cochrane. He described the current facilities as "aging, outdated, and obsolete," but hopes that facilities in the future will be "improved, livable, and functional."<sup>72</sup>

## Handling Day-to-Day Work Orders

In Philadelphia, minor facilities repairs are handled through work orders. Major repairs are handled through the Department of Public Property's Facilities Management Division.<sup>73</sup> Furthermore, the City of Philadelphia is currently implementing an Integrated Workplace Asset Management System (IWAMS), which is expected to be fully functioning in Fall 2016.<sup>74</sup>

Chicago has developed their own software system for handling work orders and running reports.<sup>75</sup> NYPD is also currently working with New York City's Department of Information Technology and Telecommunications to create a proprietary work order system. They looked into outsourcing the system to a vendor, but they could not find a system that met their needs. Given the technology and the cost, the NYPD decided to create the new work order system in house.

The Boston Fire Department's Facilities Management Division uses IBM's Maximo software to track their maintenance.<sup>76</sup> Several cities, such as Baltimore and Washington, DC, mentioned that they use Archibus,<sup>77</sup> a proprietary software system, to handle their day-to-day work order requests. Stephen Stricklin of Baltimore DGS said they needed a lot of support from the company to get the system up and running, and they have an ongoing maintenance contract with the company.<sup>78</sup> Sean MacCarthy from Washington DC's Department of General Services commented that Archibus's asset management module is too complicated for many tradespeople to use. Instead DC DGS's Public Safety Cluster manages their entire preventative maintenance program with Excel spreadsheets.<sup>79</sup>

Baltimore has a Service Request Liaison at each city agency to submit all service requests to Baltimore DGS. There is usually a second person identified as well, in the event that the primary liaison is out. The Service Request Liaisons have not worked as well as was hoped, so Baltimore DGS is doing a pilot program to

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<sup>70</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>71</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>72</sup> Cochrane, Michael. Interview by Christina Arlt, Tamara Mittman, and Karin Morris. In person Interview. Philadelphia, April 18, 2016.

<sup>73</sup> City of Philadelphia Department of Public Property. *City of Philadelphia Department of Public Property Strategic Plan: Fiscal Years 2014-2016*. Strategic Plan, Philadelphia: City of Philadelphia, Winter 2015.

<sup>74</sup> Philadelphia Department of Public Property. Interview by Christina Arlt. E-mail interview. June 28, 2016.

<sup>75</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

<sup>76</sup> Matrix Consulting Group. *DRAFT Operational Audit/Review of the Boston Fire Department*. Audit/Review, Boston, Massachusetts: Matrix Consulting Group, June 23, 2015.

<sup>77</sup> Archibus. *The #1 Solution for Real Estate, Infrastructure & Facilities Management in the World*. 2016. <http://www.archibus.com/> (accessed July 14, 2016).

<sup>78</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>79</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

improve customer service. They are sending one Baltimore DGS staff person out in a van with a tablet and access to Archibus. This person goes from building to building and creates work requests on the spot. If the repair would only take a few minutes to accomplish, the person is authorized to complete repairs on the spot with the tools available in the van.<sup>80</sup>

FDNY has an “aggressive maintenance and repair program” conducted by in-house skilled trades personnel and on-call contractors to address day-to-day issues, such as broken apparatus doors, sewer backups, electrical disruptions, and the like. At FDNY,

All work orders are transmitted via telephone to the agency’s operations center (718-999-HELP) and these are keyed into the Bureau of Facilities Management’s “Enterprise Asset Management” system and given a priority (with RED being the most critical and these are usually reserved for sewage issues, major accidents/incidents in quarters [e.g., fire], broken apparatus doors, communication failures, power outages). This would be followed by heating and cooling and similar issues. Overhead doors issues are another high priority. Generally speaking priorities start with anything that prevents a unit from getting an alarm (telecom et al), responding (fuel and overhead door), anything affecting operational response, followed by things like climate control and lack of hot water. Meanwhile requests for items such as painting are given a low priority. There are 12–13,000 work requests each year.<sup>81</sup>

According to NYPD, maintenance—having the staff and funding to maintain the facilities—is one of their top issues. Prioritizing of work orders is done on a daily basis. The work orders go to the Building Maintenance sections. The Commanding Officer and the Executive Officer make the decisions about where to send the 250+ tradespeople each day. Decisions depend on manpower needed, staff levels, resources, and where the problem is located.<sup>82</sup>



**Boston Fire Department's Engine 26 Crash in 2009**

Source: *Boston Globe*

The Boston Fire Department’s Fleet Management recently created an electronic entry portal for service requests. They have also implemented a standard out-of-service criteria for their apparatus—what conditions make a vehicle unsafe to drive. Drivers have been given training and have new responsibilities for checking in firetrucks. The number-one priority is that a truck that is not safe or mission capable is put out of service and swapped in with a reserve.<sup>83</sup> Boston had a high-profile firetruck crash in 2009, when Ladder 26’s brakes failed, causing the truck to careen down a steep hill and slam into a Mission Hill apartment building, killing Lieutenant Kevin M. Kelley, who was in the passenger seat.<sup>84</sup>

<sup>80</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>81</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>82</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>83</sup> O'Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>84</sup> Slack, Donovan. "Firetruck brakes faulted for crash." *The Boston Globe*. March 9, 2010 .

[http://archive.boston.com/news/local/massachusetts/articles/2010/03/09/boston\\_fire\\_department\\_panel\\_blames\\_brakes\\_management\\_for\\_fatal\\_truck\\_crash/](http://archive.boston.com/news/local/massachusetts/articles/2010/03/09/boston_fire_department_panel_blames_brakes_management_for_fatal_truck_crash/) (accessed July 11, 2016).

## Analyzing Past Work Orders Can Both Prevent and Identify Future Capital Project Needs

Work orders can provide a great deal of insight into underlying issues. On a small scale, numerous repairs requests for the same apparatus door may indicate that it is a priority for replacement. On a larger scale, numerous repairs may indicate that a capital project is necessary to address issues and reduce overall work orders.<sup>85</sup> FDNY mentioned that replacing boilers and converting to natural gas reduced overall outages and work requests, as well as simplified maintenance issues.

Baltimore DGS has started using its Archibus data to target preventative maintenance. For example, Baltimore DGS noticed that HVAC work was costing a lot of money, so they tweaked the system for changing filters. Now, instead of changing filters twice a year between the heating and cooling seasons, they do quarterly filter changes. Says Stephen Stricklin, “If we tackled HVAC, we knew we would be able to tackle everything else,” which was less costly.

Some cities are also moving toward remote monitoring of certain systems. Over the past decade, both FDNY<sup>86</sup> and the City of Chicago<sup>87</sup> have begun to incorporate Supervisory Control and Data Acquisition (SCADA) and Building Management Systems (BMS) to remotely monitor certain aspects of their facilities, such as HVAC.

## There Are Multiple Ways To Prioritize Projects

Sometimes it costs more to maintain aging facilities than to build new ones, but cities might not have the capital budget to build new facilities. Philadelphia Fire Department Deputy Commissioner Robert Corrigan echoed these sentiments with a rhetorical question: “Are you polishing rust?”<sup>88</sup> Below are several ways that cities prioritize their repair projects.

### Worst First

When New York City’s fiscal outlook is favorable, FDNY looks to increase the number of renovation, upgrade, or new construction projects, concentrating where possible on locations or building components that are in the worst condition. Meanwhile, during slower economic times, projects are simply “mothballed” until funding can be made available—but the agency will push for projects which must be undertaken to address serious structural or operational issues. In addition to routine monitoring and evaluation done by FDNY’s Bureau of Facilities, FDNY had consultants perform an analysis of all firehouse components’ condition in 1994 and again in 2005. The results of this assessment are used to target those components most in need of repair. The plan in all cases is to address the worst conditions first, while minimizing operational impact, as it may not be possible to address the two worst fire stations if they are next to each other, due to the need for nearby firehouses to provide fire protection coverage when one firehouse is under renovation. The goal is to bring the entire system up to a state of good repair.<sup>89</sup>

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<sup>85</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>86</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>87</sup> Public Building Commission of Chicago. “The Living Prototype.” n.d. [http://www.pbcchicago.com/pdf/PrototypeBook\\_Spreads.pdf](http://www.pbcchicago.com/pdf/PrototypeBook_Spreads.pdf) (accessed July 12, 2016).

<sup>88</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>89</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

## Safe, Dry, and Warm

Chicago admits that they have aging facilities and that they have to do more with less. It forces them to prioritize, and they focus on “safe, dry, and warm.”<sup>90</sup> That means a leaking roof or façade gets prioritized for repair over painting an interior wall. The top priority is always health and safety. Anything that violates safety code issues is a major driver. Issues like backed-up sewage and heating are addressed first. The professionals at 2FM want to make sure facilities have proper ventilation, and that people are comfortable,<sup>91</sup> although air conditioning is only contractually obligated to be provided in firehouse bunk rooms and the kitchen.<sup>92</sup> As Bonnie Amado of Chicago’s Police Department noted, “We’re trying to make sure that the building doesn’t impact the operational needs of the department. If there’s no air conditioning, it’s hard to perform operations. In addition, computers and servers generate a lot of heat, so air conditioning is needed so equipment doesn’t overheat and stop operating. If there’s malfunctioning plumbing, you might need to move prisoners to another lock up.”<sup>93</sup>

## Focus on Larger Public Buildings that House More People

When they assess their facilities, the Chicago Fire Department looks at the age of the structure, the money spent on repairs and maintenance, the number of people housed and the number of vehicles housed.<sup>94</sup> Similarly, Washington, DC’s MPD prioritizes making repairs on its larger police district facilities first. The MPD is broken up into seven districts. The district buildings are open 24 hours a day, seven days a week, 365 days a year. They also tend to be the larger buildings (average 75,000 square feet, whereas a typical firehouse might only average 10,000–15,000 square feet). They house a higher number of staff and they also tend to be the buildings where the public go when they need to file police reports or pick up property. Because the district buildings affect more personnel and more members of the public, the MPD prioritizes making repairs in the district facilities first.<sup>95</sup>

## 95 Percent Uptime

Washington, DC does not worry about building age so much as uptime and reliability. DC DGS staff aim for 95 percent “uptime” for all buildings and the other systems needed for public safety personnel to do their job. For example, is the heat and air conditioning working 95 percent of the time? Does the camera recording the cell blocks work 95 percent of the time?<sup>96</sup>

## A Safe and Mission-Capable Deployed Fleet

Boston prioritizes their repairs based on the need to have a safe and mission-capable deployed fleet.<sup>97</sup> For example, a firetruck’s brakes would be repaired before repairing a window. FDNY also mentioned the importance of prioritizing things that affect operational response. For example, it might be better to replace an overhead door that has received multiple work order requests rather than have the door out of service for multiple periods of time.<sup>98</sup>

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<sup>90</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

<sup>91</sup> Kalaycioglu, Aysegul, Anthony Pascente, and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 3, 2016.

<sup>92</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>93</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>94</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>95</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>96</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>97</sup> O’Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>98</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

## Prioritize Preventative Maintenance

Preventative maintenance can save a lot of money. Washington, DC, did not have an active preventative maintenance program back in 2008. Sean MacCarthy, who worked for the MPD at the time and now works for the Public Safety Cluster in DC DGS's Capital Construction Division, started the Preventative Maintenance program. He gave each qualified contractor a one-page checklist and a label maker. They went out and recorded data about each individual piece of equipment (serial number, model, number of compressors, etc.) installed at public safety facilities throughout Washington, DC. Each piece of equipment was also labeled with the label maker, and the code was recorded in an Excel spreadsheet. This was done for all major critical equipment: boilers, air handlers, injection pumps, etc. The next step was to categorize the equipment: Can it be repaired or should it be replaced? How much would it cost to repair? How much would it cost to replace? The contractors were also given the task of fixing any small latent repairs (anything costing less than \$2,500). They encountered situations far worse than anyone expected. As much as 50 percent of small issues (greasing and lubing, cleaning, replacing filters, powerwashing coils of rooftop units, etc.) were repaired on site during a preventative maintenance check. As a result, maintenance requests went down 50–60 percent between year one and year two.

The information from the first round of preventative maintenance reports proved to be more useful than the Facilities Condition Assessments (FCAs)—which DC has previously paid consultants to write but were only based on visual inspections—had ever been. The preventative maintenance reports also gave much more accurate repair/replacement costs than the FCAs had. Sean MacCarthy says, “You need to have an inventory, not just a list of locations. It’s hard to do long term capital planning without an inventory of equipment and the condition of all of the equipment. You need actionable, quantifiable information.”

The upfront cost of this strategy was not inexpensive—the HVAC contract in the first year alone for all 72 facilities was one million dollars (which included the costs of the seasonal changeover). The private contractors were taking care of things, like changing filters, that had not been done in years. This money paid for a backlog of requests to get the systems back to normal operation. There were only five approved contractors working for the MPD in 2008. By 2012, there were 28 approved contractors. For the Police Department, there were contractors for things like plumbing, HVAC, overhead doors, cell blocks, ice makers/water fountains, and the closed-circuit television (CCTV) system. For the fire department, the contractors included things like the vehicle exhaust system, commercial kitchen contractors, and oil interceptors. Today, DC DGS's Public Safety Cluster has service contracts with 22 separate trades valued at \$5.3 million for a physical plant of about two million square feet. There are service contracts for everything from janitorial to CCTV.<sup>99</sup> With specialized contractors in place, preventative maintenance is done regularly, which means building components function better and last longer, saving funds in the long run.

## Strategic and Long-Term Planning

Few of the cities that we spoke to conducted long-range or strategic planning for their police or fire facilities. Most described their planning process as reactive. Other terms used included “it’s crisis management,” “used a band-aid approach,” “we wing it,” and “we’ve flown by the seat of our pants.” FDNY relayed that there is little available vacant land in New York City, and land values far exceed available funding, which makes it difficult for the Department to conduct any long-term planning for fire facilities.<sup>100</sup>

Bonnie Amado from the Chicago Police Department mentioned that they did long-term planning “way back when” under the Neighborhoods Alive! Program under Mayor Richard Daley, who was mayor from 1989 to

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<sup>99</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>100</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

2011.<sup>101</sup> The Neighborhoods Alive! program was active 10–15 years ago. The program removed older stations, built new facilities, and created anchors in the community.<sup>102</sup>

NYPD was one of the few agencies we spoke with that has a 10-year Precinct Replacement Plan, which is an internal document. There is a constant need to replace facilities due to variations in population demand, building age, and need for more square footage due to changes in the personnel population (e.g., more gender diversity), or technology.<sup>103</sup>

Boston has a very old fleet. They are moving in the direction of metrics, like life cycle cost, but currently their trucks are more expensive to maintain than they are worth. They have just instituted a Fleet Replacement Plan; they want to get 15 ladder trucks and 23 engines over the next three years.<sup>104</sup>

### Hiring Outside Consultants Gets Mixed Reviews

Many large cities have hired consultants to assess their public safety facilities and make recommendations. Boston last engaged a consultant to assess the condition of their fire facilities in 2003. A recent Fire Department Audit recommended that the Facilities Management Division hire a consultant to update the 2003 assessment of the department's facilities.<sup>105</sup>

A few years ago, Baltimore was going to create a master plan for their police department, which would have cost one to two million dollars to write. The city recognized that they would spend a lot of money creating a master plan that they would then not have had enough money to implement. Eventually, they decided not to write a master plan.<sup>106</sup>

Washington, DC hired outside consultants for about one million dollars to write Facilities Condition Assessments (FCAs) in 2008. The consultants went to each facility and conducted a visual inspection. Each building received an overall score, as well as an index by trade. There was no data about the maintenance of the equipment in these reports. FCAs were at such a high level that they were not useful for day-to-day decisions about what to repair/replace.<sup>107</sup>

FDNY had a positive experience with hiring outside consultants to conduct an assessment of their facilities. In 1994 and again in 2005, FDNY hired a consultant to do an independent assessment of firehouse components. This analysis set up a priority list of items that needed to be replaced or repaired based on an evaluation of building components. A 5-point rating scale was used (5 = *very good condition/lowest priority*; 1 = *very poor condition/highest priority*). This tool is utilized to prioritize projects. Component ratings are not static but subject to revision as different buildings or components deteriorate at different rates. A new survey may be authorized soon to recalibrate ongoing assessments.<sup>108</sup> Table 2 is an excerpt from the rating system.

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<sup>101</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>102</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

<sup>103</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>104</sup> O'Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>105</sup> Matrix Consulting Group. *DRAFT Operational Audit/Review of the Boston Fire Department*. Audit/Review, Boston, Massachusetts: Matrix Consulting Group, June 23, 2015.

<sup>106</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>107</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>108</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

**Table 2:** Excerpt from FDNY Facility Rating System

	RATINGS				
	1	2	3	4	5
	<i>VERY POOR</i>	<i>POOR</i>	<i>FAIR</i>	<i>GOOD</i>	<i>VERY GOOD</i>
<b>POINT TYPES</b>	<b>PRIORITY 1</b>	<b>PRIORITY 2</b>	<b>PRIORITY 3</b>	<b>PRIORITY 4</b>	<b>PRIORITY 5</b>
<b>SIDEWALK / APRONS</b>	Significant cracking, spalling and crumbling of the concrete is evident. Some sections are missing.	Cracking, spalling and crumbling of the concrete is evident. Some sections may be missing.	Moderate cracking is present. There may be some spalling and crumbling of the concrete.	Only minor cracking is present. There may be some spalling.	The sidewalk and apron appear in good condition.
<b>APPARATUS FLOOR</b>	Reinforcing bars are exposed. Corrosion is evident. Excessive cracks or penetrations are present that may extend through the entire slab depth. Substantial concrete spalling is present	Reinforcing bars are exposed. Slight corrosion is evident. Some concrete spalling is present	A small amount of reinforcing bars are exposed. Some corrosion is evident. Moderate cracks or penetrations do not extend through the entire slab depth. Minor concrete spalling is present.	Reinforcing bars are not exposed. Only moderate to minor cracking is present. There may be some spalling.	The slab appears in good condition and/or is a slab on grade.

Source: FDNY

### Capital Programming Timeframes and Processes Vary

Philadelphia has an annual budget with a six-year capital program plan. Washington, DC has a one-year annual spending plan, a five-year plan, and a 20-year plan.<sup>109</sup> New York City has an annual, four-, and 10-year capital program to address large scale projects. In New York, the threshold for a capital project is thirty-five thousand dollars and a five-year useful life. A one hundred thousand-dollar painting project is not a capital-eligible expense, for example.<sup>110</sup>

In New York, the Office of Management and Budget provides funding for capital projects to client agencies. The client agencies, such as FDNY and NYPD, determine how to allocate that funding to projects based on their own internal priorities. The client agency puts together a scope of work and budget. Then they submit a Capital Project Initiation (CPI) to DDC, which reviews the CPI. Once DDC accepts the project, the client agency transfers the capital project funding from their agency to DDC, who then works with the client agency to get the project designed and built.<sup>111</sup>

### Renovating Facilities

In general, there are three types of renovations that police and fire departments engage in:

- Component Repair/Replacement;
- Partial-Gut Renovations;
- Full-Gut Overhauls.

Component repair or replacement usually only affects one system at a time. For example, a repair might entail replacing a boiler, fixing an overhead door, or repairing a roof. In general, these repairs do not require design services. Chicago mentioned that one of the challenges with making large capital investments on big

<sup>109</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>110</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>111</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

systems is that there is a small window of time during which it is possible to make those changes (usually when the seasons change).<sup>112</sup> The Chicago Fire Department is contractually obligated to provide cooking facilities, so they do kitchen renovations much more often than they do gut rehabs. The contractor usually gets in and out in a few days.<sup>113</sup>

Sometimes increasing the scope of a project might enable an agency to address a multitude of issues and past work orders at once. This would be considered a partial-gut renovation. For example, New York is currently renovating two firehouses in historic buildings. Engine Company 23 is a partial renovation, which includes a roof replacement, HVAC upgrade, kitchen renovation, and bathroom renovations. Engine Company 23 was initially a partial renovation that did not include façade improvements, but it quickly became apparent that it would be necessary to stabilize the façade of the landmark building.<sup>114</sup> Meanwhile, Engine Company 293 is receiving a full-gut renovation with an addition. This generally involves taking a building down to the studs and upgrading everything at once. The services of design professionals are required for this type of work, which means that the Office of the Chief Architect within New York City's DDC will be involved to oversee Design & Construction Excellence. DDC's Director of Design & Construction Excellence, Michaela Metcalfe, makes sure that the design consultants the city employs are responsive to Mayor DeBlasio's four lenses: equity, resiliency, sustainability, and healthy living.<sup>115</sup>

Currently, there are three Philadelphia Fire Department firehouses closed for full renovations. The average age of the three stations is over 90 years old. They still had the original floors, but the floors were deteriorating. The Department of Public Property decided to renovate the rest of the building at the same time. In Philadelphia, this takes approximately one year per building.<sup>116</sup> In Philadelphia, the renovation process is a long process that includes multiple phases: planning, programming, budgeting, design, bidding, construction, and operation. Construction must comply with Pennsylvania's 1913 Separations Act, which requires public agencies to solicit separate bids and award separate contracts for plumbing, heating, electrical, and ventilation work that is part of a public construction project.<sup>117</sup> NYPD also mentioned that renovations can be challenging because of the public procurement process and a three-bid minimum.<sup>118</sup>

Boston's Engine 50—the oldest public firehouse in the nation—is in Charlestown, a residential neighborhood near the Bunker Hill monument. There has been a firehouse at this location since 1853.<sup>119</sup> The original structure was designed with a hay loft for the horses that pulled the fire engines. The small three-story firehouse was renovated in 1917 to accommodate motorized firetrucks. There is no separation between the apparatus bay and the living area, and there are no ventilation ducts in the entire building—the only way to vent the kitchen is to open an exterior door. There is currently \$3.5 million set aside to renovate the historic building. The Boston Redevelopment Authority has determined that the façade of the building needs to be maintained. It will be hard to do a renovation in such a tight space.<sup>120</sup>

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<sup>112</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

<sup>113</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>114</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

<sup>115</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

<sup>116</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>117</sup> Philadelphia Department of Public Property. Interview by Christina Arlt. E-mail interview. June 28, 2016.

<sup>118</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>119</sup> Patriot-Bridge Staff. "Engine 50 Firehouse Rehab Set." Charlestown Patriot-Bridge. May 14, 2015. <http://www.charlestownbridge.com/2015/05/14/engine-50-firehouse-rehab-set/> (accessed July 27, 2016).

<sup>120</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

## Making Sure Renovations Do Not Interfere with Emergency Operations

Regardless of whether a city is doing a minor renovation or a gut overhaul, it is important that the project does not interfere with emergency service operations. As NYPD pointed out, “These are 24/7 facilities. People need to keep doing their work.”<sup>121</sup> Luckily, both police departments and fire departments seem to be very adept at shifting vehicles and personnel around to provide the necessary protective services while repairs are taking place. FDNY relocates companies on a daily basis to ensure adequate fire protection when there are multiple-alarm fires, major disasters, major events, or when one company is scheduled for training.<sup>122</sup>

### Software for Estimating Coverage and Response Time

The Philadelphia Fire Department's Operations Chief keeps an eye on response time. Many fire departments use software for determining which companies should provide coverage to keep response times low when a particular facility is being renovated. For example, the Philadelphia Fire Department uses software called Deccan, which can also be used to determine reasonable station locations for the future.<sup>123</sup> The Philadelphia Fire Department also has a Geographic Information Systems Specialist on staff.

### Figure Out How to Store Apparatus Securely and Out of the Elements

The Philadelphia Fire Department currently has three facilities that are undergoing gut renovations. The engine for the firehouse near Philadelphia International Airport—Engine 69—is currently in a tent while the building is under renovation, which leaves this costly equipment exposed to the elements and possible tampering. New York also struggles with apparatus security during renovations. If FDNY needs to store apparatus outside during a renovation, they usually store it in cages so that the vehicle is secured (see Appendix B, “Guide for Liaison to the FDNY Bureau of Facilities”).

### Phasing Projects

Making renovations in occupied spaces is especially challenging because swing space—temporary space for building occupants away from areas that are being renovated—might be needed.<sup>124</sup> It is important to phase projects. Chicago explained that firehouse aprons are usually replaced in segments—one bay at a time—so that the firehouse does not have to be shut down.<sup>125</sup> Where possible, FDNY tries to relocate companies and complete renovations in a single phase. When a firehouse can be turned over to facilities for a single construction phase, the work can often be completed in four to five months. Meanwhile, bathroom renovations in occupied firehouses are typically completed in four phases within an eight to nine month period. Even the relocation of one unit can simplify phasing requirements and decrease needed swing space. This will result in the project being completed more quickly. Partitioning off the work area and providing an alternative means of contractor access is also an option.<sup>126</sup>

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<sup>121</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>122</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>123</sup> Deccan International. *Fire Department and EMS Software: Deccan International*. 2016. <http://deccanintl.com/> (accessed July 14, 2016).

<sup>124</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>125</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>126</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

New York has taken the idea of phasing projects so they do not interfere with emergency operations one step further: they have started designing facilities so that power failures do not interrupt emergency operations



**FDNY Zerega Avenue EMS Facility**

Source: New York City DDC

either. For example, at the newly built Zerega Avenue EMS Station in Castle Hill, a power failure would only affect non-essential services: “A generator raised above flood level provides emergency power redundancy. A photovoltaic system with battery storage powers controls. Translucent side walls insulate while letting in daylight to assure off-grid work light. Even interior hallways can be lit by light-harvesting tubes. Rooftop solar thermal panels and an insulating green roof supply hot water for showers and for cleaning hazard suits. The suits are laid on a

metal grating mezzanine where heat from vehicles below can assist drying. Operable windows assure natural ventilation as needed. The green roof helps irrigate an adjacent community garden.”<sup>127</sup>

## Gut Overhauls

FDNY has recently decided to minimize all component work and reemphasize full-scale, multi-component renovations. The logic is that expending funds on individual projects dilutes their impact and is not as efficient as repairing multiple things at once. By the early 1990s, New York City’s firehouses were in “deplorable condition”<sup>128</sup> as a result of a decades-long halt on new firehouse construction and the city’s financial issues in the 1970s and again in the late 1980s, when city funding was directed to other priorities. A consultant study evaluated the buildings and then identified and quantified the deficiencies. The worst facilities were addressed as gut renovation projects. At the same time a number of apparatus floors were replaced because of severe structural defects, and the building envelopes were addressed as a priority. Over the past 20 years the department has gut rehabilitated more than 30 firehouses, with several more underway or in the planning stages. The last gut overhaul the Chicago Fire Department undertook was Engine 1. As Michael Callahan of the Fire Department noted: “The money to do this type of job doesn’t come around often.”<sup>129</sup>

## Co-locating Facilities

One strategy for reducing the number of buildings that a public agency has to maintain is to co-locate different government agencies together. For example, Philadelphia’s Fire Administration Building at 240 Spring Garden Street is co-located with the Philadelphia Office of Emergency Management.<sup>130</sup> Philadelphia Police have several properties that are co-located with Licenses & Inspections, the Fire Department, or the Streets Department.<sup>131</sup> One of the benefits of co-located facilities is that it reduces overhead because the city only

<sup>127</sup> New York City Department of Design and Construction. “Design and Construction Excellence 2.0 Guiding Principles.” *Publications*. 2016. <http://www1.nyc.gov/assets/ddc/downloads/DDC-Guiding-Principles-2016.pdf>, page 86-87 (accessed June 8, 2016).

<sup>128</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>129</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>130</sup> Philadelphia Fire Department. *Headquarters*. 2008.

[http://www.phila.gov/fire/fac\\_and equip/facil\\_admin\\_headquarters.html](http://www.phila.gov/fire/fac_and equip/facil_admin_headquarters.html) (accessed June 23, 2016).

<sup>131</sup> Philadelphia Department of Public Property. Interview by Christina Arlt. E-mail interview. June 28, 2016.

needs to maintain one facility instead of two. With fewer electrical and mechanical systems, there is less of a possibility of something breaking, as well as less of a need to have different parts on hand for repairs. Another benefit of co-location for leased facilities is that the city is able to negotiate with landlords for more favorable lease terms (lower rent per square foot) when they occupy more space in a building.

FDNY has EMS stations on the grounds of city-owned hospitals,<sup>132</sup> while NYPD has quite a few facilities that are co-located with FDNY facilities. The NYPD also leases space in severally privately owned buildings that house multiple city agencies. NYPD looks to consolidate leases wherever possible. In the past five years, they have had to relocate 3,000 personnel due to leases expiring. They do not like to give up city-owned buildings. If they open up a new building, they use the old building for other units or subunits.<sup>133</sup> For example, the new Police Academy in Queens is one and a half years old. At 730,000-square-feet, the new academy—which includes classrooms, mock training environments, instructional offices, administrative support spaces, and physical training facilities<sup>134</sup>—is three times the size of the old Police Academy, which is being renovated in order to accommodate police department personnel who currently occupy leased space.<sup>135</sup>

Recently, Chicago moved their Fire Department headquarters into 3510 Michigan Avenue, the same building that houses their Police Department headquarters. The building was renamed the Public Safety Headquarters. The Fire Department had rented floors 13 and 14 at a building across the street at a cost of five hundred thousand dollars per year. Their vehicles were parked over a block away so getting down from the 13th and 14th floors and then to the vehicles caused delays in emergencies. Now the Fire Department is located on the 2nd floor of the five-story Public Safety Headquarters, giving them more square footage (each floor of the building is approximately 60,000 square feet), and easier access to their cars in the event of an emergency.<sup>136</sup>

One of the challenges of co-located facilities is that public safety agencies have less say in the building's overall use and maintenance—especially if the facility is leased. The Boston Fire Department's "Big House" is located in the bottom of a residential building on Purchase Street. It is a division headquarters, which means it is a headquarters for half the city.<sup>137</sup> The city leased the space for 100 years. But Boston has no say in a lot of what happens in the building because they are simply a tenant; if the city were to explore this type of arrangement again in the future, the city would prefer to be a condo owner so that they would have more input into building repair and maintenance.<sup>138</sup> FDNY also mentioned that firehouses in skyscrapers have been routinely problematic as the Fire Operations and office/residential building requirements are at odds.<sup>139</sup>

Some cities are looking to co-locate facilities in the future. The District of Columbia commissioned DLR Group to develop a comprehensive Public Safety Facilities Plan, which included recommendations for a campus to

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<sup>132</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>133</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>134</sup> New York City Department of Design and Construction. "STATE OF THE AGENCY: 2014-2016." *State of the Agency*. 2016. <http://www1.nyc.gov/assets/ddc/downloads/publications/about-ddc/ddc-state-of-the-agency.pdf> (accessed June 8, 2016).

<sup>135</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>136</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>137</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

<sup>138</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

<sup>139</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

consolidate the headquarters of Washington, DC's major public safety agencies; however, no action has been taken to implement this plan.<sup>140</sup>

## Closing Facilities

Most cities said the decision to permanently close a public safety facility involved the police or fire commissioner, in addition to others like the mayor and/or City Council, Budget Office, and in some cases community members. In Chicago, there was one very old station that was closed in 2012. The footprint was too small, and it was not needed anymore.<sup>141</sup>

If FDNY were to permanently close a facility and the property were to be given up, the Bureau of Facilities would come in after Operations vacated the facility to remove the fuel tank and diesel fill ports to prevent accidental deliveries. Specialized equipment, typically related to communications and fuel monitoring, would be removed and salvaged. Water and utilities would be turned off, and the facility would effectively be mothballed. The property would then be turned over to Citywide Administrative Services for final dispensation. This is atypical.<sup>142</sup> FDNY relinquished five buildings in the past 20 years, all of which were constructed in the 1870s and 1880s.<sup>143</sup> Most cities opt to renovate facilities that police or fire departments relinquish and reuse them for other departments.

Washington, DC's police building portfolio has shrunk from approximately 36 to 28 buildings over the past decade. However, in this timeframe, they were also able to build or renovate several facilities. For example, they built a new operations center and evidence warehouse. In February 2014, they consolidated the Sixth District Headquarters and the MPD's Youth Investigations Division into a former school, the vacant Merritt Middle School at 5002 Hayes Street, NE. The 38-year-old building was converted into an 80,000-square-foot, state-of-the-art facility. The new site provides officers and residents with a brand-new facility and a more pleasant work environment to complement modern police operations and the MPD's community-outreach programs.<sup>144</sup> They also renovated a former school at 101 M Street, SW, into the headquarters for the First District.<sup>145</sup>

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<sup>140</sup> DLR Group. "District of Columbia Public Safety Facilities Master Plan." *DLR Group*. 2015.

<http://www.dlrgroup.com/work/district-of-columbia-public-safety-facilities-master-plan/> (accessed March 29, 2016).

<sup>141</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>142</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>143</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, August 3, 2016.

<sup>144</sup> Metropolitan Police Department. "Annual Report 2014." *Annual Reports*. 2014. <http://mpdc.dc.gov/page/mpdc-annual-reports> (accessed July 12, 2016).

<sup>145</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.



**Washington, DC's First District Police Station in a renovated school**

Source: Google Maps 2014

## Replacing Facilities with New Facilities

Sometimes renovating or upgrading an older facility is cost prohibitive. Chicago has responded to this dilemma with a conscious effort to replace older buildings with new buildings over the past 10–15 years. The PBC of Chicago is responsible for the construction of all new city buildings.<sup>146</sup> Many of the older Chicago Police buildings have been replaced or closed; right now there is no process for replacing buildings. Washington, DC's FEMS facilities are generally replaced one for one in order to maintain adequate response times. Sometimes the new facilities are larger than the facilities they replaced. For example, DC FEMS's new 13th District facility houses 14 people and six to seven pieces of equipment, while the old facility housed 10 people and four pieces of equipment.<sup>147</sup> Over the last 20 years, FDNY has built nine new firehouses (with an additional one in the planning stages and about to be constructed), as well as 15 new EMS stations.

New York City's 40th Precinct in the South Bronx was an existing precinct in a historic building. In the pre-schematic phase, NYPD evaluated the cost of a gut renovation versus the cost of constructing a new building. They needed more space so NYPD decided to build a new facility. NYPD had to work with the Department of Citywide Administrative Services (DCAS) to locate property, which they eventually placed on a nearby city-owned parking lot.<sup>148</sup>

After the construction of FDNY's new Rescue Company No. 2 building in Brooklyn (see rendering on page 18), the existing two-story firehouse may be given to DCAS for potential reuse for another city agency. Rescue Company No. 2 is one of six specialized rescue units in the city. There is one rescue company per borough, plus one mobile unit that can provide backup to other companies. A



**A Rendering of NYPD's 40th Precinct**

Source: NYC Department of Design and Construction

<sup>146</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>147</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>148</sup> New York City Citywide Administrative Services. *NYC DCAS*. 2016. <http://www.nyc.gov/html/dcas/html/home/home.shtml> (accessed July 15, 2016).

rescue company is an elite squad whose members have lots of specialized training in underwater rescue, collapse rescue, and rescuing firefighters. Often their training is done in house. The existing Rescue Company No. 2 building had some equipment set up in a sideyard, but it was very makeshift. The architectural firm—Studio Gang—came up with a design for the new building that provides training equipment in and on top of the building. For example, there is an internal training wall that is three-stories high. Some practice equipment is located on the roof. There is a confined-space rescue training area in the basement.<sup>149</sup>

#### Improve Efficiencies in the Capital Construction Process

New York City's DDC has recently undergone several improvements to streamline the capital project process. They have consolidated and reorganized their agency's capital budget administration office, which reduced project approval durations from the city's Office of Management and Budget by 22 percent while increasing output by 20 percent. They now proactively schedule bids for release within 14 days of DDC Law Division's approval. They have also improved their legal reviews process, which means it only took the law department 18 days to review FY 2016 infrastructure bids and 26 days to review public building bids. DDC has created an in-house design unit in their Public Buildings Division, which will allow some projects to be designed within DDC rather than being outsourced, as well as an in-house capital project front-end planning (ICPFEP) unit to reconcile a project's scope of work, project schedule, and budget prior to expending funds on design services. This helps ensure capital projects are completed on time and within budget.<sup>150</sup>

#### Multi-Disciplinary Pre-Schematic Meetings Lead to Better Facilities

Bonnie Amado of the Chicago Police Department emphasized the importance of cross-departmental meetings prior to designing a new facility. Getting the appropriate parties at the table—including the users, architect, maintenance (interior and exterior), technology, the Police Department's top brass, commanders/lieutenants, the budget office, and the people who hire janitorial staff—is important because it is easier and cheaper to make design decisions in the pre-schematic phase rather than when construction has started.<sup>151</sup> Michaela Metcalfe from New York City's DDC also emphasized the importance of talking to the end users of the facility to understand their needs, as well as talking to nearby community members to understand their expectations and desires for the facility.<sup>152</sup>

#### Building Prototypes Can Shorten the Construction Process

The Public Building Commission of Chicago has developed prototype designs for schools, police stations, firehouses and libraries in order to simplify the construction process, reduce project timelines, and streamline costs. According to PBC's website, "The use of prototypes reduces time spent on site selection and acquisition, utility relocation, building design and permit approvals. Ultimately, the prototypical approach translates to big savings on total development costs as well as faster and more efficient delivery of buildings and facilities with the very best life-cycle returns."<sup>153</sup> Chicago has two fire department prototypes: one that is 14,611 square feet, and another that is 19,725 square feet. The prototype police station is 44,000 square feet and includes a community room space that seats 100 people.<sup>154</sup>

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<sup>149</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

<sup>150</sup> New York City Department of Design and Construction. "STATE OF THE AGENCY: 2014-2016." *State of the Agency*. 2016. <http://www1.nyc.gov/assets/ddc/downloads/publications/about-ddc/ddc-state-of-the-agency.pdf> (accessed June 8, 2016).

<sup>151</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

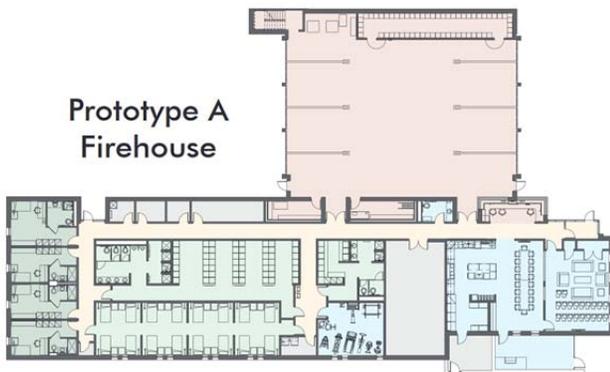
<sup>152</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

<sup>153</sup> Public Building Commission of Chicago. *PBC Projects*. 2016. <http://www.pbcchicago.com/content/projects/> (accessed May 16, 2016).

<sup>154</sup> Public Building Commission of Chicago. "The Living Prototype." n.d. [http://www.pbcchicago.com/pdf/PrototypeBook\\_Spreads.pdf](http://www.pbcchicago.com/pdf/PrototypeBook_Spreads.pdf) (accessed July 12, 2016).

It takes seven to eight years to get a fire facility built in Philadelphia. The Philadelphia Fire Department's newest facility, Engine 38, took five years to build. The only reason that it was replaced so quickly was because the Pennsylvania Department of Transportation needed to tear down the old facility to build a ramp for I-95.<sup>155</sup> Similarly, the Philadelphia Police Department had a meeting with Capital Programs in 2004–2005 about renovating the Highway Patrol Building at 6600 Erie Avenue, but the entire project was not completed for five to six years.<sup>156</sup> In contrast, Chicago built a new firehouse using one of their prototypes in 18–24 months. The time from first contact with PBC to turnkey was 30–32 months.<sup>157</sup>

New York City's Office of Management and Budget has approved prototypical spatial standards for the various types of buildings FDNY might construct (single company, double company, rescue companies, EMS stations, etc.). While each new station is different, they must adhere to these spatial standards.<sup>158</sup> New York used to have prototypes, most recently for EMS stations designed in the 1990s, but has since moved to designing unique buildings, due in part to the influence of New York City's Public Design Commission, which reviews architecture on city-owned property.<sup>159</sup> NYPD has programmatic requirements for their new facilities (which includes information about how much space a commanding officer gets versus how much space a police officer gets), but it is nothing like Chicago's prototype system. In New York, every site is different and therefore every new facility is designed from scratch.<sup>160</sup> Boston is in the preliminary stages of creating a Program of Requirements for fire stations, which describes the minimum size requirements for various parts of a firehouse, such as the apparatus bay, dormitories, living area, public areas, administrative, maintenance, and circulation space. The Boston Fire Department is using example Program of Requirements from Seattle and Phoenix.<sup>161</sup>



***An example of one of Chicago's building prototypes for a firehouse***

*Source: PBC of Chicago*

Do a Walk-Through of an Existing Facility before Designing a New One

Bonnie Amado of the Chicago Police Department recommends walking-through the most recently constructed stations to see what works and what does not. By evaluating the most recent facilities, departments can

<sup>155</sup> Philadelphia Fire Department. Interview by Christina Arlt and Tamara Mittman. In person Interview. Philadelphia, April 1, 2016.

<sup>156</sup> Cochrane, Michael. Interview by Christina Arlt, Tamara Mittman, and Karin Morris. In person Interview. Philadelphia, April 18, 2016.

<sup>157</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

<sup>158</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>159</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, August 3, 2016.

<sup>160</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>161</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

determine how well each facility is meeting current needs. Cities can also use this opportunity to make changes to future design consideration. It's important to make sure the department has enough room for technology, technological advances, and security. Other things to consider include: land acquisition, traffic, and environmental concerns.<sup>162</sup>

#### Design Facilities with Maintenance in Mind

NYPD asserted that New York City will never have enough maintenance staff, so buildings should be configured with ease of maintenance in mind.<sup>163</sup> Similarly, FDNY said one of the biggest issues with new buildings is operations and maintenance training for in-house staff.<sup>164</sup> It is important to train facilities and maintenance staff on new facility improvements they may be unfamiliar with, such as solar panels and geothermal heating, which they might not have encountered in older facilities. Training will ensure these new systems are functioning properly and as intended.

#### Conduct a Walk-Through before Accepting a Newly Constructed Building

In Chicago, the PBC, 2FM, and Police Facilities always do a walk-through before accepting a new building. Michael Cochrane of the Philadelphia Police Department recounted a story about doing a walk-through of a facility and noticing that the locks for detention cells were installed on the wrong side of a door in a new police station—an issue that definitely needed to be corrected prior to the building opening. Bonnie Amado of the Chicago Police Department recommends getting multi-year warranties on building components, which might also mean that the contract with the vendor needs to be transferred to the department that is in charge of maintenance.<sup>165</sup>

#### Conduct Post-Occupancy Building Surveys

Both Chicago and New York mentioned the importance of having post-construction debriefs. Chicago gets together an interdisciplinary team to discuss lessons learned about the floor plan, the materials, and feedback from end user, engineers, tradespeople, and janitorial staff.<sup>166</sup> New York City's DDC Architecture and Engineering Division conducts Post-Occupancy Surveys after a facility is occupied. The Office of the Chief Architect also does a Design Metrics Survey at the beginning of design, at the end of design, and at the end of occupancy to ensure that all of the city's long-term equity, sustainability, resiliency, and healthy living goals have been met. FDNY said post-construction surveys are conducted one to three years after major facilities open.<sup>167</sup>

## Building New Facilities Due to Population Shifts

As city populations grow or decline, facility needs shift. Several cities brought up the need to add new police or fire facilities due to population shifts. For example, population has grown along the Boston Waterfront in the last decade, and there is a need for a new firehouse in that area. Using Chapter 91, the Massachusetts Public Waterfront Act, the city has negotiated with the developer of Wharf 8 to build the Fire Department a new firehouse. Because firehouses in Boston have restrooms that are open to the public, it enables the developer

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<sup>162</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>163</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>164</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>165</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>166</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

<sup>167</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

to meet his obligation to provide public benefits for a waterfront project.<sup>168</sup> Washington, DC also mentioned the possibility of needing to add fire facilities in the future because DC's population has grown and shifted.<sup>169</sup>

NYPD is currently exploring the possibility of adding a new precinct in Queens due to population trends and response times. Obviously, this would be contingent on available sites and funding, as real estate in New York is very expensive, which makes it difficult to find new sites. Many of the good sites are taken. Parking is also a huge issue. Many of their newest facilities have been built on "the lousy sites that other people don't want to build on—the ones that have subsurface conditions or poor transportation."<sup>170</sup> FDNY has begun using management software to look at their response data, as well as geographic trends, to determine if and where new firehouses may be needed in the future to meet population demands and to maintain adequate emergency response times.<sup>171</sup>

As the 2010 Census showed, Philadelphia gained population for the first time in 50 years. Some areas of the city have grown faster than others, which means it may be necessary to reassess the locations of certain public safety facilities. Philadelphia's Office of the Controller released a report in February 2016 that stated: "we believe there may be too few fire stations to cover certain areas of the city, which over time have developed or redeveloped and become more populated."<sup>172</sup> The Controller recommends examining the coverage area of fire stations to determine if their location is impeding quicker response to fire emergencies.

## Show Me the Money: Funding Renovations and Capital Improvements

There's Never Enough Money to Go Around

Every city we spoke with talked about budgetary constraints. Michaela Metcalfe, who works for New York's DDC, which has a seventeen billion-dollar capital budget, summarized it most succinctly: "We don't always have adequate funding to do all we aspire to do."<sup>173</sup> And the situation does not appear to be improving in the near future. As FDNY pointed out, "It is our view [that] resources will always be 'constrained.' There will never be sufficient funding to address all issues in all locations."<sup>174</sup>

In addition to limited funding, there are also competing priorities for the funding that is available. As Bonnie Amado of the Chicago Police Department noted, "There are other facilities that are not police facilities that need attention too. Generally, public safety facilities are given higher priority, but there's still stuff you have to put off because there are other non-police and fire facilities."<sup>175</sup> Michael Callahan of the Chicago Fire Department echoed her sentiments: "We try to make as much as we can with limited resources. ...It works as well as it can under the conditions we have. When there's an emergency, the city comes up with a way to fund the repairs but that takes money away from other departments, issues, and priorities."<sup>176</sup>

Older buildings cost more money to maintain. Chicago's 2FM managers said: "If you apply the industry standard cost for each square foot, you're talking big numbers when the majority of the portfolio is in the aged buildings category. The priority is to make the best decisions without impacting the operation of buildings or

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<sup>168</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

<sup>169</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>170</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>171</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>172</sup> City of Philadelphia Pennsylvania. "PFD Needs to Reconsider Its Brownout & Rotation Policies." *Office of the Controller*. February 11, 2016. <http://www.philadelphiacontroller.org/audits-reports/philadelphia-fire-department-department-needs-to-reconsider-its-brownout-rotation-policies> (accessed July 13, 2016).

<sup>173</sup> Metcalfe, Michaela. Interview by Christina Arlt and Liz Compitello. Telephone interview. June 30, 2016.

<sup>174</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>175</sup> Amado, Bonnie. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 30, 2016.

<sup>176</sup> Callahan, Michael. Interview by Christina Arlt and Tamara Mittman. Telephone interview. April 15, 2016.

causing delays to the citizens of Chicago.”<sup>177</sup> A recent audit of Boston’s Fire Department stated, “The Facilities Management Division Staff is responsible for maintaining very old facilities that are generally in poor condition.” One of the recommendations was that additional staff or contracted resources are needed in order to maintain facilities with so much deferred maintenance.<sup>178</sup>

Philadelphia, Baltimore, and New York all mentioned the high cost of quality design and construction. FDNY commented that obtaining quality architectural services, general contractors, and construction managers for larger projects is often challenging.<sup>179</sup> Baltimore also commented that capital project dollars never stretch far enough. For example, Baltimore DGS might have five hundred thousand dollars allocated for one building, but after doing the design, there is only enough money to get the roof done and renovate a couple of bathrooms.<sup>180</sup>

#### Public-Private Partnerships Can Help Stretch Limited Public Dollars

In an era of constrained municipal resources, many cities are turning to public-private partnerships in order to upgrade and modernize their public safety facilities. The City of Chicago mentioned that one developer is so interested in building a skyscraper on the site of an existing public safety facility that he has offered to build the department a brand-new facility on the first two floors of the new skyscraper. New York City has three locations where developers have incorporated a firehouse into a high-rise structure; however, FDNY noted, “These have all been routinely problematic firehouse[s] as the Fire Operations and office/residential building requirements are at odds.”<sup>181</sup>

Baltimore has perhaps been the most prolific at using private investment to renovate police and fire stations. In 2011, the Baltimore Police Foundation and Kevin Plank, the CEO of Under Armour, a sports clothing and accessories company based in Baltimore, donated three hundred thousand dollars to purchase equipment and renovate the gym at the Southeastern District station into a state-of-the-art facility.<sup>182</sup> The renovation, which used labor donated by police officers in addition to private donations, took two years. The renovated facility featured elliptical machines, speed bikes, free weights, and leg presses, and opened in November 2013. Lt. Brian Pearson of the Baltimore Police Department stated, “This amazing facility would not have been possible without the dedication of my colleagues on the police force and the financial commitment of area business leaders. The sweat equity and dollars that have been invested in this new training center represent a public-private partnership that will benefit the entire community.”<sup>183</sup> The “sweat equity” saved the project an estimated eight hundred thousand dollars.<sup>184</sup>

Lt. Brian Pearson approached other Baltimore civic and business leaders to raise additional funds to renovate the Southeastern District’s roll-call room and break room, as well as construct an outdoor cooking area for

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<sup>177</sup> Kalaycioglu, Aysegul, Anthony Pascente, and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 3, 2016.

<sup>178</sup> Matrix Consulting Group. *DRAFT Operational Audit/Review of the Boston Fire Department*. Audit/Review, Boston, Massachusetts: Matrix Consulting Group, June 23, 2015.

<sup>179</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>180</sup> Stricklin, Stephen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 6, 2016.

<sup>181</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, June 23, 2016.

<sup>182</sup> City of Baltimore, Maryland. *Baltimore Police Foundation, Under Armour, & Baltimore Community Foundation Announce \$300,000 to Benefit BPD*. September 8, 2011.

<https://content.govdelivery.com/accounts/MDBALT/bulletins/120677> (accessed June 20, 2016).

<sup>183</sup> WMAR Staff. *New Police Training Facility Opens in Southeast Baltimore*. November 20, 2013.

<http://www.abc2news.com/news/region/baltimore-city/new-police-training-facility-opens-in-southeast-baltimore> (accessed June 20, 2016).

<sup>184</sup> Police magazine. *Baltimore PD Teams with Local Businesses to Renovate Police Stations*. September 14, 2014.

<http://www.policemag.com/channel/patrol/news/2014/09/18/baltimore-pd-teams-with-local-businesses-to-renovate-police-stations.aspx> (accessed June 20, 2016).

officers. What started as something that Lt. Pearson did in his spare time has since become an official Police Department initiative. The department hopes to use this model to revitalize Baltimore's eight other police district stations by raising three million dollars to continue capital improvements.<sup>185</sup> Major corporations, such as Blue Cross and Blue Shield and Wells Fargo, have committed to the efforts in other stations. On September 19, 2014, Under Armour sponsored a district cleanup at the Southwestern station. In July 2015, The Brickman Group, a landscaping company, planted 100 new plants around the Southeastern District with help from officers, Mission BBQ, and Bank of America employees.<sup>186</sup>

Most recently, efforts have targeted the Western District station, which was the focus of intense civil unrest in April 2015 after the arrest and subsequent death of Freddie Gray. The *Baltimore Sun* described the Western District station as "one of the most dilapidated of the city's nine police stations."<sup>187</sup> The building was built in the 1950s. The police district stations once had functioning courtrooms, judges' chambers, press rooms, and community space. When the courtrooms were moved out in the 1970s, the space was reused for purposes other than it was originally intended for. Several districts used lobbies for storage space and eventually ended up closing them off from the public. The Western District had jersey barriers placed outside and a fence built around the parking lot, which furthered the image of the building as a fortress.



**A rendering of Baltimore's proposed Western District renovations**

Source: *Baltimore Sun*

<sup>185</sup> Police magazine. *Baltimore PD Teams with Local Businesses to Renovate Police Stations*. September 14, 2014. <http://www.policemag.com/channel/patrol/news/2014/09/18/baltimore-pd-teams-with-local-businesses-to-renovate-police-stations.aspx> (accessed June 20, 2016).

<sup>186</sup> Bank of America. *Southeast district gets a facelift*. July 24, 2015. <http://about.bankofamerica.com/en-us/partnering-locally/southeast-district-facelift.html> (accessed June 20, 2016).

<sup>187</sup> Fenton, Justin. *\$2.4M private investment hopes to turn Western District police station into community hub*. May 3, 2016. <http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-new-western-district-plan-20160503-story.html> (accessed June 20, 2016).

The proposed renovations at the Western District will turn the station back into a community hub. An artist's rendering shows façade changes that will make the building look more like a library. Although the footprint of the building will not be enlarged, the floor plan will be updated to include safe community spaces, which funders hope will invite community members in and enable positive non-enforcement interactions, while still keeping officers safe. The city will perform three hundred thousand dollars in upgrades, including asbestos removal, renovated flooring, and HVAC upgrades. Private funding—totaling \$2.4 million—will fund additional upgrades, including: secure locker rooms, updated restrooms, conference rooms for interviews, and improved training and equipment space. The outdoor areas will also be enhanced with outdoor seating, free Wi-Fi access, a safe play area, and public parking spaces. Funding for the project has come from a variety of sources, including Under Armour, Wells Fargo, JS Plank and DM DiCarlo Family Foundation, the Baltimore Ravens, the Warnock Foundation, Maggie and Reed Cordish, BGE, St. Agnes Hospital, Comcast, and the Abell Foundation.<sup>188</sup>

Using public-private partnerships is not without its downsides. It takes a great deal of time because relationships must be built over time. Furthermore, if one key individual leaves either a public agency or a private company, future funding might be jeopardized. In Baltimore, certain funders wanted to hire specific contractors, which meant Baltimore's Board of Estimates had to review the agreements to make sure that it did not run afoul of bidding requirements.

Washington, DC has also successfully used public-private partnerships. For the new Engine 13 firehouse, the city conducted a landswap for developable rights with a developer. The new facility will be built at 400 E Street SW, near the NASA headquarters. The project will feature a nine-story hotel above a modern two-story fire station. DC's Engine 1 is in the heart of the Westend neighborhood close to Georgetown. The area is in high demand—the existing two-story firehouse, which was built in the 1950s, is across from a Ritz Carlton hotel and adjacent to an embassy. The parcel was zoned for a Floor Area Ratio (FAR) of 10–12 stories. The city sold the air rights to a developer minus the cost of constructing the city a brand-new firehouse. When the building is finished, the first two floors will be a firehouse, floors three through five will feature squash courts, and floors six through 10 will be apartments. While this arrangement ended up costing the city slightly more than if they had built the new facility from scratch because they also had to spend \$2.5 million to three million dollars to build a temporary firehouse for the firefighters to operate out of while the new facility was being constructed, the benefit was that the developer provided the capital so the city did not have to outlay any money upfront.

#### Saving Energy Saves Money

Chicago's 2FM looks for the low-hanging fruit ways to save money. They emphasized the importance of buying resilient products, such as LED light bulbs that do not have to be changed as often. While they have a slightly higher initial upcharge, 2FM saves money on maintenance by not having to replace the lightbulbs as often, which frees up employees' time to work on other projects. In other words, electricians can work on other things beyond changing light bulbs.<sup>189</sup>

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<sup>188</sup> Fenton, Justin. *\$2.4M private investment hopes to turn Western District police station into community hub*. May 3, 2016. <http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-new-western-district-plan-20160503-story.html> (accessed June 20, 2016).

<sup>189</sup> Pascente, Anthony and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. March 31, 2016.

## Energy Benchmarking

The New York City DCAS has, since 2009, coordinated with city agencies to benchmark nearly 3,000 city buildings, including police stations and firehouses in compliance with Local Law 84 of 2009.<sup>190</sup> Benchmarking is the process of measuring energy-use intensity (EUI), which is a metric of energy use per square foot. Benchmarking helps ascertain the relative energy efficiency of a facility, and allows building managers to set and achieve target performance goals, and track progress over time. According to NYPD, if the DCAS identifies an NYPD facility with an EUI that is not meeting target reduction goals, DCAS identifies an opportunity for improvement and provides NYPD with the funds to implement energy-management projects, such as upgrades to the boilers and other energy-saving facility improvements.

Further, NYPD has used EUI to track progress of new construction projects and help guide the success of efforts to achieve deep reductions in energy use.<sup>191</sup> NYPD's new 43,500 square-foot 40th Police Precinct Station House in the Bronx was able to achieve an EUI of 22 (measured in kBtu per square foot), which is incredibly low for a facility that operates 24 hours per day, seven days a week. By tracking EUI throughout the design of the facility, NYPD was able to verify the value of each additional energy-saving measure added to the project for a cumulative energy savings that was far below additional design expectations. NYPD's 40th Police Precinct was one of several pilot studies that New York City targeted to explore compliance with Local Law 86, which requires new city government building projects and major renovations to achieve Leadership in Energy and Environmental Design (LEED®) certification.<sup>192</sup>

More recently, New York City passed Local Law 31 in March 2016, which requires all new construction, additions, and major renovations to use 50 percent less energy than the currently measured median EUI for a similar facility type. The mayor is authorized under this legislation to establish deeper targets for facility types. Projects must also evaluate the feasibility of 10 percent production of on-site renewable energy, and projects greater than three stories must evaluate the feasibility of net-zero energy use. All city agency energy-reduction goals will be informed by city-wide efforts to identify best practices and push standards for achieving significant portfolio-wide EUI reductions.<sup>193</sup> Additionally, in 2016 New York City passed Local Law 32, which requires all new construction, building addition, or building renovation projects with construction costs exceeding two million dollars to meet LEED Gold standards.<sup>194</sup>

## Find Creative Funding Sources

Thinking creatively about funding sources for various components of a renovation or construction project might bring in new sources of funding. For example, heavy duty diesel vehicle replacement projects that reduce air pollution might be eligible for Congestion Mitigation and Air Quality Improvement Program funds (<http://www.dvrpc.org/CMAQ/>). Improvements that improve the health of police officers and firefighters might be eligible for funding through the Centers for Disease Control and Prevention (<http://www.cdc.gov/grants/interestedinapplying/index.html>). FDNY is using federal grant funds to install 18

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<sup>190</sup> New York City DCAS. "New York City Government Building Energy Benchmarking Results 2014." *DCAS Energy Management*. 2014. [http://www.nyc.gov/html/dem/downloads/pdf/2014\\_Annual\\_LL84\\_Report.pdf](http://www.nyc.gov/html/dem/downloads/pdf/2014_Annual_LL84_Report.pdf) (accessed July 15, 2016).

<sup>191</sup> New York City Department of Design and Construction. "Design and Construction Excellence 2.0 Guiding Principles." *Publications*. 2016. <http://www1.nyc.gov/assets/ddc/downloads/DDC-Guiding-Principles-2016.pdf> (accessed June 8, 2016).

<sup>192</sup> New York City Mayor's Office of Sustainability. *Green Buildings and Energy Efficiency*. 2016. <http://www.nyc.gov/html/gbee/html/public/public.shtml> (accessed July 15, 2016).

<sup>193</sup> Kerr, Laurie. *Next Gen Lean and Green NYC-Owned Buildings*. March 9, 2016. <http://urbangreencouncil.org/content/news/next-gen-lean-and-green-nyc-owned-buildings> (accessed July 15, 2016).

<sup>194</sup> The New York City Council. Legislative Research Center. March 28, 2016. <http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=2240514&GUID=730CFA4E-3E44-4CF5-AA3E-7D2E0EEEC7B8> (accessed July 15, 2016).

generators.<sup>195</sup> While bringing in grant funds can require departments to monitor and report on their progress, it also frees up local dollars for other projects. In-kind services are another option to make a project come together. For example, the Philadelphia Water Department can install tree trenches, rain gardens, and other stormwater infrastructure on public properties. Green roofs extend a roof's life, reduce air-conditioning costs in summer, and reduce heating costs in winter.



***NYPD's 121st Precinct in Staten Island treats stormwater with bioretention areas***

*Source: New York City DDC*

The Boston Fire Department's new commissioner hired Kathleen Judge, who had 30 years of experience securing and managing over one billion dollars in grants in the health care industry, to find alternative sources of funding to renovate firehouses. Massachusetts municipalities are constrained by Proposition 2½, which means they cannot raise their total annual property tax revenue by more than 2.5 percent annually. One of the first grants Judge secured for the Boston Fire Department was a Staffing for Adequate Fire and Emergency Response (SAFER) grant from the Federal Emergency Management Agency. Boston used thirteen million dollars to hire 75 firefighters. She is also exploring public-private partnerships, Energy Investment Tax Credits (which give developers who invest in solar or wind power a 30 percent reduction on their income taxes), energy bonds, tax-exempt private equity bonds, Massachusetts' Infrastructure Investment Incentive (I-cubed), and New Market Tax Credits (for redevelopment of firehouses in low-income areas). Other members of city government were so intrigued by the alternative financing strategies that Judge is exploring that the City of Boston created an Alternative Financing Unit in their Office of Budget Management.<sup>196</sup>

### Saving Money By Outsourcing

Many cities spoke about outsourcing various services in order to save time and money. New York City outsourced their records storage. The Boston Fire Department's fleet manager's goal is to send 10 percent to 15 percent of the shop's work that is too complex, or will take too much time for shop employees to handle, to vendors.<sup>197</sup> Washington, DC has hired a private ambulance service for low-level EMS calls.<sup>198</sup>

<sup>195</sup> Fire Department of the City of New York (FDNY). Interview by Christina Arlt. Written interview. E-mail, August 3, 2016.

<sup>196</sup> Judge, Kathleen. Interview by Christina Arlt. Telephone Interview. July 21, 2016.

<sup>197</sup> O'Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.

<sup>198</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

### Customized Capital Project Reports Could Win Additional Allies for Funding

New York City's DDC has generated annual reports customized for 24 agencies, 51 council districts, and five boroughs, so that agencies, elected officials, and members of the public can understand the status of the capital projects that are relevant to them.<sup>199</sup> While Philadelphia chooses not to highlight their current and past capital projects individually on the Department of Public Property's website, many cities publicize their capital projects with photos and brief project descriptions on their website, such as:

- DC DGS: <http://dgs.dc.gov/node/218502>
- PBC of Chicago: [http://pbcchicago.com/content/projects/recent\\_projects.asp](http://pbcchicago.com/content/projects/recent_projects.asp)
- New York City DDC: <http://www1.nyc.gov/site/ddc/resources/photos.page>

This allows agencies to put positive information out to the public and explain the safety and environmental benefits of particular projects.

### Hire a Grantwriter for the Philadelphia Fire Department

Interviews with the Philadelphia Fire Department revealed that they do not currently have a grantwriter on staff. Additionally, ever since Captain Vince Coughlin took on the role of interfacing with the Department of Public Property about Facilities and Capital Projects, there is no one to fill his former role, Research & Planning. Several other large fire departments have grantwriters employed in house to help bring in dollars for planning, equipment, training, and exercise needs. For example, the FDNY has Grants Development under the Deputy Commissioner for Strategic Initiatives and Policy.<sup>200</sup> Chicago has grantwriters in both their police and fire departments.<sup>201</sup> Both departments show grants in the online version of the 2016 Budget Recommendations.<sup>202</sup> Furthermore, the Philadelphia Police Department has three people in their grantwriting unit who bring in millions of dollars of grant funds, as well as 10-12 people in their Research and Policy Unit. Additionally, District Captains also often write their own grants.<sup>203</sup> Hiring a grantwriter to bring in external grant funds for the Philadelphia Fire Department could free up additional local funds for preventative maintenance.

## Relationships Matter

It is important to have capital construction people for specific facilities interacting with the maintenance/day-to-day operators of those facilities for training, operations, and maintenance.<sup>204</sup>

### Facilities Planning Should Be Apolitical

Politics can pose challenges for public facilities budgeting, and no city is immune. Philadelphia Fire Department officials recounted a story where contractors were taken off of a Fire Department project and redirected to paint a police station instead at the request of a councilperson. In Washington, DC, the situation was even worse. In the past, the MPD and FEMS had an annual maintenance budget of fifteen million dollars.

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<sup>199</sup> New York City Department of Design and Construction. *Annual Reports*. Fiscal Year 2015. <http://www1.nyc.gov/site/ddc/resources/annual-reports.page> (accessed June 8, 2016).

<sup>200</sup> New York City Fire Department. *Organizational Chart*. September 15, 2015.

[http://www.nyc.gov/html/fdny/pdf/fdny\\_org\\_chart.pdf](http://www.nyc.gov/html/fdny/pdf/fdny_org_chart.pdf) (accessed June 8, 2016).

<sup>201</sup> Kalaycioglu, Aysegul, Anthony Pascente, and Ivan Hansen. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 3, 2016.

<sup>202</sup> City of Chicago. *Budget - 2016 Budget Recommendations - Appropriations*. 2016.

<http://www.cityofchicago.org/city/en/depts/obm/dataset/budget---2016-budget-recommendations---appropriations.html> (accessed June 24, 2016).

<sup>203</sup> Cochrane, Michael. Interview by Christina Arlt, Tamara Mittman, and Karin Morris. In person Interview. Philadelphia, April 18, 2016.

<sup>204</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

A few years ago, a political appointee took ten million dollars of this budget and redirected it to schools. Facilities managers should be thinking about what is best for the department and taxpayers 20 years from now (which is not always a popular decision today). Notes Sean MacCarthy: "Political appointees have different goals. They're thinking about playing favorites."<sup>205</sup>

#### But It Helps to Have Political Support from the Top

Often there is a discrepancy between elected officials, who often think in four-year election cycles, and facilities managers and capital budgeting professionals, who are often looking several decades into the future. It helps when elected officials and appointed officials understand the importance of facilities and place a priority on their upkeep, repair, and renovation. Facilities are an emphasis of the current New York City Police Commissioner. As a result, NYPD is able to catch up on repair work that should have been done a long time ago.<sup>206</sup> Facilities are also an emphasis of the current Boston mayor, Martin J. Walsh, who initiated audits of major departments, including the police and fire departments, in 2014. Matrix Consulting Group of Mountain View, California, completed the Fire Department audit in July 2015, while Public Safety Strategies Group of West Townsend conducted the Police Department audit, which was released in December 2015.<sup>207</sup> Boston Fire Department employees stated that the facilities have suffered neglect over the past three to four decades<sup>208</sup> and expressed appreciation for the new administration's focus on facilities.<sup>209</sup>

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<sup>205</sup> MacCarthy, Sean. Interview by Christina Arlt and Tamara Mittman. Telephone Interview. May 10, 2016.

<sup>206</sup> Heller, Philip and Anthony Andreano. Interview by Christina Arlt and Liz Compitello. Telephone Interview. June 30, 2016.

<sup>207</sup> Irons, Meghan E. "Audits find Boston fire, police facilities in disrepair." Boston Globe. January 13, 2016. <https://www.bostonglobe.com/metro/2016/01/12/audits-find-boston-fire-and-police-facilities-disrepair/LxrFdMqVEGKrYpHOVzBjxN/story.html> (accessed March 29, 2016).

<sup>208</sup> Cavaleri, John. Interview by Christina Arlt. Telephone interview. July 6, 2016.

<sup>209</sup> O'Brien, Jim. Interview by Christina Arlt. Telephone Interview. June 29, 2016.



## CHAPTER 5: Recommendations for Philadelphia

While the initial premise of this study was to find out how other cities have gone about closing public facilities, few of the comparison cities actually reduced the number of public safety facilities they manage. Chicago closed one facility that was too small. NYPD has a 10-year Facility Replacement Plan, but facilities are normally replaced, not closed entirely. Similarly, FDNY said closing facilities is atypical—they have only relinquished five of their approximately 250 stations in the past 20 years; those five stations were all built in the 1870s or 1880s.

Closing fire stations in particular could increase response time to incidents and medical emergencies. The 2012 PICA report documented that the Philadelphia Fire Department's response time to fire emergencies falls slightly short of the standard established by the National Fire Protection Association (NFPA), and response times to medical emergencies were significantly worse. Fewer stations might result in a further increase in response time, as fire apparatus and ambulances might have to travel even farther to reach incidents. Additionally, fewer stations could potentially result in changes to the ISO rating, which might cause higher insurance premiums for homeowners and business owners in Philadelphia.<sup>210</sup>

While Philadelphia's population has grown over the past 15 years, the cash-strapped city still does not have the financial and staffing resources needed to replace all of its aging police and fire facilities. Despite this, there are many ideas Philadelphia should consider adopting to keep the public safe and enable police and firefighters to do the hard work that they do on a daily basis.

### Philadelphia should clear the backlog of deferred maintenance issues at public safety facilities and establish a robust, data-driven preventative maintenance program.

A robust preventative maintenance program like that in Washington, DC would be beneficial. Washington, DC's experience clearly shows that clearing the backlog of deferred maintenance issues resulted in a significant decrease in maintenance requests. Furthermore, taking the time to label, record, and track data about each individual piece of equipment—such as boilers, air handlers, and injection pumps—in each facility will better enable the Department of Public Property to engage in long term capital planning. Additionally, analyzing past work orders can both prevent and anticipate future capital project needs. Regularly performing preventative maintenance means building components function better and last longer, saving funds in the long run.

### Philadelphia should view all buildings—regardless of which department currently occupies them—as assets and be flexible about renovating sites for reuse by other departments in the future.

One needs only to look at former Philadelphia firehouses that have been turned into restaurants, such as Ladder 15, Dock Street Brewery, or Jack's Firehouse, to know that public safety facility needs evolve over time. Department needs shift constantly due to changes in population, initiatives, technology, gender diversity, new equipment, health and safety considerations, increased demand for Emergency Medical Services, storage needs, and the desire to make public safety facilities more welcoming. Washington, DC has renovated other public facilities, such as vacant schools, into District Headquarters for their police department. The five historic buildings that FDNY vacated in the past twenty years were renovated for other city departments to use. Viewing all of the land and buildings that Philadelphia owns as a holistic portfolio of assets will allow the city to adapt and change the location of facilities and personnel over time.

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<sup>210</sup> Through its Public Protection Classification program, ISO provides information about property/casualty insurance risk.

Philadelphia should analyze the location of public safety facilities compared with strong real estate market locations and zoning regulations to identify potential locations for public-private partnerships.

Washington, DC did an excellent job identifying potential opportunities for land swaps or air rights deals, where a developer builds the city a brand new fire house on the first several floors of a larger building. These opportunities allow a developer to develop a multi-story building in a prime location, while allowing the city to receive a brand new fire house without any upfront spending—the city sells the air rights minus the cost of the construction of the new fire house. While these deals are not without challenges (for example, the potential need for a temporary fire house while the new building is being constructed), these types of public-private partnerships can help stretch limited public dollars. There are precedents for successful public-private partnerships in Philadelphia. In 2012, the Children’s Hospital of Philadelphia (CHOP) was looking to expand its neighborhood clinic in South Philadelphia, where the City of Philadelphia operated a health clinic, a small recreation center, playground, and a neighborhood library, all of which needed major renovations. CHOP and the City partnered to build the \$45.2 million South Philadelphia Community Health and Literacy Center, a 96,000-square foot facility at Broad and Morris streets that houses a CHOP pediatric primary care center, a Philadelphia Department of Public Health community health center, the South Philadelphia branch of the Free Library, and the DiSilvestro Playground and Recreation Center.<sup>211</sup> The financing for the project came from a combination of city land leased to CHOP at minimal cost, \$2.2 million in city funds, \$30 million in operating revenue from CHOP, \$1.3 million from the Free Library of Philadelphia, and \$9.8 million in equity from New Market Tax Credits.<sup>212</sup>

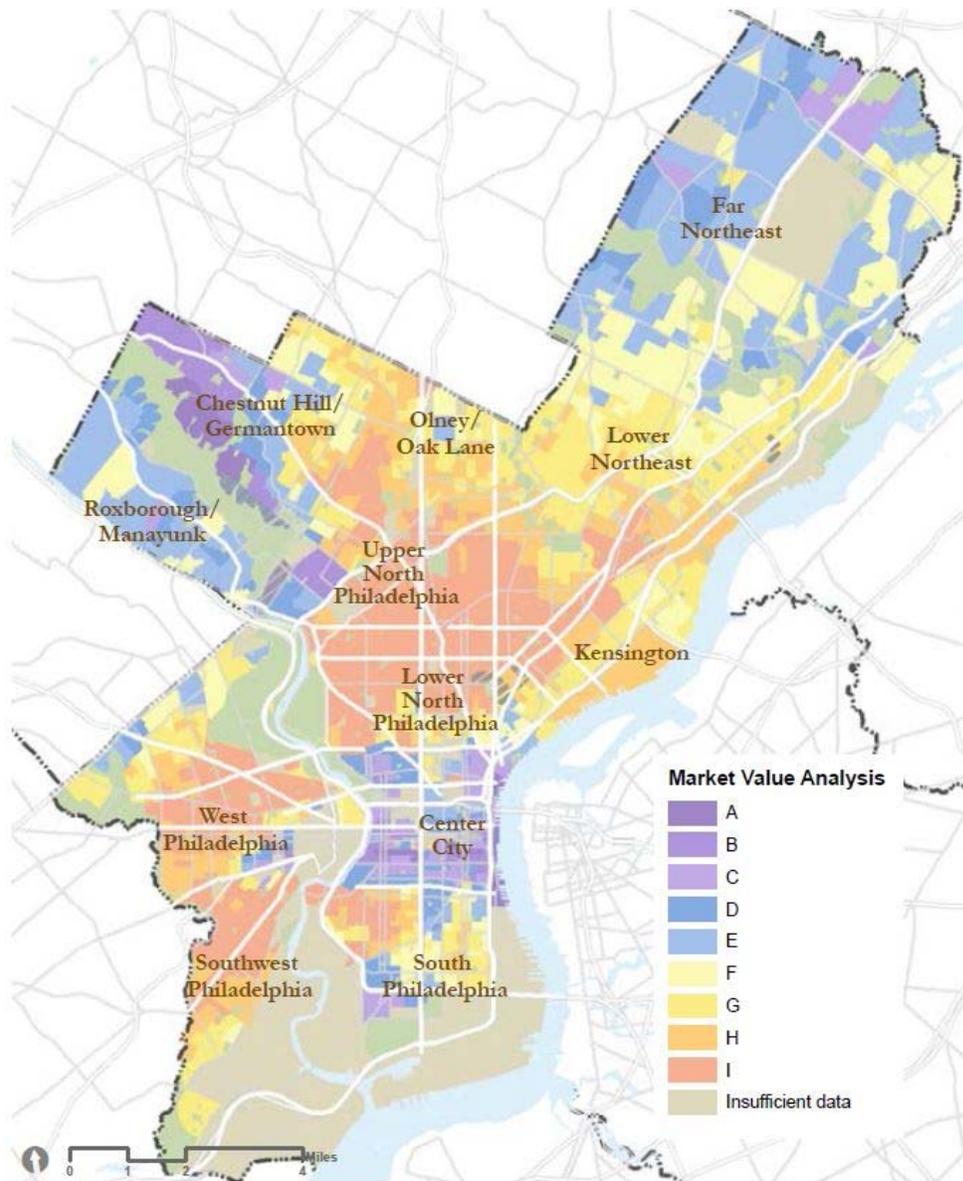
Philadelphia could potentially use The Reinvestment Fund’s (TRF) Market Value Analysis (MVA) to help identify strong market locations. TRF first created MVA for Philadelphia in 2001, and last updated it in 2012. To create the MVA, TRF conducted an in-depth analysis of the city’s neighborhoods and their market value, and then created a typology (see Figure 8) to help Philadelphia’s government make informed decisions about resource allocations (Market Value A is the highest value, for example).<sup>213</sup> To identify where opportunities for air rights deals may be possible, the City of Philadelphia should evaluate zoning regulations at existing police and fire stations to determine if those regulations allow for increased density at those sites.

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<sup>211</sup> George, John. “Unveiling set for \$42.5M South Philadelphia Community Health and Literacy Center.” Philadelphia Business Journal. May 6, 2016. Accessed September 29, 2016. <http://www.bizjournals.com/philadelphia/news/2016/05/06/chop-unveils-south-philly-health-literacy-center.html>

<sup>212</sup> The Children’s Hospital of Philadelphia. “The Children’s Hospital of Philadelphia Celebrates Grand Opening of South Philadelphia Community Health and Literacy Center.” May 6, 2016. <http://www.chop.edu/news/children-s-hospital-philadelphia-celebrates-grand-opening-south-philadelphia-community-health#.V-0saMmTR-4> (Accessed September 29, 2016).

<sup>213</sup> Goldstein, Ira. “Making Sense of Markets: Using Data to Guide Reinvestment Strategies.” In *What Counts: Harnessing Data for America’s Communities*. San Francisco: The Federal Reserve Bank of San Francisco, 2016. Available online: <http://www.whatcountsforamerica.org/book/what-counts/> (Accessed September 26, 2016).



**Figure 8:** Sample Market Value Analysis Map from The Reinvestment Fund

**Source:** Goldstein, Ira. "Making Sense of Markets: Using Data to Guide Reinvestment Decisions." In *What Counts: Harnessing Data for America's Communities*, edited by Naomi Cytron, Kathryn L.S. Pettit, and G. Thomas Kingsley. 75-87. San Francisco: Federal Reserve Bank of San Francisco, 2014.

### Philadelphia should hire a grant writer for the Philadelphia Fire Department, and re-staff the PFD's Office of Long Range and Strategic Planning.

Philadelphia should hire a grant writer for the Philadelphia Fire Department—a recommendation that was also made by the Pennsylvania Intergovernmental Cooperation Authority (PICA) in a 2012 report, but has yet to be implemented. Bringing in outside grant funds and foundation funds would free up additional funds for other facility needs. The Philadelphia Fire Department should also receive additional funds to hire staff for their Strategic and Long-Term Planning unit, which is currently vacant. Hiring a full-time staff person to consider strategic and long-term decisions would enable PFD to think proactively instead of reactively about facility needs.

Philadelphia should view public safety facilities as community hubs and reach out to private funders and the business community for additional financial support for renovations in existing public safety facilities.

Baltimore has been extremely successful at bringing in foundation funding and private funding from businesses, such as Under Armour, to renovate police facilities. Major corporations, such as Blue Cross and Blue Shield and Wells Fargo, have committed funding to revitalizing Baltimore police stations. As police stations and fire stations try to become more welcoming, foundation funds might be used to renovate community rooms for hosting community meetings or public health classes, freeing up city funds for other building renovations.

Philadelphia should explore retraining and resource reallocation to reduce overtime staffing costs.

While closing aging public safety facilities might seem like it would result in budget savings, the largest percentage of a police and fire department's budget is made up of personnel expenses. Closing facilities without a corresponding decrease in personnel would not result in major savings. For example, a 2012 study by PICA found that reallocating resources and discontinuing 69 positions at the Philadelphia Fire Department would result in a savings of \$11,657,000. If two stations were closed in combination with relocating two additional stations, the department would be able to discontinue 101 positions, resulting in an estimated savings of \$14,196,000. Thus, the larger savings are with personnel cuts, not reducing facilities. While no one wants to lay off public safety employees, the PICA report outlined several retraining and resource reallocation recommendations that could result in significant savings, which could then be reinvested into physical buildings. The Philadelphia Fire Department has already made strides towards implementing some of those recommendations.

Philadelphia should ensure that there is support for sound public safety facilities at the highest levels of government, including the Mayor and City Council, as well as among average citizens, who vote on capital expenditure bonds.

While facilities planning should be apolitical, it helps to have political support from the top. Taking the mayor and council members on tours of the worst facilities (or on tours of recently completed modern facilities, like Chester County's Public Safety Training Campus, to show them what is possible) is one way to engender support at the top. New York City DDC's recent practice of creating customized capital project reports for 24 agencies, 51 council districts, and five boroughs also helps elected officials and members of the public understand the status of the capital projects that are relevant to them.<sup>214</sup> Philadelphia could also do more to highlight their current and past capital projects on the Department of Public Property's website. Washington, DC, Chicago, and New York all publicize their capital projects with photos and brief project descriptions on their website. This allows agencies to put positive information out to the public and explain the safety and environmental benefits of particular projects.

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<sup>214</sup> New York City Department of Design and Construction. *Annual Reports*. Fiscal Year 2015. <http://www1.nyc.gov/site/ddc/resources/annual-reports.page> (accessed June 8, 2016).

## Philadelphia should invest in energy-efficient building components.

As representatives from Chicago's 2FM stated: "saving energy saves money." While building components like LED lightbulbs and energy-efficient air handlers might have a higher cost initially, the incremental savings from not having to change lightbulbs or other equipment as regularly leads to savings in the end—both in direct savings that result from using less energy, as well as the savings in manpower from not having to replace the equipment as often. The city should consider an approach similar to New York City by setting target energy use intensities for facility types, and seeking cost-recoverable opportunities for energy management where possible. The city has already taken the first step by benchmarking energy use at most government facilities. The 2014 ballot initiative to amend the City Charter to make the Mayor's Office of Sustainability a permanent office in Philadelphia's city government shows that there is support from the electorate for these types of initiatives.

## Conclusion

Urban police and fire departments are faced with a plethora of challenges on a daily basis. Many struggle with cramped, outdated facilities in cities that do not have the capital funds to renovate them or replace them. Despite these challenges, many of the city employees we spoke with have found ways to maintain and upgrade facilities through a variety of methods, including prioritizing preventative maintenance, exploring public-private partnerships, co-locating facilities, and creating building prototypes, to name a few. Public safety facilities management is a complex and evolving field, which works best when multi-disciplinary teams align their efforts to find creative solutions to challenging problems.

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# Appendix A

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## Appendix A: Foundations that Support Police and Fire

Name	Website
Boston Police Foundation	<a href="http://www.bostonpolicefoundation.org/">http://www.bostonpolicefoundation.org/</a>
Boston Firefighters Burn Foundation	<a href="http://www.bostonfirefightersburnfoundation.com">http://www.bostonfirefightersburnfoundation.com</a>
The Leary Firefighters Foundation	<a href="https://www.learyfirefighters.org">https://www.learyfirefighters.org</a>
Last Call Foundation	<a href="http://www.lastcallfoundation.org/">http://www.lastcallfoundation.org/</a>
Baltimore City Fire Foundation	<a href="http://fire.baltimorecity.gov/fire-fire-foundation">http://fire.baltimorecity.gov/fire-fire-foundation</a>
Baltimore County Police Foundation	<a href="http://www.thebcpf.com/">http://www.thebcpf.com/</a>
Police Foundation	<a href="http://www.policefoundation.org/">http://www.policefoundation.org/</a>
Washington DC Police Foundation	<a href="http://www.dcpolicefoundation.org/">http://www.dcpolicefoundation.org/</a>
DC Firefighters Burn Foundation	<a href="http://www.dcffburnfoundation.org">http://www.dcffburnfoundation.org</a>
New York City Police Foundation	<a href="http://www.nycpolicefoundation.org/">http://www.nycpolicefoundation.org/</a>
FDNY Foundation	<a href="http://www.fdneyfoundation.org/">http://www.fdneyfoundation.org/</a>
Answer the Call	<a href="http://www.answerthecall.org/">http://www.answerthecall.org/</a>
Philadelphia Police Foundation	<a href="http://www.phillypolicefoundation.org/">http://www.phillypolicefoundation.org/</a>
National Fallen Firefighters Foundation	<a href="http://www.firehero.org">http://www.firehero.org</a>
Burn Foundation	<a href="http://www.burnfoundation.org/">http://www.burnfoundation.org/</a>





# Appendix B



## Appendix B: Guide for Liaison to the FDNY Bureau of Facilities

*When FDNY firehouses undergo major renovations, there is one person at each firehouse who becomes the liaison to FDNY's Bureau of Facilities to ensure that the renovation process goes smoothly. These are the instructions and checklists that FDNY provides to the liaison at the local firehouse.*

### **Purpose**

The primary purpose of the Liaison to the Bureau of Facilities is to facilitate the flow of accurate and necessary information to the appropriate party or parties, as it regards and relates to FDNY buildings during construction projects.

### **Introduction**

When notified by the Bureau of Facilities that a gut renovation project, an apparatus floor replacement project, or any project requiring the relocation of the units assigned to a firehouse is said to begin in the near future, the first steps for the liaison should be to survey all the sites involved (both work sites and relocation sites) and meet the Company Commanders. The appropriate Battalions and Divisions should also be notified prior to the surveys for any input, as well as the Director of Support Services.

### **Gut Renovation Projects**

The gut renovation projects are entire building renovations, which will require all units assigned to that particular firehouse to be relocated to other firehouses. The final decision as to where these units will be relocated to will be made by the Chief of Operations. In order to assist the Chief of Operations with this decision, it is necessary to gather information and speak to other Staff Chiefs, Division Chiefs, Battalion Chiefs and Company Commanders. A typical duration of relocation is approximately 18 months.

The company will move back to a fully renovated firehouse. The house will be outfitted with a new apparatus floor, a cellar without support jacks, new furniture, new office and new kitchen equipment. It is important to notify the affected company to throw out as much old and unused furniture prior to the move into the renovated firehouse. Items such as gym equipment, pool tables and good furniture will be stored in long term storage by FDNY Support Services.

The Liaison must carefully survey the firehouses where these companies will be relocated to. It is critical to make sure everything from operations to day to day living comfort issues are addressed. Meetings with Captains of all companies involved with these moves and the Director of Support Services will have to be coordinated. This is important to ensure a smooth transition to the relocated quarters. The Captain of the Engine Company at the relocated quarters will be primarily responsible for getting this firehouse ready to accept any companies being relocated to quarters for the duration of the relocation.

### **Apparatus Floor Replacements**

Apparatus floor replacement projects are typically conducted without replacing the kitchen floor or any of the ground level sitting room's floors. There are exceptions. The housewatch area will also be demolished and rebuilt. Any asbestos abatement at the housewatch area will also be addressed at this time. Unlike gut renovation projects where companies are always relocated, apparatus floor replacement projects may allow for the companies to remain in quarters. The apparatus would be stored in a cage outside the firehouse. It is

always preferred however, from a construction and Operations point of view to relocate companies to another firehouse. If there is no space within the firehouse the company has been relocated to, a cage will be erected at that site to secure the fire apparatus.

When a company remains at their quarters, the construction company has to work around a fully functioning firehouse. This can, at times can cause interference with the construction company and the operations of the fire company. It is sometimes operationally unsound to relocate companies, as this would leave an unacceptable lack of fire protection in an area. The decision as to whether or not a company is relocated, and to where they are relocated is decided by the Chief of Operations. It is not uncommon for the Chief of Operations or other Staff Chiefs, to ask for the Liaison's to gather information to assist the chiefs, in reaching the best overall decision.

If a decision is reached to keep a company or companies in quarters, the Liaison, in conjunction with the Bureau of Facilities, will have to find a suitable place to put the cage(s). All parties should be involved in this decision-making process. This would include everyone from the Division Commander to the Chauffeurs of the company. All suggestions should be presented to the Chief of Operations for approval

When a company remains at their original quarters and responds from a cage, the housewatch is moved by the Bureau of Facilities to the kitchen. The construction area consisting of the entire apparatus floor and basement are sectioned off from the rest of the first floor. This allows the fire company to live as independently as possible from the construction company. At times, in order to facilitate egress of the members from the second floor to the area where bunker gear is staged, an additional opening is made in the firehouse. This egress opening is usually located on the side of the firehouse at the first floor level, where the stairs lead to the second floor. It will be important for the Liaison to convey to the Company Commanders of all companies remaining at quarters of what to expect, prior to, and during construction at these quarters. Also, the Liaison will have to ensure that all personal items that firehouse members have stored in the cellar are removed prior to the beginning of the project. The remaining items in the cellar are removed by Support Services and placed inside a locked container on or near the premises.

It is crucial that the Liaison reiterate to the construction company the importance of the front doorbell being relocated to the kitchen area. This bell must ring louder than usual due to potentially loud construction equipment. The construction company must keep in mind that this firehouse functions 24 hours a day to any and all (including verbal) alarms. At no time can egress of the men or the fire apparatus be blocked or impeded. The shed area, where the members will store their turnout gear must be waterproof and heated in cold weather (this item must be removed after end of construction).

At the end of the project, fireproofing is sprayed in the cellar by the construction company. It will be important that the construction company leave up as much plastic as possible until all fireproof spraying is completed. This will prevent damage to electrical contacts, house heating equipment, computers, etc. The firehouse members are to be advised to cover with plastic, any electrical equipment on the first and upper floors, on the day prior to this fireproof spraying. Operations are to be asked to have all companies removed from quarters for a few hours during, and directly after, spraying of this material.

### **Gut Renovation Checklist**

#### **The liaison and the Director of Support Services shall:**

##### **At the existing firehouse:**

1. Firehouse members are to clean out any personal items from the basement and remove them from the premises.
2. Any trash in the basement should be removed and thrown out. Coordinate with the Bureau of Facilities on obtaining a dumpster if necessary.
3. If the firehouse gym is in the basement, Support Services will make arrangements with a professional moving company to put the gym equipment into a storage unit for the duration of the move.

#### **Procedures at the Relocation Site:**

1. Gather information at the site, which will assist the Chief of Operations in making the decision as to where the apparatus will go at the relocation site. The best choice would be if the company had its own bay or at least parked in quarters in such a way that no apparatus blocks any other apparatus. Generally, the least desirable placement of the relocated apparatus is to park in front of the other (piggybacked).
2. If the apparatus is going inside of quarters, determine if there is an existing fully functioning nederman system. If not, a nederman system will have to be installed.
3. If the apparatus is going in a cage outside of quarters, gather information to assist the chief of operations in deciding the best overall place for this cage.
4. The company being relocated will need lockers and a place to hang up their bunker gear. The liaison should survey the firehouse where the work is being done in order to determine if they have movable racks for the bunker gear and moveable lockers. In some firehouses, due to spiral staircases and other configurations, it is extremely difficult to move these lockers from one firehouse to another. Contact the Director of Support Services about other alternatives and request from the Engine Captain of the relocation site to ask that members consolidate as many lockers as possible in order to minimize impact to the firehouse. As for the bunker racks, there may be extra bunker rack space at the relocation site. The Liaison and Director of Support Services will have to survey both sites in order to make this determination.
5. The Liaison and Director of Support Services must determine how many bunks must be moved to the relocation site. There may be extra bunks at the relocation site but it is still advisable to confer with the house members as to how many they need. Survey the bunkroom at the firehouse where the work is being done to ensure the beds are not so old and beat up that they could not withstand the move to the relocation site. If in bad condition, this matter is addressed by Support Services.
6. The Liaison must determine if the toilet and shower facilities are adequate at the relocation site or if repairs need to be made. Remember that there will be more members on duty increasing the frequency of showering after a fire and at the change of tours.
7. The Liaison and Director of Support Services must determine if the kitchen table will be able to accommodate the additional members. Also determine the number of kitchen chairs that Support Services will have bring over from the firehouse that is being worked on and confirm that these chairs are regular kitchen chairs and not large benches as found in some firehouses. If only benches are available, Support Services is to determine alternatives.
8. With the assistance of the Engine Captain and the Bureau of Facilities, determine the best place for the relocated company office.

9. With the assistance of the Engine Captain and the Bureau of Facilities, determine whether any general building renovations need to be done to the house to accommodate any additional company or companies.

10. The Liaison and Director of Support Services will make timely notifications to the Commissioner of the Bureau of Communications and the Commissioner of the Bureau of Technology/Systems to ensure that Department phones, Starfire, and Alarm Boxes are changed over to the relocated company. This notification should be as early as possible in writing and followed-up by a phone call to each Commissioner.

#### APPARATUS FLOOR REPLACEMENT CHECKLIST

##### Liaison and Director of Support Services Shall:

1. Confer with the Chief of Operations in order to determine if relocation is feasible.
2. If relocation is not possible, assist operations in deciding the cages location
3. Confirm that cages will have sufficient lighting installed by the construction company.
4. Confirm that FDNY Community Affairs, DOT, and Community Board are all notified by the Bureau of Facilities. It is important that the above mentioned agencies/bureaus are aware that either a large cage is going to be in the street in front of a firehouse or that the fire company is being relocated to another firehouse.
5. Confirm temporary storage will be provided for items in the basement
6. Confirm that a temporary, water tight area is provided for the turnout gear. In cold weather, this area must be provided with heaters. These heaters must be on a dedicated electrical line to prevent tripping the firehouse breakers. If this area is a plywood shed structure, it is important that that this structure has a waterproof roof to prevent any rainfall into the bunker gear. **Convey that this will be removed when construction is complete.**
7. Confirm that the members have disposed of as much basement material (junk) as possible. This would include any personal items that members may have stored in the basement. Coordinate with the Bureau of Facilities on obtaining a dumpster if necessary.
8. Housewatch is to be relocated to the kitchen or other suitable location. The ringing of the front doorbell must be loud and clear to alert near the housewatch area. If the housewatch is not in the kitchen, then the doorbell alarm must also be audible in the kitchen. This alarm must be loud enough to be heard over construction equipment.
9. Parking alternatives should be considered before work begins.
10. Since the apparatus floor is being removed from within the firehouse, the liaison must confirm that the Bureau of Facilities has developed an egress plan which includes both emergency turnouts and normal movement around the firehouse.
11. Confirm that the areas around the pole holes and other openings are sealed by the contractor to prevent, or at least minimize dust exposure.

12. Confirm that a portable toilet is delivered for the construction workers. The portable toilets allow the firehouse to remain independent from the construction. This is desirable due to security concerns of the operating firehouse and minimizes day to day interference between the firehouse and the construction company.
13. Confirm that the Bureau of Facilities has changed the locks in the firehouse depending on the specific situation. A common example of this would be as follows; when a new opening is made in the firehouse at the base of the stairwell leading to the second floor. This would result in the door now becoming the main point of entrance to the firehouse. The front door combination lock or 1620 key-lock needs to be moved to this new side door and a keyed lock put in the "old" front door for use by the construction company. This way all members of the house can continue to use the same means of opening the door.
14. Confirm that the placement of the cage(s) and firehouse parking, do not interfere with the work that the construction company must do. Remember, the construction crew is going to be backing large equipment up to the front of the operational firehouse. In addition, make sure that no construction trucks block the opening of the cage, especially after the construction crew has gone home for the day.
15. Confirm with the Bureau of Facilities that the active firehouse will be separated as much as possible from the construction site.
16. Confirm that the Bureau of Facilities has arranged for the removal of old batteries in the basement of the firehouse.
17. If it has been determined that the fire companies will relocate to another quarters, the following are items that the firehouse members must address. Again, all personal items belonging to the members must be removed from the premises, thrown out, or stored at the rear of the basement, under the kitchen area if space exists.
18. It will be the responsibility of Support Services to remove any FDNY property, which do not belong to the members into either storage or to the rear of the basement.
19. The Bureau of Facilities will confirm that that the second floor and kitchen are sealed off from the construction area
20. If the fire company or companies are going to be relocated to another quarters, please refer back to the procedures referenced under the Gut Renovation Projects section of this document for procedures at the relocation site.



## ABSTRACT

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**Abstract:**

In the 1960s and 1970s, the City of Philadelphia expanded its portfolio of recreation centers, libraries, police and fire facilities, and other municipal assets in anticipation of a population of 2.5 million by the turn of the century; by the year 2000, Philadelphia had instead lost over 550,000 residents. Despite population growth between 2000 and 2015, the city continues to struggle with aging public facilities: assets that were built decades ago that require extensive maintenance in a city that cannot adequately cover the costs. Aging public facilities profoundly influence the city's ability to budget and program capital improvement funds in strategic ways, and to deliver services to its population. Philadelphia is not the only city in the nation to face this issue. This report describes the lessons learned from interviews with city officials in five cities about their aging police and fire facilities. These lessons will be helpful background information for Philadelphia's forthcoming Public Safety Facilities Master Plan, which was funded in the City of Philadelphia's Fiscal Year 2016 budget, and scheduled to kick off in August 2016.

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