



City of New York

OFFICE OF THE COMPTROLLER

Scott M. Stringer
COMPTROLLER



MANAGEMENT AUDIT

Marjorie Landa

Deputy Comptroller for Audit

Audit Report on the New York City
Housing Authority's Controls over Heat
Maintenance

MG18-101A

May 28, 2020

<http://comptroller.nyc.gov>



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
SCOTT M. STRINGER

May 28, 2020

To the Residents of the City of New York:

My office has audited the New York City Housing Authority (NYCHA) to determine whether management has adequate controls over its provision of heat to residents and its resolution of heating issues. We audit entities such as NYCHA as a means of increasing accountability and ensuring that City programs operate in the best interest of the public.

The audit found that the tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective. NYCHA does not have the ability to readily track the status and resolution of repairs that are not the result of system-wide heating failures (identified as heating "outages"). As a result, NYCHA management cannot readily identify the number of unresolved heat-related complaints open at any one time, nor can it readily determine the length of time it takes to ultimately resolve those complaints. Absent such information, NYCHA's ability to determine how to most effectively allocate resources in order to address problems is significantly hindered. In addition, NYCHA does not have adequate procedures for independently verifying the accuracy of the repair information that staff record; does not maintain complete boiler inventory listings; and does not maintain adequate records of mandated external and internal boiler inspections to help ensure that all required inspections are completed.

To address these issues, the audit makes eight recommendations, including that NYCHA should create a mechanism for it to efficiently track all heat-related complaints, including those that are not related to outages, from receipt to final disposition; maintain a complete and updated inventory listing of boilers; and establish a formal system for documenting its tracking of all boilers that require inspections.

The results of the audit have been discussed with NYCHA officials throughout the audit, and their comments have been considered in preparing this report.

If you have any questions concerning this report, please e-mail my Audit Bureau at audit@comptroller.nyc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott M. Stringer".

Scott M. Stringer

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Audit Findings and Conclusions	2
Audit Recommendations.....	3
Agency Response	3
AUDIT REPORT	6
Background	6
Objective.....	8
Scope and Methodology Statement.....	8
Discussion of Audit Results with NYCHA	8
FINDINGS AND RECOMMENDATIONS	11
NYCHA’s Central Management’s Oversight of Issues Pertaining to Lack of Heat Is Inadequate.....	12
NYCHA’s Central Management Lacks the Ability to Effectively Track Information about Heat-Related Complaints, Including Whether They Have Been Completely Resolved	12
Inadequate Verification of Work Order Completion	16
Inefficient Use of Customer Satisfaction Feedback Tools	18
Recommendations	19
NYCHA Does Not Maintain an Updated Inventory Listing of Boilers in Its Developments.....	21
Recommendations	23
Lack of Evidence That NYCHA Ensured That All Required Boiler Inspections Were Conducted or That It Followed up on Deficiencies	24
Follow-up of Deficiencies for External and Internal Inspections	25
Deficiencies with Preventive Maintenance Inspections	26
Recommendations	27
DETAILED SCOPE AND METHODOLOGY	29
APPENDIX	32
ADDENDUM	

THE CITY OF NEW YORK OFFICE OF THE COMPTROLLER MANAGEMENT AUDIT

Audit Report on the New York City Housing Authority's Controls over Heat Maintenance

MG18-101A

EXECUTIVE SUMMARY

The New York City Housing Authority (NYCHA), the largest public housing authority in the United States, was created in 1935 to provide decent, affordable housing for low- and moderate-income New Yorkers. According to data published by NYCHA, as of 2019, more than 370,000 New Yorkers resided in NYCHA's 316 public housing developments located throughout the five boroughs of New York City (City), comprising 2,351 buildings that contain 173,762 units. NYCHA has established standard operating procedures (SOPs) that set forth the agency's internal operating procedures governing a wide variety of areas.

Among other things, NYCHA's heating SOPs mandate that NYCHA is required to provide heat to its residents between October 1st and May 31st, (*i.e.*, the heating season) when the temperature falls below 55 degrees Fahrenheit.¹ NYCHA requires that its staff respond to heat-related complaints within 24 hours. Responding to a complaint does not, however, necessarily mean that the complaint will be resolved within 24 hours, but rather means that steps to assess the heating issue complained of will be initiated within 24 hours. Depending on the circumstances, resolving the complaint itself and restoring heat may take longer. Once a complaint identifying the need for a repair (heat-related or otherwise) is received by NYCHA, it is entered into Siebel, NYCHA's computer software system used for scheduling appointments.² The complaint is then automatically uploaded from Siebel into Maximo, NYCHA's computer software system used for generating work orders and for tracking the status of repair work orders.³ Heat-related work orders are categorized as "NOHEAT" in Maximo.

If NYCHA, upon investigation of a resident's complaint, determines that the concern is related to a system-wide heat failure (*e.g.*, affecting an entire development, building, apartment line or stair hall), the corrective maintenance work order will be closed and an "outage work order" will be

¹ NYCHA's heating SOPs refer to the New York City Administrative Code, Title 27, Chapter 21 Article 8, § 27-2029 and Section 79(1) of New York State Multiple Dwelling Law with regards to the provision of heat.

² Complaints are automatically uploaded into Siebel if they originate from any source other than a phone call or a walk-in center. Complaints resulting from phone calls and at walk-in centers must be entered manually into Siebel.

³ NYCHA tracks the status of all work orders through Maximo, but not necessarily the resolution of the complaint. A complaint may require several different crafts and specialists; therefore, several different work orders may need to be opened before the complaint can be resolved.

opened. According to NYCHA's records, there were 167,752 no-heat work orders created during the 2017-2018 heating season as a result of complaints made by residents. Of these, 81,997 (49%) were related to 1,776 outages (*i.e.*, system-wide heating failures). This means that 85,755 (51%) no-heat work orders were heating complaints unrelated to outages.

Audit Findings and Conclusions

The tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective. As a result, NYCHA is significantly hindered in its ability to manage and resolve heating issues.

NYCHA does not have the ability to readily track the status and resolution of repairs required to respond to heating complaints that are not the result of system-wide heating failures (*i.e.*, outages). Rather, for such heating complaints stemming from issues that affect individual units and not larger areas, Maximo only tracks the closure of individual work orders and not the amount of time it takes to successfully resolve these heat-related complaints. This practice is particularly problematic because individual unit heat-related complaints may require the opening and closing of multiple work orders before the issues complained of are ultimately resolved. As a result, among other things, NYCHA management cannot readily identify the number of unresolved heat-related complaints open at any one time nor can it readily determine the length of time it took to ultimately resolve those complaints. Absent such information, NYCHA's ability to identify problems that delay repairs is undermined and, as a result, NYCHA is significantly hindered in its ability to determine how to most effectively allocate resources, make operational changes, and enhance training and oversight in order to address problems.

Additionally, we found that NYCHA does not have adequate procedures for independently verifying the accuracy of the repair information that staff records in Maximo. As a result, the degree to which the repair-related data reported in the system can be relied upon is questionable.

Further, the audit found that NYCHA does not maintain complete inventory listings of all the boilers currently in its developments, which undermines the agency's ability to properly manage its inventory. Absent a comprehensive, accurate listing of the boilers that includes essential identifying and other information, such as the dates of installation, asset numbers, makes and models, warranty information, as well as each boiler's inspection and repair histories, NYCHA cannot efficiently ensure that all inspections are properly made and that decisions about the need and timing of replacements are made with complete information.

The audit found that NYCHA also does not maintain adequate records of mandated external and internal boiler inspections in a manner that enables the agency to track the status of those inspections and ensure that all required inspections are completed. Moreover, during our audit period, NYCHA did not maintain adequate records that deficiencies identified in these inspections had been addressed. With regard to preventive maintenance inspections, according to data contained in Maximo, for the 2017-2018 heating season, NYCHA conducted only 84 percent of the required inspections. However, we were unable to identify the specific work orders created to address the deficiencies cited during those inspections—and the disposition of those work orders—because NYCHA did not have a way to identify such orders. As a result, neither we nor NYCHA could determine whether work identified through the preventive maintenance inspections was ever satisfactorily performed.

Under present circumstances, NYCHA's persistent failure to adequately resolve heating issues will continue unless management addresses the deficiencies we found and establishes systems that enable it to reliably track the causes and occurrences of heating problems, equipment conditions and deficiencies, along with the timing and adequacy of repairs, including whether work was properly done.

Audit Recommendations

To address the issues raised by this audit, we make eight recommendations, including that:

- NYCHA should create a mechanism for it to efficiently track all heat-related complaints, including those that are not caused by system-wide outages, from receipt of a complaint to its final disposition so that the agency can efficiently and effectively determine, among other things, the time it takes to resolve such complaints, identify aging complaints, address languishing complaints, and improve systems that lead to delayed resolutions of complaints.
- NYCHA should maintain a complete and updated inventory listing of boilers with unique identifying information to better enable NYCHA to track and monitor issues relating to each boiler.
- NYCHA should establish a formal system for documenting its tracking of all boilers that require inspections and the status of such inspections so as to ensure that all boilers receive the required internal, external, and preventive maintenance inspections in a timely manner and that deficiencies found during the inspections are corrected within the time frames mandated by applicable law, rules, regulations, and agreements with external oversight agencies.
- NYCHA should continue its efforts to develop a tracking system that would allow it to identify the work orders created to address deficiencies identified during inspections so as to be able to track the repairs and the timeliness of those repairs.

Agency Response

In its response, NYCHA agreed without any qualifications with three recommendations: that it analyze the feedback it receives from residents with regard to their satisfaction with heating-related work (#4); that it ensure it disseminates its inventory listing to all of its operational units involved in processes related to the boilers (#6); and that it continue its efforts to develop a tracking system to identify work orders created to address deficiencies identified through boiler inspections (#8).

In addition, NYCHA agreed with the following four recommendations in principle, but claimed that it was already in compliance with each: that NYCHA create a mechanism to efficiently track all heat-related complaints (#1); that it monitor the adequacy of its staffing levels (#2); that it maintain a complete and updated inventory listing of boilers with unique identifying information (#5); and that it establish a formal system for documenting its tracking of all boilers that require inspections (#7). By asserting that the agency's current practices are consistent with the recommendations, however, NYCHA has effectively rejected the auditors' recommendations that its current practices need to be improved. Finally, NYCHA failed to directly address recommendation #3, that it develop

a process whereby supervisors are required to follow up on a prescribed number of closed out work orders and confirm that the work reported as completed was conducted as reported.

In its response, NYCHA strongly objects to the audit's findings and overall assessment that the tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective. Its rejection of the audit's findings is primarily based on three arguments. First, NYCHA contends that the report fails to acknowledge the improvements the agency has made since the 2017-2018 heating season. In particular, NYCHA claims that it has implemented a number of new initiatives and procedural changes with the collaboration and approval of the independent Federal Monitor. However, to support its claims, NYCHA misleadingly cites recently developed policies and procedures that apply only to heating outages (e.g., system-wide heat losses that affect entire developments and buildings) in response to the audit's identification of deficiencies in NYCHA's handling of individual heat-related complaints (e.g., heat loss complaints that affect only individual apartment units). Consequently, the changes NYCHA cites do not resolve the problems that underlie key findings of this report. Among other things, NYCHA remains unable to determine how many units are experiencing heat-related issues at any given point in time. In addition, it is unable to tell how long it takes to resolve heating issues that are *not* related to outages. Further, NYCHA failed to provide any evidence that it is able to independently verify the repair information that staff records in Maximo.

Second, NYCHA incorrectly argues that the audit's findings related only to the 2017-2018 heating season and, based largely on that misstatement, are outdated. However, as is clearly set forth in the report, the audit scope period was January 1, 2017 through May 31, 2019. Moreover, we requested and accepted evidence up to and after the February 24, 2020 exit conference where we discussed the audit's preliminary findings. Although the data we analyzed related to heat-related complaints and outages primarily relates to the 2017-2018 heating season, NYCHA has provided no evidence—although requested—that the operational weaknesses cited in the report have been corrected.⁴ As discussed in detail below, the findings of deficiencies identified in this audit for that period unfortunately remain relevant to this day. Moreover, the audit's findings and recommendations related to NYCHA's boiler inventory and boiler inspections expressly address issues that existed beyond the 2017-2018 heating season up to and after the February 24, 2020 exit conference. These issues include NYCHA's failure to maintain and appropriately disseminate a complete and comprehensive inventory of its boilers, and NYCHA's failure to properly track repairs made to address deficiencies identified through inspections.

Finally, NYCHA argues that current data reflects that it has a lower number of heating service disruptions and quicker complaint response rates that demonstrate its operations have improved. However, NYCHA's argument fails to take into account the fact that the 2017-2018 heating season was significantly colder than the two that followed it. According to data reported on the National Weather Service's website, there were 21 days during December 2017 – February 2018 in which the maximum temperature in the City was below freezing. By comparison, there were only 8 days and 3 days, respectively, of subfreezing temperatures during December 2018 – February 2019 and December 2019 – February 2020. Thus, lower number of service disruptions and quicker service times in the most recent two years must be analyzed in the context of the different weather conditions in those periods in order for them to be properly compared with the much colder 2017-2018 audit scope period. Moreover, the response time rate is of limited relevance because (1) the

⁴ Notably, the audit's focus on heat-related complaints made in the 2017-2018 heating season resulted from NYCHA's failure to produce relevant materials to the auditors in a timely manner. NYCHA's inexplicable delays producing routine business records necessitated the Comptroller's Office to issue two separate subpoenas after which the bulk of the records were produced.

rate pertains only to work orders generated in response to outages and (2) NYCHA is measuring only the time it took to respond to work orders, rather than the time it expended to resolve the problems upon which the complaints are based. Thus, NYCHA does not know whether there has been any improvement since the 2017-2018 heating season in its timeliness in *actually resolving* heat-related complaints.

NYCHA makes a number of other arguments in its response; those topics not addressed in our comments relating to NYCHA's responses to our recommendations are discussed in the Appendix of this report. After carefully reviewing NYCHA's arguments, we find no basis to alter any of the report's findings or conclusions.

AUDIT REPORT

Background

NYCHA, the largest public housing authority in the United States, was created in 1935 to provide decent, affordable housing for low- and moderate-income New Yorkers. Pursuant to its charter and its status as a federal Public Housing Authority, NYCHA develops, constructs, and manages affordable housing. NYCHA's mission is to increase opportunities for low- and moderate-income New Yorkers by providing safe, affordable housing and facilitating access to social and community services.

According to data published by NYCHA, as of 2019, more than 370,000 New Yorkers resided in NYCHA's 316 public housing developments located throughout the five boroughs of the City, comprising 2,351 buildings that contain 173,762 units. NYCHA has established SOPs that set forth the agency's internal operating procedures governing a wide variety of areas.

Among other things, NYCHA's heating SOPs mandate that NYCHA is required to provide heat to its residents between October 1st and May 31st (*i.e.*, the heating season) when the temperature falls below 55 degrees Fahrenheit. Complaints relating to heat are always considered emergencies. NYCHA's internal procedures require that emergency calls are responded to within 24 hours. Responding to a complaint does not, however, necessarily mean that the complaint will be resolved within 24 hours, but rather it means that steps to assess the heating issue complained of will be initiated within 24 hours. Resolving the complaint may be done within that time frame or may take much longer, depending on the circumstances.

NYCHA residents who require emergency and non-emergency repairs to their apartments can make their complaints to NYCHA's Customer Contact Center (CCC) either by calling CCC directly or online through the MyNYCHA phone application; at a kiosk located at each development; or at two walk-in centers, one located in the Bronx and the other located in Brooklyn.⁵ NYCHA residents also have the option of making complaints through the City's 311 system, which forwards those complaints to CCC.

Once a complaint identifying the need for a repair (heat-related or otherwise) is received by NYCHA, it is entered into Siebel, NYCHA's computer software system used for scheduling appointments. The complaint is then automatically uploaded from Siebel into Maximo, NYCHA's computer software system used for generating work orders and for tracking the status of repair work orders. Heat-related work orders are categorized as "NOHEAT" in Maximo.

NYCHA's Heating Management Services Department (HMSD) is responsible for all heating operations in the developments. They are tasked with establishing and maintaining the safe and efficient operation of all heat generating systems and associated equipment. Their responsibilities include: maintaining heating equipment; overseeing the maintenance of fuel oil supplies, oil deliveries, and the status of oil-on-hand; maintaining files for all required certifications/registrations/permits; conducting annual inspections of boilers, boiler rooms, tank rooms, hot water tanks, and all mechanical equipment; inspecting equipment for heating and/or

⁵ The Bronx walk-in serves the Bronx, Manhattan and parts of Queens. Brooklyn serves Staten Island and some of Queens.

hot water plants prior to its disposal/transfer; and reviewing, completing, approving, and closing heat work orders in Maximo.

HMSD employs Heating Plant Technicians (HPTs) who are responsible for the day-to-day maintenance and repairs of boilers.⁶ During the 2017-2018 heating season, NYCHA employed 302 HPT staff. However, other NYCHA staff may be required to resolve no-heat complaints where systems other than the boilers are involved, such as where there are faulty pipes or broken or inadequately sealed windows.

When residents make no-heat complaints, they do not generally know if the no-heat condition affects just their unit or a larger area in the building. Accordingly, NYCHA's protocol is to treat all no-heat complaints as if they affect only an individual unit and Maximo automatically creates a "corrective maintenance work order" based on a resident no-heat complaint. Thereafter, if the resident's complaint is determined by NYCHA to concern a system-wide heat failure (e.g., affecting an entire development, building, apartment line, or stair hall), the corrective maintenance work order will be closed and an "outage work order" will be opened.

According to NYCHA's records, there were 167,752 no-heat work orders created during the 2017-2018 heating season as a result of complaints made by residents. Of these, 81,997 (49%) were related to 1,776 outages (i.e., system-wide heating failures). This means that 85,755 (51%) no-heat work orders were complaints unrelated to outages.

This audit began in January 2018 after widespread heating complaints originated from tenants at 32 NYCHA developments during a time when New York City experienced record low subfreezing temperatures. From October 1, 2017 through May 31, 2018 (i.e., the 2017-2018 heating season), NYCHA residents made repeated complaints of no heat in entire developments, buildings, apartment lines, stair halls, and individual apartments.

On June 11, 2018, the United States Attorney for the Southern District of New York (USAO SDNY) filed a complaint against NYCHA in the Federal District Court. The complaint alleged that NYCHA had failed to provide residents decent, safe, and sanitary housing by, among other things, failing to adequately provide heat.⁷ The complaint also stated that NYCHA had repeatedly misled the United States Department of Housing and Urban Development (HUD) through false statements and deceptive practices.⁸

During the audit, NYCHA was unable to provide consistent and reliable information to the auditors of the number of heat complaints it received in the 2017-2018 heating season and the number of residents affected. However, according to documents filed in court on behalf of NYCHA and USAO SDNY on June 11, 2018, NYCHA admitted, among other things, that in the winter of 2017-2018 alone, "more than 320,000 residents, 80% of the public housing population, lost heat."⁹

⁶ HPTs' daily responsibilities include: maintaining janitorial standards in all heating related areas; performing daily oil tank stick readings; receiving and inspecting fuel deliveries; performing boiler safety tests; and performing regular inspections and lubrications of all machinery and equipment.

⁷ Other allegations included that NYCHA failed to protect children from lead paint, adequately abate mold conditions, eradicate pest infestations, and failed to provide disabled and elderly residents with functioning elevators. United States v. New York City Housing Authority, 18 Civ. 5213 (June 11, 2018).

⁸ HUD provides the majority of NYCHA's funding.

⁹ United States v. New York City Housing Authority, 18 Civ. 5213 (June 11, 2018).

Objective

To determine whether NYCHA management has adequate controls to provide heat to residents and to address and resolve heating issues during the heating season.

Scope and Methodology Statement

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The scope of this audit covers the period from January 1, 2017 to May 31, 2019. Please refer to the Detailed Scope and Methodology at the end of this report for the specific procedures and tests that were conducted.

Discussion of Audit Results with NYCHA

The matters covered in this report were discussed with NYCHA officials during and at the conclusion of this audit. A preliminary draft report was sent to NYCHA and was discussed at an exit conference held on February 24, 2020. On March 2, 2020, we submitted a draft report to NYCHA with a request for comments. We received a written response from NYCHA on March 17, 2020.

The audit makes eight recommendations to NYCHA. In its response, NYCHA agreed without any qualifications with three recommendations: that it analyze the feedback it receives from residents with regard to their satisfaction with heating-related work (#4); that it ensure it disseminates its inventory listing to all of its operational units involved in processes related to the boilers (#6); and that it continue its efforts to develop a tracking system to identify work orders created to address deficiencies identified through boiler inspections (#8).

In addition, NYCHA agreed with the following four recommendations in principle, but claimed that it was already in compliance with each: that NYCHA create a mechanism to efficiently track all heat-related complaints (#1); that it monitor the adequacy of its staffing levels (#2); that it maintain a complete and updated inventory listing of boilers with unique identifying information (#5); and that it establish a formal system for documenting its tracking of all boilers that require inspections (#7). By asserting that the agency's current practices are consistent with the recommendations, however, NYCHA has effectively rejected the auditors' recommendations that its current practices need to be improved. Finally, NYCHA failed to directly address recommendation #3, that it develop a process whereby supervisors are required to follow up on a prescribed number of closed out work orders and confirm that the work reported as completed was conducted as reported.

In its response, NYCHA strongly objects to the audit's findings and overall assessment that the tools used by NYCHA's central management to oversee and track heating issues are inefficient and, in key respects, ineffective. Throughout its response, NYCHA challenged many of the audit's findings. In doing so, NYCHA makes numerous misrepresentations.

In particular, NYCHA's responses reflect an apparent attempt to recast the audit as one that looked primarily at system-wide heat and hot water losses, referred to by NYCHA as outages. However, as we repeatedly point out in the report, the audit's focus is on heat-related complaints, which significantly include heat-related complaints that affect only individual apartment units and not building-wide systems as a whole. Accordingly, the audit findings regarding the timeliness and tracking of NYCHA's resolution of heat-related complaints are not about the processes NYCHA had or currently has to address system-wide outages, but rather primarily concern complaints about conditions that affect individual apartment units. Nevertheless, in response to those findings, NYCHA cites the following changes it has made to be more proactive:

Residents receive a robocall when an **outage** is created and restored. . . .
[Emphasis added]

Unplanned heat and hot water **outages** can only be created by HMSD Supervisors and Heat Desk Personnel. This eliminates the possibility of **outages** being created without a confirmed service disruption. . . . [Emphasis added]

Restrictions are in place that do not allow the creation of planned **outages** without 60-hour advance notification. . . . [Emphasis added]

Confirming the restoration of services when closing the **outage** work orders.
[Emphasis added]

Its rejection of the audit's findings is primarily based on three arguments. First, NYCHA contends that the report fails to acknowledge the improvements the agency has made since the 2017-2018 heating season. In particular, NYCHA claims that it has implemented a number of new initiatives and procedural changes with the collaboration and approval of the independent Federal Monitor. However, to support its claims, NYCHA misleadingly cites recently developed policies and procedures that apply only to heating outages (e.g., system-wide heat losses that affect entire developments and buildings) in response to the audit's identification of deficiencies in NYCHA's handling of individual heat-related complaints (e.g., heat loss complaints that affect only individual apartment units). Consequently, the changes NYCHA cites do not resolve the problems that underlie key findings of this report. Among other things, NYCHA remains unable to determine how many units are experiencing heat-related issues at any given point in time. In addition, it is unable to tell how long it takes to resolve heating issues that are *not* related to outages. Further, NYCHA failed to provide any evidence that it is able to independently verify the repair information that staff records in Maximo.

Second, NYCHA incorrectly argues that the audit's findings related only to the 2017-2018 heating season and, based largely on that misstatement, are outdated. However, as is clearly set forth in the report, the audit scope period was January 1, 2017 through May 31, 2019. Moreover, we requested and accepted evidence up to and after the February 24, 2020 exit conference where we discussed the audit's preliminary findings. Although the data we analyzed related to heat-related complaints and outages primarily relates to the 2017-2018 heating season, NYCHA has provided no evidence—although requested—that the operational weaknesses cited in the report have been corrected.¹⁰ As discussed in detail below, the findings of deficiencies identified in this audit for that period unfortunately remain relevant to this day. Moreover, the audits' findings and

¹⁰ As noted, the audit's focus on heat-related complaints made in the 2017-2018 heating season resulted from NYCHA's failure to produce relevant materials to the auditors in a timely manner. Such documents were finally produced, after much delay, only after the Comptroller's Office issued two separate subpoenas for the documents.

recommendations related to NYCHA's boiler inventory and boiler inspections expressly address issues that existed beyond the 2017-2018 heating season up to and after the February 24, 2020 exit conference. These issues include NYCHA's failure to maintain and appropriately disseminate a complete and comprehensive inventory of its boilers, and NYCHA's failure to properly track repairs made to address deficiencies identified through inspections.

Finally, NYCHA argues that current data reflects that it has a lower number of heating service disruptions and quicker complaint response rates that demonstrate its operations have improved. However, NYCHA's argument fails to take into account the fact that the 2017-2018 heating season was significantly colder than the two that followed it. According to data reported on the National Weather Service's website, there were 21 days during December 2017 – February 2018 in which the maximum temperature in the City was below freezing. By comparison, there were only 8 days and 3 days, respectively, of subfreezing temperatures during December 2018 – February 2019 and December 2019 – February 2020. Thus, lower number of service disruptions and quicker service times in the most recent two years must be analyzed in the context of the different weather conditions in those periods in order for them to be properly compared with the much colder 2017-2018 audit scope period. Moreover, the response time rate is of limited relevance because (1) the rate pertains only to work orders generated in response to outages and (2) NYCHA is measuring only the time it took to respond to work orders, rather than the time it expended to resolve the problems upon which the complaints are based. Thus, NYCHA does not know whether there has been any improvement since the 2017-2018 heating season in its timeliness in *actually resolving* heat-related complaints.

NYCHA makes a number of other arguments in its response; those topics not addressed in our comments relating to NYCHA's responses to our recommendations are discussed in the Appendix of this report. After carefully reviewing NYCHA's arguments, we find no basis to alter any of the report's findings or conclusions.

The full text of NYCHA's response is included as an addendum.

FINDINGS AND RECOMMENDATIONS

The audit found that the tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective, which has significantly hindered the agency's ability to manage and resolve heating issues.

We found that NYCHA does not have the ability to readily track the status and resolution of repairs for heating complaints unrelated to system-wide heating failures (*i.e.*, outages). Resolving such complaints commonly involves the creation of multiple work orders. However, while Maximo tracks the closure of individual work orders, it does not track the amount of time it takes to successfully resolve the individual heat-related complaints. As a result, among other things, NYCHA management cannot readily identify the number of heat-related repair requests that have not been resolved at any one time, nor can it readily determine the length of time it took to ultimately resolve those requests. If NYCHA were able to effectively track such information, it could better evaluate the agency's allocation of resources (both personnel and supplies) and the effectiveness of its procedures and its training.

In addition, although NYCHA's stated goal is to close all heat-related work orders created as a result of an initial no-heat complaint within 24 hours, Maximo records indicate that approximately 23 percent of the heat-related work orders initiated by residents' complaints during the 2017-2018 heating season were not closed within that time frame (91 percent were closed within 48 hours and 96 percent were closed within 72 hours). As noted above, however, the closing of a work order does not necessarily indicate that a repair has been completed. Consequently, these figures do not reflect NYCHA's performance in actually completing repairs. Further, the delays in initial assessments reflected in Maximo result in delays in the ultimate resolution of the heat-related complaints.

Additionally, NYCHA does not have adequate procedures for independently verifying the accuracy of the repair information that staff records in Maximo. As a result, the degree to which the repair-related data reported in the system can be relied upon is questionable. Further, NYCHA does not formally solicit feedback from tenants, such as in the form of customer satisfaction surveys, to gauge their level of satisfaction with repairs, which reduces its ability to ensure the reliability of the information in Maximo and further limits the agency's ability to assess its effectiveness in resolving heat-related issues.

The audit also found that NYCHA does not maintain complete inventory listings of all the boilers currently in its developments, which undermines the agency's ability to properly manage its inventory. Absent a comprehensive, accurate listing of the boilers that includes essential identifying and other information, such as the dates of installation, asset numbers, makes and models, warranty information, as well as each boiler's inspection and repair histories, NYCHA cannot efficiently ensure that all inspections are properly made and that decisions about the need and timing of replacements are made with complete information.

Further, to maintain safe and properly-functioning heating equipment, NYCHA is responsible for ensuring that three types of inspections are conducted of its boilers and related areas and equipment: (1) Department of Buildings (DOB) mandated external inspections; (2) DOB mandated

internal inspections; and (3) in-house annual preventive maintenance inspections.¹¹ However, our review of external and internal inspection records maintained by NYCHA's Risk Management Unit for the 2017-2018 heating season found that NYCHA did not maintain adequate records for the required external and internal inspections in a manner that would allow the agency to readily track the status of such inspections. Further, according to data in Maximo for the 2017-2018 heating season, NYCHA conducted preventive maintenance inspections for 84 percent of the boilers scheduled to be inspected. However, we were unable to identify the specific work orders created to address the deficiencies cited during the annual preventive maintenance tests—and the disposition of those work orders—because NYCHA did not have a way to identify such orders.

Under present circumstances, NYCHA's persistent failure to adequately resolve heating issues will continue unless management addresses the deficiencies we found and establishes systems that enable it to reliably track the causes and occurrences of heating problems. NYCHA management should also develop a system that allows it to track deficiencies and conditions, along with the timing and adequacy of repairs, including whether work was properly done.

The details of our findings are discussed in the following sections of this report.

NYCHA's Central Management's Oversight of Issues Pertaining to Lack of Heat Is Inadequate

We found that NYCHA's central management does not have the ability to readily track the status and resolution of repairs necessitated by heating complaints unrelated to system-wide heating failures (*i.e.*, outages). This deficiency reflects NYCHA's failure to adequately follow the guidance in Comptroller's Directive #1, *Principles of Internal Control*, which states that:

[A] sound internal control system must be supported by ongoing monitoring of activities at various organizational levels and in the course of normal operations. To best ensure that an agency successfully achieves its mission and is fully accountable for resources, such monitoring should be ingrained throughout an agency's operations and should include appropriate measurements, comparisons and reconciliations of actions taken by employees in performing their duties and of all activities and programs.

However, as discussed below, we found that NYCHA lacks sound internal controls, which reduces its ability to readily determine how long it took residents' complaints to be resolved, to ensure that the investigation of complaints and the subsequent work orders were closed within prescribed time periods, and to evaluate whether work was properly done as reported.

NYCHA's Central Management Lacks the Ability to Effectively Track Information about Heat-Related Complaints, Including Whether They Have Been Completely Resolved

NYCHA's use of its electronic work order system, Maximo, does not provide an efficient and effective way for central management to identify at any one time the number of unresolved heating

¹¹ NYCHA contracts with a private insurance company to conduct the external and internal inspections. NYCHA staff conduct the annual preventive maintenance inspections.

complaints unrelated to system-wide outages and how long those complaints have remained unresolved. Moreover, NYCHA cannot determine, except by researching one complaint at a time, how long it took to fix the conditions that caused the heat-related complaints that apply only to individual housing units and to restore heat.¹²

As noted, NYCHA has established a goal of responding to every heat-related complaint in 24 hours. Further, according to NYCHA's procedures, and in accordance with State law, when the outside temperature falls below 55°F during the heating season, the temperature for housing units must meet the following minimum requirements:

- Between the hours of 6:00 a.m. and 10:00 p.m., the inside temperature is required to be at least 68 degrees.
- Between the hours of 10:00 p.m. and 6:00 a.m., the inside temperature is required to be at least 62 degrees.

In accordance with its procedures, when NYCHA receives heat complaints, HMSD staff are required to identify the complaints for which corrective actions are needed (e.g., where the temperature in the units falls below the prescribed levels) and close out work orders within its required 24-hour time frame. However, as noted, closing a work order within 24 hours does not necessarily mean that the complaint has been resolved within 24 hours. For complaints that require repair work that is outside the purview of HMSD staff, such as where complaints result from plumbing or window problems, NYCHA maintains that it is not feasible for it to set a target for the timeliness, since the types of repairs required can vary widely. To comply with the guidance provided in Comptroller's Directive #1 relating to the establishment of a sound internal control system, NYCHA management should continually monitor whether and when heat-related complaints are completely resolved. However, as noted, Maximo is not programmed to track the total amount of time it takes for NYCHA to successfully resolve individual unit heat-related complaints. Rather, Maximo is used to open work orders and track their closings.

NYCHA's processes for tracking individual work order completion is inadequate for tracking the time it takes for resident complaints to be completely resolved because, in the majority of instances, the completion of a repair involves the opening and closing of multiple work orders to account for the multiple different trades that are needed to resolve a single problem. For example, a work order would be opened to assess the complaint and then closed when the heating unit determines that a plumber is needed to address a complaint. In that case, the initial work order would be closed out and a new work order would be opened for a plumber, who would perform the required work and close out the work order and open yet another work order for a plasterer to repair a wall that was opened to access the pipes. Once that work was completed, the plasterer might open yet another work order for a painter who would be needed to complete the job. However, Maximo is not designed to track the completion of the job from start to finish, just the opening and closing of each of the successive individual work orders.

Accordingly, as noted, when an issue requires more than one work order to resolve the complaint, NYCHA is unable to determine whether the complaint has been completely resolved without conducting additional research. Such research would require NYCHA staff to manually track individual complaints, one at a time, by looking at each work order associated with a particular

¹² By contrast, the tracking of system-wide outages, including how long they remain unresolved and how many units are affected, is a feature of Maximo and was in effect during our audit scope period.

unit's complaint and following the trail of work orders to determine the length of time it actually took to resolve a complaint.

Knowing how long it takes to resolve heating complaints as they pertain to individual units and the amount of time it takes to completely resolve different types of problems, would enable NYCHA management to make informed decisions with regard to the replacement of boilers, better evaluate the effectiveness of procedures, personnel, and training, as well as to identify where to deploy resources. In addition, NYCHA's inability to track information related to complaints, as well as its inadequate supervisor oversight, discussed below, prevents NYCHA management from obtaining potentially useful information that it could use to ascertain whether work orders have been closed out erroneously.

NYCHA's Records Show that 23 Percent of Heat-related Work Orders Were Not Closed Out Timely

NYCHA's procedures state that "heat-related work orders must be completed within 24 hours after they are reported." NYCHA officials explained that this reflects the agency's desire to both investigate and resolve all heat-related complaints in that time frame, if possible. Accordingly, NYCHA officials stated that all issues that can be resolved within 24 hours of a complaint having been received are given immediate attention and that staff will work overtime, if necessary, to resolve the issues. However, according to NYCHA officials, if the problem cannot be addressed immediately because the repairs required are outside the scope of the heating department's responsibility, or if additional parts necessary for the repair need to be ordered, NYCHA staff will close out the original work order (referred to as a parent work order) and then open a new work order (referred to as a child work order) to address the issues for which additional resources are needed.

According to data provided by NYCHA, there were 167,752 heat-related work orders initiated due to complaints made by residents during the 2017-2018 heating season. Our review of data generated from Maximo indicates that 38,052 (23 percent) of these work orders were not closed out within the 24-hour time frame established by NYCHA as its goal. A breakdown of the time it took to close these work orders is shown in Table I below.

Table I

Timeliness in Closing Initial Work Orders
during 2017-2018 Heating Season

Number of Hours to Close Initial Work Order	Number of Work Orders	Percentage of Work Orders	Number of Work Orders (cumulative)	Percentage of Work Orders (cumulative)
24 hours or less	129,700	77.3%	129,700	77.3%
Over 24, not more than 48	22,772	13.6%	152,472	90.9%
Over 48, not more than 72	9,319	5.5%	161,791	96.4%
Over 72, not more than 96	3,287	2.0%	165,078	98.4%
Over 96, not more than 120	1,224	0.7%	166,302	99.1%
120 hours or more	1,450	0.9%	167,752	100.0%
Total	167,752	100.0%		

It is important to note that since, as stated previously, the closing of the initial work order does not necessarily indicate that a repair has been completed, this performance indicator does not reflect NYCHA's performance in actually completing repairs. For example, 14,257 (11 percent) of the 129,700 initial work orders closed within 24 hours were closed as a result of either the resident not being home or maintenance staff not being able to gain access to the building or apartment. Nevertheless, by failing to ensure that all heat-related work orders are closed within 24 hours, NYCHA increases the likelihood that its residents will be left without adequate heat in their apartments for an extended period of time.

NYCHA offered multiple reasons for why in the 2017-2018 heating season almost a quarter (23 percent) of the work orders in its system were not closed within the 24-hour target, including: difficulties in identifying the problem; difficulties obtaining parts needed to complete a repair; and shortages of workers needed to address all of its outstanding work orders, including heating complaints. NYCHA officials stated that they had fewer heating and maintenance staff than they had just a few years ago, and heating officials assigned to individual developments told us that the high turnover of existing staff has made their jobs and the jobs of heating staff much more difficult. As of March 2018, NYCHA had 302 HPTs, down from the 411 HPTs employed during 2015, a 27 percent reduction. NYCHA officials cited retirement as one of the reasons for the decrease in staff, although the agency had not at the time replaced many of these retiring workers. Despite repeated requests, NYCHA has never provided us with a number of heating and maintenance staff it thinks are necessary for the agency to adequately address its heating issues.

NYCHA's failure, according to its own records, to close out nearly a quarter of its initial heating complaint work orders is of significant concern because the timely closing of those initial work orders is critical to ensuring the timely resolution of the residents' complaints. Moreover, the data in Maximo is itself unreliable. This concern remains even if, as NYCHA has recently claimed, 90

percent of the heat-related work orders have been closed out in the required time frame during the as yet incomplete 2019-2020 heating season.¹³

Of further concern, NYCHA officials stated that on occasion, although work may have been completed, HPT staff neglect to close out the work orders. As a result of this problem, officials informed us that NYCHA's IT unit performs an annual batch closing of the heat-related work orders that have been open for a substantial amount of time. However, this process significantly reduces the reliability of the information in Maximo concerning the amount of time it took to close out heat-related work orders because NYCHA's batch closings could result in the closing of work orders where required work was never performed. In addition, NYCHA officials informed us that, upon restoring service after a system-wide outage occurred, the agency performs a batch closing of all complaints that were made after the outage was established, including those that may be unrelated to the outage. Accordingly, there is the possibility that an individual heat-related complaint that was not as a result of the outage, but rather due to, for example, a broken window or poor insulation, might be closed without the issues that were not related to the outage having been resolved.

Finally, while we have used data maintained in Maximo in our findings above, as noted, we have additional concerns about the reliability of that data which are discussed in detail in the following section of this report. Absent reliable data, NYCHA cannot efficiently deploy resources (*e.g.*, personnel and parts), enhance operations (*e.g.*, oversight, training, and distribution systems), or determine where capital improvements might be most effectively made.

Inadequate Verification of Work Order Completion

According to Section 4.3 of Comptroller's Directive #1,

Internal control activities help ensure that management's directives are carried out. They are, basically, the policies, procedures, techniques, and mechanisms used to enforce management's direction.

The directive further states that the control activities should include actions such as approvals, authorizations, and verifications. Accordingly, with regard to the completion of work orders, management should have procedures to verify that the work was performed as attested to by agency staff.

However, NYCHA did not have procedures in place for independently verifying: (1) that work orders were closed out properly in accordance with NYCHA's policies; and (2) that work was actually undertaken and satisfactorily completed as reported. Among other things, we found that the agency has no express requirement for supervisors to follow up on work orders, either in total or on a sample basis, for the purpose of assessing whether individual work orders were properly closed. Rather, any follow-up that might be performed is done solely at the discretion of the HPT supervisor. Moreover, as indicated above, we found that the closing of a work order is not necessarily an indication that the complaint itself has been resolved, but rather the closing is an

¹³ We note that the 90 percent figure that NYCHA asserts is its current work order closure rate, like the 77 percent that we found in our audit scope period, does NOT necessarily mean that the problem complained of was resolved and therefore does not reflect NYCHA's performance in actually completing repairs. Moreover, as we discuss in further sections of the report, we found reliability issues with the data in Maximo that is the basis for claims that work orders have been properly closed. Finally, NYCHA has made these claims regarding its current performance without providing any support to substantiate the claims.

administrative function that can have several different meanings. Among other things, it can mean a problem was diagnosed and referred to another unit to fix or that NYCHA staff came to an apartment in response to a work order and was unable to gain access to the apartment at that time. Finally, despite numerous requests, NYCHA failed to provide evidence that staff tracked work order backlogs, which could have possibly provided some degree of review of the work done to close individual work orders. In the absence of such a quality control process, we question the degree to which the repair-related data reported in the system can be relied upon.

Pursuant to its agreement with HUD and the City, dated January 31, 2019, (the Monitoring Agreement), the City agreed to appoint and fund a monitor (Monitor) chosen by HUD and the USAO SDNY to, among other things, ensure the establishment of corrective actions by NYCHA to address issues identified in United States v. New York City Housing Authority, 18 Civ. 5213. Pursuant to the Monitoring Agreement, by no later than 45 days after the appointment of the Monitor, NYCHA agreed to create a Quality Assurance (QA) Unit whose tasks included “considering both performance on individual work orders and also performance of maintenance repairs from the first identification of the need to the ultimate correction of the problem (“end-to-end”).” The Monitor was appointed at the end of February 2019 and began work on February 28, 2019. Accordingly, the establishment of the QA unit should have been completed by no more than 45 days later, or roughly by no later than April 14, 2019.

Based on this requirement, we asked NYCHA to provide us with documentation pertaining to the QA unit mandated by the Monitoring Agreement. However, NYCHA provided us with conflicting information in response to this request during the course of this audit. Specifically, in August 2019, we asked NYCHA officials to provide us with, among other things, a list of all QA inspections that have been performed by the QA unit. In response,

- NYCHA officials provided us with a summary of inspections purportedly conducted between May and August of 2019 by that unit.
- However, when we met with NYCHA officials in December 2019 to discuss the methodology (e.g., the status of the work orders, types of work orders, the basis for determining whether work performed was satisfactory) used for the inspections, the NYCHA Chair’s Chief of Staff stated that NYCHA had *not* yet established the QA unit, but that it was in the process. The audit coordinator later told us that the list we were given was of inspections performed by its Leased Housing unit, not the QA unit.
- Nevertheless, during the exit conference held on February 24, 2020, NYCHA officials at that meeting contradicted the prior statements of the Chief of Staff and again claimed that the QA unit had been established. In subsequent materials sent to us, NYCHA officials claimed that, in fact, a QA unit has been in existence since October 2014 and was later rolled into the QA unit mandated by the Monitoring Agreement.
- NYCHA, however, did not explain why the Monitoring Agreement called for NYCHA to create a QA unit if one was already in existence. Consequently, we find NYCHA’s current claim regarding the establishment of the QA unit to be of questionable reliability.

Absent adequate controls, such as a QA unit, NYCHA would be unable to independently verify that work orders are closed out properly and that work was completed as reported. A lack of controls increases the risks that work orders may be improperly closed out, the information in Maximo is unreliable, the allocation of resources based on that information is inadequate, and

most importantly, individuals are left without sufficient heat in their apartments for extended periods of time.

Inefficient Use of Customer Satisfaction Feedback Tools

Solicitation of customer satisfaction is an important component of any service delivery operation's internal controls. Comptroller's Directive #1 highlights the importance of customer satisfaction surveys as a means of soliciting customer feedback in its Directive #1 checklist, an oversight tool that every City agency is required to fill out annually. In particular, the checklist asks whether an agency has a process for getting periodic customer feedback (suggestions, compliments, or complaints) and whether customer complaints are reviewed and addressed, when considered necessary.

We found that, although NYCHA does solicit feedback from its residents regarding their satisfaction with the work performed in response to complaints, the agency neither analyzes nor utilizes that customer feedback to review the quality of the work done in connection with any particular work order, to improve the training of heating staff, to allocate resources, or to reorganize any processes and functions within NYCHA.

NYCHA conducts two types of surveys to solicit customer feedback. The first survey is taken at the time that the work order is completed. Upon completion of a job, the HPT is required to show the complaining resident one question on a hand-held device – “Resident Satisfied – yes/no?” The resident is asked to give a response, but has the option of leaving it unanswered. NYCHA officials acknowledged that they do not utilize these customer satisfaction surveys for any purpose.¹⁴

The second survey, the quality assurance survey, is conducted by NYCHA's CCC through an electronic system that randomly selects closed work orders and calls the customers to ask seven questions—four pertaining to the actual work performed and three pertaining to satisfaction with the call center itself. The seven questions are:

- 1) Was your issue completely resolved?
- 2) Was your issue addressed in a timely manner?
- 3) Did NYCHA staff keep their scheduled appointment?
- 4) How would you rate your level of satisfaction with the service provided by the NYCHA employee that responded to our service request?
- 5) Was your call answered in a timely manner?
- 6) How would you rate the call taker's professionalism and knowledge about your inquiry?
- 7) How would you describe your overall level of satisfaction with the service provided by the call taker?

¹⁴ Notwithstanding requests for results from these surveys, NYCHA never provided them.

NYCHA officials stated that CCC only uses the responses to the last three questions for training purposes for staff within the call center and that they do not use the information obtained in the responses for any other purpose, including addressing the substance of the heat complaints.

In lieu of relying on a customer satisfaction survey to assess the effectiveness of its responses to heat complaints, NYCHA officials stated they have the ability, through Maximo, to see whether customers put in repeat complaints, which would possibly be an indication of customer dissatisfaction. However, they provided us with no evidence that NYCHA staff ever actually do such analysis. NYCHA management also claimed that they follow up on complaints on a case-by-case basis, especially when there are a large number of complaints or repeated number of complaints from the same unit and/or development. However, they stated that such follow-up is generally not documented.

Obtaining and using resident feedback can be a meaningful managerial oversight tool to identify specific areas that require corrective actions, including specifically with regard to providing adequate heat to residents. Without such tools, NYCHA's ability to assess how well it is resolving heat-related issues is made much more difficult.

During the audit, NYCHA officials stated that they would consider implementing additional customer satisfaction tools.

Recommendations

1. NYCHA should create a mechanism for it to efficiently track all heat-related complaints, including those that are not caused by system-wide outages, from receipt of a complaint to its final disposition so that the agency can efficiently and effectively determine, among other things, the time it takes to resolve such complaints, identify aging complaints, address languishing complaints, and improve systems that lead to delayed resolutions of complaints.

NYCHA Response: NYCHA agreed in principle with this recommendation but asserts that it is already in compliance, stating, “NYCHA's Maximo Work Order system can already track all work orders from receipt of complaint to final disposition. After the 2017-2018 heating season NYCHA created a Heating Dashboard which tracks individual heating complaints as well as heating outages. The Dashboard also helps NYCHA to forecast and determine, in real-time, the root cause for potential service disruption and address them before they become an outage. Access to both Maximo and the Dashboard were provided to the Comptroller during this audit.

NYCHA has implemented other enhancements, such as new heat triage questions. These questions are posed to residents to better ascertain the technical source of the complaint. Also, robocalls are made to residents after an outage work order is closed to confirm that the problem has been resolved.”

Auditor Comment: While the new measures cited by NYCHA appear to be positive steps, none of them address the actual recommendation. During the course of the audit, NYCHA officials were unable to demonstrate that Maximo or the Dashboard (which draws its information from Maximo) could readily track the complete resolution of a complaint—especially ones requiring the creation of multiple work orders—or determine the time needed to resolve it. Rather, in such

cases NYCHA staff must manually track individual complaints, one at a time, and to do so, they must look at each work order associated with each particular complaint and follow the trail of work orders to determine the length of time it actually took to ultimately resolve the initial complaint.

Additionally, NYCHA's reference to its triage questions is irrelevant in the sense that the questions are used to streamline the initial handling and categorization of complaints, not for tracking the resolution of those complaints. NYCHA also refers to robocalls; however, their utilization is limited to outages only.

Accordingly, we urge NYCHA to reconsider its response and implement this recommendation.

2. NYCHA should take all necessary measures to determine and monitor on an ongoing basis the adequacy of its staffing levels and processes related to heating.

NYCHA Response: NYCHA agreed in principle with this recommendation but believed that it was already in compliance, stating, “[a]s HMSD is aware of vacancies, it immediately takes administrative action and submits required documentation to fulfill the position. HMSD is involved from the inception of the vacancy opening until hiring. In addition, Human Resources reviews staffing levels for Heating on a weekly basis and conducts a weekly call to discuss staffing issues.”

Auditor Comment: While NYCHA may have hired additional staff, we have no evidence that its current levels are sufficient. As we state in this report, NYCHA has not responded to our request to provide the number of heating and maintenance staff needed for the agency to adequately address its heating issues. During the course of our audit fieldwork, NYCHA staff and officials at the developments who we interviewed said that they were severely short-staffed. Additionally, the lack of reliable data in Maximo limits NYCHA's ability to efficiently deploy its staffing resources.

3. NYCHA should develop a process to independently verify that work orders were closed out properly and that work was completed as reported. This should include an explicit requirement that supervisors follow up on a prescribed number of closed out work orders and confirm that the work reported as completed was conducted as reported.

NYCHA Response: NYCHA does not directly address this recommendation but instead states, “To monitor and track performance, HMSD hosts a weekly discussion with all its Managers to review all outages, incidents and pain points and identify opportunities to improve the operation. Members of the Compliance Department as well as the Federal Monitor often participate. In addition, during October 1st until May 31st, the department hosts a daily heat call to discuss current service disruptions, open heat, hot water, too much heat work orders and any other events that might impact the operation and residential services. Members from Property Management, Department of Capital Projects, and Executive Personnel often participate. As previously stated, QAU averages about 4,000 attempted QA unannounced inspections per month (all types of work tickets, not just heat) throughout the city. To date, the average failure rate is about 3% for random inspections performed on all types of work tickets. When a repair is determined to be unacceptable, the QAU indicates through Maximo the need

to complete the repair. Starting January 2020, QAU began QA inspections of work orders assigned to the HPT craft.”

Auditor Comment: The weekly discussions and daily heat calls that NYCHA refers to do not address our recommendation, which calls for independent verifications that work was completed. With regard to QAU inspections, as we state in this report, NYCHA provided us with conflicting information pertaining to the QA unit mandated by the Monitoring Agreement, so we find NYCHA’s claims regarding the unit’s establishment and operations to be of questionable reliability. Additionally, NYCHA provided no specifics regarding the methodology used for the inspections it cites in its response (e.g., whether work orders with a disposition of “no access” were included, the basis for determining whether work performed was satisfactory), so we are unable to assess what the three percent failure rate cited by NYCHA actually represents. More importantly, however, NYCHA fails to address a key component of our recommendation, which is that it require its supervisors to follow up on a specified number of work orders and confirm that the work reported as completed was actually conducted. Accordingly, we urge NYCHA to reconsider its response and implement this recommendation.

4. NYCHA should formally analyze the feedback that it receives from residents with regard to their satisfaction with the heating-related work performed and use that data to highlight specific areas that require action, including providing training for individuals and groups of employees, redeploying personnel and other resources, and improving processes and procedures to ensure better performance.

NYCHA Response: NYCHA agreed with this recommendation and stated, “The data will be made available to HMSD on the existing Heating Dashboard. HMSD will outline a business process to handle unsatisfied residents and train staff accordingly.”

NYCHA Does Not Maintain an Updated Inventory Listing of Boilers in Its Developments

NYCHA does not maintain an updated inventory listing of its boilers. In April 2018, we asked NYCHA to provide us with an inventory list of boilers maintained at its developments. It was not until September 2018, five months after our request, that NYCHA provided a listing. However, as described below, we found that list to be incomplete. NYCHA officials acknowledged that prior to our request, they did not have a reconciled inventory listing and that they needed to expend many hours to visit the boiler rooms to create one based on our request.

Comptroller’s Directive #30, *Capital Assets* states that,

[I]nventory control and the maintenance and reconciliation of accurate inventory records is an important aspect of safeguarding all assets of value held by the City including those assets classified as Capital Assets.

Accordingly, pursuant to Comptroller’s Directive #30, each agency must maintain internal inventory records of all furniture, equipment, and vehicles purchased with capital dollars. Depending on the nature of the asset, at the very minimum, the inventory records at the agencies must contain the following information:

- type of equipment;
- manufacturer;
- serial number;
- location;
- date purchased and received; and
- assigned capital asset number.

According to the inventory list provided by NYCHA, the agency reported that it had 1,955 boilers installed at its developments as of September 2018.¹⁵ However, during our review of NYCHA's annual preventive maintenance inspections, NYCHA records revealed that 13 boilers were not included on the inventory listing NYCHA provided to us on September 2018. Notwithstanding our discovery of the 13 omitted boilers, for the purposes of this audit, we had to rely on the original inventory listing of 1,955 boilers provided by NYCHA to conduct our analysis because we were not provided with what NYCHA claimed was a complete updated listing until the audit exit conference was held on February 24, 2020, which occurred after the audit testing was completed.

Based on the information in the September 2018 NYCHA inventory listing of boilers, we calculated that the average age of its boilers is approximately 21 years. According to NYCHA officials, boilers have a useful life of 25 years. Using the installation dates from data that NYCHA provided us, we determined that in 2019, 907 (46 percent) of NYCHA's 1,952 boilers are past their useful life. As of January 2018, these 907 boilers were located at 115 of NYCHA's 325 developments. A frequency distribution relating to the age of the boilers at the developments is shown in Table II below.

Table II
Age of Boilers at NYCHA
Developments

Age of Boiler	Number of Boilers	Percentage	Number of Developments*
≤5 years	247	12.65%	39
>5 years, ≤10 years	101	5.17%	24
>10 years, ≤20 years	400	20.49%	97
>20 years, ≤25 years	297	15.22%	63
>25 years	907	46.47%	115
Total	1,952	100%	

* A development may have more than one boiler

In addition, during the scope of our audit, NYCHA did not maintain its data with unique identifying numbers in the same manner within the data for all of the boilers that would have allowed us to conduct comparative analyses. Instead, in order to perform any meaningful tests, we needed to first manually compile our own listing from various NYCHA listings so that we could then analyze

¹⁵ The list NYCHA provided did not include the boiler serial numbers, as required by Comptroller's Directive #30. In addition, instead of providing the date purchased/received, the listing provided the date installed, which is not the same as the date purchased/received. Further, three boilers on the list did not have date installed. In addition, although we ultimately received multiple lists of boilers from NYCHA, the lists each used different information, which makes it extremely difficult to compare the information in the various listings.

the data. Maintaining an updated and complete inventory listing of boilers with all unique identifying information would better enable NYCHA to track and monitor issues relating to particular boilers, including the number and type of inspections, as well as repairs. An accurate, perpetually updated inventory listing would also aid NYCHA management while making decisions regarding boiler replacements and the applicability of existing warranties.¹⁶ Finally, we note that multiple NYCHA units (e.g., Risk Management, HMSD, Capital Projects Division, Operations, and Central Management) for different reasons, need to know information about the boilers. Effective and efficient decision making would be aided by a single consistent source of information being available for all of the agency to rely on.

NYCHA officials stated that they were in the process of updating and completing its inventory listing and entering the details into Maximo. Officials did not give a target date for when they anticipated this would be completed. At the exit conference NYCHA officials stated that although this was an on-going process, they believed that they currently do have an updated inventory listing, which they provided to us at that meeting. However, while we were unable to test the accuracy of the information recorded on the list due to the lateness of its production, we were able to see that information required by Comptroller's Directive # 30 was still missing

Recommendations

5. NYCHA should maintain a complete and updated inventory listing of boilers with unique identifying information, to better enable NYCHA to track and monitor issues relating to each boiler.

NYCHA Response: NYCHA agreed in principle with this recommendation but believed that it was already in compliance, stating, "However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA. These assets are already identified in the system with a unique asset number. In addition to adding new boilers and removing decommissioned boilers, updates were made to various data fields such as condition ratings and jurisdiction code. Maximo also allows users to capture various attributes/specifications for each boiler asset, such as Horse Power, BTU, MMBTUs, Manufacturer #, Make, Model, Install Date, Fuel Type, Burner Info, etc."

Auditor Comment: NYCHA maintains that it is already in compliance; however, as of the February 24, 2020 exit conference, officials acknowledged that the inventory listing was in the process of being developed and was not yet finalized. Moreover, the most recent inventory listing that NYCHA provided (dated February 25, 2020) still does not include serial numbers, date purchased, and date received, nor does the listing distinguish between those boilers that require all types of inspections and those that do not – a key and useful aspect in a detailed inventory list.

Accordingly, we urge NYCHA to reconsider its response and implement this recommendation.

¹⁶ An audit report issued by the Comptroller's Office on July 26, 2019 looked into the risks associated with lack of a maintenance program on the warranty of roofs—*Audit Report on the New York City Housing Authority's Preventive Maintenance and Repairs on the Roofs under Warranty* (Audit # SE18-059A)

6. NYCHA should ensure that it disseminates its inventory listing to those units within NYCHA that are involved in processes related to the boilers.

NYCHA Response: NYCHA agreed with this recommendation and stated, “NYCHA uploaded the boiler inventory to Maximo for employees to access.”

Auditor Comment: As noted above, NYCHA does not maintain a complete and updated inventory listing. As such, we urge NYCHA to ensure that the correct inventory list is uploaded to Maximo for its employees to access.

Lack of Evidence That NYCHA Ensured That All Required Boiler Inspections Were Conducted or That It Followed up on Deficiencies

NYCHA does not maintain records relating to the performance of required external and internal inspections in a manner that allows the agency to readily track the status of such inspections. Consequently, neither we nor NYCHA can assess the degree to which the agency’s boilers are being inspected to ensure that the boilers are up to standards and functioning properly.

NYCHA has entered into a contract with a private insurance company to perform both DOB mandated external and internal inspections. Pursuant to that contract, NYCHA’s Risk Management unit receives the results of both types of inspections conducted by the insurance company. If a boiler fails an inspection, DOB procedures require the inspector to inform the development staff of the deficiencies that resulted in the failed inspection at the time of the inspection. NYCHA must correct the deficiencies by the re-inspection date or DOB may fine NYCHA for its failure to remediate the faulty equipment.

External inspections of boilers are required by DOB to be performed annually. Their focus is on conditions around the boilers and in the boiler rooms. They include: inspections of water cut-off capacity; the condition of the burners, oil tanks, cold water feeds, pipes, combustion chambers, and the mixing valves; and the location of emergency shutdown switches. DOB specifically requires that low-pressure boilers in residential buildings with six or more families receive an annual external inspection, and the inspection results be filed with DOB.

According to NYCHA officials, internal inspections are conducted to assess the internal safety components of boilers. These inspections are generally performed borough-wide, with one borough inspected every four years. For this purpose, Queens and Staten Island are treated as a single borough and are inspected in the same year. Internal inspections focus on the condition of the boilers themselves, including particularly internal conditions such as of the existence of sediments in internal surfaces, and of the aquastat, a device used to control water temperature.

NYCHA does not appear to place a high priority on these inspections as evidenced by the fact that when we requested information about external and internal inspections, the multiple responses that NYCHA provided were incomplete and inconsistent.

- During the audit, we subpoenaed NYCHA and, among other things, demanded that it provide all documentation relating to external and internal inspections conducted prior to

the 2017-2018 heating season.¹⁷ On November 19, 2018, in response to that subpoena, NYCHA provided us with a listing it represented as inspections relating to 1,234 boilers that NYCHA inspected in 2017; 1,045 boilers with only external inspections, 185 boilers with only internal inspections, and 4 boilers that had both external and internal inspections. We were specifically informed that the list “include[d] all inspectable objects requiring annual inspections.”

- On October 28, 2019, towards the conclusion of our audit fieldwork, we asked NYCHA to identify the boilers that did not receive an internal or external inspection and to provide an explanation as to why the boilers had no record of being inspected. We received a response nearly three months later—in January 2020—when NYCHA provided us with a new listing of 1,506 boilers that NYCHA represented had been inspected in 2017; 1,362 boilers with only external inspections, 63 boilers with only internal inspections, and 81 boilers that had both external and internal inspections.

The NYCHA official who created both lists stated that the first list represented only those boilers with deficiencies—a marked departure from what the agency asserted when the list was provided—while the second list represented all of the boilers that should have been inspected (according to NYCHA, all of the boilers requiring inspections were inspected). We asked NYCHA to provide a written explanation for the agency’s disavowal of its initial representation that the information provided on November 19, 2019 in response to the subpoena was accurate. However, we received no response. NYCHA’s failure to provide an explanation significantly limits the degree of reliance we can place on any of its submissions.

In addition, our examination of the two lists revealed conflicting information between them, namely that there were at least 21 boilers recorded on the first list as having been inspected that were missing entirely from the second list, further calling into question the reliability of the data we received. Moreover, NYCHA has not developed a formal system for tracking boilers that are required to be inspected and the status of those inspections.

NYCHA acknowledged that when this audit was initiated, the agency did not maintain lists pertaining to the external and internal inspections and only started to do so in order to better respond to our inquiries. The official who created the lists stated that he needed to analyze numerous documents that NYCHA received from the contracted insurance companies in order to aggregate the inspection information for the lists. Further, as discussed above, NYCHA does not maintain an updated inventory listing of its boilers, which significantly hinders the ability of NYCHA or the insurance company to keep track of the boilers that need to be inspected.

As a result of the above inconsistencies, we are unable to place adequate reliance on the inspection information provided by NYCHA and neither we nor NYCHA are able to conclusively state the total number of inspections that were performed.

Follow-up of Deficiencies for External and Internal Inspections

As of February 24, 2020, when we discussed the audit’s preliminary findings during an exit conference, NYCHA has been unable to tell us whether deficiencies found during external and internal inspections were addressed and provided no evidence of any corrections. NYCHA has

¹⁷ Due to extensive delays in receiving requested information from NYCHA, we issued two separate subpoenas, one on October 30, 2018 and one on November 23, 2018, to obtain information.

been unable to identify all of the work orders that were created to address the deficiencies cited, so we do not know the extent to which the cited conditions were corrected and the amount of time it took NYCHA to address such deficiencies.

With regard to external inspections where violations are found, NYCHA is given 180 days to clear each condition. However, neither the inspecting insurance company nor DOB conducts a re-inspection to determine if NYCHA has corrected the conditions cited. During the audit, a DOB official stated that the agency has never issued any fines to date for NYCHA boiler deficiencies. However, the official stated that the agency's electronic systems related to its inspections and issuance of violations were updated in 2017 to tie specific boiler inspections to the deficiencies found which would enable DOB to fine and collect any fines or fees for violations through its DOB NOW system. Prior to the upgrade, according to the DOB official, the agency had been unable to do so. Going forward, DOB anticipates issuing fines if NYCHA does not correct boiler and any other deficiencies.

We selected a sample of 100 boilers from 651 boilers that were cited for deficiencies during the 2016 external inspections and determined whether the citations associated with those inspections were resolved or identified in connection with the next year's inspection. We found that 35 of the 100 boilers (35 percent) were cited for the same issue in both years. For example, in one instance, a "wrong size relief valve" was cited in both a 2016 and a 2017 inspection report. This condition, if not corrected, can impact the functionality of the boiler and it should have been corrected well before the following year's citation. Yet, the fact that the same condition was cited two years in a row strongly suggests that it had never been corrected.

Failure to perform the required inspections increases the risk that the safety and efficiency of the boilers may become compromised. Failure to correct conditions cited for failing to comply with required boiler safety and operational requirements further increases risks to resident health and safety and could increase the likelihood of future losses of heat, especially with regard to conditions that exist year to year without being identified and repaired in a timely manner.

NYCHA officials stated that subsequent to the start of our audit, the contracted insurance company has begun uploading external and internal inspection results into a system called Jurisdiction Online, which is now linked to Maximo. For each deficiency identified during such inspections, Maximo is now programmed to generate a work order.

Deficiencies with Preventive Maintenance Inspections

To ensure that the boilers are in optimal condition prior to the start of the heating season and to remedy any deficiencies, NYCHA conducts annual preventive maintenance inspections. These preventive maintenance inspections are performed of the heating tanks, vacuum pumps, heating plant equipment, fuel oil storage tanks, fixed air compression in boiler rooms, and the overall heating systems to ensure that the system is prepared for the following heating season. To facilitate these inspections, on January 1st of every year, Maximo generates a Preventive Maintenance Work Order for each boiler. Thereafter, the development-based heating superintendent schedules the annual Preventive Maintenance inspections for heating staff to conduct prior to the start of the following heating season. If deficiencies are found during inspections, heating staff are supposed to create work orders which will cause the appropriate staff to correct the deficiencies.

As stated previously, NYCHA had 1,917 boilers at the start of the 2017-2018 heating season.¹⁸ Based on NYCHA data from Maximo, prior to the 2017-2018 heating season, NYCHA staff reportedly conducted preventive maintenance inspections for 1,618 boilers (84 percent), located at 325 developments during that time period.¹⁹

In response to our request for all of the deficiencies that resulted from the preventive maintenance work orders, NYCHA provided us with list of 290 work orders for 125 boilers at 68 developments. However, during our scope period, when creating work orders in Maximo, NYCHA staff did not specify which work orders were generated to address deficiencies cited during the annual preventive maintenance inspections. As a result, we were unable to establish the total number of deficiencies that resulted from the 1,618 preventive maintenance inspections and the total number of work orders that were created to address those deficiencies, or assess the degree to which they were reportedly resolved.

It is essential for management to be aware of the current state of each of its boilers and the types of repairs that are needed to keep them operational, especially since 907 (46 percent) of NYCHA's boilers are past their useful life of 25 years, according to information provided by NYCHA. Failure to perform the required inspections and subsequent repairs increases the risk that the safety and efficiency of the boilers may become compromised and not be repaired in a timely manner.

NYCHA officials stated that subsequent to the start of our audit, staff were instructed to note within Maximo whether a work order has been created to address a deficiency cited during a preventive maintenance inspection. However, associating work orders with deficiencies would still be difficult and labor intensive since it would necessitate sorting through all of the work orders opened during Calendar Year 2018 to identify the work order that corresponds to the deficiency cited during the preventive maintenance inspection.

Recommendations

7. NYCHA should establish a formal system for documenting its tracking of all boilers that require inspections and the status of such inspections so as to ensure that all boilers receive the required internal, external, and preventive maintenance inspections in a timely manner and that deficiencies found during the inspections are corrected within the time frames mandated by applicable law, rules, regulations, and agreements with external oversight agencies.

NYCHA Response: NYCHA agreed in principle with this recommendation but believed that it was already in compliance, stating, "NYCHA does have a system to track all boilers that require inspections. All boilers and hot water heaters that require inspections are tracked to completion by NYCHA's Boiler and Machinery Insurance Carrier through their system JOL, which schedules the inspections to be conducted each year. Any boiler that was missed for any reason in the previous inspection cycle becomes the first to be inspected in the next cycle. In February 2019, a process change was implemented to integrate the inspection software (JOL) with Maximo to automatically create work orders from deficiencies found during the inspection. This is more efficient, transparent and accessible to all

¹⁸ NYCHA's records indicate that 38 boilers (from the list of 1,955 boilers provided to us) were installed during or subsequent to the 2017-2018 heating season.

¹⁹ The 1,618 boilers with preventive maintenance inspections includes 13 boilers that were not included on NYCHA's inventory listing.

pertinent stakeholders. HMSD tracks, monitors and resolves issues as required. Once the requisite to cure a violation is completed, DOB reviews and approves the work and violations are cleared.”

Auditor Comment: In its response, NYCHA acknowledges that the Jurisdiction Online (JOL) system is not maintained by NYCHA but rather is maintained by the insurance company NYCHA contracts with to perform inspections. Accordingly, the reporting capabilities for the contracted insurance company (via the JOL system) do not relieve NYCHA of its responsibility to independently verify that all of its boilers have been inspected. Under the current structure, NYCHA has to rely on the contracted insurance company to notify NYCHA that certain inspections were *not* conducted, an apparent conflict of interest. Moreover, the JOL system is used to track internal and external inspections only and is not used to track preventive maintenance inspections that are conducted by NYCHA personnel.

Accordingly, we urge NYCHA to reconsider its response and implement this recommendation.

8. NYCHA should continue its efforts to develop a tracking system that would allow it to identify the work orders created to address deficiencies identified during inspections so as to be able to track the repairs and the timeliness of those repairs.

NYCHA Response: NYCHA agreed with this recommendation and stated, “NYCHA IT worked with JOL to create an interface that auto-creates work orders for each deficiency directly into NYCHA Maximo work order system. As stated above, NYCHA does maintain a tracking process that identifies the work orders created to address deficiencies.”

Auditor Comment: As we state earlier in this report, NYCHA was unable during the course of our audit to readily identify the work orders it created to address deficiencies cited during preventive maintenance inspections. Based on its response, it appears that NYCHA is indicating that this issue has subsequently been addressed.

DETAILED SCOPE AND METHODOLOGY

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The scope of this audit covers the period from January 1, 2017 through May 31, 2019. During that time we experienced extensive delays as a result of delays in receiving requested information from NYCHA that was necessary to conduct the audit. We issued two separate subpoenas, one on October 30, 2018 and one on November 23, 2018, in order to obtain the information, which we eventually received.

To gain an understanding of NYCHA's policies and procedures regarding the provision of heat to NYCHA residents, we reviewed the following information obtained from various NYCHA departments and personnel, the agency's website, and statutory regulations:

- *NYCHA Standard Procedure Manuals S.P. 060:63:1 – Space Heating and Domestic Hot Water*, issued on May 25, 2016 and October 4, 2018.
- *Housing Maintenance Code, Chapter 2 Section 27-2033 – Access to boiler room; Section 27-2029 Minimum temperature to be maintained; Section 27-2055 Certification of competency; Article 8 – Heat and Hot Water Section 27-2028.*
- *New York State (NYS) Public Housing Law 151 – Authority construction contracts, cancellation of contracts, disqualification to contract with authority, statement of non-collusion in bids or proposals.*
- *NYS Public Housing Law 151-a – Separate specifications for certain subdivisions of work involved in the construction or alteration of buildings as a part of or in connection with housing projects.*
- *Contract Procedure Resolution – General Procurement Policy – Article 1 – General Provisions.*
- NYC Heat and Hot Water Law Information.
- MOU between NYCHA and DEP regarding Title 15, Chapter 2 of the Rules of the City of New York.
- DEP Bureau of Environmental Compliance regulations regarding the different categories of boilers and the types of professionals who are qualified to complete the registration process with the agency.
- Requirement Contract specifications for rental and installation of mobile steam or hot water heating boilers, heat exchangers and mobile oil tanks.
- CCC information used by residents who need to report emergencies and/or schedule routine maintenance repairs in their apartments.

- SIEBEL and Maximo Priority Levels governing the response and resolution time frames assigned to the various service requests.
- The complaint filed by the US Attorney for the Southern District of New York, United States v. New York City Housing Authority, 18 Civ. 5213 (June 11, 2018).
- The proposed Consent Decree submitted to the Court on June 11, 2018 in connection with United States v. New York City Housing Authority, 18 Civ. 5213 (June 11, 2018).
- The Agreement entered into between HUD, NYCHA, the City, and the United States Attorney for the Southern District of New York on January 31, 2019.

To obtain an understanding of the process in place to record, address, investigate and resolve resident heating issues, we interviewed the following NYCHA personnel:

- The Director and Deputy Director of Heating Management Services - to obtain an overview of the steps that the department takes to address heat-related issues.
- The Team Manager of the CCC - to obtain an overview of the department's operations and the options available to residents when notifying NYCHA of their heating and/or maintenance issues.
- The Senior Deputy Director of Information Technology - to obtain an understanding of the operations and capabilities of the SIEBEL and Maintenance and Asset Management System (Maximo) systems.
- The Acting Director of Emergency Services Department - to obtain an understanding of the department's responsibilities regarding heat emergencies/repairs throughout the evenings and the night.
- Two Heating Administrators - to obtain an understanding of the procedures adopted in investigating and resolving resident heating complaints, as well as the steps that NYCHA takes to prepare the boilers and heating plant during the preventive maintenance inspections.
- The Director of Risk Management - to obtain an overview of the procedures regarding the external and internal boiler inspections by the insurance contractor.
- A Heating Plant Technician - to obtain an overview of the responsibilities assigned to the staff responsible for maintaining the boilers and performing heat-related repairs.
- Officials from NYCHA's Capital Planning, Quality Assurance Compliance, and Project Management units – to obtain an understanding of NYCHA management's strategies and long-term goals, regarding the provision of heat to residents and responding to heat outages in a timely manner, as well as its oversight efforts of the work completed.

To assess the accuracy and reliability of the data maintained in NYCHA's computer system – Maximo - we obtained a list of 167,752 heat-related work orders for the 2017-2018 heating season and reviewed the data to determine whether it is reasonably complete and accurate and whether all fields were populated.

To determine whether NYCHA was in compliance with its 24 hour-targeted goal for closing out initial no-heat work orders, we calculated the length of time it took to close such work orders. We calculated the time frame in 24-hour bands; specifically, work orders closed in 24 hours or less, 48 hours, 72 hours, 96 hours, 120 hours, and more than 120 hours.

We assessed the controls that NYCHA had in place to ensure that the work orders were closed out properly, that supervisors inspected and reviewed the closed work orders and that residents were satisfied with the work performed. To determine whether NYCHA elicits resident feedback regarding the agency's response to heat complaints and whether survey results are used to make management decisions, we reviewed the tools used by NYCHA to obtain feedback and requested the results and analysis of the feedback.

To determine the number of heating staff that NYCHA employed from 2015 through June 2018 to address resident heating issues, we obtained the listing of staff whose titles qualify them to perform heat-related tasks and repairs. From the listing we removed from consideration those workers who were no longer employed by NYCHA because of termination or resignation, the ones who retired, and the ones who were removed from the title because of a title change.

To determine the number of boilers that NYCHA used to provide heat to residents in the developments, including the age of the boilers, we reviewed the boiler inventory listing that we received on September 2018, consisting of 1,955 boilers, as well as the dates that the boilers were installed. We also used this information to calculate the number of boilers that were operating past their useful lifespan. We eliminated 38 boilers that were installed during 2018 and used the data for 1,917 boilers that were already in use during the time period that external, internal and preventive maintenance inspections should have been performed.

To obtain an understanding of the aspects involved in an external and internal boiler inspection, we observed an external inspection conducted by an insurance company contracted to conduct the inspections.²⁰

To determine whether NYCHA conducted the required annual preventive maintenance inspections, we reviewed the population of corrective maintenance work orders and extracted those that were designated as preventive maintenance. We identified that NYCHA conducted preventive maintenance inspections for 1,618 boilers and we requested the work orders that were generated to correct the deficiencies cited during the preventive maintenance inspections.

The results of the above tests, while not statistically projected to their respective populations, provided a reasonable basis for us to assess whether NYCHA management has adequate controls to provide heat to residents and to address and resolve heating issues during the heating season.

²⁰ The contracting company is Continental North America.

DETAILED DISCUSSION OF NYCHA'S RESPONSE

In its response, NYCHA strongly objects to many of the audit's findings; however, in challenging the audit's findings, NYCHA makes numerous inaccurate and misleading statements, many of which do not directly address the audit's findings and recommendations. Accordingly, rather than addressing each of them every time they are raised, we have added this Appendix to examine significant inaccurate and misleading statements that have not already been addressed in *Discussion of Audit Results with NYCHA* or in our comments pertaining to NYCHA's responses to the audit's recommendations. (For the full text of NYCHA's response, see the Addendum to this report.)

Re: Central Management's Oversight Is Inadequate

NYCHA's Response

HMSD personnel are guided by NYCHA Standard Procedure Manual SP 060:63:1 Heating and Domestic Hot Water, as well as the Federal Monitor-approved Heating Action Plan. In addition to the use of Maximo, the Heating Dashboard, and daily conference calls to track performance, HMSD hosts a weekly discussion with all its managers to review outages, incidents, areas of concern and identify opportunities to improve the operation. Members of the Compliance Department as well as the Federal Monitor often participate in these weekly meetings.

Auditor Comment

Throughout its response, NYCHA refers to a number of initiatives utilized by its HMSD personnel in an effort to refute our finding that NYCHA central management's oversight with regard to the agency's efforts to address and resolve heating issues is inadequate. However, NYCHA provided no evidence of any efforts by central management to ensure that HMSD staff are actually carrying out these initiatives or properly following up on issues that result from them. In the absence of such evidence, we find no basis to modify our finding.

Re: Tracking of Work Orders in Maximo

NYCHA's Response

. . . Maximo **does** allow for the tracking of all work orders associated with an individual complaint using a unique location string associated with the apartment. The apartment's location string allows users to pull address specific data that can be based on a variety of failure classes and problem codes. The data pull can also be queried to show open unresolved work orders and historical data showing closed work order for any of NYCHA's 173,762 apartments.

Auditor Comment

While NYCHA can use the unique location identifier associated with an apartment to identify individual work orders associated with a particular unit's complaint, this process—as we state in this report—is *not* automated within Maximo but must be performed manually by staff, who must inspect each work order to identify and group together those that are associated with the same

complaint. NYCHA failed to provide any evidence to refute our finding that Maximo does not have the functionality to readily identify the length of time needed to resolve complaints unrelated to outages.

NYCHA's Response

Both Maximo and the Heating Dashboard permit the tracking of individual heating complaints as well as outages. Work order tracking contains open and close times.

Auditor Comment

NYCHA's claim that Maximo and the Heating Dashboard permit the tracking of individual heating complaints is incorrect. While Maximo and the Heating Dashboard permit the tracking of individual *work orders*, the resolution of complaints frequently requires the creation of multiple work orders and, as stated above, the functionality to readily track complaints unrelated to outages that involve multiple work orders does not exist within Maximo or the Dashboard, which obtains its data from Maximo.

Re: Closing out Work Orders within 24 Hours

NYCHA's Response

HMSD staff are required to respond within 24 hours, not close a work order within 24 hours. As mandated by the HUD Agreement, and memorialized in SP 060:63:1, NYCHA must restore heat to units affected by a heating shortage within an average of 12 hours, and for 85% of heating shortfalls, NYCHA will restore heat to affected units within 24 hours, and in no event more than 48-hours.

Auditor Comment

NYCHA's argument directly contradicts its own written guidelines, which specifically state that "Heat work orders must be completed within 24 hours after they are reported." Furthermore, our interviews with the staff responsible for the repairs revealed that they also understood the requirement to be that work orders should be *closed* within 24 hours. Accordingly, we find no basis for altering this finding.

Re: Closing of Parent/Child Work Orders

NYCHA's Response

When a resident calls the Customer Contact Center ("CCC") or submits a complaint on a heating issue via NYCHA's MYNYCHA App, a work order is generated in Maximo. If other non-heating staff are required to conduct work, such as carpenter to repair a hole in the wall, then a secondary, or "child", work order is created. This is the hierarchical concept of parent/child work order. Once the heating problem is fixed, the initial heat work order is closed but other child work orders, as with the carpenter example above, remain open until the additional issues are addressed.

Heating work order tickets related to a "no heat" condition should remain open until the heat issue is resolved. Non-heat related work order tickets generated as

“children” of the heating work order, such as a carpenter needed to close a hole in the wall, remain open until complete.

Auditor Comment

NYCHA failed to produce evidence to support its claim that an initial work order remains open until the heating problem is resolved. To the contrary, our analysis of data in Maximo revealed that in instances where a child work order was created, the initial work order was closed when the child work order was created. We also confirmed this practice in our interviews with NYCHA staff at the developments. Moreover, if, as NYCHA claims, an initial work order remains open until the heating issue is resolved, the agency would be able to tell, with little difficulty, how long it takes to resolve heating complaints. The fact that NYCHA cannot do so without conducting substantial additional research on a case-by-case basis belies its claim that the parent work orders remain open until the heat-related condition is resolved.

Re: NYCHA’s Response to Table I – Timeliness in Closing Initial Work Orders

NYCHA’s Response

As the chart below shows, NYCHA improved work order close time in the 2018-2019 season. *Note: The NYCHA charts below are using the same methodology from Audit’s chart above, in that they include all outage work orders as well as individual heating complaint work orders.*

Auditor Comment

NYCHA’s assertion that Table I in the audit report includes “all outage work orders” is incorrect. The report clearly states in connection with the findings in Table I that there were 167,752 heat-related work orders initiated due to complaints made by residents during the 2017-2018 heating season. This is a category of work orders identified in Maximo that do not include work orders generated by complaints of system-wide outages. Work orders that relate to system-wide outages are specifically identified as “outage work orders” and were not included in Table I’s figures. Consequently, NYCHA’s attempt to compare the 2018-2019 season’s work order close time with the figures reported in Table I is not valid.

Re: NYCHA’s QA Unit

NYCHA’s Response

To establish the new QAU, in the early fall of 2019, NYCHA transitioned staff from the existing QA Unit in Leased Housing to the new QAU. These staff were then placed under the supervision of the new Director of QAU, who was appointed with the concurrence of the Federal Monitor pursuant to the process set forth in paragraph 58 of the HUD Agreement. In addition to these staff, the QAU is currently hiring additional staff to increase its capacity to provide oversight across the agency. Had the Report properly considered the Federal Monitor’s Quarterly Reports, which are publicly available, the auditors could have avoided this misunderstanding.

Auditor Comment

The “misunderstanding” referenced by NYCHA resulted exclusively from conflicting representations made by its own upper management. As noted in the report, at a meeting held on December 23, 2019—eight months after the unit should have been established pursuant to the January 2019 Monitoring Agreement—the NYCHA Chair's Chief of Staff was adamant that NYCHA had not yet established the QA unit. This statement was not contradicted by any of the other NYCHA officials participating in that meeting. At a meeting with two NYCHA officials on January 10, 2020, they confirmed that the QA unit had not yet been established and stated that they hoped to have one running later in the year. Moreover, the information provided in the Federal Monitor’s Quarterly Reports understandably does not directly address the contradictory testimony of the NYCHA officials who would be responsible for the oversight and monitoring of the QA unit. The fact that NYCHA now appears to be arguing that its upper management was incorrect and that the QA unit has been in existence is of concern and speaks to a larger issue of lack of coordination within the agency and, if the QA unit was in operation, the degree to which NYCHA management was actually overseeing the unit’s activities.

Re: Updated Inventory Listing of Boilers

NYCHA’s Response

NYCHA does maintain a boiler inventory with unique identifiers. NYCHA maintains all DOB Mechanical Identification Numbers in JOL for inspection purposes as well as in Maximo. The numbers are assigned by the DOB upon final inspection of an installation. As stated, not all boilers will have this unique assigned number if the boiler does not meet the criteria for annual inspection. These numbers are how the inspection deficiencies are automatically loaded into Maximo to create the work orders.

Auditor Comment

As stated earlier, the JOL is not a NYCHA system, but rather is software maintained by the insurance company that NYCHA has contracted with to perform inspections. With regard to Maximo—the system that *does* belong to and *is* controlled by NYCHA—the most recent inventory listing NYCHA generated from it and provided to the auditors dated February 25, 2020 still did not include the boilers’ serial numbers and dates of purchase, as required by Comptroller’s Directive # 30.

Additionally, that listing lacked critical information such as a clear indication as to which boilers meet the criteria for inspection and which boilers do not meet the criteria for inspection; instead, NYCHA relies on the contracted insurance company to keep track of NYCHA’s boilers that require inspections. NYCHA would be better able to track the inspections of the boilers and ensure that boilers meeting the criteria for inspections receive them if it independently maintains a complete and current boiler inventory list that clearly identified which are subject to inspections.

Re: Inconsistencies with NYCHA’s Listing of Inspections

NYCHA’s Response

NYCHA provided all information requested and disagree with the counting methodology. The original request had asked for all deficiencies and inspections

and was not intended to be used as a count for inspections. Once Risk Management removed the multiple deficiencies and multiple recommendations, the spreadsheet then showed the actual inspections that were conducted. As a result, the count for inspections for the 2017 inspection year is 1,635.

Auditor Comment

As we found with other findings, NYCHA has provided conflicting statements regarding this finding. In its response, when making reference to the list initially provided to us, NYCHA states that the list was intended to represent “actual inspections that were conducted.” However, as noted in the report, the NYCHA official who created both lists stated that the first list represented only those boilers with deficiencies, while the second list represented all of the boilers that should have been inspected. Not only did we find significant discrepancies between the two lists in terms of the number of boilers listed, NYCHA is now purporting to present a third count (1,635 boilers), once again limiting the degree of reliance we can place on any of its data.

Re: Inspection Deficiencies Not Corrected

NYCHA’s Response

In 2017-2018, this was a paper driven process where HMSD would receive a listing of recommendations and required corrections at the end of the inspection year. By the time the list was received, HMSD and the boiler certified inspectors were preparing for the new year’s rounds of inspections making the information provided the previous year stale.

Auditor Comment

As noted in the report, our tests revealed that 35 of the 100 boilers (35 percent) were cited for the same issues in two consecutive years. NYCHA’s response that the HMSD and the boiler certified inspectors were preparing for the new year’s rounds of inspections does not negate the fact that deficiencies were not remedied timely but were allowed to remain unresolved for two consecutive years.

Conclusion

Overall, after carefully reviewing NYCHA’s arguments, we found them to be without merit. Accordingly, we stand by our findings.

**NEW YORK CITY HOUSING AUTHORITY**

250 BROADWAY • NEW YORK, NY 10007

TEL: (212) 306-3000 • <http://nyc.gov/nycha>**Gregory Russ**Chair & Chief Executive Officer
Office of the Chair

March 17, 2020

Ms. Marjorie Landa
Deputy Comptroller for Audit
NYC Office of the Comptroller
One Centre Street, Room 1100
New York, NY 10007

Dear Ms. Landa:

This letter is in response to your March 2, 2020, draft Audit Report on the New York City Housing Authority's Controls over Heat Maintenance - # MG18-101A (the "Report").

The New York City Housing Authority (NYCHA) respectfully does not agree with the overall assessment of the Report. Our disagreement mainly stems from the Report's failure to carefully draw the distinction between the 2017-2018 heating season and subsequent 2018-2019 and 2019-2020 seasons. Because of this, the Report's recommendations do not address the many changes that NYCHA has made in addressing heating challenges, including improvements made with the collaboration and approval of the independent Federal Monitor, appointed under the January 31, 2019, agreement with HUD and the City of New York. As a result, the Report's use of stale data to reach conclusions about the current state of heating at NYCHA is unsound in terms of both methodology and outcome.

While we do agree with some observations as they pertain to the 2017-2018 season, the Report does not acknowledge the improved processes, increased resources, and demonstrable improvements made over the past two years. The strategic improvements implemented by NYCHA since the 2017-2018 season have resulted in a 61% reduction in service disruption duration and a 23% reduction in the total number of heat and hot water service disruptions during the 2018-2019 season. NYCHA expects that this trend will continue for the 2019-2020 season. For instance, heating outages went from an average of 30 hours restoration time in the 2017-2018 heating season but averaged 8 hours in the current 2019-2020 heating season for the period of October 1, 2019 through March 15, 2020

A more pertinent portrayal of the current state of heating at NYCHA is set forth in the Heat Action Plan, which was approved by the Federal Monitor on December 4, 2019, and in the Federal Monitor's Quarterly Reports assessing NYCHA's current strengths and weaknesses on heating.

Indeed, since 2017-18, we have made the following improvements:

- Implemented a 24/7 staffing model for repair teams during the heating season;
- Established a 24/7 Heat Desk that monitors potential service disruptions from various data sources and dispatches staff accordingly;
- Hired 70 heating plant technicians, 12 full-time plumbing teams, and 8 temporary plumbing teams to support our enhanced staffing model;
- Established a Situation Room that is activated, when necessary, to coordinate a focused response to outages;
- Established a daily call with heating management and property management to strategize on service disruption issues and open heat and hot water related work orders;
- Invested City operating funding to repair and/or replace over 500 heating equipment components, such as hot water boiler replacements, heat control panels, and tanks;
- Executed an agreement to provide third-party management of the heating plants at over 40 developments and utilizing contractors for specialized repairs across our portfolio;
- Staged high-demand heating parts in satellite storerooms in all five boroughs;
- Staged 62 mobile boilers across the city; and
- Improved the tracking of outages and assets, and examining the root cause of outages to prevent future occurrences.

As part of our transformation efforts, we have enhanced our communication with residents. This includes:

- Ensuring that residents are notified of outages, or in advance of scheduled repairs, via building flyers and robocalls;
- Enabling residents to inform NYCHA if they are still experiencing a service disruption following a service restoration through our Interactive Voice Recognition system, which helps address lingering issues;
- Improving the process for collecting resident data on outages by updating the questions residents are asked when submitting heat complaints through the Customer Contact Center (CCC) or MyNYCHA app. This facilitates the correct diagnosis of the issue and deployment of staff with the correct skill set to address the problem; and
- Posting information about outages on NYCHA's website, as well as apartment temperatures for the developments where we have installed indoor temperature sensors. Our website provides more transparency than ever; enhancements guided by our discussions with advocates, residents, and the independent Federal Monitor. We are also posting information about outages on social media.

Based on the Authority's disagreement with this audit report, we are also providing a paragraph-by-paragraph response to certain findings and recommendations issued thorough out this document. Please note our response inserts paragraph numbers to the Report for ease of reference.

We look forward to our continued collaboration with all our stakeholders to improve customer service and obtain the funding required for enduring improvement.

If you have any questions, please contact Vilma Huertas, Special Advisor to the Chair at 212-306-8887.

Sincerely,


Gregory Russ
Chair & Chief Executive Officer
Office of the Chair

cc:

Vito Mustaciuolo, General Manager
Joey Koch, Chief of Staff
Lisa Bova-Hiatt, Executive Vice President for Legal Affairs & General Counsel
Robert Marano, Executive Vice President & Chief Information Officer
Daniel Greene, Chief Compliance Officer
Javier Almodovar, Director of Heating Management Services Department
Flaherty, Jay, Director of Quality & Cost Control
Arlene Orenstein, Director for Risk Management
Vilma Huertas, Special Advisor to the Chair
Tricia L. Roberts, Vice President of Internal Audit
Hyacinth Jeffers, Acting Director, Internal Audit & Assessment

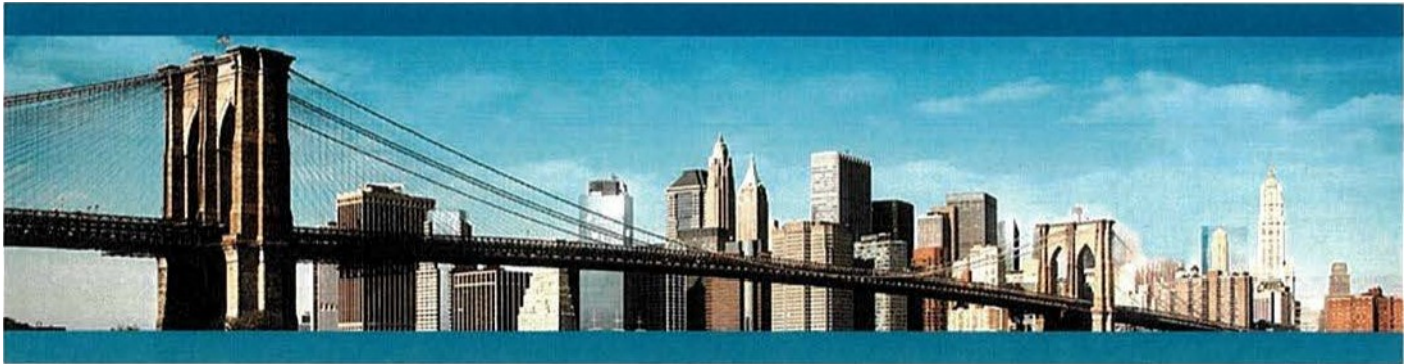
NYCHA Response to Draft Report



City of New York

OFFICE OF THE COMPTROLLER

Scott M. Stringer
COMPTROLLER



MANAGEMENT AUDIT

Marjorie Landa Deputy Comptroller for Audit

Audit Report on the New York City Housing
Authority's Controls over Heat Maintenance

MG18-101A

March 2, 2020

<http://comptroller.nyc.gov>

NYCHA Response to Draft Report

THE CITY OF NEW YORK

OFFICE OF THE COMPTROLLER

MANAGEMENT AUDIT

Audit Report on the New York City Housing Authority's Controls over Heat Maintenance

MG18-101A

EXECUTIVE SUMMARY

The New York City Housing Authority (NYCHA), the largest public housing authority in the United States, was created in 1935 to provide decent, affordable housing for low- and moderate-income New Yorkers. According to data published by NYCHA, as of 2019, more than 370,000 New Yorkers resided in NYCHA's 316 public housing developments located throughout the five boroughs of New York City (City), comprising 2,351 buildings that contain 173,762 units. NYCHA has established standard operating procedures (SOPs) that set forth the agency's internal operating procedures governing a wide variety of areas.

Among other things, NYCHA's heating SOPs mandate that NYCHA is required to provide heat to its residents between October 1st and May 31st, (i.e., the heating season) when the temperature falls below 55 degrees Fahrenheit.¹ NYCHA requires that its staff respond to heat-related complaints within 24 hours. Responding to a complaint does not, however, necessarily mean that the complaint will be resolved within 24 hours, but rather means that steps to assess the heating issue complained of will be initiated within 24 hours. Depending on the circumstances, resolving the complaint itself and restoring heat may take longer. Once a complaint identifying the need for a repair (heat-related or otherwise) is received by NYCHA, it is entered into Siebel, NYCHA's computer software system used for scheduling appointments.² The complaint is then automatically uploaded from Siebel into Maximo, NYCHA's computer software system used for generating work orders and for tracking the status of repair work orders.³ Heat-related work orders are categorized as "NOHEAT" in Maximo.

If NYCHA, upon investigation of a resident's complaint, determines that the concern is related to a system-wide heat failure (e.g., affecting an entire development, building, apartment line or stair hall), the corrective maintenance work order will be closed and an "outage work order" will be opened. According to NYCHA's

¹ NYCHA's heating SOPs refer to the New York City Administrative Code, Title 27, Chapter 21 Article 8, S 27-2029 and Section 79(1) of New York State Multiple Dwelling Law with regards to the provision of heat.

² Complaints are automatically uploaded into Siebel if they originate from any source other than a phone call or a walk-in center. Complaints resulting from phone calls and at walk-in centers must be entered manually into Siebel.

³ NYCHA tracks the status of all work orders through Maximo, but not necessarily the resolution of the complaint. A complaint may require several different crafts and specialists, therefore, several different work orders may need to be opened before the complaint can be resolved.

NYCHA Response to Draft Report

records, there were 167,752 no-heat work orders created during the 2017-2018 heating season as a result of complaints made by residents. Of these 81,997 (49%) were related to 1,776 outages (i.e., system-wide heating failures). This means that 85,755 (51%) no-heat work orders were heating complaints unrelated to outages.

NYCHA Response to the Executive Summary: The Authority does not agree with the overall assessment of The NYC Office of the Comptroller's Audit Report on NYCHA's Controls over Heating Maintenance. It is important to carefully draw the distinction between the 2017-2018 heating season and subsequent 2018-2019 and 2019-2020 seasons. The report fails to make this clear. Additionally, the recommendations enumerated do not address the myriad changes that have been made in addressing heating challenges since the audit period, included many improvements made with the collaboration and approval of the independent Federal Monitor, as appointed as part of NYCHA's January 31, 2019 agreement with HUD and the City of New York. As a result, the Audit Report's use of stale data to reach conclusions about the current state of heating maintenance at NYCHA is unsound in terms of both its methodology and outcome.

The Report does not accurately portray NYCHA's current heating operation implemented by the Heating Management Services Department (HMSD) as it stands today. While we do agree with some observations as they pertain to the 2017-2018 heating season, the Report does not acknowledge the improved processes, increased resources for staffing and equipment, and demonstrable improvements made over the past two years. The strategic improvements implemented by NYCHA since the 2017-2018 Heating season have resulted in a 61% reduction in service disruption duration and a 23% reduction in the total number of heat and hot water service disruption during the 2018-2019 heating season. NYCHA expects that this trend will continue for the 2019-2020 heating season. For instance, heating outages went from an average of 30 hours restoration time in the entire 2017-2018 heating season but averaged 8 hours in the current 2019-2020 heating season for the period of October 1, 2019 through March 15, 2020

A more pertinent portrayal of the current state of heating at NYCHA is set forth in the Heat Action Plan, which was approved by the Federal Monitor on December 4, 2019, and in the Federal Monitor's Quarterly Reports assessing NYCHA's current strengths and weaknesses with respect to heating.

Indeed, since 2017-18, NYCHA has made the following improvements:

- Implemented a 24/7 staffing model for repair teams during the heating season;
- Established a 24/7 Heat Desk that monitors potential service disruptions from various data sources and dispatches staff accordingly;
- Hired 70 heating plant technicians (HPTs), 12 full-time plumbing teams, and 8 temporary plumbing teams to support NYCHA enhanced staffing model;
- Established a Situation Room that is activated, when necessary, to coordinate a focused response to outages;
- Established a daily call with heating management and property management to strategize on service disruption issues and open heat and hot water related work orders;
- Invested City operating funding to repair and/or replace over 500 heating equipment components, such as hot water boiler replacements, heat control panels, and tanks;
- Executed an agreement to provide third-party management of the heating plants at over 40 developments and utilizing contractors for specialized repairs across NYCHA's portfolio;
- Staged high-demand heating parts in satellite storerooms in all five boroughs;
- Staged 62 mobile boilers across the city; and

NYCHA Response to Draft Report

- Improved the tracking of outages and assets, and examining the root cause of outages to prevent future occurrences.

As part of NYCHA's transformation efforts, we have enhanced NYCHA's communication with residents. This includes:

- Ensuring that residents are notified of outages, or in advance of scheduled repairs, via building flyers and robocalls;
- Enabling residents to inform NYCHA if they are still experiencing a service disruption following a service restoration after an outage through NYCHA's Interactive Voice Recognition system, which helps address lingering issues;
- Improving the process for collecting resident data on outages by updating the questions residents are asked when submitting heat complaints through the Customer Contact Center (CCC) or MyNYCHA app. This facilitates the correct diagnosis of the issue and deployment of staff with the correct skill set to address the problem; and
- Posting information about outages on NYCHA's website, as well as apartment temperatures for the developments where NYCHA has installed indoor temperature sensors. NYCHA's website provides more transparency than ever; enhancements guided by NYCHA's discussions with advocates, residents, and the independent Federal Monitor. NYCHA is also posting information about outages on social media.

Below, NYCHA responds to the Report, paragraph-by-paragraph, to draw a clear distinction between the certain conclusions drawn by the Comptroller based on the 2017-18 heating season and the state of heating at NYCHA today. NYCHA fully acknowledges that it still needs to make many improvements to its heating efforts. However, NYCHA should be judged fairly based on current information and processes, not from information from two years ago.

Audit Findings and Conclusions

1. The tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective. As a result, NYCHA is significantly hindered in its ability to manage and resolve heating issues.

NYCHA Response to Paragraph 1: This conclusion, written in the present tense, is untrue considering the improvements implemented since the 2017-2018 heating season. The Comptroller wrongly attempts to apply its conclusions based on two-year old data to present day conditions without any apparent consideration of the approved Heat Action Plan or other changes. NYCHA's Heating Dashboard, Heating Action Plan and improvements to the Maximo Work Order system have dramatically improved oversight and the ability to track and respond to problems throughout the heat tracking system. Many of the changes have been made under the oversight of the Federal Monitor.

2. NYCHA does not have the ability to readily track the status and resolution of repairs required to respond to heating complaints that are not the result of system-wide heating failures (i.e., outages). Rather, for such heating complaints stemming from issues that affect individual units and not larger areas, Maximo only tracks the closure of individual work orders and not the amount of time it takes to successfully resolve these heat-related complaints. This practice is particularly problematic because individual unit heat-related complaints may require the opening and closing of multiple work orders before the issues complained of are ultimately resolved. As a result, among other things, NYCHA management cannot readily identify the number of unresolved heat related complaints open

NYCHA Response to Draft Report

at any one time nor can it readily determine the length of time it took to ultimately resolve those complaints. Absent such information, NYCHA's ability to identify problems that delay repairs is undermined and, as a result, NYCHA is significantly hindered in its ability to determine how to most effectively allocate resources, make operational changes, and enhance training and oversight in order to address problems.

3. Additionally, we found that NYCHA does not have adequate procedures for independently verifying the accuracy of the repair information that staff records in Maximo. As a result, the degree to which the repair-related data reported in the system can be relied upon is questionable.

NYCHA Response to Paragraphs 2 - 3: NYCHA does not agree with these conclusions. NYCHA's Maximo Work Order system can track work orders from receipt of complaint to its final disposition. When a resident calls the Customer Contact Center (“CCC”) or submits a complaint on a heating issue via NYCHA’s MYNYCHA App, a work order is generated in Maximo. If other non-heating staff are required to conduct work, such as carpenter to repair a hole in the wall, then a secondary, or “child”, work order is created. This is the hierarchical concept of parent/child work order. Once the heating problem is fixed, the initial heat work order is closed but other child work orders, as with the carpenter example above, remain open until the additional issues are addressed.

NYCHA has implemented numerous enhancements in the past two years to better support the creation and tracking of heat related work orders such as:

- New heat triage questions used by the CCC staff to better ascertain the nature of the heat complaint when residents report the problem to the CCC. See Heat Action Plan, at 22.
- A new heating dashboard to forecast and determine a root cause of potential service disruption and address before they become an outage.
- NYCHA also recently began requiring certain tank room readings to be captured on work orders for individual heat complaints prior to visit for the apartment.

These changes have resulted in improved efficiency, quicker responses to service disruption and a more transparent operation. Additionally, Maximo **does** allow for the tracking of all work orders associated with an individual complaint using a unique location string associated with the apartment. The apartment’s location string allows users to pull address specific data that can be based on a variety of failure classes and problem codes. The data pull can also be queried to show open unresolved work orders and historical data showing closed work order for any of NYCHA’s 173,762 apartments.

4. Further, the audit found that NYCHA does not maintain complete inventory listings of all the boilers currently in its developments, which undermines the agency's ability to properly manage its inventory. Absent a comprehensive, accurate listing of the boilers that includes essential identifying and other information, such as the dates of installation, asset numbers, makes and models, warranty information, as well as each boiler's inspection and repair histories, NYCHA cannot efficiently ensure that all inspections are properly made and that decisions about the need and timing of replacements are made with complete information.

NYCHA Response to Paragraph 4: The inventory (or, asset information) has always existed in Maximo. However, during the 2017-2018 heating season, the inventory had missing asset information and was not updated to include information on new boiler and ancillary equipment replacements. However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA.

NYCHA Response to Draft Report

5. The audit found that NYCHA also does not maintain adequate records of mandated external and internal boiler inspections in a manner that enables the agency to track the status of those inspections and ensure that all required inspections are completed. Moreover, during our audit period, NYCHA did not maintain adequate records that deficiencies identified in these inspections have been addressed. With regard to preventive maintenance inspections, according to data contained in Maximo, for the 2017-2018 heating season, NYCHA conducted only 84 percent of the required inspections. However, we were unable to identify the specific work orders created to address the deficiencies cited during those inspections—and the disposition of those work orders—because NYCHA did not have a way to identify such orders. As a result, neither we nor NYCHA could determine whether work identified through the preventive maintenance inspections was ever satisfactorily performed.

NYCHA Response to Paragraph 5: All mandated annual inspections performed by NYCHA's Boiler and Machinery Insurance Carrier are tracked through a system called Jurisdiction Online (JOL). The results of the inspections as well as the dates of next inspection are kept in the in the database and are readily available. As a common practice, HMSD staff performs a yearly internal and external inspection of all operating boilers. This process is explained in NYCHA's SOP 060:63:1 Titled Heating and Domestic Hot Water on page 81, line D through line 6 on page 82. Once the inspection is complete, the inspector enters the inspection results in Maximo and child work orders are created in Maximo to correct the noted deficiencies.

6. Under present circumstances, NYCHA's persistent failure to adequately resolve heating issues will continue unless management addresses the deficiencies we found and establishes systems that enable it to reliably track the causes and occurrences of heating problems, equipment conditions and deficiencies, along with the timing and adequacy of repairs, including whether work was properly done.

NYCHA Response to Paragraph 6: This statement is an inaccurate description of NYCHA's current heating operation. With the significant improvements over the last 2 years, the Authority has the ability to identify any heating deficiencies, their root cause, monitor ongoing repairs and track closely all service disruptions from the inception to restoration. NYCHA's current average response time for heat and hot water is 8 hours for the period of October 1, 2019 to March 15, 2020. This is down from the over the 10 average hours during the same time period during the 2018-2019 heating season and down from 30 hours during the 2017-2018 year of this audit. Moreover, as part of the HUD agreement, NYCHA's adopted Service Levels Average (SLA) pertaining to the restoration of heating outages is 12 hours. See Chart 1 below.

NYCHA Response to Draft Report

Chart 1: Comparing Heat and Hot Water Outages for the 2017 and 2018 seasons

	2017 Season	2018 Season	% change from 2017 to 2018 seasons
	(Oct 1 2017 - May 31 2018)	(Oct 1 2018 - May 31 2019)	
# of Heat Outages	1776	1224	-31%
Average Duration of Heat Outages (hrs)	30	8.78	-71%
# of Heat and Hot Water Outages	4625	3565	-23%
Average Duration of Heat and Hot Water Outages (hrs)	23.37	9.03	-61%

Additionally, to ensure that heating issues are addressed appropriately, NYCHA has enhanced the options available to callers when they report a complaint to the Customer Contact Center (“CCC”) or the MyNYCHA App. The questions now include the following, with additional follow-up for each:

- Is your apartment temperature too hot or too cold?
- Is there no heat in the entire apartment or just one room?
- Are the risers warm?
- Are the radiators warm?
- Are the radiators blocked by curtains or a piece of furniture?
- Are your windows closing properly?

See Heat Action Plan, at 22. The questions are used to determine whether the issue is related to heating system or if the issue is apartment specific. A work order is created accordingly. Further, upon the restoration of services after a heating outage, a restoration call is initiated, and residents are asked if service has been restored and if not they are asked the triage questions to help better identify the issue in the apartment. Subsequent work orders are then created.

Audit Recommendations

To address the issues raised by this audit, we make eight recommendations, including that:

7. NYCHA should create a mechanism for it to efficiently track all heat-related complaints, including those that are not caused by system-wide outages, from receipt of a complaint to its final disposition so that the agency can efficiently and effectively determine, among other things, the time it takes to resolve such complaints, identify aging complaints, address languishing complaints, and improve systems that lead to delayed resolutions of complaints.

NYCHA Response to Paragraph 7: As stated previously in the Response to Paragraph 2, NYCHA's Maximo work order system can track work orders from receipt of complaint to final resolution. With the support of enhanced technology and improved operating procedures, NYCHA has implemented numerous upgrades in the past two years to better support the creation and tracking of heat-related work orders such as heat triage questions

NYCHA Response to Draft Report

and a heating dashboard. Many of these changes were developed under the oversight of the Federal Monitor and have resulted in improved efficiency, quicker response to service disruptions, and a more transparent operation.

For every heat related complaint, HMSD staff visit the apartment and address the heat and hot water complaint. For every complaint regarding heat or hot water that is received during the heating season, the following readings should be taken in the apartment and can be logged on the related work order, with a picture of the thermometer showing the recorded temperature:

- Ambient temperature;
- Hot water temperature.

In the coming months, these fields will be mandatory.

8. NYCHA should maintain a complete and updated inventory listing of boilers with unique identifying information, to better enable NYCHA to track and monitor issues relating to each boiler.

NYCHA Response to Paragraph 8: A boiler inventory with unique identifying information is already in Maximo. However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA. This information is accessible to all Maximo users within the Authority.

9. NYCHA should establish a formal system for documenting its tracking of all boilers that require inspections and the status of such inspections so as to ensure that all boilers receive the required internal, external, and preventive maintenance inspections in a timely manner and that deficiencies found during the inspections are corrected within the time frames mandated by applicable law, rules, regulations, and agreements with external oversight agencies.

NYCHA Response to Paragraph 9: NYCHA **does** have a system to track all boilers that require inspections. All boilers and hot water heaters that require inspections are tracked to completion by NYCHA's Boiler and Machinery Insurance Carrier through their Jurisdiction Online (JOL) system, which schedules the inspections to be conducted each year. Any boiler that was missed for any reason in the previous inspection cycle becomes the first to be inspected in the next cycle. The tracking process for the 2017-2018 inspection cycle was a paper driven process. Since February 2019, the process has changed to use the new JOL system, which is more efficient, transparent and accessible to all pertinent stakeholders. JOL stores all identified deficiencies based on the inspections which, in turn, NYCHA's Heating Department Violations Team tracks, monitors and resolves as required. The JOL system syncs with Maximo, and from this, Maximo creates work orders for any inspections in which deficiencies were found. All items that are required to be inspected by code reside in that database. It should be noted that not all boilers require an annual inspection. Once the requisite work to cure a violation is completed, DOB reviews and approves the work and violations are cleared.

10. NYCHA should continue its efforts to develop a tracking system that would allow it to identify the work orders created to address deficiencies identified during inspections so as to be able to track the repairs and the timeliness of those repairs

NYCHA Response to Draft Report

NYCHA Response to Paragraph 10: As stated in the NYCHA Response to Paragraph 9, NYCHA does maintain a tracking process that identifies the work orders created to address deficiencies. NYCHA's IT Department created an interface with JOL which auto-creates work orders for deficiencies directly into Maximo.

NYCHA Response to Draft Report

Background

11. NYCHA, the largest public housing authority in the United States, was created in 1935 to provide decent, affordable housing for low- and moderate-income New Yorkers. Pursuant to its charter and its status as a federal Public Housing Authority, NYCHA develops, constructs, and manages affordable housing. NYCHA's mission is to increase opportunities for low- and moderate-income New Yorkers by providing safe, affordable housing and facilitating access to social and community services.

12. According to data published by NYCHA, as of 2019, more than 370,000 New Yorkers resided in NYCHA's 316 public housing developments located throughout the five boroughs of the City, comprising 2,351 buildings that contain 173,762 units. NYCHA has established SOPs that set forth the agency's internal operating procedures governing a wide variety of areas.

13. Among other things, NYCHA's heating SOPs mandate that NYCHA is required to provide heat to its residents between October 1st and May 31st, (i.e., the heating season) when the temperature falls below 55 degrees Fahrenheit. Complaints relating to heat are always considered emergencies. NYCHA's internal procedures require that emergency calls are responded to within 24 hours. Responding to a complaint does not, however, necessarily mean that the complaint will be resolved within 24 hours, but rather it means that steps to assess the heating issue complained of will be initiated within 24 hours. Resolving the complaint may be done within that time frame or may take much longer, depending on the circumstances.

NYCHA Response to Paragraph 13: As referenced in the HUD Agreement and the Heating Action Plan approved by the Federal Monitor, NYCHA's heating service disruption response time obligation is 12-hours. Currently, NYCHA's average response time is 8 hours for heat and hot water. In addition, as stated in the NYCHA Response to the Executive Summary, the Heat Desk operates 24 hours a day and 7 days a week. It is staffed with HMSD employees who track all work order complaints in Maximo using the Heating Dashboard. Staff uses this information as a predictive tool and early indicator of a possible service disruption. The Heat Desk also sends daily emails to HMSD and Property Management supervisory staff, on areas with high work order counts and Building Management System alarms, which are indicators of potential service disruptions.

Furthermore, it is important to distinguish between an individual complaint work order and an outage work order. A ***complaint work order*** is generated in Maximo when a complaint is initiated by a resident. An ***Outage work order*** is generated in Maximo by HMSD personnel when a service disruption affecting multiple residents is confirmed as the root cause of a problem and/or when planned corrective maintenance is needed on the heat or hot water system. Both an individual complaint-based work order and an outage work order are treated as priorities and given the highest attention by HMSD.

14. NYCHA residents who require emergency and non-emergency repairs to their apartments can make their complaints to NYCHA's Customer Contact Center (CCC) either by calling CCC directly or online through the MyNYCHA phone application; at a kiosk located at each development; or at two walk-in centers, one located in the Bronx and the other located in Brooklyn.⁴ NYCHA residents also have the option of making complaints through the City's 311 system, which forwards those complaints to CCC.

⁴ Bronx walk-in services the Bronx, Manhattan and parts of Queens. Brooklyn serves Staten Island and some of Queens.

NYCHA Response to Draft Report

15. Once a complaint identifying the need for a repair (heat-related or otherwise) is received by NYCHA, it is entered into Siebel, NYCHA's computer software system used for scheduling appointments. The complaint is then automatically uploaded from Siebel into Maximo, NYCHA's computer software system used for generating work orders and for tracking the status of repair work orders. Heat-related work orders are categorized as "NOHEAT" in Maximo.

16. NYCHA's Heating Management Services Department (HMSD) is responsible for all heating operations in the developments. They are tasked with establishing and maintaining the safe and efficient operation of all heat generating systems and associated equipment. Their responsibilities include: maintaining heating equipment; overseeing the maintenance of fuel oil supplies, oil deliveries, and the status of oil-on-hand; maintaining files for all required certifications/registrations/permits; conducting annual inspections of boilers, boiler rooms, tank rooms, hot water tanks, and all mechanical equipment; inspecting equipment for heating and/or, hot water plants prior to its disposal/transfer; and reviewing, completing, approving, and closing heat work orders in Maximo.

17. HMSD employs Heating Plant Technicians (HPTs) who are responsible for the day-to-day maintenance and repairs of boilers.⁵ During the 2017-2018 heating season, NYCHA employed 302 HPT staff. However, other NYCHA staff may be required to resolve no-heat complaints where systems other than the boilers are involved, such as where there are faulty pipes or broken or inadequately sealed windows

18. When residents make no-heat complaints, they do not generally know if the no-heat condition affects just their unit or a larger area in the building. Accordingly, NYCHA's protocol is to treat all no-heat complaints as if they affect only an individual unit and Maximo automatically creates a "corrective maintenance work order" based on a resident no-heat complaint. Thereafter, if the resident's complaint is determined by NYCHA to concern a system-wide heat failure (e.g., affecting an entire development, building, apartment line, or stair hall), the corrective maintenance work order will be closed and an "outage work order" will be opened.

19. According to NYCHA's records, there were 167,752 no-heat work orders created during the 2017/2018 heating season as a result of complaints made by residents. Of these 81,997 (49%) were related to 1,776 outages (i.e., system-wide heating failures). This means that 85,755 (51%) no heat work orders were complaints unrelated to outages.

20. This audit began in January 2018 after widespread heating complaints originated from tenants at 32 NYCHA developments during a time when New York City experienced record low sub-zero temperatures. From October 1, 2017 through May 31, 2018 (i.e., the 2017-2018 heating season), NYCHA residents made repeated complaints of no heat in entire developments, buildings, apartment lines, stair halls, and individual apartments.

21. On June 11, 2018, the United States Attorney for the Southern District of New York (USAO SDNY) filed a complaint against NYCHA in the Federal District Court. The complaint alleged that NYCHA had failed to provide residents decent, safe, and sanitary housing by, among other things, failing to adequately provide heat.⁶

⁵ HPT's daily responsibilities include: maintaining janitorial standards in all heating related areas; performing daily oil tank stick readings; receiving and inspecting fuel deliveries; performing boiler safety tests; and performing regular inspections and lubrications of all machinery and equipment.

⁶ Other allegations included that NYCHA failed to protect children from lead paint, adequately abate mold conditions, eradicate pest infestations, and failed to provide disabled and elderly residents with functioning elevators. United States v. New York City Housing Authority, 18 Civ. 5213 (June 11, 2018).

NYCHA Response to Draft Report

The complaint also stated that NYCHA had repeatedly misled the United States Department of Housing and Urban Development (HUD) through false statements and deceptive practices.⁷

[NYCHA Response to Paragraph 21](#): Though this audit mentions action taken by the SDNY after the 2017-2018 heating season, it fails to properly note the Heating Action Plan, and other operational improvements.

22. During the audit, NYCHA was unable to provide consistent and reliable information to the auditors of the number of heat complaints it received in the 2017-2018 heating season and the number of residents affected. However, according to documents filed in court on behalf of NYCHA and USAO SDNY on June 11, 2018, NYCHA admitted, among other things, that in the winter of 2017-2018 alone, "more than 320,000 residents, 80% of the public housing population, lost heat."⁸

Objective

23. To determine whether NYCHA management has adequate controls to provide heat to residents and to address and resolve heating issues during the heating season.

Scope and Methodology Statement

24. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, 593, of the New York City Charter.

25. The scope of this audit covers the period from January 1, 2017 to May 31, 2019. Please refer to the Detailed Scope and Methodology at the end of this report for the specific procedures and tests that were conducted.

[NYCHA Response to Paragraph 25](#): The scope stated above does not correspond with the focus of the audit, which is the 2017-2018 heating season. The improvements implemented after the 2017-2018 season are largely ignored in this report, despite the reference to May 31, 2019.

Discussion of Audit Results with NYCHA

26. The matters covered in this report were discussed with NYCHA officials during and at the conclusion of this audit. A preliminary draft report was sent to NYCHA and was discussed at an exit conference held on February 24, 2020. We are submitting this draft report to NYCHA with a request for comments. NYCHA's written comments will be included in the final version of this report.

⁷ HUD provides the majority of NYCHA's funding.

⁸ [United States v. New York City Housing Authority](#), 18 Civ. 5213 (June 11, 2018)

NYCHA Response to Draft Report

NYCHA Response to Paragraph 26: Despite numerous meetings with the Comptroller's auditors, including a Maximo walkthrough and Heating Dashboard review on January 10, 2020, as well as many efforts to demonstrate the significant changes made since the 2017-2018 heating season, this audit fails to reflect those improvements or consider the actions taken since that time when setting forth its recommendations.

FINDINGS AND RECOMMENDATIONS

27. The audit found that the tools used by NYCHA's central management to oversee and track heating issues are inefficient and ineffective, which has significantly hindered the agency's ability to manage and resolve heating issues.

28. We found that NYCHA does not have the ability to readily track the status and resolution of repairs for heating complaints unrelated to system-wide heating failures (i.e., outages). Resolving such complaints commonly involves the creation of multiple work orders. However, while Maximo tracks the closure of individual work orders, it does not track the amount of time it takes to successfully resolve the individual heat-related complaints. As a result, among other things, NYCHA management cannot readily identify the number of heat-related repair requests that have not been resolved at any one time, nor can it readily determine the length of time it took to ultimately resolve those requests. If NYCHA were able to effectively track such information, it could better evaluate the agency's allocation of resources (both personnel and supplies) and the effectiveness of its procedures and its training.

NYCHA Responses to Paragraphs 27 – 28: Improvements made since the 2017-2018 heating season have significantly addressed these issues. As previously noted, both Maximo and the Heating Dashboard permit the tracking of individual heating complaints as well as outages. Work order tracking contains open and close times. In addition to electronic work order tracking systems, HMSD hosts a daily conference call meeting to review all open heat and hot water work orders and provide a progress update of all active service disruptions. The conference call is held at 9:30am every morning and includes HMSD management staff, Property Management Regional Asset Managers and members of Operation's Executive Department. These daily conference meetings are designed to provide key staff with an overview of areas of concern, provide service disruption progress updates, and advise on all of areas that require follow up.

29. In addition, although NYCHA's stated goal is to close all heat-related work orders created as a result of an initial no-heat complaint within 24 hours, Maximo records indicate that approximately 23 percent of the heat-related work orders initiated by residents' complaints during the 2017-2018 heating season were not closed within that time frame (91 percent were closed within 48 hours and 96 percent were closed within 72 hours). As noted above, however, the closing of a work order does not necessarily indicate that a repair has been completed. Consequently, these figures do not reflect NYCHA's performance in actually completing repairs. Further, the delays in initial assessments reflected in Maximo result in delays in the ultimate resolution of the heat-related complaints.

NYCHA Responses to Paragraph 29: NYCHA acknowledges that it did not meet response times in the 2017-2018. However, as described in NYCHA Response to the Executive Summary, NYCHA has made improvements over past two years, which are not sufficiently acknowledged in the Report.

30. Additionally, NYCHA does not have adequate procedures for independently verifying the accuracy of the repair information that staff records in Maximo. As a result, the degree to which the repair related data reported

NYCHA Response to Draft Report

in the system can be relied upon is questionable. Further, NYCHA does not formally solicit feedback from tenants, such as in the form of customer satisfaction surveys, to gauge their level of satisfaction with repairs, which reduces its ability to ensure the reliability of the information in Maximo and further limits the agency's ability to assess its effectiveness in resolving heat-related issues.

NYCHA Response to Paragraph 30: NYCHA acknowledges the difficulty of verifying repair data during the 2017-2018 heating season. However, since that time, the complaint response procedure has been updated to include new controls that provide information that the condition has been addressed by the repairs.

In addition, the HUD Agreement required the establishment of three new departments – Compliance, Environmental, Health & Safety (EH&S), and Quality Assurance – to increase oversight and transparency into NYCHA's operations and compliance with laws, rules, and internal procedures. The creation and evolution of these three Departments is described in detail in the Federal Monitor's first three Quarterly Reports. Of the three new Departments, the EH&S Department plays a critical role in the Heat Action Plan in implementing the QA Root Investigation Plan. See Heat Action Plan, at 25. EH&S must investigate any event in which heat is not restored within 12 hours and conduct a root cause analysis. The methodology for this root cause analysis is explained in detail in the Heat Action Plan.

The Federal Monitor has confirmed the value and independence of the EH&S's root cause analysis. In the Third Quarterly Report, the Federal Monitor stated, "The Monitor team has been and is exercising its oversight to ensure that NYCHA's root-cause investigations are thorough and complete. From what we have seen so far, their investigations have provided unbiased critiques independent from the heating department. They have called for smarter mobilization of heating staff during nighttime hours and better preparation during the summer, consistent with NYCHA's own findings. Utilization of these findings will give NYCHA an even better understanding of what heating systems need replacement and how to better focus the pre-season maintenance program for next winter." These "unbiased critiques independent from the heating department" demonstrates that NYCHA has made significant progress in improving quality assurance and independent evaluation when assessing heating problems.

In addition to the critical role played by EH&S, in January 2020, the Quality Assurance Unit (QAU) began conducting quality assurance inspections of work orders assigned to HPTs to ensure that the repairs are performed in accordance with industry standards.

Finally, the work of the three new Departments in independently evaluating critical issues such as heating will not occur in a vacuum. The Federal Monitor is closely monitoring the staffing and work product of these Departments to ensure that they are providing the independent checkpoint that the Comptroller's Report envisions.

The Comptroller's Report is also out of date in its statement that NYCHA does not solicit customer feedback for heat-related complaints. In contrast, NYCHA currently uses an Interactive Voice Response system to communicate with and gather information from residents during heat outages. This allows residents to provide feedback when they receive an automated call notifying them that their heat service has been restored. This enhancement allows residents to inform NYCHA if they are still experiencing an interruption of service following an outage, in which case they are automatically connected with the CCC and their call is flagged as a follow up to the heat outage. The system also logs when the resident confirms that their heat has been restored and when they hang-up without a response.

NYCHA Response to Draft Report

31. The audit also found that NYCHA does not maintain complete inventory listings of all the boilers currently in its developments, which undermines the agency's ability to properly manage its inventory. Absent a comprehensive, accurate listing of the boilers that includes essential identifying and other information, such as the dates of installation, asset numbers, makes and models, warranty information, as well as each boiler's inspection and repair histories, NYCHA cannot efficiently ensure that all inspections are properly made and that decisions about the need and timing of replacements are made with complete information.

NYCHA Response to Paragraph 31: Boiler inventory with unique identifying information is already in Maximo. However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA. This information is accessible to all Maximo users within the Authority.

32. Further, to maintain safe and properly-functioning heating equipment, NYCHA is responsible for ensuring that three types of inspections are conducted of its boilers and related areas and equipment: (1) Department of Buildings (DOB) mandated external inspections; (2) DOB mandated internal inspections; and (3) in-house annual preventive maintenance inspections.⁹ However, our review of external and internal inspection records maintained by NYCHA's Risk Management Unit for the 2017-2018 heating season found that NYCHA did not maintain adequate records for the required external and internal inspections in a manner that would allow the agency to readily track the status of such inspections. Further, according to data in Maximo for the 2017-2018 heating season, NYCHA conducted preventive maintenance inspections for 84 percent of the boilers scheduled to be inspected. However, we were unable to identify the specific work orders created to address the deficiencies cited during the annual preventive maintenance tests—and the disposition of those work orders—because NYCHA did not have a way to identify such orders.

⁹ NYCHA contracts with a private insurance company to conduct the external and internal inspections. NYCHA staff conduct the annual preventive maintenance inspections.

NYCHA Response to Draft Report

NYCHA Response to Paragraph 32: This is inaccurate. Inspection work orders are automatically created in Maximo and are then tracked on a deficiency log until completion. Inspections are not seasonal but are annual. As such, each boiler receives its annual inspection every calendar year, at least 6 months later than the previous inspection, but no later than the 31st of December of each year.

It should be noted that not all boilers that reside in NYCHA's inventory are required to be inspected annually. The objects that do not require inspection are:

- Low-pressure boilers in residential buildings with 5 families or less;
- H-stamp domestic hot water heaters in residential buildings with 5 families or less;
- Individual boilers heating individual residential units (including residential portions of mixed-use buildings);
- Low-pressure Boilers with an input of 100,000 BTUs or less

Also, virtually every preventative maintenance inspection of operating boilers was conducted before 2019-2020 season.

33. Under present circumstances, NYCHA's persistent failure to adequately resolve heating issues will continue unless management addresses the deficiencies we found and establishes systems that enable it to reliably track the causes and occurrences of heating problems. NYCHA management should also develop a system that allows it to track deficiencies and conditions, along with the timing and adequacy of repairs, including whether work was properly done.

NYCHA Response to Paragraph 33: The phrase "under present circumstances" is misguided. This report incorrectly details, or omits altogether, practices instituted since the 2017-2018 heating season. Had it not done so it would be clear that the prediction of continued "persistent failure" is unfounded. For example, NYCHA's outage restoration time has dropped from an average of 30 hours in 2017-2018 to 8 hours thus far in the 2019-2020 heating season.

34. The details of our findings are discussed in the following sections of this report.

NYCHA's Central Management's Oversight of Issues Pertaining to Lack of Heat Is Inadequate

35. We found that NYCHA's central management does not have the ability to readily track the status and resolution of repairs necessitated by heating complaints unrelated to system-wide heating failures (i.e., outages). This deficiency reflects NYCHA's failure to adequately follow the guidance in Comptroller's Directive #1, Principles of Internal Control, which states that:

[A] sound internal control system must be supported by ongoing monitoring of activities at various organizational levels and in the course of normal operations. To best ensure that an agency successfully achieves its mission and is fully accountable for resources, such monitoring should be ingrained throughout an agency's operations and should include appropriate measurements, comparisons and reconciliations of actions taken by employees in performing their duties and of all activities and programs.

NYCHA Response to Draft Report

However, as discussed below, we found that NYCHA lacks sound internal controls, which reduces its ability to readily determine how long it took residents' complaints to be resolved, to ensure that the investigation of complaints and the subsequent work orders were closed within prescribed time periods, and to evaluate whether work was properly done as reported.

NYCHA Response to Paragraph 35: HMSD personnel are guided by NYCHA Standard Procedure Manual SP 060:63:1 Heating and Domestic Hot Water, as well as the Federal Monitor-approved Heating Action Plan. In addition to the use of Maximo, the Heating Dashboard, and daily conference calls to track performance, HMSD hosts a weekly discussion with all its managers to review outages, incidents, areas of concern and identify opportunities to improve the operation. Members of the Compliance Department as well as the Federal Monitor often participate in these weekly meetings.

Furthermore, the QAU averages about 4,000 attempted QA unannounced inspections per month (for all types of work tickets, not just heating) throughout the City. To date, the average failure rate is about 3% for random inspections performed on all types of work tickets.

NYCHA's Central Management Lacks the Ability to Effectively Track Information about Heat-Related Complaints, Including Whether They Have Been Completely Resolved

36. NYCHA's use of its electronic work order system, Maximo, does not provide an efficient and effective way for central management to identify at any one time the number of unresolved heating complaints unrelated to system-wide outages and how long those complaints have remained unresolved. Moreover, NYCHA cannot determine, except by researching one complaint at a time, how long it took to fix the conditions that caused the heat-related complaints that apply only individual housing units and to restore heat.¹⁰

NYCHA Response to Paragraph 36: Since the 2017-2018 heating season NYCHA has created a Heating Dashboard that enables restoration tracking through outage and complaint work order analysis.

37. As noted, NYCHA has established a goal of responding to every heat-related complaint in 24 hours. Further, according to NYCHA's procedures, and in accordance with State law, when the outside temperature falls below 55⁰ F during the heating season, the temperature for housing units must meet the following minimum requirements:

- Between the hours of 6:00 a.m. and 10:00 p.m., the inside temperature is required to be at least 68 degrees.
- Between the hours of 10:00 p.m. and 6:00 a.m., the inside temperature is required to be at least 62 degrees.

In accordance with its procedures, when NYCHA receives heat complaints, HMSD staff are required to identify the complaints for which corrective actions are needed (e.g., where the temperature in the units falls below the prescribed levels) and close out work orders within its required 24-hour time frame. However, as noted, closing a work order within 24 hours does not necessarily mean that the complaint has been resolved within 24 hours.

¹⁰ By contrast, the tracking of system-wide outages, including how long they remain unresolved and how many units are affected, is a feature of Maximo and was during our audit scope period.

NYCHA Response to Draft Report

For complaints that require repair work that is outside the purview of HMSD staff, such as where complaints result from plumbing or window problems, NYCHA maintains that it is not feasible for it to set a target for the timeliness, since the types of repairs required can vary widely.

NYCHA Response to Paragraph 37: HMSD staff are required to respond within 24 hours, not close a work order within 24 hours. As mandated by the HUD Agreement, and memorialized in SP 060:63:1, NYCHA must restore heat to units affected by a heating shortage within an average of 12 hours, and for 85% of heating shortfalls, NYCHA will restore heat to affected units within 24 hours, and in no event more than 48-hours. See HUD Agreement, Ex. B, at ¶ 9; see SP 060:63:1, at XXXIII.c and XVI. Additional work orders (a “child” work order) may be generated off of an initial work order (“parent”). These additional work orders, such as those requiring work outside the purview of HMSD staff, can be tracked in Maximo.

38. To comply with the guidance provided in Comptroller's Directive #1 relating to the establishment of a sound internal control system, NYCHA management should continually monitor whether and when heat-related complaints are completely resolved. However, as noted, Maximo is not programmed to track the total amount of time it takes for NYCHA to successfully resolve individual unit heat-related complaints. Rather, Maximo is used to open work orders and track their closings.

39. NYCHA's processes for tracking individual work order completion is inadequate for tracking the time it takes for resident complaints to be completely resolved because, in the majority of instances, the completion of a repair involves the opening and closing of multiple work orders to account for the multiple different trades that are needed to resolve a single problem. For example, a work order would be opened to assess the complaint and then closed when the heating unit determines that a plumber is needed to address a complaint. In that case, the initial work order would be closed out and a new work order would be opened for a plumber, who would perform the required work and close out the work order and open yet another work order for a plasterer to repair a wall that was opened to access the pipes. Once that work was completed, the plasterer might open yet another work order for a painter who would be needed to complete the job. However, Maximo is not designed to track the completion of the job from start to finish, just the opening and closing of each of the successive individual work orders.

40. Accordingly, as noted, when an issue requires more than one work order to resolve the complaint, NYCHA is unable to determine whether the complaint has been completely resolved without conducting additional research. Such research would require NYCHA staff to manually track individual complaints, one at a time, by looking at each work order associated with a particular unit's complaint and following the trail of work orders to determine the length of time it actually took to resolve a complaint.

NYCHA Response to Paragraph 38 through 40: See NYCHA Response to Paragraph 2 through 3.

41. Knowing how long it takes to resolve heating complaints as they pertain to individual units and the amount of time it takes to completely resolve different types of problems, would enable NYCHA management to make informed decisions with regard to the replacement of boilers, better evaluate the effectiveness of procedures, personnel, and training, as well as to identify where to deploy resources. In addition, NYCHA's inability to track information related to complaints, as well as its inadequate supervisor oversight, discussed below, prevents NYCHA management from obtaining potentially useful information that it could use to ascertain whether work orders have been closed out erroneously.

NYCHA Response to Draft Report

NYCHA 's Records Show that 23 Percent of Heat-related Work Orders Were Not Closed Out Timely

42. NYCHA's procedures state that "heat-related work orders must be completed within 24 hours after they are reported." NYCHA officials explained that this reflects the agency's desire to both investigate and resolve all heat-related complaints in that time frame, if possible. Accordingly, NYCHA officials stated that all issues that can be resolved within 24 hours of a complaint having been received are given immediate attention and that staff will work overtime, if necessary, to resolve the issues. However, according to NYCHA officials, if the problem cannot be addressed immediately because the repairs required are outside the scope of the heating department's responsibility, or if additional parts necessary for the repair need to be ordered, NYCHA staff will close out the original work order (referred to as a parent work order) and then open a new work order (referred to as a child work order) to address the issues for which additional resources are needed.

NYCHA Response to Paragraph 42: This is inaccurate. Heating work order tickets related to a “no heat” condition should remain open until the heat issue is resolved. Non-heat related work order tickets generated as “children” of the heating work order, such as a carpenter needed to close a hole in the wall, remain open until complete.

Moreover, NYCHA must restore heat to units affected by a heating shortage within an average of 12 hours, and for 85% of heating shortfalls, NYCHA will restore heat to affected units within 24 hours, and in no event more than 48-hours. See HUD Agreement, Ex. B, at ¶ 9; see SP 060:63:1, at XXXIII.c and XVI. These are the current performance standards that NYCHA must achieve in terms of heat restoration.

43. According to data provided by NYCHA, there were 167,752 heat-related work orders initiated due to complaints made by residents during the 2017-2018 heating season. Our review of data generated from Maximo indicates that 38,052 (23 percent) of these work orders were not closed out within the 24-hour time frame established by NYCHA as its goal. A breakdown of the time it took to close these work orders is shown in Table I below.

Table I
Timeliness in Closing Initial Work Orders during 2017-2018
Heating Season

Number of Hours to Close Initial Work Order	Number of Work Orders	Percentage of Work Orders	Number of Work Orders (cumulative)	Percentage of Work Orders (cumulative)
24 hours or less	129,700	77.3%	129,700	77.3%
Over 24, not more than 48	22, 772	13.6%	152,472	90.9%
Over 48, not more than 72	9,319	5.5%	161 ,791	96.4%
Over 72, not more than 96	3,287	2.0%	165,078	98.4%
Over 96, not more than 120	1,224	0.7%	166,302	99.1%
120 hours or more	1 ,450	0.9%	167,752	100.0%
Total	167,752	100.0%		

NYCHA Response to Paragraph 43 and Table I: As the chart below shows, NYCHA improved work order close time in the 2018-2019 season.

NYCHA Response to Draft Report

Note: The NYCHA charts below are using the same methodology from Audit's chart above, in that they include all outage work orders as well as individual heating complaint work orders. Also, the data below is based on work orders reported through the entire heating season (Oct 1 – May 31), which is the same logic as followed above.

2018-2019 Heating Season

Number of Hours to Close Initial Work Order	Number of Work Orders	Percentage of Work Orders	Number of Work Orders (Cumulative)	Percentage of Work Orders (Cumulative)
24 hours or less	132,284	83.1	132,284	83.1
Over 24, not more than 48	17186	10.8	149,470	93.9
Over 48, not more than 72	4933	3.1	154,403	97
Over 72, not more than 96	2142	1.35	156,545	98.35
Over 96, not more than 120	1153	0.72	157,698	99.07
120 hours or more	1495	0.94	159,193	100
Total	159,193	100		

44. It is important to note that since, as stated previously, the closing of the initial work order does not necessarily indicate that a repair has been completed, this performance indicator does not reflect NYCHA's performance in actually completing repairs. For example, 14,257 (11 percent) of the 129,700 initial work orders closed within 24 hours were closed as a result of either the resident not being home or maintenance staff not being able to gain access to the building or apartment. Nevertheless, by failing to ensure that all heat-related work orders are closed within 24 hours, NYCHA increases the likelihood that its residents will be left without adequate heat in their apartments for an extended period of time.

45. NYCHA offered multiple reasons for why in the 2017-2018 heating season almost a quarter (23 percent) of the work orders in its system were not closed within the 24-hour target, including: difficulties in identifying the problem; difficulties obtaining parts needed to complete a repair; and shortages of workers needed to address all of its outstanding work orders, including heating complaints. NYCHA officials stated that they had fewer heating and maintenance staff than they had just a few years ago, and heating officials assigned to individual developments told us that the high turnover of existing staff has made their jobs and the jobs of heating staff much more difficult. As of March 2018, NYCHA had 302 HPTs, down from the 411 HPTs employed during 2015, a 27 percent reduction. NYCHA officials cited retirement as one of the reasons for the decrease in staff, although the agency had not at the time replaced many of these retiring workers. Despite repeated requests, NYCHA has never provided us with a number of heating and maintenance staff it thinks are necessary for the agency to adequately address its heating issues.

NYCHA Response to Paragraphs 44 and 45: While NYCHA acknowledges that HMSD entered the 2017-2018 heating season with vacancies, NYCHA has already made a number of staffing changes resulting from this recognition. NYCHA has hired an additional 70 HPTs, 12 Plumbers, and 12 Plumbers Helpers. Additionally, through staff augmentation, temporary Electricians and additional Plumbers are hired to support the heating operation during the heating season. HMSD also hosts a weekly conference meeting with Human Resources to discuss staffing issues such as vacancies in critical positions.

NYCHA Response to Draft Report

46. NYCHA's failure, according to its own records, to close out nearly a quarter of its initial heating complaint work orders is of significant concern because the timely closing of those initial work orders is critical to ensuring the timely resolution of the residents' complaints. Moreover, the data in Maximo is itself unreliable. This concern remains even if, as NYCHA has recently claimed, 90 percent of the heat-related work orders have been closed out in the required time frame during the as yet incomplete 2019-2020 heating season.¹¹

NYCHA Response to Paragraph 46: While acknowledging that there were data weaknesses in 2017-2018, NYCHA has proactively taken steps to improve its heating operations. In addition to Maximo enhancements, staff are now issued handheld devices for mobile interaction with the Maximo system. In addition, Maximo enables NYCHA to track the closure of both parent and child work orders, which provides a mechanism to ensure that all associated work has been properly completed.

47. Of further concern, NYCHA officials stated that on occasion, although work may have been completed, HPT staff neglect to close out the work orders. As a result of this problem, officials informed us that NYCHA's IT unit performs an annual batch closing of the heat-related work orders that have been open for a substantial amount of time. However, this process significantly reduces the reliability of the information in Maximo concerning the amount of time it took to close out heat-related work orders because NYCHA's batch closings could result in the closing of work orders where required work was never performed. In addition, NYCHA officials informed us that, upon restoring service after a system-wide outage occurred, the agency performs a batch closing of all complaints that were made after the outage was established, including those that may be unrelated to the outage. Accordingly, there is the possibility that an individual heat-related complaint that was not a result of the outage, but rather due to, for example, a broken window or poor insulation, might be closed without the issues that were not related to the outage having been resolved.

NYCHA Response to Paragraph 47: Since the time of the audit the Authority made significant changes to become a more proactive operation. Those changes include and are not limited to the following:

- Residents receive a robocall when an outage is created and restored. Through this system, residents are able to report unresolved heat related issues after an outage is closed. If necessary, a new complaint work order is automatically created.
- Revised the triage questions used by CCC personnel when residents call about with a heat complaint. The questions are designed to better identify the heat issue and ensure the appropriate staff or skill set is assigned to address the issue.
- Unplanned heat and hot water outages can only be created by HMSD Supervisors and Heat Desk Personnel. This eliminates the possibility of outages being created without a confirmed service disruption.
- Restrictions are in place that do not allow the creation of planned outages without 60-hour advance notification.
- Confirming the restoration of services when closing the outage work orders;
- Implementing new processes, including proof of temperature in the form of an attached picture of the temperature recording device when responding to heat complaints;

¹¹ We note that the 90 percent figure that NYCHA asserts is its current work order closure rate, like the 77 percent that we found in our audit scope period, does NOT necessarily mean that the problem complained of was resolved and therefore does not reflect NYCHA's performance in actually completing repairs. Moreover, as we discuss in further sections of the report, we found reliability issues with the data in Maximo that is the basis for claims that work orders have been properly closed. Finally, NYCHA has made these claims regarding its current performance without providing any support to substantiate the claims.

NYCHA Response to Draft Report

48. Finally, while we have used data maintained in Maximo in our findings above, as noted, we have additional concerns about the reliability of that data which are discussed in detail in the following section of this report. Absent reliable data, NYCHA cannot efficiently deploy resources (e.g., personnel and parts), enhance operations (e.g., oversight, training, and distribution systems), or determine where capital improvements might be most effectively made.

Inadequate Verification of Work Order Completion

49. According to Section 4.3 of Comptroller's Directive #1,

Internal control activities help ensure that management's directives are carried out. They are, basically, the policies, procedures, techniques, and mechanisms used to enforce management's direction.

The directive further states that the control activities should include actions such as approvals, authorizations, and verifications. Accordingly, with regard to the completion of work orders, management should have procedures to verify that the work was performed as attested to by agency staff.

50. However, NYCHA did not have procedures in place for independently verifying: (1) that work orders were closed out properly in accordance with NYCHA's policies; and (2) that work was actually undertaken and satisfactorily completed as reported. Among other things, we found that the agency has no express requirement for supervisors to follow up on work orders, either in total or on a sample basis, for the purpose of assessing whether individual work orders were properly closed. Rather, any follow-up that might be performed is done solely at the discretion of the HPT supervisor. Moreover, as indicated above, we found that the closing of a work order is not necessarily an indication that the complaint itself has been resolved, but rather the closing is an administrative function that can have several different meanings. Among other things, it can mean a problem was diagnosed and referred to another unit to fix or that NYCHA staff came to an apartment in response to a work order and was unable to gain access to the apartment at that time. Finally, despite numerous requests, NYCHA failed to provide evidence that staff tracked work order backlogs, which could have possibly provided some degree of review of the work done to close individual work orders. In the absence of such a quality control process, we question the degree to which the repair-related data reported in the system can be relied upon.

NYCHA Response to Draft Report

51. Pursuant to its agreement with HUD and the City, dated January 31, 2019, (the Monitoring Agreement), the City agreed to appoint and fund a monitor (Monitor) chosen by HUD and the USAO SDNY to, among other things, ensure the establishment of corrective actions by NYCHA to address issues identified in United States v. New York City Housing Authority 18 Civ. 5213. Pursuant to the Monitoring Agreement, by no later than 45 days after the appointment of the Monitor, NYCHA agreed to create a Quality Assurance (QA) Unit whose tasks included "considering both performance on individual work orders and also performance of maintenance repairs from the first identification of the need to the ultimate correction of the problem ("end-to end")." The Monitor was appointed at the end of February 2019 and began work on February 28, 2019. Accordingly, the establishment of the QA unit should have been completed by no more than 45 days later, or roughly by no later than April 14, 2019.

NYCHA Response to Paragraphs 50 – 51: Three departments were required under the HUD Agreement and all have been established with Federal Monitor oversight; The Compliance Department, The Office of Environmental Health and Safety, and the Quality Assurance unit. This is documented in the three quarterly and publicly available reports issued by the Federal Monitor.

52. Based on this requirement, we asked NYCHA to provide us with documentation pertaining to the QA unit mandated by the Monitoring Agreement. However, NYCHA provided us with conflicting information in response to this request during the course of this audit. Specifically, in August 2019, we asked NYCHA officials to provide us, among other things, with a list of all QA inspections that have been performed by the QA unit. In response,

53. NYCHA officials provided us with a summary of inspections purportedly conducted between May and August of 2019 by that unit.

54. However, when we met with NYCHA officials in December 2019 to discuss the methodology (e.g., the status of the work orders, types of work orders, the basis for determining whether work performed was satisfactory) used for the inspections, the NYCHA Chair's Chief of Staff stated that NYCHA had not yet established the QA unit, but that it was in the process. The audit coordinator later told us that the list we were given was of inspections performed by its Leased Housing unit, not the QA unit.

55. Nevertheless, during the exit conference held on February 24, 2020, NYCHA officials at that meeting contradicted the prior statements of the Chief of Staff and again claimed that the QA unit had been established. In subsequent materials sent to us, NYCHA officials claimed that, in fact, a QA unit has been in existence since October 2014 and was later rolled into the QA unit mandated by the Monitoring Agreement.

56. NYCHA, however, did not explain why the Monitoring Agreement called for NYCHA to create a QA unit if one was already in existence. Consequently, we find NYCHA's current claim regarding the establishment of the QA unit to be of questionable reliability.

NYCHA Response to Paragraphs 52 to 56: The Report misunderstands the creation of the QAU. The QAU was established in the timeframes required under the Agreement. This is independently confirmed by the first three quarterly reports issued by the Federal Monitor. See First Quarterly Report, 17 – 22; Second Quarterly Monitoring Report, 17 – 18; and Third Quarterly Monitoring Report, at 10 (confirming creation of the new QAU on April 29, 2020), 19 – 20. To establish the new QAU, in the early fall of 2019, NYCHA transitioned staff from the existing QA Unit in Leased Housing to the new QAU. These staff were then placed under the supervision of the new Director of QAU, who was appointed with the concurrence of the Federal Monitor pursuant to the process

NYCHA Response to Draft Report

set forth in paragraph 58 of the HUD Agreement. In addition to these staff, the QAU is currently hiring additional staff to increase its capacity to provide oversight across the agency. Had the Report properly considered the Federal Monitor's Quarterly Reports, which are publicly available, the auditors could have avoided this misunderstanding.

57. Absent adequate controls, such as a QA unit, NYCHA would be unable to independently verify that work orders are closed out properly and that work was completed as reported. A lack of controls increases the risks that work orders may be improperly closed out, the information in Maximo is unreliable, the allocation of resources based on that information is inadequate, and most importantly, individuals are left without sufficient heat in their apartments for extended periods of time.

NYCHA Response to Paragraph 57: As explained in the NYCHA Response to Paragraphs 52 to 56, the Comptroller's Report inexplicably questions the existence of the QAU established under the HUD Agreement. The Report's purported confusion about the unit is belied by the first three Quarterly Reports issued by the Federal Monitor, which confirms the existence of the unit, its scope, and its operations. See First Quarterly Report, 17 – 22; Second Quarterly Monitoring Report, 17 – 18; and Third Quarterly Monitoring Report; at 10 (confirming creation of the new QA Unit on April 29, 2020), 19 – 20.

For instance, in the Third Quarterly Report, the Federal Monitor stated, “[i]n Q4, the QAU completed work order and health and safety checks at 100 different locations. QAU provided the Monitor team with a copy of the QA Inspection Report for the period. Of the 11,951 attempted QA inspections (inspection work order created and QA inspector assigned and deployed), 7,522 inspections were completed, representing a 63% success rate. Of the QA inspections completed, 210 or roughly 3% were unsatisfactory; this is consistent with data reported previously when we saw average monthly satisfaction rates of 95-97%.” See Third Quarterly Monitoring Report, at 19.

The clear unbiased evidence set forth in the Monitor's report strongly contradicts with the Comptroller's Reports purported confusion about the existence of the unit. Moreover, as explained in NYCHA Response to Paragraph 30, the QAU and EH&S both are currently performing QA functions specifically related to heating. As confirmed by the Federal Monitor, EH&S is performing unbiased root cause inspections of heating outages lasting longer than 12 hours. In addition, the QAU has commenced reviewing work orders assigned to the HPT craft in January 2020.

Therefore, the Comptroller's comments about the current state of the QAU are misguided and should not have been included in its audit of the 2017-18 heating season.

Inefficient Use of Customer Satisfaction Feedback Tools

58. Solicitation of customer satisfaction is an important component of any service delivery operation's internal controls. Comptroller's Directive #1 highlights the importance of customer satisfaction surveys as a means of soliciting customer feedback in its Directive #1 checklist, an oversight tool that every City agency is required to fill out annually. In particular, the checklist asks whether an agency has a process for getting periodic customer feedback (suggestions, compliments, or complaints) and whether customer complaints are reviewed and addressed, when considered necessary.

59. We found that, although NYCHA does solicit feedback from its residents regarding their satisfaction with the work performed in response to complaints, the agency neither analyzes nor utilizes that customer feedback to

NYCHA Response to Draft Report

review the quality of the work done in connection with any particular work order, to improve the training of heating staff, to allocate resources, or to reorganize any processes and functions within NYCHA.

60. NYCHA conducts two types of surveys to solicit customer feedback. The first survey is taken at the time that the work order is completed. Upon completion of a job, the HPT is required to show the complaining resident one question on a hand held device — "Resident Satisfied — yes/no?" The resident is asked to give a response, but has the option of leaving it unanswered. NYCHA officials acknowledged that they do not utilize these customer satisfaction surveys for any purpose.¹²

61. The second survey, the quality assurance survey, is conducted by NYCHA's CCC through an electronic system that randomly selects closed work orders and calls the customers to ask seven questions—four pertaining to the actual work performed and three pertaining to satisfaction with the call center itself. The seven questions are:

- 1) Was your issue completely resolved?
- 2) Was your issue addressed in a timely manner?
- 3) Did NYCHA staff keep their scheduled appointment?
- 4) How would you rate your level of satisfaction with the service provided by the NYCHA employee that responded to our service request?
- 5) Was your call answered in a timely manner?
- 6) How would you rate the call taker's professionalism and knowledge about your inquiry?
- 7) How would you describe your overall level of satisfaction with the service provided by the call taker?

62. NYCHA officials stated that CCC only uses the responses to the last three questions for training purposes for staff within the call center and that they do not use the information obtained in the responses for any other purpose, including addressing the substance of the heat complaints.

63. In lieu of relying on a customer satisfaction survey to assess the effectiveness of its responses to heat complaints, NYCHA officials stated they have the ability, through Maximo, to see whether customers put in repeat complaints, which would possibly be an indication of customer dissatisfaction. However, they provided us with no evidence that NYCHA staff ever actually do such analysis. NYCHA management also claimed that they follow up on complaints on a case-by-case basis, especially when there are a large number of complaints or repeated number of complaints from the same unit and/or development. However, they stated that such follow-up is generally not documented.

64. Obtaining and using resident feedback can be a meaningful managerial oversight tool to identify specific areas that require corrective actions, including specifically with regard to providing adequate heat to residents. Without such tools, NYCHA's ability to assess how well it is resolving heat-related issues is made much more difficult.

65. During the audit, NYCHA officials stated that they would consider implementing additional customer satisfaction tools.

¹² Notwithstanding requests for results from these surveys, NYCHA never provided them.

NYCHA Response to Draft Report

Recommendations

66. NYCHA should create a mechanism for it to efficiently track all heat-related complaints, including those that are not caused by system-wide outages, from receipt of a complaint to its final disposition so that the agency can efficiently and effectively determine, among other things, the time it takes to resolve such complaints, identify aging complaints, address languishing complaints, and improve systems that lead to delayed resolutions of complaints.

NYCHA Response to Paragraph 66: NYCHA's Maximo Work Order system can already track all work orders from receipt of complaint to final disposition. After the 2017-2018 heating season NYCHA created a Heating Dashboard which tracks individual heating complaints as well as heating outages. The Dashboard also helps NYCHA to forecast and determine, in real-time, the root cause for potential service disruption and address them before they become an outage. Access to both Maximo and the Dashboard were provided to the Comptroller during this audit.

NYCHA has implemented other enhancements, such as new heat triage questions. These questions are posed to residents to better ascertain the technical source of the complaint. Also, robocalls are made to residents after an outage work order is closed to confirm that the problem has been resolved.

67. NYCHA should take all necessary measures to determine and monitor on an ongoing basis the adequacy of its staffing levels and processes related to heating.

NYCHA Response to Paragraph 67: As HMSD is aware of vacancies, it immediately takes administrative action and submits require documentation to fulfill the position. HMSD is involved from the inception of the vacancy opening until hiring. In addition, Human Resources reviews staffing levels for Heating on a weekly basis and conducts a weekly call to discuss staffing issues.

68. NYCHA should develop a process to independently verify that work orders were closed out properly and that work was completed as reported. This should include an explicit requirement that supervisors follow up on a prescribed number of closed out work orders and confirm that the work reported as completed was conducted as reported.

NYCHA Response to Paragraph 68: To monitor and track performance, HMSD hosts a weekly discussion with all its Managers to review all outages, incidents and pain points and identify opportunities to improve the operation. Members of the Compliance Department as well as the Federal Monitor often participate. In addition, during October 1st until May 31st, the department hosts a daily heat call to discuss current service disruptions, open heat, hot water, too much heat work orders and any other events that might impact the operation and residential services. Members from Property Management, Department of Capital Projects, and Executive Personnel often participate. As previously stated, QAU averages about 4,000 attempted QA unannounced inspections per month (all types of work tickets, not just heat) throughout the city. To date, the average failure rate is about 3% for random inspections performed on all types of work tickets. When a repair is determined to be unacceptable, the QAU indicates through Maximo the need to complete the repair. Starting January 2020, QAU began QA inspections of work orders assigned to the HPT craft.

69. NYCHA should formally analyze the feedback that it receives from residents with regard to their satisfaction with the heating-related work performed and use that data to highlight specific areas that require

NYCHA Response to Draft Report

action, including providing training for individuals and groups of employees, redeploying personnel and other resources, and improving processes and procedures to ensure better performance.

[NYCHA Response to Paragraph 69](#): The data will be made available to HMSD on the existing Heating Dashboard. HMSD will outline a business process to handle unsatisfied residents and train staff accordingly.

NYCHA Does Not Maintain an Updated Inventory Listing of Boilers in Its Developments

70. NYCHA does not maintain an updated inventory listing of its boilers. In April 2018, we asked NYCHA to provide us with an inventory list of boilers maintained at its developments. It was not until September 2018, five months after our request, that NYCHA provided a listing. However, as described below, we found that list to be incomplete. NYCHA officials acknowledged that prior to our request, they did not have a reconciled inventory listing and that they needed to expend many hours to visit the boiler rooms to create one based on our request.

[NYCHA Response to Paragraph 70](#): Boiler inventory with unique identifying information is already in Maximo. However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA. This information is accessible to all Maximo users within the Authority.

71. Comptroller's Directive #30, Capital Assets states that,

[I]nventory control and the maintenance and reconciliation of accurate inventory records is an important aspect of safeguarding all assets of value held by the City including those assets classified as Capital Assets.

Accordingly, pursuant to Comptroller's Directive #30, each agency must maintain internal inventory records of all furniture, equipment, and vehicles purchased with capital dollars. Depending on the nature of the asset, at the very minimum, the inventory records at the agencies must contain the following information:

- type of equipment;
- manufacturer;
- serial number;
- location;
- date purchased and received; and
- assigned capital asset number.

72. According to the inventory list provided by NYCHA, the agency reported that it had 1,955 boilers installed at its developments as of September 2018.¹³ However, during our review of NYCHA's annual preventive

¹³ The list NYCHA provided did not include the boiler serial numbers, as required by Comptroller's Directive #30. In addition, instead of providing the date purchased/received, the listing provided the date installed, which is not the same as the date purchased/received. Further, three boilers on the list did not have date installed. In addition, although we ultimately received multiple lists of boilers from

NYCHA Response to Draft Report

maintenance inspections, NYCHA records revealed that 13 boilers were not included on the inventory listing NYCHA provided to us on September 2018. Notwithstanding our discovery of the 13 omitted boilers, for the purposes of this audit, we had to rely on the original inventory listing of 1,955 boilers provided by NYCHA to conduct our analysis because we were not provided with what NYCHA claimed was a complete updated listing until the audit exit conference was held on February 24, 2020, which occurred after the audit testing was completed.

73. Based on the information in the September 2018 NYCHA inventory listing of boilers, we calculated that the average age of its boilers is approximately 21 years. According to NYCHA officials, boilers have a useful life of 25 years. Using the installation dates from data that NYCHA provided us, we determined that in 2019, 907 (46 percent) of NYCHA's 1,952 boilers are past their useful life. As of January 2018, these 907 boilers were located at 115 of NYCHA's 325 developments. A frequency distribution relating to the age of the boilers at the developments is shown in Table II below.

Table II
Age of Boilers at NYCHA
Developments

Age of Boiler	Number of Boilers	Percentage	Number of Developments*
≤5 years	247	12.65%	39
>5 years, ≤ 10 years	101	5.17%	24
>10 years, ≤20 years	400	20.49%	97
>20 years, ≤25 years	297	15.22%	63
>25 years	907	46.47%	115
Total	1,952	1000/0	

*A development may have more than one boiler

NYCHA, the lists each used different information, which makes it extremely difficult to compare the information in the various listing.

NYCHA Response to Draft Report

74. In addition, during the scope of our audit, NYCHA did not maintain its data with unique identifying numbers in the same manner within the data for all of the boilers that would have allowed us to conduct comparative analyses. Instead, in order to perform any meaningful tests, we needed to first manually compile our own listing from various NYCHA listings so that we could then analyze the data. Maintaining an updated and complete inventory listing of boilers with all unique identifying information would better enable NYCHA to track and monitor issues relating to particular boilers, including the number and type of inspections, as well as repairs. An accurate, perpetually updated inventory listing would also aid NYCHA management while making decisions regarding boiler replacements and the applicability of existing warranties.¹⁴ Finally, we note that multiple NYCHA units (e.g., Risk Management, HMSD, Capital Projects Division, Operations, and Central Management) for different reasons, need to know information about the boilers. Effective and efficient decision making would be aided by a single consistent source of information being available for all of the agency to rely on.

NYCHA Response to Paragraph 72 - 74: NYCHA does maintain a boiler inventory with unique identifiers. NYCHA maintains all DOB Mechanical Identification Numbers in JOL for inspection purposes as well as in Maximo. The numbers are assigned by the DOB upon final inspection of an installation. As stated, not all boilers will have this unique assigned number if the boiler does not meet the criteria for annual inspection. These numbers are how the inspection deficiencies are automatically loaded into Maximo to create the work orders.

75. NYCHA officials stated that they were in the process of updating and completing its inventory listing and entering the details into Maximo. Officials did not give a target date for when they anticipated this would be completed. At the exit conference NYCHA officials stated that although this was an on-going process, they believed that they currently do have an updated inventory listing, which they provided to us at that meeting. However, while we were unable to test the accuracy of the information recorded on the list due to the lateness of its production, we were able to see that information required by Comptroller's Directive # 30 was still missing.

Recommendations

76. NYCHA should maintain a complete and updated inventory listing of boilers with unique identifying information, to better enable NYCHA to track and monitor issues relating to each boiler.

NYCHA Response to Paragraph 76: However, under current practices, the asset information is being updated at least annually and as needed as new boilers and ancillary heating equipment comes online. This information is accessible to all Maximo users within the NYCHA. These assets are already identified in the system with a unique asset number. In addition to adding new boilers and removing decommissioned boilers, updates were made to various data fields such as condition ratings and jurisdiction code. Maximo also allows users to capture various attributes/specifications for each boiler asset, such as Horse Power, BTU, MMBTUs, Manufacturer #, Make, Model, Install Date, Fuel Type, Burner Info, etc.

77. NYCHA should ensure that it disseminates its inventory listing to those units within NYCHA that are involved in processes related to the boilers.

¹⁴ An audit report issued by the Comptroller's Office on July 26, 2019 looked into the risks associated with lack of a maintenance program on the warranty of roofs—Audit Report on the New York City Housing Authority's Preventive Maintenance and Repairs on the Roofs under Warranty (Audit # SE18-059A)

NYCHA Response to Draft Report

NYCHA Response to Paragraph 77: NYCHA uploaded the boiler inventory to Maximo for employees to access.

Lack of Evidence That NYCHA Ensured That All Required Boiler Inspections Were Conducted or That It Followed up on Deficiencies

78. NYCHA does not maintain records relating to the performance of required external and internal inspections in a manner that allows the agency to readily track the status of such inspections. Consequently, neither we nor NYCHA can assess the degree to which the agency's boilers are being inspected to ensure that the boilers are up to standards and functioning properly.

NYCHA Response to Paragraph 78: Virtually all operating boilers and hot water tanks were inspected prior to the current heating season.

79. NYCHA has entered into a contract with a private insurance company to perform both DOB mandated external and internal inspections. Pursuant to that contract, NYCHA's Risk Management unit receives the results of both types of inspections conducted by the insurance company. If a boiler fails an inspection, DOB procedures require the inspector to inform the development staff of the deficiencies that resulted in the failed inspection at the time of the inspection. NYCHA must correct the deficiencies by the re-inspection date or DOB may fine NYCHA for its failure to remediate the faulty equipment.

NYCHA Response to Paragraph 79: The implication that the insurance company inspector only informs development staff is incorrect. The inspector also informs HMSD.

80. External inspections of boilers are required by DOB to be performed annually. Their focus is on conditions around the boilers and in the boiler rooms. They include: inspections of water cut-off capacity; the condition of the burners, oil tanks, cold water feeds, pipes, combustion chambers, and the mixing valves; and the location of emergency shutdown switches. DOB specifically requires that low-pressure boilers in residential buildings with six or more families receive an annual external inspection, and the inspection results be filed with DOB.

NYCHA Response to Paragraph 80: Both internal and external boiler inspections are conducted. Those boilers requiring external inspections by DOB are conducted by NYCHA's insurance carrier every 4 years under an agreement with DOB. It is important to note that not all boilers are required to undergo external inspection by the DOB. As a common practice, HMSD staff performs a yearly internal and external inspection of all operating boilers. This process is explained in NYCHA's SOP 060:63:1 on pages 81 - 82. Once the inspection is complete, the inspector enters the inspection results in Maximo and child work orders are created in Maximo to correct the noted deficiencies. As stated above, virtually all operating boilers were inspected prior to the 2019-2020 heating season.

NYCHA Response to Draft Report

81. According to NYCHA officials, internal inspections are conducted to assess the internal safety components of boilers. These inspections are generally performed borough-wide, with one borough inspected every four years. For this purpose, Queens and Staten Island are treated as a single borough and are inspected in the same year. Internal inspections focus on the condition of the boilers themselves, including particularly internal conditions such as of the existence of sediments in internal surfaces, and of the aquastat, a device used to control water temperature.

82. NYCHA does not appear to place a high priority on these inspections as evidenced by the fact that when we requested information about external and internal inspections, the multiple responses that NYCHA provided were incomplete and inconsistent.

83. During the audit, we subpoenaed NYCHA and, among other things, demanded that it provide all documentation relating to external and internal inspections conducted prior to the 2017-2018 heating season.¹⁵ On November 19, 2018, in response to that subpoena, NYCHA provided us with a listing it represented as inspections relating to 1,234 boilers that NYCHA inspected in 2017; 1,045 boilers with only external inspections, 185 boilers with only internal inspections, and 4 boilers that had both external and internal inspections. We were specifically informed that the list "include[d] all inspectable objects requiring annual inspections."

NYCHA Response to Paragraphs 82 - 84: NYCHA provided all information requested and disagree with the counting methodology. The original request had asked for all deficiencies and inspections and was not intended to be used as a count for inspections. Once Risk Management removed the multiple deficiencies and multiple recommendations, the spreadsheet then showed the actual inspections that were conducted. As a result, the count for inspections for the 2017 inspection year is 1,635.

84. On October 28, 2019, towards the conclusion of our audit fieldwork, we asked NYCHA to identify the boilers that did not receive an internal or external inspection and to provide an explanation as to why the boilers had no record of being inspected. We received a response nearly three months later—in January 2020—when NYCHA provided us with a new listing of 1,506 boilers that NYCHA represented had been inspected in 2017; 1,362 boilers with only external inspections, 63 boilers with only internal inspections, and 81 boilers that had both external and internal inspections.

85. The NYCHA official who created both lists stated that the first list represented only those boilers with deficiencies—a marked departure from what the agency asserted when the list was provided—while the second list represented all of the boilers that should have been inspected (according to NYCHA, all of the boilers requiring inspections were inspected). We asked NYCHA to provide a written explanation for the agency's disavowal of its initial representation that the information provided on November 19, 2019 in response to the subpoena was accurate. However, we received no response. NYCHA's failure to provide an explanation significantly limits the degree of reliance we can place on any of its submissions.

NYCHA Response to Paragraphs 84 - 85: The original list included boilers that passed inspection, passed inspection with recommendations and those with deficiencies. There were approximately 3500 entries. Confusion on the part of auditors as to the boiler count led to the production of a revised list supplied by NYCHA

¹⁵ Due to extensive delays in receiving requested information from NYCHA, we issued two separate subpoenas, one on October 30, 2018 and one on November 23, 2018, to obtain information.

NYCHA Response to Draft Report

where boilers with multiple deficiencies or multiple recommendations were removed so that the number of entries was equal to the actual number of inspections. In 2017, there were 1,635 inspections conducted. The inspection inventory still maintains boiler numbers for boilers undergoing replacement until the time that the new plant is turned over and a new device number is assigned by the DOB.

86. In addition, our examination of the two lists revealed conflicting information between them, namely that there were at least 21 boilers recorded on the first list as having been inspected that were missing entirely from the second list, further calling into question the reliability of the data we received. Moreover, NYCHA has not developed a formal system for tracking boilers that are required to be inspected and the status of those inspections.

NYCHA Response to Paragraph 86: The Comptroller did not ask NYCHA about this figure or explain their methodology.

87. NYCHA acknowledged that when this audit was initiated, the agency did not maintain lists pertaining to the external and internal inspections and only started to do so in order to better respond to our inquiries. The official who created the lists stated that he needed to analyze numerous documents that NYCHA received from the contracted insurance companies in order to aggregate the inspection information for the lists. Further, as discussed above, NYCHA does not maintain an updated inventory listing of its boilers, which significantly hinders the ability of NYCHA or the insurance company to keep track of the boilers that need to be inspected.

NYCHA Response to Paragraph 87: NYCHA does maintain a regularly updated boiler inventory. Inspection data is entered into the JOL system by the inspecting company and is used to record inspection results and act as a scheduling tool for the next inspection date. This information is automatically transferred into NYCHA's Maximo system and an inspection work order is generated after the inspection is completed if deficiencies are identified.

88. As a result of the above inconsistencies, we are unable to place adequate reliance on the inspection information provided by NYCHA and neither we nor NYCHA are able to conclusively state the total number of inspections that were performed.

Follow-up of Deficiencies for External and Internal Inspections

89. To date, NYCHA has been unable to tell us whether deficiencies found during external and internal inspections were addressed and provided no evidence of any corrections. NYCHA has been unable to identify all of the work orders that were created to address the deficiencies cited, so we do not know the extent to which the cited conditions were corrected and the amount of time it took NYCHA to address such deficiencies.

90. With regard to external inspections where violations are found, NYCHA is given 180 days to clear each condition. However, neither the inspecting insurance company nor DOB conducts a reinspection to determine if NYCHA has corrected the conditions cited. During the audit, a DOB official stated that the agency has never issued any fines to date for NYCHA boiler deficiencies. However, the official stated that the agency's electronic systems related to its inspections and issuance of violations were updated in 2017 to tie specific boiler inspections to the deficiencies found which would enable DOB to fine and collect any fines or fees for violations through its

NYCHA Response to Draft Report

DOB NOW system. Prior to the upgrade, according to the DOB official, the agency had been unable to do so. Going forward, DOB anticipates issuing fines if NYCHA does not correct boiler and any other deficiencies.

91. We selected a sample of 100 boilers from 651 boilers that were cited for deficiencies during the 2016 external inspections and determined whether the citations associated with those inspections were resolved or identified in connection with the next year's inspection. We found that 35 of the 100 boilers (35 percent) were cited for the same issue in both years. For example, in one instance, a "wrong size relief valve" was cited in both a 2016 and a 2017 inspection report. This condition, if not corrected, can impact the functionality of the boiler and it should have been corrected well before the following year's citation. Yet, the fact that the same condition was cited two years in a row strongly suggests that it had never been corrected.

[NYCHA Response to Paragraphs 90 - 91:](#) In 2017-2018, this was a paper driven process where HMSD would receive a listing of recommendations and required corrections at the end of the inspection year. By the time the list was received, HMSD and the boiler certified inspectors were preparing for the new year's rounds of inspections making the information provided the previous year stale. As mentioned previously, the current improved process incorporates the JOL electronic system used by NYCHA's contracted insurance inspectors that captures their findings and communicates with Maximo to create work orders automatically. The work order description contains details/results of the inspection from JOL. Corrective maintenance work orders can be further generated as desired from this inspection work order.

92. Failure to perform the required inspections increases the risk that the safety and efficiency of the boilers may become compromised. Failure to correct conditions cited for failing to comply with required boiler safety and operational requirements further increases risks to resident health and safety and could increase the likelihood of future losses of heat, especially with regard to conditions that exist year to year without being identified and repaired in a timely manner.

93. NYCHA officials stated that subsequent to the start of our audit, the contracted insurance company has begun uploading external and internal inspection results into a system called Jurisdiction Online, which is now linked to Maximo. For each deficiency identified during such inspections, Maximo is now programmed to generate a work order.

Deficiencies with Preventive Maintenance Inspections

94. To ensure that the boilers are in optimal condition prior to the start of the heating season and to remedy any deficiencies, NYCHA conducts annual preventive maintenance inspections. These preventive maintenance inspections are performed of the heating tanks, vacuum pumps, heating plant equipment, fuel oil storage tanks, fixed air compression in boiler rooms, and the overall heating systems to ensure that the system is prepared for the following heating season. To facilitate these inspections, on January 1st of every year, Maximo generates a Preventive Maintenance Work Order for each boiler. Thereafter, the development-based heating superintendent schedules the annual Preventive Maintenance inspections for heating staff to conduct prior to the start of the following heating season. If deficiencies are found during inspections, heating staff are supposed to create work orders which will cause the appropriate staff to correct the deficiencies.

NYCHA Response to Draft Report

95. As stated previously, NYCHA had 1,917 boilers at the start of the 2017-2018 heating season.¹⁶ Based on NYCHA data from Maximo, prior to the 2017-2018 heating season, NYCHA staff reportedly conducted preventive maintenance inspections for 1,618 boilers (84 percent), located at 325 developments during that time period.¹⁷

96. In response to our request for all of the deficiencies that resulted from the preventive maintenance work orders, NYCHA provided us with list of 290 work orders for 125 boilers at 68 developments. However, during our scope period, when creating work orders in Maximo, NYCHA staff did not specify which work orders were generated to address deficiencies cited during the annual preventive maintenance inspections. As a result, we were unable to establish the total number of deficiencies that resulted from the 1,618 preventive maintenance inspections and the total number of work orders that were created to address those deficiencies, or assess the degree to which they were reportedly resolved.

NYCHA Response to Paragraphs 95 - 96: Prior to the 2019-2020 heating season virtually all boilers were inspected and underwent required preventative maintenance, with the exception of those in boiler rooms which are under construction.

97. It is essential for management to be aware of the current state of each of its boilers and the types of repairs that are needed to keep them operational, especially since 907 (46 percent) of NYCHA's boilers are past their useful life of 25 years, according to information provided by NYCHA. Failure to perform the required inspections and subsequent repairs increases the risk that the safety and efficiency of the boilers may become compromised and not be repaired in a timely manner.

98. NYCHA officials stated that subsequent to the start of our audit, staff were instructed to note within Maximo whether a work order has been created to address a deficiency cited during a preventive maintenance inspection. However, associating work orders with deficiencies would still be difficult and labor intensive since it would necessitate sorting through all of the work orders opened during Calendar Year 2018 to identify the work order that corresponds to the deficiency cited during the preventive maintenance inspection.

NYCHA Response to Paragraphs 97 - 98: In the 2017-2018 heating season preventative maintenance work orders were heavily paper driven. Today, corrective and preventative maintenance work order have a parent/child work order relationship to track each in Maximo.

Recommendations

99. NYCHA should establish a formal system for documenting its tracking of all boilers that require inspections and the status of such inspections so as to ensure that all boilers receive the required internal, external, and preventive maintenance inspections in a timely manner and that deficiencies found during the inspections are

¹⁶ NYCHA's records indicate that 38 boilers (from the list of 1,955 boilers provided to us) were installed during or subsequent to the 2017-2018 heating season.

¹⁷ The 1,618 boilers with preventative maintenance inspections includes 13 boilers that were not included on NYCHA's inventory listing.

NYCHA Response to Draft Report

corrected within the time frames mandated by applicable law, rules, regulations, and agreements with external oversight agencies.

NYCHA Response to Paragraph 99:

NYCHA does have a system to track all boilers that require inspections. All boilers and hot water heaters that require inspections are tracked to completion by NYCHA's Boiler and Machinery Insurance Carrier through their system JOL, which schedules the inspections to be conducted each year. Any boiler that was missed for any reason in the previous inspection cycle becomes the first to be inspected in the next cycle. In February 2019, a process change was implemented to integrate the inspection software (JOL) with Maximo to automatically create work orders from deficiencies found during the inspection. This is more efficient, transparent and accessible to all pertinent stakeholders. HMSD tracks, monitors and resolves issues as required. Once the requisite to cure a violation is completed, DOB reviews and approves the work and violations are cleared.

100. NYCHA should continue its efforts to develop a tracking system that would allow it to identify the work orders created to address deficiencies identified during inspections so as to be able to track the repairs and the timeliness of those repairs.

NYCHA Response to Paragraphs 100: NYCHA IT worked with JOL to create an interface that auto-creates work orders for each deficiency directly into NYCHA Maximo work order system. As stated above, NYCHA does maintain a tracking process that identifies the work orders created to address deficiencies.

DETAILED SCOPE AND METHODOLOGY

101. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, 593, of the New York City Charter.

101. The scope of this audit covers the period from January 1, 2017 through May 31, 2019. During that time we experienced extensive delays as a result of delays in receiving requested information from NYCHA that was necessary to conduct the audit. We issued two separate subpoenas, one on October 30, 2018 and one on November 23, 2018, in order to obtain the information, which we eventually received.

NYCHA Response to Paragraph 101: Note, the audit period quoted above contradicts the previously stated scope of the 2017-2018 heating season.

102. To gain an understanding of NYCHA's policies and procedures regarding the provision of heat to NYCHA residents, we reviewed the following information obtained from various NYCHA departments and personnel, the agency's website, and statutory regulations:

- NYCHA Standard Procedure Manuals S.P. 060:63:1 — Space Heating and Domestic Hot Water, issued on May 25, 2016 and October 4, 2018.

NYCHA Response to Draft Report

- Housing Maintenance Code, Chapter 2 Section 27-2033 — Access to boiler room; Section 27-2029 Minimum temperature to be maintained; Section 27-2055 Certification of competency; Article 8 — Heat and Hot Water Section 27-2028.
- New York State (NYS) Public Housing Law 151 — Authority construction contracts, cancellation of contracts, disqualification to contract with authority, statement of non-collusion in bids or proposals.
- NYS Public Housing Law 151-a — Separate specifications for certain subdivisions of work involved in the construction or alteration of buildings as a part of or in connection with housing projects.
- Contract Procedure Resolution — General Procurement Policy — Article I — General Provisions.
- NYC Heat and Hot Water Law Information.
- MOU between NYCHA and DEP regarding Title 15, Chapter 2 of the Rules of the City of New York.
- DEP Bureau of Environmental Compliance regulations regarding the different categories of boilers and the types of professionals who are qualified to complete the registration process with the agency.
- Requirement Contract specifications for rental and installation of mobile steam or hot water heating boilers, heat exchangers and mobile oil tanks.
- CCC information used by residents who need to report emergencies and/or schedule routine maintenance repairs in their apartments.
- SIEBEL and Maximo Priority Levels governing the response and resolution time frames assigned to the various service requests.
- The complaint filed by the US Attorney for the Southern District of New York, United States v. New York City Housing Authority. 18 Civ. 5213 (June II, 2018).
- The proposed Consent Decree submitted to the Court on June 11, 2018 in connection with United States v. New York City Housing Authority. 18 Civ. 5213 (June II, 2018).
- The Agreement entered into between HUD, NYCHA, the City, and the United States Attorney for the Southern District of New York on January 31 , 2019.

103. To obtain an understanding of the process in place to record, address, investigate and resolve resident heating issues, we interviewed the following NYCHA personnel:

- The Director and Deputy Director of Heating Management Services - to obtain an overview of the steps that the department takes to address heat-related issues.
- The Team Manager of the CCC - to obtain an overview of the department's operations and the options available to residents when notify NYCHA of their heating and/or maintenance issues.
- The Senior Deputy Director of Information Technology - to obtain an understanding of the operations and capabilities of the SIEBEL and Maintenance and Asset Management System (Maximo) systems.
- The Acting Director of Emergency Services Department - to obtain an understanding of the department's responsibilities regarding heat emergencies/repairs throughout the evenings and the night.

NYCHA Response to Draft Report

- Two Heating Administrators - to obtain an understanding of the procedures adopted in investigating and resolving resident heating complaints, as well as the steps that NYCHA takes to prepare the boilers and heating plant during the preventive maintenance inspections.
- The Director of Risk Management - to obtain an overview of the procedures regarding the external and internal boiler inspections by the insurance contractor.
- A Heating Plant Technician - to obtain an overview of the responsibilities assigned to the staff responsible for maintaining the boilers and performing heat-related repairs.
- Officials from NYCHA's Capital Planning, Quality Assurance Compliance, and Project Management units — to obtain an understanding of NYCHA management's strategies and long term goals, regarding the provision of heat to residents and responding to heat outages in a timely manner, as well as its oversight efforts of the work completed.

104. To assess the accuracy and reliability of the data maintained in NYCHA's computer system — Maximo - we obtained a list of 1 67, 752 heat-related work orders for the 2017-2018 heating season and reviewed the data to determine whether it is reasonably complete and accurate and whether all fields were populated.

105. To determine whether NYCHA was in compliance with its 24 hour-targeted goal for closing out initial no-heat work orders, we calculated the length of time it took to close such work orders. We calculated the time frame in 24 hour bands; specifically, work orders closed in 24 hours or less, 48 hours, 72 hours, 96 hours, 120 hours, and more than 120 hours.

106. We assessed the controls that NYCHA had in place to ensure that the work orders were closed out properly, that supervisors inspected and reviewed the closed work orders and that residents were satisfied with the work performed. To determine whether NYCHA elicits resident feedback regarding the agency's response to heat complaints and whether survey results are used to make management decisions, we reviewed the tools used by NYCHA to obtain feedback and requested the results and analysis of the feedback.

107. To determine the number of heating staff that NYCHA employed from 2015 through June 2018 to address resident heating issues, we obtained the listing of staff whose titles qualify them to perform heat-related tasks and repairs. From the listing we removed from consideration those workers that were no longer employed by NYCHA because of termination or resignation, the ones that retired, and the ones that were removed from the title because of a title change.

108. To determine the number of boilers that NYCHA used to provide heat to residents in the developments, including the age of the boilers, we reviewed the boiler inventory listing that we received on September 2018, consisting of 1,955 boilers, as well as the dates that the boilers were installed. We also used this information to calculate the number of boilers that were operating past their useful lifespan. We eliminated 38 boilers that were installed during 2018 and used the data for 1,917 boilers that were already in use during the time period that external, internal and preventive maintenance inspections should have been performed.

NYCHA Response to Draft Report

109. To obtain an understanding of the aspects involved in an external and internal boiler inspection, we observed an external inspection conducted by an insurance company contracted to conduct the inspections.¹⁸

110. To determine whether NYCHA conducted the required annual preventive maintenance inspections, we reviewed the population of corrective maintenance work orders and extracted those that were designated as preventive maintenance. We identified that NYCHA conducted preventive maintenance inspections for 1,618 boilers and we requested the work orders that were generated to correct the deficiencies cited during the preventive maintenance inspections.

111. The results of the above tests, while not statistically projected to their respective populations, provided a reasonable basis for us to assess whether NYCHA management has adequate controls to provide heat to residents and to address and resolve heating issues during the heating season.

¹⁸ The contracting company is Continental North America.