



MONITOR REPORT MEASURING NYCHA'S COMPLIANCE WITH THE HUD AGREEMENT

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Submitted by:

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I. Introduction

The HUD Agreement (“Agreement”) commits NYCHA to meet specified performance standards for its provision of key residential services. These service areas (collectively, “pillar areas”) include heating system and elevator maintenance and operations, lead-based paint (“lead”) and mold/leaks remediation and abatement, waste management and pest control, and annual apartment/PHAS inspections. NYCHA, in consultation with the Monitor, HUD, and SDNY, has established a series of metrics to measure its performance in these pillar areas over time. This report provides details on those metrics and NYCHA’s progress in satisfying the Agreement’s mandates, based on data acquired through the end of October 2022. We also discuss the Monitor’s role in supporting NYCHA’s development of additional metrics and in verifying the accuracy of NYCHA’s corresponding data. This report does not include many recommendations as those are provided to NYCHA in our quarterly Monitor reports and as part of our regular interactions with pillar supervisors. Going forward, the Monitor will be issuing performance metrics summaries for each pillar area on a regular basis (likely quarterly) which will provide updates on NYCHA’s compliance with Agreement obligations and other important metrics.

As this report describes, NYCHA, with the support of the Monitor and HUD, has made major strides since the start of the monitorship to improve both the collection and strategic use of its data. These efforts have increased NYCHA’s understanding of key performance metrics as well as the root causes of service breakdowns, enabling NYCHA to reduce interruptions and provide better service to its residents.

II. Background

NYCHA’s performance is measured somewhat differently in each pillar area. For example, for heating and hot water systems, as well as elevators, the performance metrics generally reflect data about negative events, such as the number of interruptions in service delivery and their duration. The fewer the service interruptions and the shorter their duration, the better the performance. Conversely, in the other pillar areas, including mold/leaks, lead, pest infestations and waste management, the main performance metrics are positive. These include data such as the amount, frequency, and effectiveness of remedial work as measured by quality assurance inspections.

Most of the operational information underlying these metrics is contained in NYCHA’s work order system, called “Maximo.”¹ Work orders are records of scheduled maintenance, repairs, and emergency response conditions. Work orders are typically initiated when NYCHA residents request an appointment for repair or maintenance within an apartment, or public spaces, or when NYCHA staff observe issues in units, buildings, grounds, equipment, *etc.* NYCHA staff enter data directly into Maximo after completing work

¹ Maximo is an IBM electronic information platform. NYCHA’s Capital Division mainly uses another data platform called *e-Builder* to house and organize its information and documents regarding its capital projects.

orders. While contractors and other vendors do not have direct access to Maximo, their work is also supposed to be entered into Maximo by NYCHA staff.

The amount of work order data is massive. Maximo currently contains approximately 33,700,000 open and closed work orders. This wealth of data can be used by NYCHA to better understand repair and maintenance issues and to improve staff performance.

Since 2019, NYCHA, the Monitor, and HUD have worked together to develop “dashboards” for each pillar area and for key capital projects that provide real-time performance reporting based on the data in Maximo.² These dashboards allow users to analyze NYCHA’s efficiency in multiple areas and at multiple levels – organizationally and by neighborhood, borough, development, and unit.

Data analysis alone, however, cannot provide a comprehensive measurement of NYCHA’s performance. Proper measurement must also include validation of the data, including whether the activities reported in the work orders were *properly and completely* done. Thus, the Monitor conducts its own field inspections and interviews to determine the adequacy of the work performed. In addition to monitoring NYCHA’s performance against HUD Agreement metrics, the Monitor performs additional analyses on issues impacting NYCHA’s operations to further understand the root causes of these problems. For these analyses, the Monitor, often working with NYCHA’s Performance Tracking & Analytics Department (PTAD) and the Environmental Health & Safety unit (EHS), also uses Maximo data. Both the data dashboards and the Monitor’s review efforts are described in detail below.

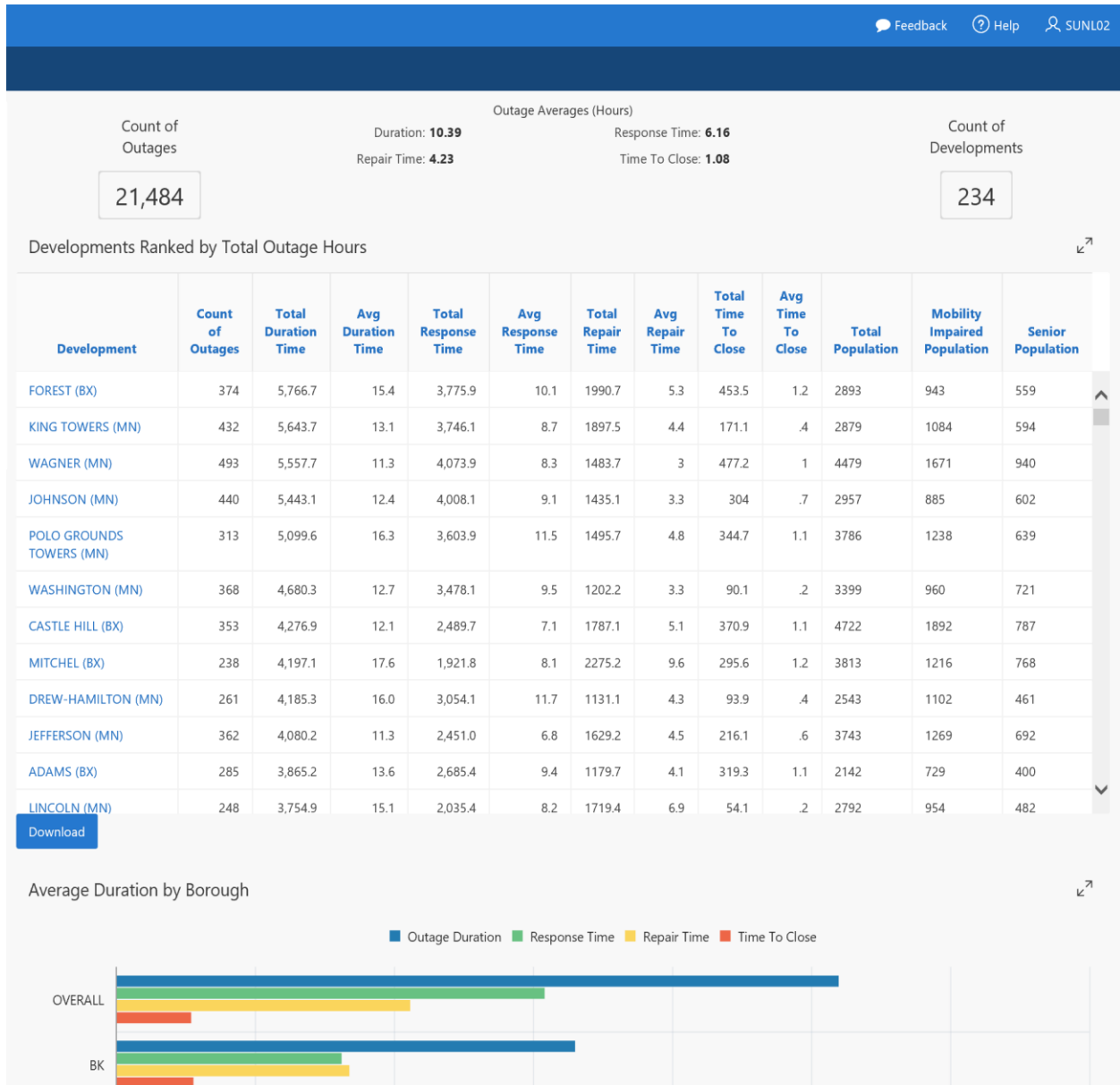
A. Data Dashboards

Through NYCHA’s dashboards, users can monitor and analyze the total number of open work orders in each pillar area and the time required to complete them. Work order backlogs can be diagnosed and investigated. For example, elevator and heat dashboards incorporate outage maps to identify various locations affected by no-service conditions across the organization.

NYCHA uses Maximo data to continuously update these dashboards, disclosing performance trends over time. This capability supports informed decision-making and allows for quick identification of data outliers and correlations. The ability to review work order data also allows NYCHA and the Monitor to connect identified issues with potential root causes of operational breakdowns. Root cause identification assists NYCHA in isolating priority areas for improvement in order to prevent future emergencies such as recurring heat or elevator outages or widespread pest infestations. For example, NYCHA’s elevator department has been working with the Monitor to use outage and repair data to improve elevator maintenance, which helps to reduce the number of future equipment breakdowns.

² The Monitor’s data team works with NYCHA – primarily the PTAD, the Strategy and Innovation Unit, and the IT Unit – to ensure there is agreement on the “business rules” used to establish parameters for the data analysis.

A specific dashboard tracks and provides analytics on NYCHA’s progress in meeting its HUD Agreement obligations, such as those related to outages, pest remediation, and development cleanliness. In many instances, Agreement obligations, and compliance therewith, embrace clusters of conditions where operational issues reoccur that indicate trends or underlying breakdowns. This dashboard gives an overview of these clusters in one place, simplifying the analysis in a reader-friendly format. For example, below is a screen shot from an elevator dashboard showing key Agreement requirements concerning the number and duration of service outages by development.



The above screenshot is from the Agreement dashboard reporting on elevator outages by development. It is used to track key Agreement obligations, such as resolution of outages within specific timeframes and improvement in average outage durations. In addition, this dashboard also provides information about those impacted by outages, particularly vulnerable populations such as mobility-impaired and senior residents.

In addition to measuring NYCHA's performance per the Agreement, most pillars have multiple dashboards that measure performance metrics pertinent to that service area. For example, NYCHA has been restructuring its Heating Management Services Department ("HMSD") over the last several months to improve its ability to provide heat and hot water to residents. A key aspect of this process is ensuring that development boilers are properly overhauled before the heating season starts on October 1st. NYCHA has been holding weekly meetings with the Monitor heat team and HUD to report on its progress and hear reports from HMSD supervisors on any challenges they are having in completing the work, and has created a dashboard for that purpose, as shown below. This data enables the parties to focus on problem areas and find solutions where progress has been slow.

Year
 Job Plan

**This report is a Year by Year comparison of the completion rate of Annual Overhaul Inspections as of Aug 16 of that year*

Annual Overhaul Inspections															
Annual Boiler PMs - PMBOILER															
HeatVendor	Geographical Borough	June Goal	July Goal	August Goal	September Goal	2021					2022				
						Total Inspections	Completed	% Complete	Remaining Inspections	% Remaining	Total Inspections	Completed	% Complete	Remaining Inspections	% Remaining
GSH	Brooklyn	25%	50%	75%	100%	13	13	100%	0	0%	13	13	100%	0	0%
	Manhattan	25%	50%	75%	100%	20	12	60%	8	40%	20	15	75%	5	25%
	Queens	25%	50%	75%	100%	27	20	74%	7	26%	27	26	96%	1	4%
NATGRID	Bronx	25%	50%	75%	100%	9	9	100%	0	0%	9	9	100%	0	0%
	Brooklyn	25%	50%	75%	100%	56	52	93%	4	7%	57	56	98%	1	2%
NYCHA	Queens	25%	50%	75%	100%	7	6	86%	1	14%	7	7	100%	0	0%
	Bronx	25%	50%	75%	100%	159	92	58%	67	42%	167	116	69%	51	31%
	Brooklyn	25%	50%	75%	100%	133	101	76%	32	24%	133	111	83%	22	17%
	Manhattan	25%	50%	75%	100%	177	121	68%	56	32%	170	135	79%	35	21%
	Queens	25%	50%	75%	100%	40	30	75%	10	25%	37	33	89%	4	11%
Staten Island	25%	50%	75%	100%	30	25	83%	5	17%	30	28	93%	2	7%	
Grand Total						671	481	72%	190	28%	670	549	82%	121	18%

Annual Boiler PMs - PMHYDBLR															
HeatVendor	Geographical Borough	June Goal	July Goal	August Goal	September Goal	2021					2022				
						Total Inspections	Completed	% Complete	Remaining Inspections	% Remaining	Total Inspections	Completed	% Complete	Remaining Inspections	% Remaining
NYCHA	Bronx	25%	50%	75%	100%	195	126	65%	69	35%	181	161	89%	20	11%
	Brooklyn	25%	50%	75%	100%	278	239	86%	39	14%	284	257	90%	27	10%
	Manhattan	25%	50%	75%	100%	165	123	75%	42	25%	145	135	93%	10	7%
	Queens	25%	50%	75%	100%	2	0	0%	2	100%	2	2	100%	0	0%
Grand Total						640	488	76%	152	24%	612	555	91%	57	9%

The above dashboard is refreshed on a daily basis and is used to track the progress of annual summer overhaul activities for NYCHA-managed boilers, as well as sites managed by third-party vendors National Grid and GS Hall. NYCHA generally maintains and operates two types of boilers, steam boilers and hydro boilers, and the two tables show current progress of annual overhaul for both types. Information in the table is displayed by the party responsible for performing the overhaul work, NYCHA or vendors. The left half of the tables displays the goals set for the work by months, while the right half of the table shows current progress against those goals. 2021 data is also provided to enable comparison with current year.

As discussed in more detail below, the Monitor team reviews this dashboard and conducts field inspections to verify the data. The Monitor team has been examining boilers to determine whether the overhaul work was adequate and complete. When discrepancies are found, we report to NYCHA immediately and NYCHA takes corrective action, which may include counseling supervisors or retraining line staff.

B. Monitor Field Inspections and Reporting

As important as reliable data is, the only way to know what is happening across NYCHA – to determine whether improvements are taking place and to assess compliance with the Agreement – is to physically see what is happening at the developments and hear directly from the residents and staff. Thus, the Monitor team’s constant on-site inspections of the grounds and in the buildings, basements, boiler rooms, elevators and apartments, and our regular interactions with residents and NYCHA staff, are critically important to our assessment of progress. The Monitor team documents its findings from its field work in reports that are shared with NYCHA and HUD. As described below, NYCHA’s internal oversight units – Compliance, Quality Assurance (QA) and EHS – conduct their own field inspections to assess and evaluate NYCHA’s performance and identify operational breakdowns and often work collaboratively with the Monitor team.³ The Monitor and these three internal units document their findings in reports and share them with NYCHA and HUD.

1. Field Inspections

Experienced field examiners who conduct the on-site reviews have been part of the Monitor team since its inception. Each field examiner is assigned about 8 or 9 developments to inspect. They visit those developments daily, speaking with staff and residents and viewing conditions. Every field examiner has gotten to know the people who live and work there, the physical conditions of the developments, and the challenges in providing core services to the residents. The field teams perform in-depth investigations on site to identify contributing factors and when possible, root causes, for specific problems. The Monitor uses this data in collaboration with NYCHA to make recommendations and formulate plans for corrective action.

The field examiners also regularly check NYCHA’s compliance with various Agreement pillar obligations, including whether (i) residents have been properly notified of heating and elevator outages, (ii) staff are using lead safe work practices to remove lead from units, (iii) trash is being timely removed from development premises, and (iv) maintenance workers are properly performing mold inspections and abatement. They take particular notice of any safety and security issues (e.g., broken hallway trash chute doors, broken exterior doors, broken or missing building security cameras, motor bike or other obstructions in resident hallways, *etc.*) and immediately report them to NYCHA. The appropriate team at NYCHA, whether it be property management or a specific operations unit, generally creates a plan to address the issue and then reports back to the Monitor team on progress.

Further, the field examiner team regularly collaborates with NYCHA units to improve residential conditions. For example, as described in more detail below in Section III.C, the

³ The Agreement obligated NYCHA to work with the Monitor to establish three new internal oversight units – EHS, QA, and Compliance. These units have been operational since mid-2019 and have been effective in their work investigating, assessing, and improving NYCHA’s operational performance. They also make recommendations to help improve performance and correct any deficiencies found.

field examiners have been conducting pilot waste management inspections, providing NYCHA's Waste Management Department with detailed field reports to document development conditions. To enhance this process, the Monitor team's data analytics staff developed a "Waste Management Measurement App," or "WAMMA," which can be uploaded on a tablet or iPhone. WAMMA enables inspectors to easily input and organize field inspection results, and to share that information with NYCHA in real time. The Monitor has offered this technology to NYCHA so that it can create its own field inspection applications.

The Monitor team's inspections also capture problems that affect other service areas such as heating (e.g., broken basement waste pipes that leak and corrode the boilers underneath them) and elevators (e.g., constant litter and other debris that obstruct elevator doors). The Waste Management Department uses these reports to guide local staff in improving waste management practices.

The field examiners also collaborate with NYCHA's EHS and QA units, focusing especially on vendor work at the developments. For example, starting with NYCHA's Clean Building Initiative at the beginning of 2020, the field examiners and QA have partnered to evaluate the work of pest exterminator vendors. Field examiners have also partnered with EHS's pest oversight team to assess the work of NYCHA's own pest exterminators. Additionally, whenever the field examiner team hears of possible wrongdoing by NYCHA staff or vendors, that information is shared with QA, which either investigates on its own, or in tandem with the Monitor team.

When technical expertise is required, the Monitor team's experts can assist the field examiners in assessing pillar-specific conditions, including heating, elevators, pest control and the capital projects required by the Agreement. Much of this work is focused on verifying NYCHA's data and metrics to determine whether work was completed in accordance with NYCHA's standard procedures. Examples include verifying the proper completion of heating preventive maintenance and repair work, pest control extermination, and related maintenance work in units. Capital projects management experts on the Monitor team perform regular field inspections of NYCHA projects related to heating, elevators, waste management and building infrastructure upgrade construction.

The Monitor's technical experts also collaborate with EHS's technical experts, especially on elevators and heat (e.g., assessing boiler room conditions and elevator PM), performing field inspections, assessing the quality of maintenance and repair work on essential equipment, and marshaling techniques for using Maximo data more effectively. When the Monitor heat team created the structure for our field inspection reports, we incorporated many of the ideas from EHS's existing "smart sheet" heat reports.

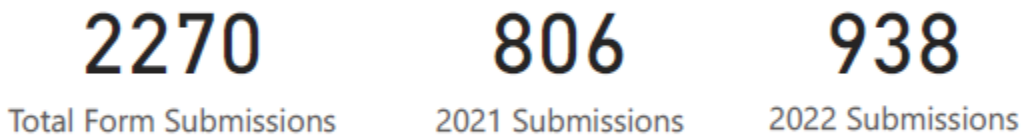
The field and technical team inspections do more than just search for areas within NYCHA needing improvements. The field visits also inform discussions with NYCHA regarding developments and departments whose processes and procedures are working well, identification of those factors contributing to such success, and exploration of the means

to replicate that success elsewhere. For example, it comes as no surprise to see that those developments whose staff have been properly trained and who are properly supervised meet more of the metrics required by the Agreement than developments where staff performance is lackluster.

2. Reporting Findings

The ability to capture and communicate what the Monitor field and technical teams see is as essential as the inspections themselves. The Monitor team mainly uses a mobile data and analytics platform called “Fastfield” for that purpose. The Fastfield software organizes data to evaluate trends and identify functions where NYCHA has progressed, as well as functions needing improvement. As indicated in the graph below, the Monitor team to date has recorded in Fastfield over 2,200 field investigation visits associated with over 220 developments – a significant portion of NYCHA’s portfolio.

GPS NYCHA Mobile Form Submissions Dashboard
Performance Overview
From 2019 to September 2022

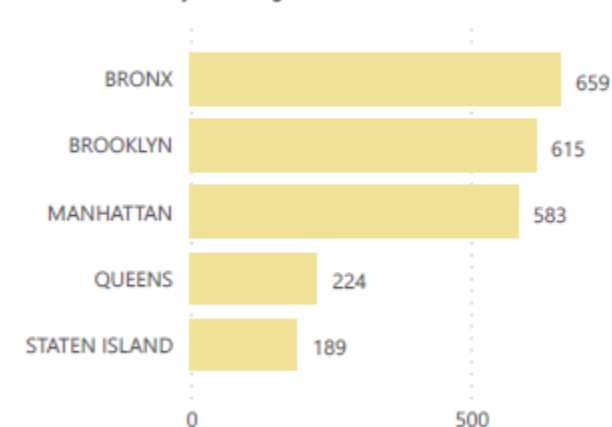


- 6% increase in September 2022 compared to September 2021
- 21.9% decrease in September 2022 compared to August 2022
- In September 2022, 36.5% more Field Reports were submitted than WAMMA (56 vs. 41)

Total Submissions by Month and Year

Month	2019	2020	2021	2022	Total
1		6	42	90	138
2		5	53	63	121
3		15	57	106	178
4	5	3	64	110	182
5	43	5	44	119	211
6	48	2	55	105	210
7	66		61	109	236
8	23		49	132	204
9	29	55	97	103	284
10	13	64	91	1	169
11	19	41	104		164
12	7	77	89		173
Total	253	273	806	938	2270

Submissions by Borough

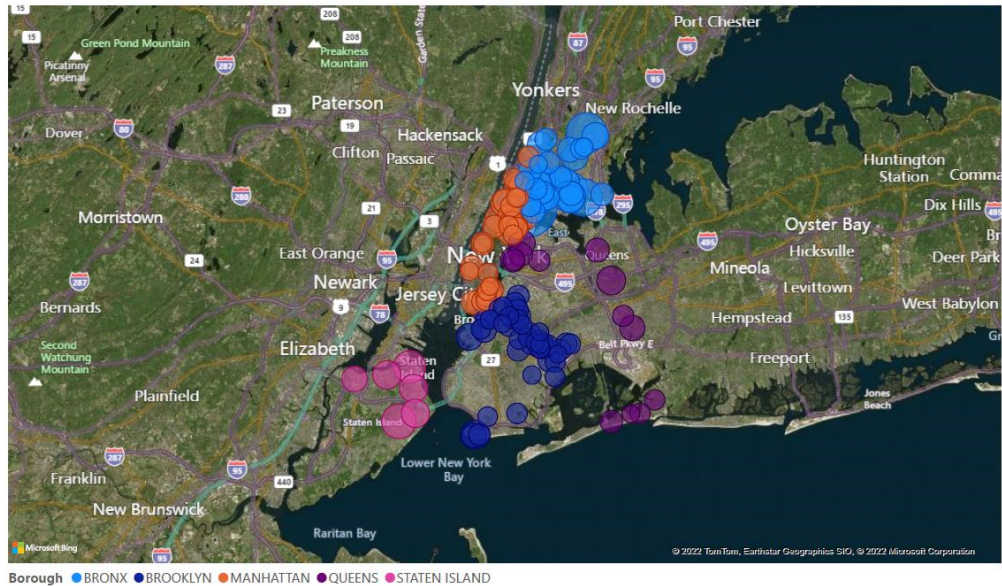


An immense amount of information is collected during the on-site visits. The Monitor team employs advanced sorting, searching, and mapping capability to analyze the information from the compiled reports by areas of interest. The figure below shows the highest level

of an interactive map of the field investigation results. Users may drill down and view summary data by borough, neighborhood, or development. The data may also be sorted by field investigator, reason for the visit, issues addressed, and other categories. Even more targeted search capability allows the Monitor to investigate issues that affect resident experience, such as broken exterior doors, broken trash chute doors (a serious fire hazard), or the illegal presence of homeless individuals living in development basements, stairwells, and roofs.

GPS Field Examiner Reports Dashboard
Most Visited Heat Map by Borough - Since 09/2020

Borough	#Field Reports
BRONX	517
MANHATTAN	355
BROOKLYN	293
QUEENS	114
STATEN ISLAND	110
Total	1389



The three major subject categories of Monitor field reports are (i) general development conditions, (ii) development waste management conditions, and (iii) heat inspections (which include elevator and motor room inspections). Of the total 2,270 Fastfield reports created through September 2022, almost 1,400 cover general development conditions, approximately 700 focus on development waste management conditions, and close to 170 are heat field reports.

Below are excerpts from a recent boiler room inspection and a link to a complete heat field report. During the heating season, these reports generally focus on outages, needed repairs, and other conditions that should be immediately addressed. During the summer, the emphasis is on HMSD’s summer preventive maintenance program, including whether the work is being properly completed (especially boiler overhaul work) and whether additional maintenance or repair work is required. Because our heating inspections are conducted by experienced technicians, we offer assessments and recommendations as part of our reporting.

For illustrative purposes, below are portions from a recent summer Monitor heating field report. The report included photos documenting the condition of the boilers and other key heating equipment in the boiler room – here, a condensate tank (which prepares the water

for the boilers) and an instantaneous hot water heater (which heats hot water for the units). Additionally, the reports include general boiler room conditions that can affect the overall operations such as drains that are not working properly.



Butler Boiler #3 Control panel



Butler Boiler #3 Front view



Butler Boiler #3
Right side clogged overflow trough



Butler Boiler #3 Left side



Butler Condensate Tank
Missing insulation



Butler Instantaneous Hot Water Heater
with Leaking Flange



Butler Floor drainage clog



Figure #: Butler Floor drainage clog

Every heating field report concludes with a summary of observations made during the inspection. The narrative relating to the heating equipment is as follows:

The Butler Houses Heat Plant has six (6) low pressure boilers manufactured by Easco Boilers with manufacturing dates labeled as 1999. Each boiler is gas-fired with an oil back-up feed. This year the AOPM (boiler overhaul) work is being shared by XXX (vendor name) (assigned to Boilers #1, #2, #3) and NYCHA HPTs (assigned to Boilers #4, #5, #6).

Heat Plant maintenance is done by two (2) NYCHA HPTs, one of which was on site during our visit. Plant and systems appear very well kept.

Boiler #1: (Serial # 9867) - middle-aged and off-line (0 PSI). Awaiting overhaul work by XXX (vendor name). AOPM has not been completed yet. Boiler has been very well maintained; however, the trough is rusted through and needs replacing.

Boiler #2: (Serial # 9869) – middle-aged and off-line (0 PSI) with AOPM 100% completed by XXX (vendor name). The trough also needs replacing. The boiler remains offline for two reasons:

- 1. Awaiting delivery and installation of needed flame scanner.*

2. *Recurring leak from rainwater from the above storm trap pours directly onto Boiler #2's burner.*

Boiler #3: (Serial # 9871) – middle-aged and on “standby” with a pressure reading of 6.5 P.S.I. Boiler repeatedly switches to “standby” and requires NYCHA OBM's to service controls. Also, both trough drains are obstructed and need snaking.

Boiler #4: (Serial # 9870) – middle-aged and offline with a 0 PSI pressure reading. Also needs repairs including a “Five Head” manifold and previously ordered flame scanner before restarting. AOPM to follow completion of Boiler #5 overhaul.

Boiler #5: (Serial # 9872) – middle-aged and presently off-line at 0 PSI. AOPM is 90% complete with only newly refurbished handholes and manhole needing to be re-installed. However, a fire in the control panel destroyed the transformer requiring replacement by NYCHA OBM's and like Boilers #2 and #4, this boiler requires a fire scanner replacement as well.

Boiler #6: (Serial # 9868) – middle-aged, online at 10 PSI and the only boiler servicing the development's summer needs currently. Operating without any needed repairs.

Boiler Summary:

1. *XXX (vendor name) completed AOPM on Boilers #2 and #3. Boiler #1 AOPM is incomplete.*
2. *NYCHA will complete AOPM on Boiler #5, move to Boiler #4 but cannot shutdown/start AOPM on Boiler #6 until back ordered parts are received /installed on Boilers #4 and #5.*

Heating Distribution System:

System is old but very well maintained. Recently replaced King Valve solved the only recent heating leak. However, as specified earlier, the storm water trap leaks and allows rainwater onto Boiler #2's burner continuing to keep Boiler #2 off-line.

Condensate Tank:

General condition of Condensate Tank is middle aged and in good condition. All three (3) Condensate Pumps are operating. Feedwater Control valve is working with bypass closed and occasional overflow. The water analysis is done daily with the water treatment schedule done by NYCHA three (3) times a week.

Link to Full Heat Report- <https://filecloud.guidedpostsolutions.com/url/ecrngghizbx5bjhr>

The Monitor's field inspections and reports are not only essential for assessing NYCHA's performance and compliance with its Agreement obligations, they also are an invaluable tool to assist NYCHA supervisors in better understanding where staff performance is working, as well as areas where corrective measures must be taken.

III. Performance by Pillar Area

In this section, we describe general metrics trends in each pillar area and assess NYCHA's compliance with its Agreement obligations.

A. Heating Systems

This section focuses on NYCHA's performance for the most recent complete heating season (October 1, 2021, through May 31, 2022).⁴ The main performance indicators under the Agreement are the number and duration of heating outages. Outages are

⁴ As we are now in the early weeks of the new heating season, we will be providing updated performance metrics for the current heating season in the first Monitor Quarterly Report for 2023.

situations in which multiple apartment units experience temperatures below legal requirements.⁵ At a minimum, outages affect an entire building stair hall, but they can also extend throughout the building or encompass an entire development. The root cause is generally a single source – often a malfunctioning boiler or major blockage in the building’s steam heat system – that cuts off sufficient heat to affected units.

Heating outages at NYCHA are both *planned* and *unplanned*. NYCHA creates planned outages when it is necessary to shut off heat and/or hot water to perform heating equipment repairs. For example, it is sometimes necessary to shut off boilers to install valves to control the heat distribution in a building.⁶ Unplanned outages, on the other hand, are unintended heating service disruptions that affect multiple apartments. They are generally caused by breakdowns in NYCHA’s heating equipment but can also be caused by conditions beyond NYCHA’s control, such as electrical, gas or water outages that result in the shutdown of NYCHA’s boilers and related equipment.

The duration of an unplanned outage is measured from the start of the heating service disruption to the point when apartment temperatures return to proper levels after the cause of the disruption is fixed. For example, if a water main break cuts off water to a development and shuts off the boilers, the duration of the unplanned outage is the time between the boiler shutdown and when apartment temperatures return to proper levels after the boilers are operational again.

The Agreement requires that NYCHA meet the following specific performance metrics with respect to outages (which include both planned and unplanned outages):

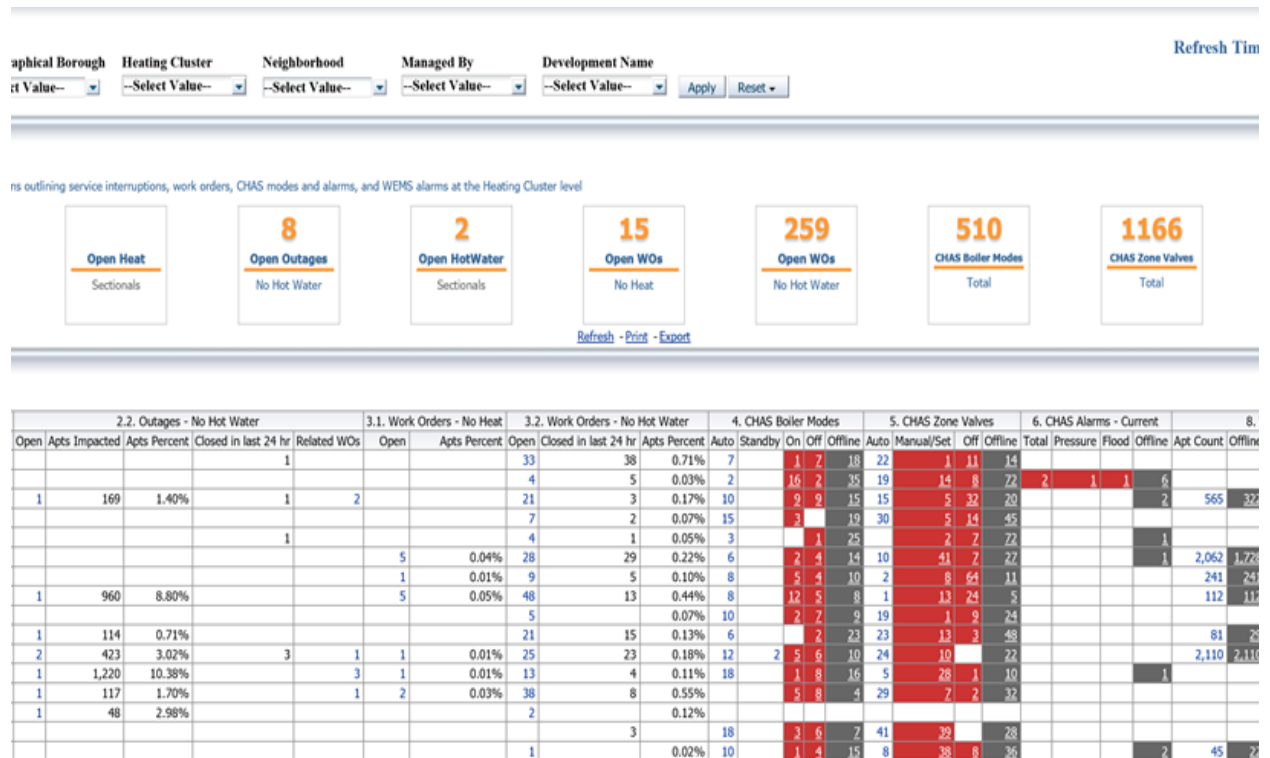
- restore heat to units affected by a heating shortage within an average 12 hours;
- restore heat to 85% of affected units within 24 hours;
- investigate the root causes of heat outages that exceed 12 hours.

The Monitor team, NYCHA, and HUD also examine the root causes and underlying factors that contribute to heating outages and their duration. This includes operational factors such as the frequency and thoroughness of preventive maintenance and the timely repair of heating equipment. As described below, the Monitor evaluates the quality and completeness of the information entered into work orders for maintenance and repair work performed by staff and vendors, and also conducts field inspections to spot-check the accuracy of the information in the work orders. This data is then used to create more effective strategies to improve the comprehensiveness of maintenance work, identify areas where improved staff trainings are needed, and ensure that equipment inspections are thorough and that repairs are tracked and addressed.

⁵ The New York City Administrative Code establishes minimum apartment temperatures that landlords must comply with between October 1st and May 31st of the following year – considered the “heating season.”

⁶ The Agreement requires that NYCHA provide affected residents at least 48 hours’ notice prior to the start of a planned outage. Additionally, NYCHA will generally not create a planned outage unless exterior temperatures are at least 40° F.

As explained in the section above, dashboards created by NYCHA in consultation with the Monitor team and HUD are useful to communicate and understand “live” conditions at NYCHA. The screen shot below from NYCHA’s internal heat outage dashboard shows current open work orders for heat and hot water outages, resident complaints, and the number of units impacted. The table is broken down by heat clusters, each of which includes a grouping of developments. This dashboard helps NYCHA, the Monitor, and other stakeholders gain a holistic view of the problems in each region and the impact on residents, to prioritize and track workload.



Screen shot from the heat outage dashboard map which displays daily live data analytics during the heating season

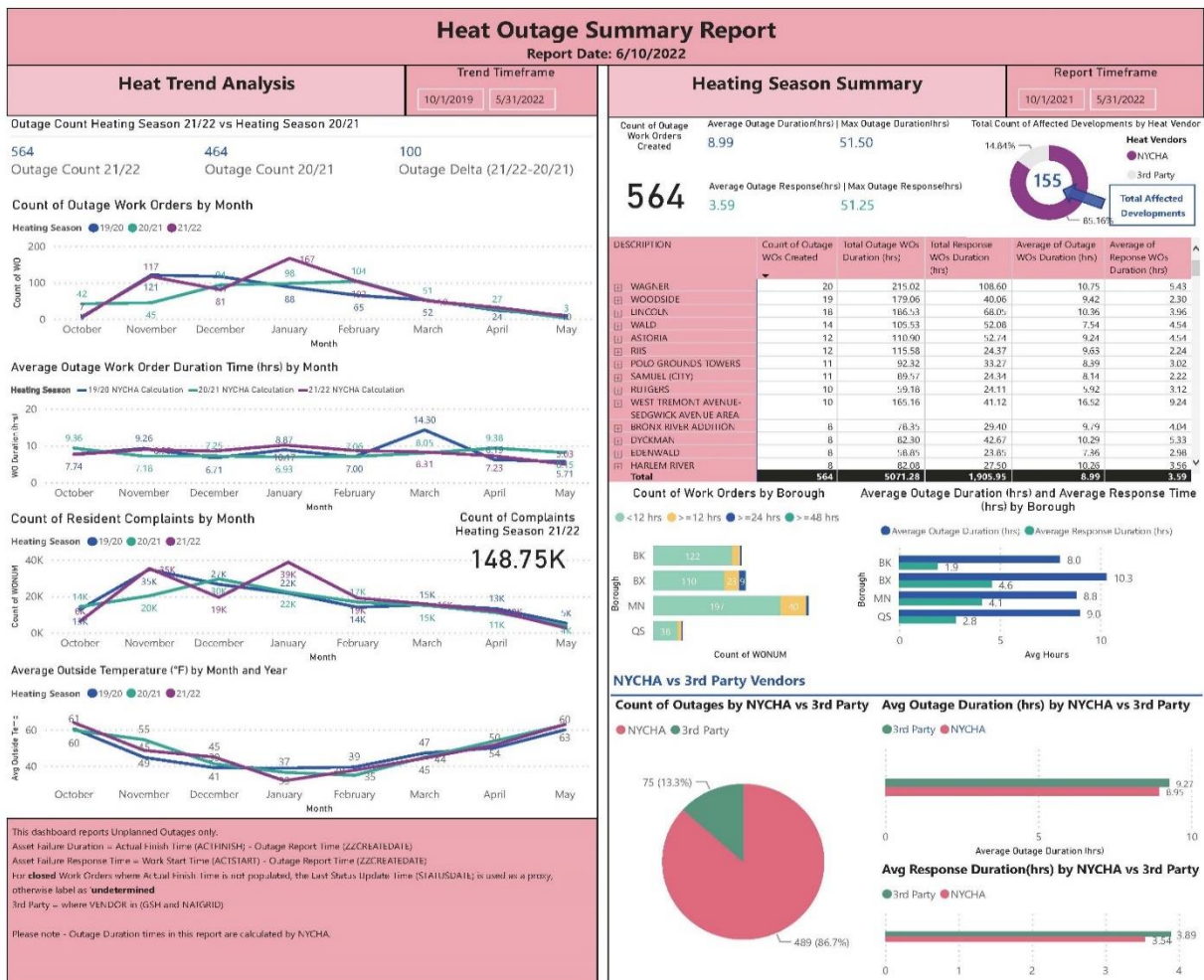
In addition, the Monitor oversees and assesses the work of NYCHA’s Capital Division in delivering the boiler replacement projects it is obligated to complete under the Agreement, along with related capital work performed for heating services. Given the age and often poor condition of much of NYCHA’s equipment and building infrastructure, proper and timely delivery of these projects to replace the worst performing equipment is an essential element of NYCHA’s ability to provide residents with heating and hot water services.

1. Heating Metrics for the Recent Heating Season

As recently addressed in the Monitor’s Twelfth Quarterly report (released September 7, 2022), the data from this past heating season (2021 – 2022) shows that NYCHA had a significantly higher number of unplanned heating outages than in the prior two heating seasons. There was also a substantial increase from the previous two seasons in outages lasting over 12 hours. Finally, outages occurred in more developments than in the previous two seasons, meaning that a greater number of residents were affected than in

the two prior seasons. NYCHA's poor heating performance this past winter was anticipated to some extent because HMSD did not complete its summer preventive maintenance program in 2021. The result was that much of NYCHA's heating equipment was not prepared for the coming heating season as evidenced by the marked increase in service failures due to boiler mechanical operations breakdowns. As described in the Monitor's most recent quarterly report, the Monitor provided NYCHA with a detailed assessment of the breakdowns in the summer preventive maintenance program, which included numerous recommendations for improvements.⁷ NYCHA has since made significant upgrades to its overall heating program, which among other things led to a much more effective off-season maintenance program this past summer.

The graph below, prepared by the Monitor heat team based on Maximo data, provides a broad overview of NYCHA's unplanned heat outage performance.



An analysis of the data, which focuses on NYCHA's key Agreement obligations for heating, shows that:

1. There were 564 unplanned heat outages this past heating season. This is an increase of 100 outages, or 22% greater than last season's count of 464 unplanned outages.
2. The average outage duration for this season was approximately 9 hours. This is an increase of almost 1.5 hours compared to the prior season's average outage duration time, which was approximately 7.5 hours.
3. The count of unplanned outages with durations greater than 12 hours doubled this last heating season – with 97 this season and 47 for the prior season. Fifteen of the outages lasted between 24 and 48 hours, with one outage lasting more than 48 hours. In January 2022 alone, there were 47 outages greater than 12 hours in duration.
4. Unplanned outages this season affected 155 developments, with the most outages at Wagner (20), Woodside (19), Lincoln (18), Wald (14) and Astoria (12).
5. Boiler unplanned outages (as opposed to breakdowns in other heating equipment or heating distribution systems) accounted for 62.4% of all unplanned outages (352 boiler outages) in the 2021/22 heating season compared with 44% during 20/21 season (204 boiler outages) and 31.7% during 2019/20 season (153 boiler outages).

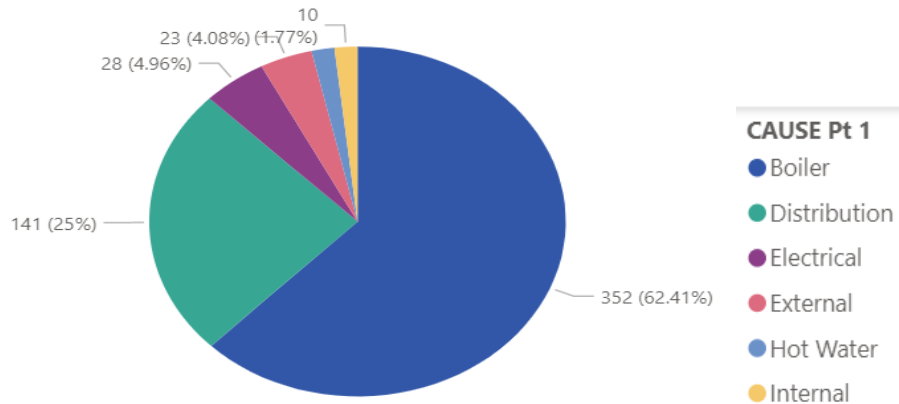
2. Root Cause Analysis of Heat Outages and Durations

NYCHA and the Monitor use data not only to calculate performance metrics, but also to help determine the root causes of outages and other issues so that staff can work to reduce them through more effective preventive maintenance and repairs. Under the Agreement, EHS's heat team is responsible for this analysis; for the last three heating seasons EHS has done comprehensive root cause investigations for outages greater than 12 hours and made recommendations to HMSD to address the underlying problems and operational deficiencies. The Monitor heat team works with EHS to better understand the causes and recommend comprehensive corrective actions to address them. The two main causes for heating outages at NYCHA developments are: (i) breakdowns of the boilers (so that adequate heat is not being produced), and/or (ii) breakdowns of the heating distribution systems needed to carry that heat from the boilers to the individual apartments. The heating distribution piping in most development buildings has not been replaced since the buildings were erected, and much of it is in poor condition.

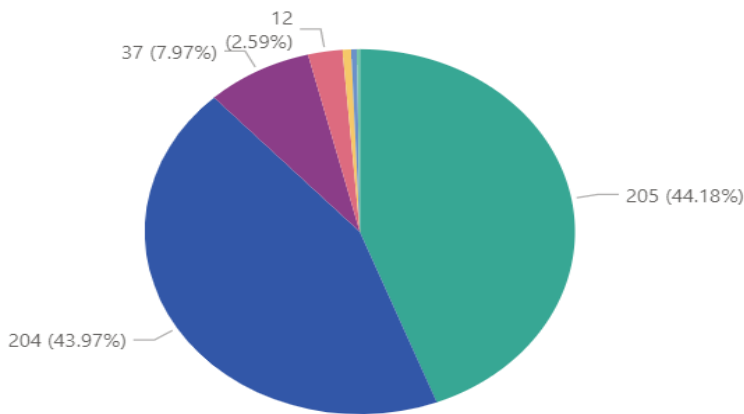
The principal finding relating to outages this past heating season was an increase in breakdowns in boiler mechanical operations – 73% over the 2020/21 heating season and 130% over the 2019/20 heating season. There were 352 boiler failures this past season, 204 for the 2020/21 season, and 153 for the 2019/20 season. As shown in the chart

below, outages caused by boiler mechanical failures accounted for 62.4% of NYCHA's heat outages this past season. It should be noted that if a development is converted to private management through RAD/PACT during a heating season, the pre-RAD portion of outages associated with that development is or will be included in the outage counts.

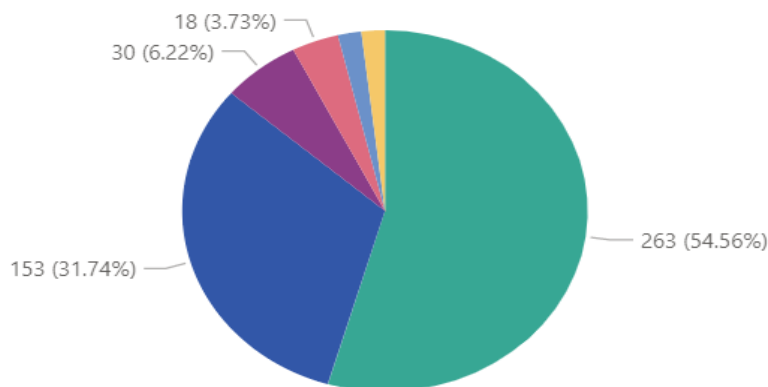
Heating Season 21/22 - Count of Workorders by Cause



Heating Season 20/21 - Count of Workorders by Cause



Heating Season 19/20 - Count of Workorders by Cause



Issues relating to boiler controls and burners were the leading cause of boiler related outages this season.⁸ Boiler control outages have increased by 300% since the 2019/20 heating season while burner outages have grown by 312% since the 2019/20. The increase in such outages is likely caused by lack of effective PM combined with degrading assets.



3. Work Order Improvements

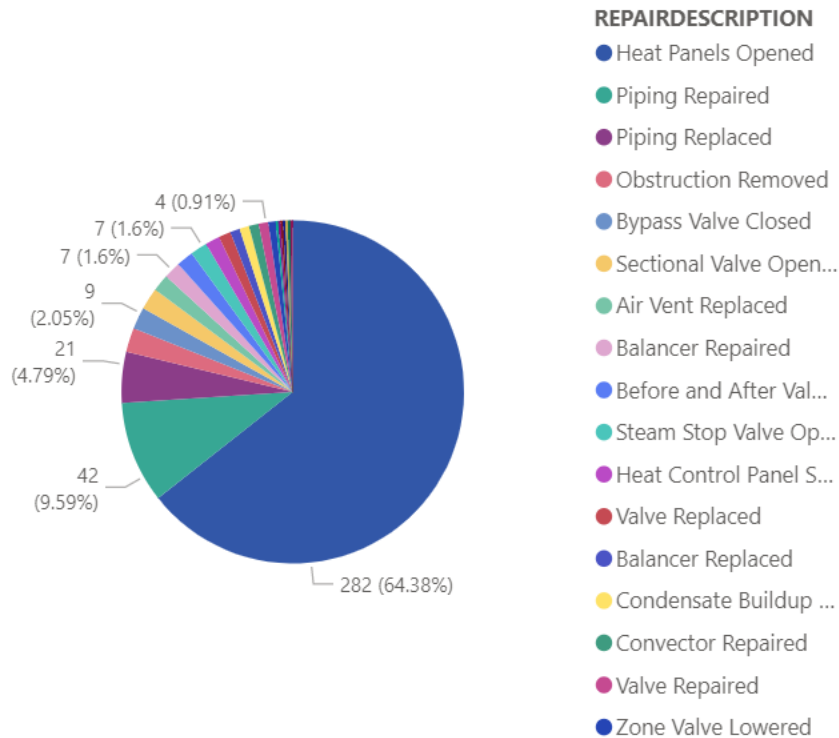
Regular review of work order data in Maximo – with a particular focus on the maintenance, repair, and breakdown histories of the relevant equipment – is critical to understanding the root causes of heat outages stemming from equipment failures. One of the key recommendations of EHS and the Monitor team is that HMSD improve the training and management of its staff so that work orders provide accurate descriptions of the condition of the equipment, the staff’s assessments of why the equipment failed, and all corrective actions taken. Our reviews of Maximo data on routine maintenance work show that this information is not being consistently captured in work orders. Even when captured, often there are few details regarding the condition of the equipment or the maintenance work performed. Consequently, HMSD managers have insufficient information to know whether standard maintenance protocols are being followed. Thus, NYCHA lacks a

⁸ Boiler control breakdowns generally involve problems with low water cutoff valves, feed water regulators, and/or firematic devices.

comprehensive understanding of the general conditions of heating assets for repair and replacement purposes. The Monitor heat team has been evaluating heat data and providing NYCHA with statistical information concerning staff compliance with work order standard procedures, including specific examples where critical information was not included in work orders. HMSD has now started to use this information for staff management and training purposes.

Similar issues have surfaced regarding work order submissions when HMSD staff respond to outages. For example, we reviewed repair codes most frequently used for outage work orders. A large majority of repair codes (64.38%) indicate “heat panels opened” as the repair description. This is not a useful description as it does not identify which assets were responsible for the root cause of the outage. Further, this repair code indicates a temporary fix was implemented which did not address the root cause of the outage.

Count of Workorder by Repair Description



The lack of quality data in Maximo is a significant obstacle to assessing the effectiveness of annual overhauls and identifying root causes of outages and problem assets, and inhibits the development of mitigation strategies. We note that this work order issue exists all across NYCHA and is a major focus of NYCHA, the Monitor, and HUD for correction.

B. Elevator Services

As with heating, the key negative performance metrics under the Agreement for NYCHA elevator services are the number and duration of outages. Just over half of NYCHA's buildings are single-elevator buildings, making them especially vulnerable in the event of an outage because they create a "no service condition" meaning the building has no elevator service. It is for this reason that performance metrics for single-elevator buildings are a particular focus of NYCHA and the Monitor, and why the Agreement has more stringent outage performance obligations for these elevators.

Similar to heating systems, elevators may have planned and unplanned service disruptions. The Agreement requires NYCHA to meet the following specific performance metrics as to the number and duration of elevators out of service:

- 70% of buildings with more than one elevator will not have more than one instance a year where all elevators are out of service at the same time;
- 70% of elevators shall not be out of service more than 8 times a year;
- 75% of no service conditions shall be resolved within 18 hours;
- The average response time by NYCHA to outages will decrease each year.

The core work of NYCHA's heating and elevator departments is similar in that their success in reducing outages and their durations is largely dependent on keeping the equipment operational. Thus, effective maintenance and repair of this essential equipment is the central focus of their staff. Many of NYCHA's elevators are in poor condition given years of heavy use and often inconsistent maintenance. NYCHA's Elevator Service & Repair Department ("ESRD") recently reported that 58% of its elevators have been in use beyond the manufacturer's suggested lifespans. Given the condition of the equipment, ESRD must constantly work to maximize the effectiveness of the preventive maintenance that its staffs perform to minimize breakdowns and maintain the life of the equipment for as long as possible.

As part of this effort, the Monitor team works with ESRD to perform data analytics on relevant work orders. This includes an analysis of work order data regarding the root causes of outages and repairs, and other analyses concerning the work done by maintenance crews when they perform maintenance on an elevator. Given the importance of preventive maintenance, the Monitor team, ESRD, and EHS work together to ensure it is effective and that standard procedures are followed.

1. Elevator Metrics

The Monitor regularly tracks NYCHA's elevator performance trends to understand and evaluate them. The graph below shows the latest in a series of reports produced by the Monitor to review on-going performance. The chart focuses on the number of outages, outage durations, and repair team response times, and also identifies the developments with the worst performing elevators.

Elevator Outage Summary Report

Report Date: 10/11/2022

Elevator Trend Analysis

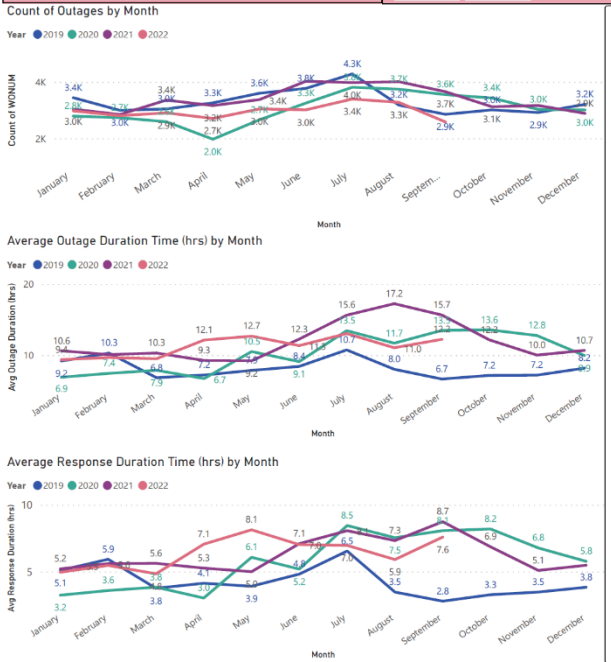
Trend Timeframe

1/1/2019 9/28/2022

Summary

Report Timeframe

1/1/2022 9/28/2022



Count of Outage

26,701

Count of Failed Asset

2,898 Average Outage Duration (hrs)11.25Max Outage Duration (hrs)1,365.94Average Response Times | Max Response Time (hrs)6.43905.58Count of Affected Development233

DESCRIPTION	Average Outage per Elevator	Total Outage Count	Count of Failed Elevators	Count of Failed Elevators	Total Duration (hrs)	Average Duration (hrs)	Total Response (hrs)	Average Response (hrs)
1162-1176 WASHINGTON AVENUE	54.0	54	1	1	425.1	7.9	184.5	3.42
BETHUNE GARDENS	46.0	92	2	2	1,710.3	18.6	792.6	8.61
WSUR (SITE B) 74 WEST 92ND STREET	39.5	79	2	2	381.4	4.8	166.5	2.11
AUDUBON	31.0	93	3	2	1,573.0	16.9	851.8	9.16
MORRISANIA	28.3	113	4	4	2,100.9	18.6	1,025.1	9.11
CAMPOS PLAZA II	28.0	196	7	7	655.8	19.6	1,335.9	6.82
MCKINLEY	26.9	269	10	10	1,653.3	17.0	2,006.0	7.46
830 AMSTERDAM AVENUE	26.5	53	2	2	702.6	13.3	416.4	7.86
DAVIDSON	26.3	79	3	3	940.4	11.9	535.1	6.77
METRO NORTH PLAZA	26.3	158	6	6	1,847.7	18.0	795.8	5.04
ADAMS	25.1	351	14	14	3,310.0	15.1	2,177.0	9.20
BOYNTON AVENUE REHAB	25.0	25	1	1	1,315.1	5.3	62.8	2.51
SEWARD PARK EXTENSION	24.8	99	4	4	1,652.3	16.7	731.6	7.39
ATLANTIC TERMINAL SITE 4B	24.7	74	3	3	1,489.4	20.1	671.5	9.07
KING TOWERS	24.4	512	21	21	1,654.8	13.6	1,554.2	8.95
LEXINGTON	24.3	194	8	8	1,722.8	14.0	1,839.3	9.48
EAGLE AVENUE-EAST 163RD STREET	24.0	24	1	1	149.5	6.2	69.3	2.89
BUSHWICK	22.8	365	16	16	5,311.1	9.7	1,665.5	4.56
1010 EAST 178TH STREET	22.5	45	2	2	539.5	12.0	327.4	7.27
ST. MARY'S PARK	21.9	263	12	12	3,299.3	12.7	2,181.4	8.29
HYLAN	21.5	43	2	2	369.9	8.6	193.0	4.49
CHELSEA	20.4	163	8	8	3,650.8	16.3	1,974.2	2.11
Total	6.1	26,701	3294	2898	300,304.4	11.2	171,970.5	6.43

Count of Outage by Borough and Duration Group

● 1. <=4 hrs ● 2. >4 hrs ● 3. >10 hrs ● 4. >18 hrs

Borough	<=4 hrs	>4 hrs	>10 hrs	>18 hrs
MN	3660	2549	1311	2293
BX	2906	2323	1000	1680
BK	3797	1820	564	671
QS	1262	623		

Avg Outage Duration (hrs) and Avg Outage Response Time (hrs) by Borough

● Average Duration (hrs) ● Average Response (hrs)

Borough	Avg Duration (hrs)	Avg Response (hrs)
MN	8.0	13.3
BX	7.8	13.0
BK	3.6	7.7
QS	3.2	6.7

NYCHA Elevator Performance Trend Analysis

NYCHA Monitor Report

Report Date: 10/11/2022

Next Report Date: 10/11/2022

Count of Outages by Month

Year: 2019 (blue), 2020 (green), 2021 (purple), 2022 (red)

Worst 10 Development by Total Count of Outages since 2019

Year: 2019 (blue), 2020 (green), 2021 (purple), 2022 (red)

Development	2019	2020	2021	2022
MOTT HAVEN	703	1028	883	
PATTERSON	530	645	1254	408
WAGNER	755	696	725	575
FOREST	512	591	722	520
BARUCH	517	756	624	432
MITCHEL	749	642	605	
POLO GRO...	725	607	449	380
WASHINGT...	581	493	581	472
JOHNSON	436	592	499	545
BUSHWICK	650	463	531	365

Worst 10 Development by Count of Outages by Borough

Borough: Bronx (blue), Brooklyn (green), Manhattan (purple)

Development	Count
MOTT HAVEN	2879
PATTERSON	2837
WAGNER	2751
FOREST	2545
BARUCH	2329
MITCHEL	2286
POLO GROUNDS TOWERS	2161
WASHINGTON	2127
JOHNSON	2072
BUSHWICK	2009

Proportion of Outages by Borough (All Developments)

STATUS: OPERATING | Sector: All

Year	Outages	Average Monthly Outages
2019	39,557	3,296
2020	36,561	3,047
2021	40,611	3,384
2022 Current	26,701	2,967

Based on the elevator performance and trends analysis report dated October 11, 2022, NYCHA has seen a decrease in elevator outages. From January 1, 2022, to September 30, 2022, there were 26,954 outages, at an average monthly rate of 2,995, across the entire portfolio of NYCHA elevators. Based on the current data, we anticipate this trend to continue and for the 2022 end-of-year total to be 35,940 outages – approximately 12% lower than the previous year.

Analysis of the data also shows the following:

1. A high-level assessment based on the latest data indicates that elevator performance has improved since the Agreement went into effect in February 2019.
2. From January 1, 2022, to September 30, 2022, there were a total of 26,954 outages across the entire portfolio of NYCHA elevators. This was about 14% lower than the 31,437 outages in the same timeframe in 2021.
3. The average outage duration this year from January 1st to September 30th is 11.30 hours, a modest improvement from 12.54 hours for the same period last year. For the same time frame, the maximum outage duration (total hours) has significantly decreased to 1365.94 hours this year versus 7358.92 hours last year.
4. The average response time this year from January 1st to September 30th is 6.43 hours, a modest improvement from 6.55 hours for the same time frame last year.
5. Worst performing developments by outage count this year for the January 1st to September 30th timeframe include Wagner (578 outages), Johnson (557 outages) and Forest (522 outages).
6. Pilot projects focused on improving preventive maintenance, such as at Mott Haven and Patterson Houses, have demonstrated the effectiveness of high-quality preventive maintenance in significantly reducing outage frequencies and the benefit of having dedicated teams on-site to improve outage durations and response times.

2. Root Cause Analysis of Elevator Outages and Durations

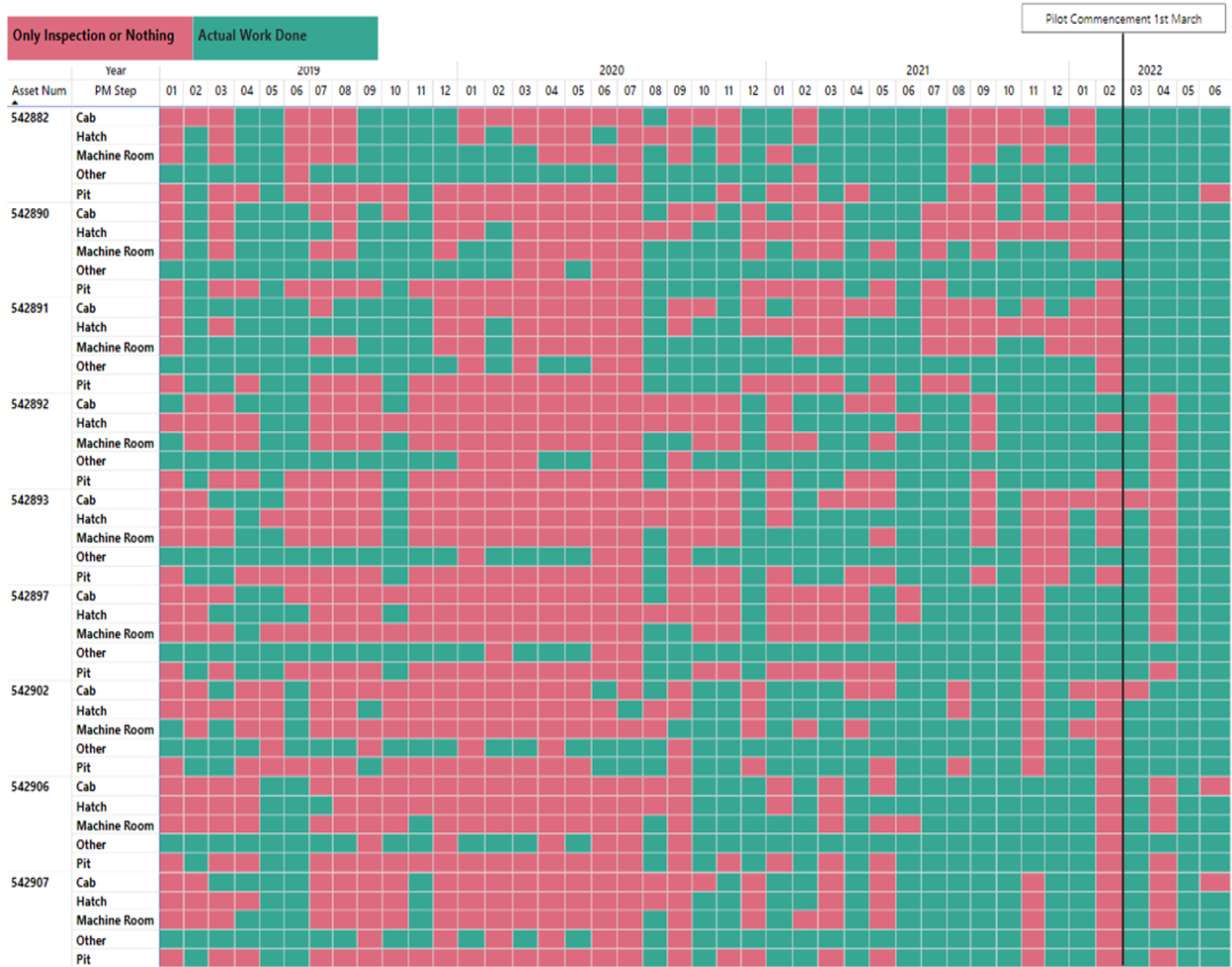
As with NYCHA's heating services, understanding the root causes of elevator outages is essential for ESRD not only to ensure that effective repairs are made, but also to better understand how to direct its preventive maintenance program to address these causes. Understanding root causes, particularly for its worst performing elevators, is also essential for NYCHA's Capital Division in prioritizing elevators for replacements. Based on the Monitor's assessment, the primary root cause of outages often traces back to a lack of thorough and effective preventive maintenance.

To that end, ESRD, with the support of the Monitor team, conducted two pilot projects to examine strategies to improve preventive maintenance at developments with poorly

performing elevators. The first pilot was at Mott Haven Houses, starting in early 2021 and running into the fall of that year. Using the lessons learned there, a second pilot was started at Patterson Houses in March 2022 that will likely run through the end of the year. ESRD performed the maintenance work on the elevators during the pilots while the Monitor team and the EHS elevator team conducted the data analytics. So far, the main lesson learned is that having a dedicated maintenance team working on the same elevators enables them to better understand the individual maintenance requirements for those elevators, resulting in significantly fewer equipment breakdowns. Also, having a dedicated crew enables them to complete a thorough maintenance process without being interrupted to respond to unplanned elevator outages.

During discussions with ESRD personnel, we learned that elevator mechanics perform a mix of visual inspection and actual work (cleaning, lubricating, replacing components, *etc.*) for key elevator components during their monthly preventive maintenance. Visual inspections, however, do nothing to improve the condition of an asset and are therefore ineffective in prolonging the duration between failures. The Monitor created a tracking mechanism to indicate the occurrence of visual-only inspections, compared with inspections when actual work is performed.⁹ This is depicted in the graph below for the Patterson development.

⁹ We note that during the early months of the pandemic (April 2022 to September 2020), NYCHA stopped taking elevators out of service in single-elevator buildings (almost 50% of NYCHA's elevator portfolio). This impaired NYCHA's ability to perform maintenance work, which is necessary for preventing no-service conditions.



The data across the top of the graph corresponds to months and the side corresponds to each elevator (identified by Asset Number) and the relevant Preventive Maintenance step. For any given month, a red box denotes that visual inspection was performed for the specific elevator and step number while a green box denotes that actual work was performed.

ESRD has found this tracking information to be a useful tool in assessing possible root causes for individual elevators that experience frequent outages. For these elevators, the chart shows that months can go by with visual inspections only, with no actual preventive maintenance. Our analysis of Maximo data routinely shows a direct correlation between an increase in the number of outages and the lack of actual maintenance work performed for those elevators. The Monitor team is working with ESRD leadership to use these charts as a management tool for communicating to elevator mechanics and helpers that visual inspections in these circumstances are not acceptable, as per the ESRD standard operating procedures (SOP).

3. Work Order Improvements

As with heating systems, the Monitor Team has worked with NYCHA to improve the accuracy and completeness of information in elevator work orders. Every elevator outage work order is assigned one or more repair codes, which typically indicate the action or

repair taken to address the outage. If used correctly, repair codes can help assess the assets and factors responsible for the outage. In that regard, while there are approximately 3600 repair codes available in Maximo, less than 40% identify specific equipment – significantly reducing their usefulness. A large majority of repair codes utilized are “Found Out of Service”, “Faults Cleared,” and “Main Line Reset.”

Each outage work order also has a work log – a series of entries made by field personnel responding to outages. These entries are meant to describe the problem or situation, actions taken, and other information that would help explain the root cause of an outage. Because work logs are a freeform text field, their analysis is a challenge, as information is not entered in a uniform format. The Monitor searched the work logs for keywords that identify specific causes or equipment to pinpoint the root causes for each outage.

Using this approach, the Monitor was able to determine root causes for about 65-75% of all outages. This keyword search technique could be improved with the following adjustments:

- The analysis looks for specific keywords – this list should be updated to make it more effective (approximately 25-35% of work log entries do not include the current list);
- In some cases, there are typos, abbreviations, and variations of the same keyword, complicating the analysis (e.g., Door Lock, Door Lock Monitoring, DLM, etc.);
- Because one worklog may contain multiple keywords, the analysis is organized such that the higher priority keyword is counted – this priority list should be validated.

4. Elevator Deficiencies Analysis

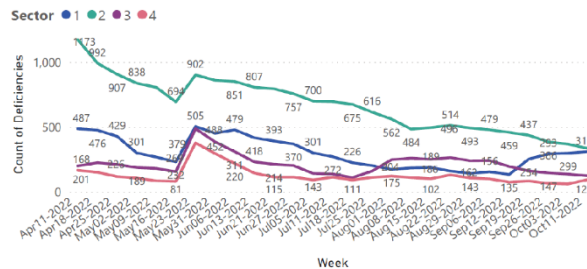
Since August 2021, ESRD has been maintaining a list of elevator “deficiencies” noted during elevator inspections. These deficiencies have been recorded in a spreadsheet updated weekly, with new deficiencies added and resolved ones removed. The Monitor has helped optimize this process by developing an electronic deficiency analysis report that is now issued weekly to ESRD.

This report, a portion of which is shown below, takes the information contained in the spreadsheet and creates visualizations that enable more effective tracking, assessment, and management of deficiencies. With the Monitor’s support, ESRD has been able to significantly reduce the number of deficiencies over the past year across all four operating sectors. There has been a 78.9% reduction in the number of total deficiencies from October 17 - 24, 2021, to October 17 - 24, 2022 (3963 to 836).

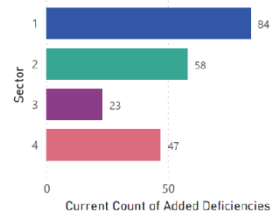
Elevator Aging Deficiencies and AOC Report		Report Timeframe		Sector	Number of Developments	Number of Elevators	Number of Teams	Number of Openings
Data Start Date: August 2021		Oct 03, 2022 - Oct 11, 2022		1	60	790	37	10434
				2	71	767	35	9809
				3	41	752	25	6015
				4	56	760	27	6577

Total Count of Deficiencies Recorded Since August 2021	Total Count of Deficiencies Closed So Far	Previous Count of Deficiencies by: October 3, 2022	Current Count of Deficiencies by: October 11, 2022	Count of Deficiencies Added in: Oct 03, 2022 - Oct 11, 2022	Count of Deficiencies Closed in: Oct 03, 2022 - Oct 11, 2022
14,191	13,324	868	▼ 1 867	212	213

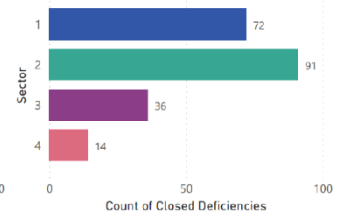
Total Count of Deficiencies by Week and Sector



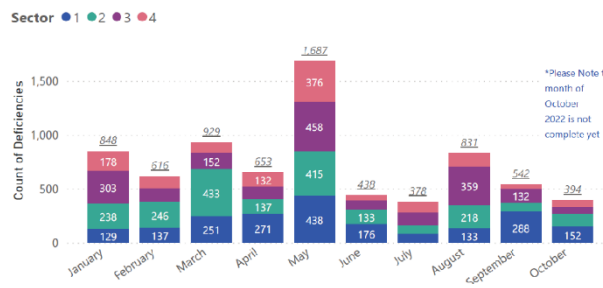
Count of Deficiencies by Sector Added in: Oct 03, 2022 - Oct 11, 2022



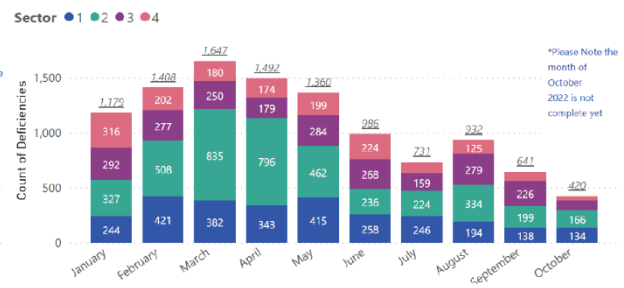
Count of Deficiencies by Sector Closed in: Oct 03, 2022 - Oct 11, 2022



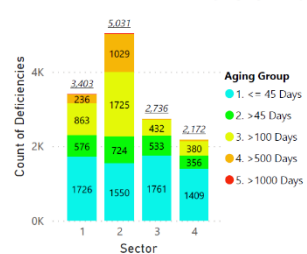
Count of Deficiencies Added in 2022 by Sectors



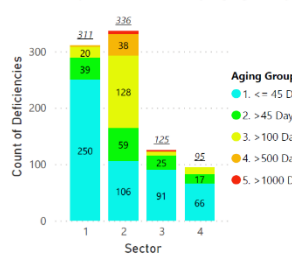
Count of Deficiencies Closed in 2022 by Sectors



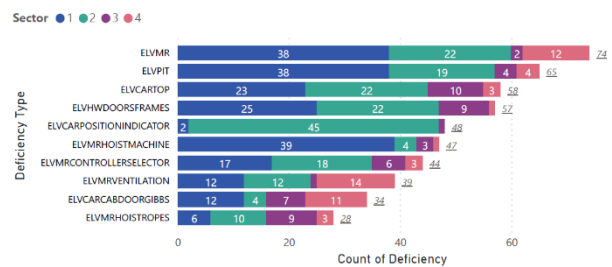
Count of Closed Deficiencies by Aging Group



Count of Open Deficiencies by Aging Group



Top-10 Types of Open Deficiencies in All Sectors



C. Waste Management

Paragraph 45 of Exhibit B to the Agreement requires that NYCHA, at least once daily, police the grounds and common areas at each development for trash. Further, at least once daily, the trash at each development must be collected and removed from the premises or securely stored for removal in a manner that prevents pest access.

The principal challenge faced by the Monitor in determining NYCHA's compliance with Paragraph 45 was its breadth – explicitly encompassing every NYCHA building, to be cleaned of outside garbage daily, with the trash securely stored or removed from the development daily. Neither NYCHA nor the Monitor had the means to inspect all 335 NYCHA developments every day to assure compliance with this requirement. Moreover,

if the implicit goal of Paragraph 45 is to require NYCHA to maintain clean conditions at its developments, compliance with the requirements of Paragraph 45 alone would not do it, as people generate garbage throughout the day. A clean development in the morning may be littered with trash by the evening unless the trash is being continuously collected.

1. Waste Management Data Collection and Analysis

To address these issues, the Monitor team and NYCHA's Waste Management Department collaborated in early 2021 to develop an electronic Fastfield report that would collect waste management data and report on cleanliness conditions (based on visual inspections by Monitor field examiners) throughout the common interior spaces and exterior grounds at all NYCHA developments. Over time, that data would enable the Monitor and NYCHA to identify those developments where the goals of Paragraph 45 were being met as well as those requiring improvement.

The Fastfield reports specific to waste management inspections are captured on a "Waste Management Measurement App," or "WAMMA." WAMMA can be uploaded on a hand-held tablet or iPhone. The WAMMA field report applications were developed by the Monitor's data analytics staff, and they enable inspections of each development via a standard inspection form. The form includes fields for grades, comments, and photographs to illustrate the observed conditions.

For example, the below photographs from WAMMA depict construction debris, weeds, and rat burrows, as well as a trash-strewn area that needs attention:



The WAMMA inspection assesses multiple interior and exterior areas: lawns and grassy areas; curbside garbage pickup sites; walkways; short term exterior storage areas; waste yards and ancillary exterior storage areas; outside main entranceways to buildings; roofs; lobbies and mail areas; mail rooms; elevators; hallways; stairwells; compactor rooms; machine rooms; and basements. Each item is graded 1-5, with "1" signifying extremely substandard conditions, and "5" meaning spotless conditions. In addition, in order to compute a composite score for the entire development based on the individual scores at

various buildings, each item is weighted in accordance with its overall significance to the big picture as follows:

Rating Component	WAMMA Data Point	Weight
Exterior Components		
Lawn/grassy areas	Rating_OutsideGrounds_CompositeScore	10.00%
Curbside Pickup Sites	Rating_CurbsidePickupSitesCompositeScore	7.00%
Walkways	Rating_OutsideWalkwaysCompositeScore	7.50%
Short Term Storage	Rating_ShortTermStorageCompositeScore	5.00%
Waste Yard/Exterior Storage	Rating_WasteYardExteriorCompositeScore	5.00%
Outside Main Entranceways	Rating_OutsideOfMainEntrancewaysCompositeScore	7.50%
Roof	Rating_RoofsCompositeScore	8.00%
	Sub-total	50.00%
Interior Components		
Lobbies/Mail Area	Rating_LobbiesCompositeScore	10.00%
Mailroom	Rating_MailRoomsCompositeScore	7.50%
Elevators	Rating_InteriorOfElevatorsCompositeScore	5.00%
Hallways	Rating_CommonHallwaysCommonScore	12.50%
Stairwells	Rating_StairwellsCompositeScore	10.00%
Compactor Room/Machine Rooms	Rating_InteriorCompactorCompositeScore	2.50%
Basement	Rating_BasementsCompositeScore	2.50%
	Sub-total	50.00%

Figure 1 - Component Weights

In March 2021, the Monitor began random inspections at developments throughout the City, testing and improving WAMMA's scope and functionality. Recently, the Monitor concluded a six-month pilot at 20 developments, taking WAMMA readings periodically at each development and measuring compliance over time. The Monitor has now expanded that pilot to include an additional 20 developments for inspection over the next 6 months. The WAMMA reports for the inspected developments are immediately shared with NYCHA, enabling NYCHA to apply necessary resources to correct the identified problems. The Monitor has offered this technology to NYCHA so that it can create its own field inspection applications as a tool to effectively capture conditions in the field for inspectional and staff management purposes.

The power of this tool in measuring progress (or lack thereof) at any given development over a period of time is self-evident. For example, here are three photos of the waste yard at West Brighton Houses taken over a period of approximately a year and a half, showing dramatic improvement.



March 11, 2021



January 20, 2022



August 3, 2022

The overall ratings for West Brighton have risen in dramatic fashion over that period of time as well:

Development	Date	Average Rating
WEST BRIGHTON I	03/11/21	2.25
WEST BRIGHTON I	04/08/21	2.46
WEST BRIGHTON I	08/25/21	2.73
WEST BRIGHTON I	10/07/21	3.15
WEST BRIGHTON I	11/11/21	2.56
WEST BRIGHTON I	01/21/22	3.14
WEST BRIGHTON I	03/08/22	3.74
WEST BRIGHTON I	03/16/22	3.31
WEST BRIGHTON I	04/11/22	2.79
WEST BRIGHTON I	05/03/22	3.45
WEST BRIGHTON I	05/23/22	3.54
WEST BRIGHTON I	08/03/22	4.20

The average rating for the 37 submissions in September 2022 was 3.40. That reflected an increase from August, when the average of the 45 submissions was 3.21. The average rating for all 696 WAMMA submissions from 3/2/21 to 9/30/22 was 2.94.

Below is a borough-by-borough breakdown for August and September 2022:

Overall Average Submission Score - August			Overall Average Submission Score - September		
Borough	Average Score	Inspections	Borough	Average Score	Inspections
THE BRONX	3.06	7	THE BRONX	2.91	10
BROOKLYN	3.21	20	BROOKLYN	3.38	11
MANHATTAN	2.87	11	MANHATTAN	3.43	7
QUEENS	3.40	3	QUEENS	3.52	5
STATEN ISLAND	4.28	4	STATEN ISLAND	4.46	4
Total	3.21	45	Total	3.40	37

WAMMA is thus proving to be a highly effective tool in providing a “snapshot in time” of the overall conditions of the interior and exterior spaces at NYCHA developments, which NYCHA has been using to increase accountability among staff and drive improvements. Repeated on-site inspections by the Monitor Team at formerly troubled developments spotlighted by WAMMA have revealed significant improvements overall, and the trend upward appears to be continuing. The mandate of Paragraph 45 – of daily trash collection and then removal and/or proper storage of trash collected until it can be removed from the sites – should be readily attainable as the average monthly WAMMA scores approach “4.” Prior to conclusion of the Monitorship, the Monitor plans to transfer the WAMMA software to NYCHA so that it can continue the program after the Monitor is gone.

To date, over 690 WAMMA reports have been completed by the Monitor’s field examiners and provided to NYCHA. Those reports contain over 38,000 photographs of development conditions, broken down by development location and subject area as indicated on the graphic below:

38.85K

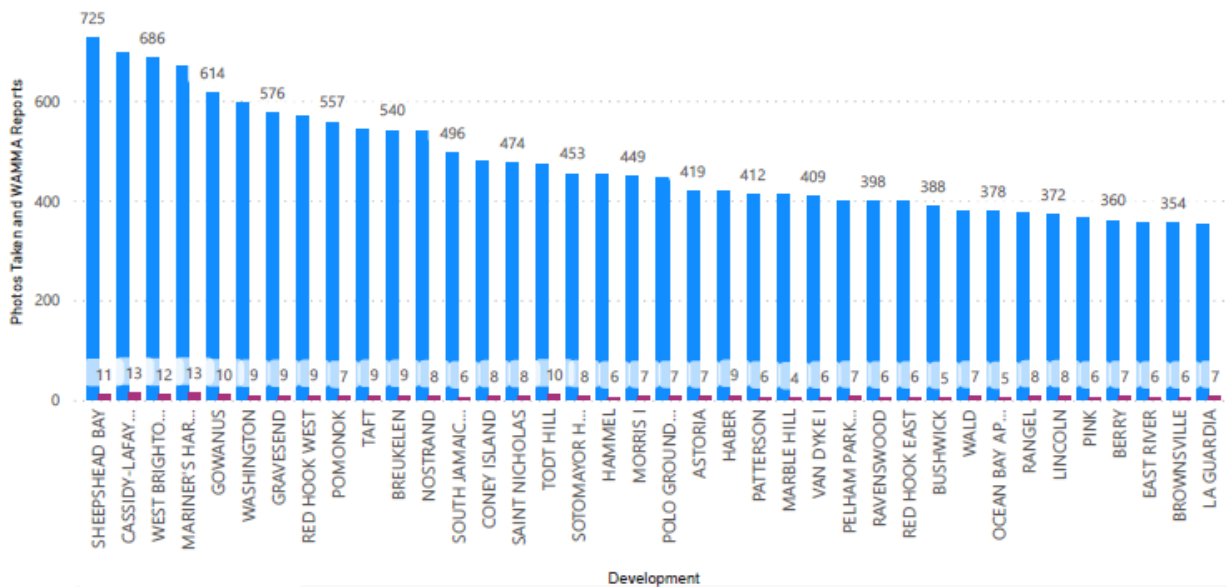
Number of WAMMA Photos

Boroughs	WAMMA Submissions	Photos Taken
BRONX	132	7644
BROOKLYN	218	12614
MANHATTAN	186	9667
QUEENS	82	4915
STATEN ISLAND	78	4008
Total	696	38848

Sites Assessed	BRONX	BROOKLYN	MANHATTAN	QUEENS	STATEN ISLAND	Total
Common Hallways	972	1284	1225	443	441	4365
Stairwells	1003	1221	1222	488	327	4261
Outside Grounds	905	1018	1084	387	427	3821
Basements	530	1417	777	571	360	3655
Outside of Main Entrance Ways	628	1057	773	409	347	3214
Roofs	645	1049	771	391	257	3113
Interior Compactor	531	993	680	368	316	2888
Interior of Elevators	462	1028	575	364	342	2771
Lobbies	558	850	645	346	345	2744
Outside of Walkways	445	877	546	337	289	2494
Waste Yard Exterior	339	600	534	295	276	2044
Short Term Storage	428	565	568	234	190	1985
Curbside Pickup Sites	82	319	116	123	21	661
Area 1	81	155	61	82	36	415
Mail Room	29	115	82	45	31	302
Area 2	6	66	8	32	3	115
Total	7644	12614	9667	4915	4008	38848

Highest Frequency of Photos Taken at the Developments

● Photos Taken ● WAMMA Reports



2. Waste Storage

The Agreement also obligates NYCHA to store trash securely at least daily prior to removal. To facilitate this task, NYCHA has converted 16% of its “curbside pickup” developments (where garbage is piled at the curb and later collected by the City Sanitation Department) into fully containerized or “shared” developments (where one development uses secure containers located at a nearby development). In addition, 2% of curbside pickup developments are receiving new, secure garbage cans and 67% of FHA housing (owned by NYCHA) will also receive updated cans. Approximately 15% of curbside pickup developments are currently being assessed for further improvements.

In addition, NYCHA has augmented garbage pickup in Brooklyn with a pilot program at seven developments that supplements the Department of Sanitation's 2/3-day curbside collection service with two additional trucks that provide 5/6-day service. NYCHA reports that it intends to expand this program to additional sites. NYCHA is also in the midst of another successful pilot program installing automatic cardboard compactors at several sites, reducing the amount of labor necessary to bag and bundle paper and cardboard and allowing for increased storage of landfill-bound waste in compactors and containers. NYCHA has collected 242.7 tons of paper and cardboard since the pilot launched in March 2020 and plans to expand the project going forward. In collaboration with the Asset and Capital Management Department, the Waste Management Department plans further expansion of outside waste yards and upgrades of compactor equipment that should further accelerate NYCHA's Agreement compliance.

D. Pest Control

NYCHA's detailed obligations respecting pest control are found in Exhibit B to the Agreement at paragraphs 35-44. These provisions require specific reductions over time in the populations of cockroaches, rats, bedbugs and mice; accelerated response times to pest complaints; and application of state-of-the-art pest control methods, called Integrated Pest Management, or "IPM."

The Agreement sets certain benchmarks for NYCHA. By 2021, NYCHA must accomplish the following:

- respond to 75% of all rat complaints within 2 business days, and to all rat complaints within 5 days;
- respond to 75% of all other pest complaints within 7 days, and to all other pest complaints within 5 days;
- apply effective pest control methods in accordance with applicable law to address verified complaints within 7 days;
- provide expedited responses and application of pest control methods where a resident has a health condition caused or exacerbated by exposure to pest infestation.

Additionally, by 2024, NYCHA is supposed to respond to 90% of all rat complaints within 2 business days, and to all rat complaints within 5 days, and respond to 90% of all other pest complaints within 7 days, and to all other pest complaints within 10 days.

1. Pest Control Metrics

The following table is NYCHA's recent compilation of completed tasks as per the Agreement:

Completed Pest Control Obligations (Paragraphs 35 – 45)

Key deliverable/ milestone	Percent	Date Completed	Paragraph	Topic
Implementation of priority matrix	100%	July 2020	38 - 40	Pest Response Times
IT Enhancement to Flag Units w/ Applicable Health Conditions	100%	August 2020	38 - 40	Pest Response Times
Determination of Pest Sensitivity Flag Parameters	100%	July 2020	38 - 40	Pest Response Times
First Priority/Primary Impacted Units (PIUs) Inspected and Treated	100%	January 2020	41	Targeted Relief
Second priority PIUs Resident Contact Plan	100%	September 2020	41	Targeted Relief
Second priority PIUs Inspected and Treated	100%	September 2020	41	Targeted Relief
IPM interim Guidance to Staff	100%	January 2020	42 - 44	IPM Adoption
IPM Work Order Check List Implemented	100%	May 2020	42 - 44	IPM Adoption
Trainings for Exterminator on Specific Pest Types & Interact w/ Residents	100%	September 2020	42 - 44	IPM Training
Hiring Additional Exterminator Staff	100%	November 2020	38 - 40	Response Times
Training staff on QR Reference Guide and New SP	100%	September 2020	42 - 44	IPM Training
Targeted Relief	100%	November 2020	41	Targeted Relief
Improving Vendor Contracts to Include NYCHA Specific Training	100%	June 30, 2020	41	Vendor Contracts to Include NYCHA Specific Training
Pest Standard Procedure	Nov 30, 2020	December 21, 2020	41	IPM
QR guide	Aug 30, 2020	December 21, 2020	41	IPM
Maximo Compliance Pest Dashboard Exceptions	100%	April 2, 2021	38 - 39	Response Times
Implement Policy Requiring Borough Schedulers Provide Residents Opportunity to Authorize Access During Absence	100%	April 5, 2021	40	Response Times
Employee Time Analysis	100%	April 2021		
Pest Sensitivity Communications Plan	100%	May 31, 2021	38 - 40	Pest Sensitivity
Adjacent Protocol Phase I (Pest Test and Severity)	100%	May 10, 2020		Adjacent Units
Door Sweep QA	103%	Feb 28, 2022	44	Door Sweeps
NPII Inspections	100%	April 7, 2022		NPII

As seen above, NYCHA has made significant progress in fulfilling its response time obligations, although they are not yet fully satisfied. Recent data concerning showing response times is set forth in the chart immediately below. It should be noted, however, as discussed further below, that quicker response times do not necessarily equate to better remediations.

For Rats		
Metric	Last Month	Last Month (Pest Sensitive)¹⁰
% Complaints responded to w/in 2 business days	42.04	100.00
% Complaints responded to w/in 5 calendar days	53.00	100
Avg. Response Times(Days)	4.58	1.92
For Mice, Roaches & Bedbugs		
Metric	Last Month	Last Month (Pest Sensitive)
% Complaints responded to w/in 7 calendar days	19.13	46.43
% Complaints responded to w/in 10 calendar days	24.72	54.59
Avg. Response Time (Days)	2.72	3.66

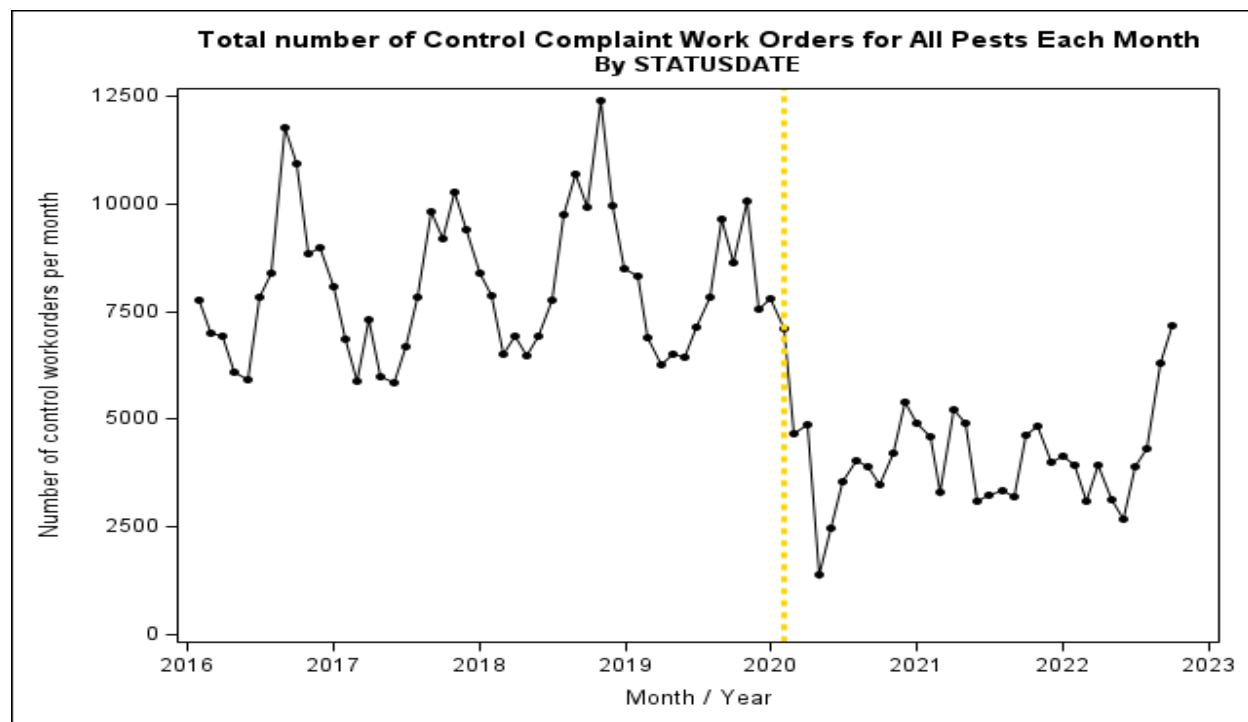
As noted above, the Agreement also requires that the populations of the four pest types (cockroaches, bedbugs, mice and rats) be reduced by specific percentages over specific periods of time. In that regard, NYCHA was required, by June 2019, to work with the Monitor to develop a reliable methodology for determination of pest levels and publish those estimates quarterly; by January 2022, to achieve a 50% reduction in its rat population, a 40% reduction in its mice and roach population, and a reduction in its bedbug population acceptable to the Monitor; and by January 2024, to achieve a further 50% reduction for each pest category. As for the methodology, in 2021, NYCHA, working with an expert data scientist, determined that 2000 apartment inspections portfolio-wide (in addition to approximately 2000 inspections conducted before the pandemic) could establish a baseline from which overall populations of cockroaches and mice might be estimated. The units slated for inspection were selected by the data scientist based on criteria she developed. During the late winter and early spring of 2022, NYCHA performed 2071 such inspections, called “NP II inspections” (NP II stands for “NYCHA Pest Infestation Index”). In early 2023, NYCHA is contemplating performing a second annual census of an additional 2000 units to measure progress in pest remediation during the past year. The Monitor will assist in that effort by having its consulting entomologists train the NYCHA inspectors conducting the census.

In the interim, the Monitor’s pest expert has proposed an alternative methodology based in part on Maximo data collected by NYCHA on an ongoing basis which relies on an “outcomes dashboard” that shows trends for each of the pest types over time. When properly used in conjunction with NP II inspections, the outcomes dashboard can provide the basis for determination of a census for each of the four pest types.

Below is an illustrative graph taken from the dashboard demonstrating the number of work orders per month based on new and active complaints. While the pandemic created a considerable interruption in this graph (as indicated by a yellow dotted line), a trend is nonetheless discernable. Prior to 2019 there was little change in the pattern and volume of new and active pest complaints. There was then a significant drop-off due to COVID,

¹⁰ “Pest sensitive” is a designation for units where residents have asthma or another condition generally recognized as being caused by or exacerbated by exposure to pest infestations (e.g., other respiratory illness, immune deficiency/suppression, and/or effects of certain medical treatment).

but now the volume of new and active pest complaints is climbing back to 2016 levels (the periodic dips in the graph otherwise reflect seasonal trends in pest behavior).



NYCHA disputes this conclusion based on its own data that shows a decline in *new* pest complaints over time, possibly suggesting that the incidence of pest infestations themselves are declining. Although NYCHA acknowledges that there could be many reasons for a reduction in new pest complaints, in NYCHA’s view the data does not indicate that pest infestation is on the rise heading toward the level of infestation in 2016. The Monitor’s expert agrees with NYCHA’s finding that new pest complaints have gone down and applauds NYCHA’s attention to that metric. But that does not mean that the overall volume of infestation is going down. To the contrary, we believe the overall level of infestations is increasing because the backlog of unresolved complaints (*i.e.*, “active” complaints) is increasing. Thus, taking into account both “new” and “active” complaints, we believe the level of infestation is growing again. As discussed further below in the section captioned “Resident Ambassador Program,” we are optimistic that this trend can be reversed in the coming year based on NYCHA’s progressive plans.

2. Monitor Inspection

NYCHA’s pest control data is typically used to measure NYCHA’s “output” in response to the Agreement, that is, the amount of work NYCHA has completed (*e.g.*, the number of work orders closed per month, or average time between opening and closing a work order). By contrast, “outcome” metrics measure the quality of the work done. While “output” metrics are useful in monitoring certain aspects of operations, they have less utility in illuminating whether the remediation work is thorough and effective, nor do they

identify procedures that need improvement or dwelling units that are especially problematic and require a greater concentration of remediation resources.

NYCHA Pest Control Unit (Pest Control) Supervisors of Inspectors (SOEs) are trained in quality assurance and have primary responsibility for overseeing the work of the exterminators to confirm its propriety and completion. In order to confirm the adequacy of the SOEs' work as well as the quality of the underlying remediations, a Monitor expert and several members of the Monitor team perform separate quality checks in the field. These inspections are conducted during (and following) remediations done by borough-based exterminators and outside vendors. After each inspection, the Monitor expert prepares a written report analyzing the adequacy of the work done. These reports are routinely shared with Pest Control to aid in improving the quality of the exterminations.¹¹

Some specific problems noted in the most recent report include the following:

- Application of bait by an unlicensed individual
- Incorrect pesticide records
- Inaccurate reporting of cockroach infestation levels
- Unresolved sanitation issue
- Pest problem not investigated
- Unnecessary work order
- Inadequate application of cockroach bait
- Inadequate service and subsequent controversy

Many of these deficiencies have been observed in other Monitor quality checks. We have found that the exterminators' emphasis appears to be on sealing crevices and vacuuming and cleaning the premises, rather than on proactive means to curtail pest infestations in the future, such as the thorough use of baiting and other means of trapping roaches, mice, and rats. Generally speaking, the exterminators are proficient in the work they do, but our expert's view is that the work often does not go far enough. Little time is spent applying cockroach bait, and the quantity used is insufficient and not applied in the most effective locations.

The most recent report states that no more than 5 -10% of the service time is devoted to applying roach bait, when in fact the majority of time should be spent doing so. Further, the amount of bait applied in the apartments is typically 5 grams or less regardless of the infestation level. The bait is applied mostly to hinges on cabinets, closet doors, and cable conduits, but not in other areas where it is needed and would be more effective. In sum, it appears that the work done by the vendors and exterminators follows a predictable pattern in each apartment, rather than addressing the unique needs of that apartment – and, while useful as far as it goes, is often insufficient. The consequence is that

¹¹ EHS's IPM oversight team (IPMOT) also conducts inspections and assesses the quality of NYCHA's pest remediation work and has made similar recommendations to Pest Control to improve the quality of work performed.

apartments undergoing these exterminations may see a reduction in pest activity for a month or two, but the pests return, as the remediations are not thorough.¹²

The Monitor expert's reports have provided guidance to NYCHA on how to solve this problem, by tailoring each remediation to that apartment's needs and ensuring that the exterminators use their time to best advantage in performing work having the greatest impact. For its part, the Pest Control Department has been providing guidance in the field based on the observations in these reports. We look forward to progress in that regard as our inspections, and our productive dialogue with Pest Control, continue.

3. Vendor Issues

To augment its own pest remediation efforts, NYCHA contracts with a handful of outside vendors to provide pest extermination services. Both Pest Control and the boroughs are authorized to retain these vendors when circumstances warrant. While SOEs from Pest Control or the boroughs (depending on who did the retention) are responsible for supervising the vendors and assuring the quality of their work, the Monitor's investigative team has determined that such oversight is not uniform and is often lax. This has led not only to incomplete remediations as discussed in the section above, but also to instances of potential fraud, waste, and abuse in extermination and billing practices.

That is because Pest Control has lacked the authority and personnel to adequately supervise and audit the work done by the vendors (and borough exterminators) spread throughout the field. We have maintained that unless control of pest remediation throughout the portfolio is centralized under the authority of Pest Control, and Pest Control is given proper tools to manage that activity, the problems identified by our investigative team will persist. For example, training for all NYCHA exterminators should be supervised by Pest Control – both classroom and field work – and Pest Control should be responsible for uniform quality control for all exterminations in the field, including the power to sanction or require additional training for poorly performing exterminators.

Based on that assessment, the Monitor Team submitted to Pest Control a comprehensive memorandum documenting our findings and proposing remedial action consisting primarily of consolidation of management of all pest remediation efforts under Pest Control. This would provide uniformity of professional standards for all pest remediations throughout the portfolio, whether done by Pest Control, borough operations, or vendors. This would also enable NYCHA to execute better oversight of work performed by both staff and vendors to ensure that the measures taken are thorough and effective. Pest Control embraced these recommendations and responded by drafting a detailed proposed restructuring plan for Pest Control consistent with the Monitor's recommendations. Pest Control is currently working with NYCHA's leadership to integrate the new operational model for Pest Control within the framework of the "Neighborhood

¹² Also, the exterminators are often prevented from performing thorough remediations because the apartments are not adequately prepared by residents in advance (kitchens cleaned, cabinets emptied, appliances pulled out from the walls, etc.). This is a complex problem that the Monitor and NYCHA are jointly addressing through the "Resident Ambassador Program," discussed below.

Model” for management of developments. The Monitor team and our consulting experts are prepared to assist in implementing the new pest remediation management regimen.

4. The Resident Ambassador Program

As discussed above, exterminators frequently are unable to conduct thorough exterminations because the units to which they are assigned are not prepared for the exterminations, meaning that the areas where pests tend to cluster are inaccessible: kitchen cabinets have not been emptied; kitchen sinks and counters contain dishes, utensils and food containers; closets have not been emptied; and furniture and appliances have not been removed from walls. When exterminators find these conditions, they have three choices. They can perform an incomplete remediation; they can wait while the resident prepares the apartment; or they can leave and return on a later date. None of these options is attractive. The result of the first option is an incomplete remediation, leading to a repeat infestation within a short period of time. The second option causes delays that frustrate completion of the day’s schedule. The third option may simply exacerbate the pest infestation problem that necessitated the visit, as the pests will continue to proliferate when the extermination is delayed until it can be rescheduled. Rescheduling is also necessitated when a resident simply is not home – or declines admittance to the exterminators – when they knock on the door.

NYCHA is well aware of these problems, and in the past, has sought to address them through flyers and robo-calls to the residents in advance, advising them of the date for the extermination and the measures they should take to prepare their units for remediation. These efforts have largely proven ineffectual, however, for the principal reason that residents did not necessarily read the flyers or hear the robo-calls. NYCHA then instructed its extermination vendors to communicate directly with the tenants in advance of the exterminations, to assure that someone would be home on the scheduled date, and that their units would be prepared for the extermination. That has not worked either, however, for a variety of reasons.

Accordingly, NYCHA has decided to partner with the Monitor on a pilot program that the Monitor developed last year, but that was not initiated then due to lack of funding. Called the “Resident Ambassador” program, it has every prospect of success where previous efforts at effective advance communication with residents have failed. The key ingredient is the resident ambassadors themselves – fellow NYCHA residents who understand the pest remediation protocol and who know their neighbors. The resident ambassadors, who will be paid, will be responsible for: meeting with residents whose units are scheduled for pest remediation; confirming the date of remediation (and if that date is inconvenient for the resident, working with the neighborhood planner to schedule a different date); explaining to the resident the extermination process and the need to prepare their units in advance; doing a walk-through with the resident to identify what exactly needs to be done before the extermination; helping the resident prepare as necessary (without heavy lifting); and confirming immediately before the extermination that the unit is prepared for remediation.

The goal is to facilitate full remediations by the exterminators – on schedule. That will reduce or eliminate the necessity for repeat visits to the same unit, improving the quality of life and enabling the exterminators to cover more ground more effectively on an ongoing basis. NYCHA and the Monitor are excited at the prospects for success for this new pilot, which will be initiated on the Lower East Side and expanded throughout the portfolio during 2023 as circumstances permit.

E. Lead-based Paint

The Agreement requires NYCHA to abate lead in its properties by 2039, with 50% of the abatement to be finished by 2029. According to the extensive provisions of Exhibit A to the Agreement, NYCHA must also strictly follow the laws and regulations applicable to safe abatement and any renovation, repair, or painting work that disturbs more than two square feet of a component part of an apartment. Further, NYCHA must comply with the laws of New York City, which has a stricter standard than HUD for abatement of lead. To determine if lead abatement is required, NYCHA conducts X-ray fluorescence (“XRF”) testing to the New York City standard of .5 milligrams per centimeter squared (.5 mg/cm²).

From the very outset of the monitorship, lead abatement in apartments where children under six (“CU6”) reside has been a paramount priority given that children are most vulnerable to the serious and permanent effects of lead once it enters the blood stream. The process of identifying these units has changed over time, causing many more apartments to be classified as CU6. The most significant changes have come from the expanded legal definition of “resides” to include units where children visit, and from the stricter lead paint standard, which led NYCHA to proactively include CU6 apartments in developments that were exempt under the previous standard. Specifically, the key legal and policy changes were:

- a 2019 law that required CU6 to include apartments where children live or visit more than 10 hours per week (this took effect in 2020);
- a 2021 change of the lead paint standard to .5, which led NYCHA to voluntarily broaden its CU6 population to include developments which were exempt under the 1.0 standard; and
- increased outreach efforts around annual Local Law 1 notices, including posters, door knocks, and web portals to identify CU6 units.

As a consequence of these factors, the total number of XRF-tested CU6 units has increased substantially in the last few years.¹³ As of January 1, 2019, 3,028 CU6 units were XRF tested. Refreshed later that year, the number was 6,436. By January 1, 2020, the number of CU6 units was 20,880. Refreshed later that year, the number was 21,347.

¹³ These are units requiring a visual assessment that have been designated as CU6 units. They may have been XRF-tested but if tested positive, they would continue to be assessed. For units presumed positive, they would be visually assessed until they test negative.

The number of CU6 units tested in first half of 2021 was 6,198, with 10,749 CU6 units tested in the second half of 2021. The number of CU6 units tested in first half of 2022 was 32,092. The projected count of CU6 units to be tested in the second half of 2022 is 20,609.

NYCHA has established the TEMPO Program to focus on CU6 apartments, and also those in which a pregnancy has been reported. The TEMPO Abatement Program is a sea change to how NYCHA previously performed lead abatement. The TEMPO Abatement Program temporarily relocates residents in hotels during abatement activities so that the resident and their family return to a lead-free apartment.¹⁴

The data showing test results for each component in an apartment is saved in Maximo. NYCHA also has extensive data from its prior XRF initiative (testing some 100,000 units to 1.0 mg/cm²), which is used to help ensure that lead-safe work practices are used on positive components.

All lead repair, interim control, and abatement work must conclude with a clearance test in which dust is collected and tested in a laboratory. Dust wipe performance following repair work has significantly improved since 2019. But even in 2022, performance has fluctuated between a high of over 92% and a low of 60%.

Abatement in two developments converted under the PACT program – Harlem River and Williamsburg Houses – is now underway (*i.e.*, 10% or less complete). Both locations must be abated by the end of January 2024.

The graphs below provide details of NYCHA's performance in testing and abatement as of October 7, 2022:

¹⁴ In addition to abatement, NYCHA is also prioritizing inspection and repair of lead paint under the TEMPO program, as required by the Initial Lead Action Plan approved by the Monitor last year. Units housing children under six receive visual assessments every six months (only one is required by the HUD regulation), and repairs are made on an accelerated basis.

EFO/RIIS January – October 7, 2022 Report									
WO Category	Q1	April	May	June	July	August	Sept	Oct	Total
CU6 Abatements	0	0	0	0	0	0	0	0	0
DOH Abatements	8	5	3	3	2	5	0	2	28
Moveouts (Regular/PEG)	59	31	24	39	4	31	47	13	248
Occupied LAW Abatements	0	0	1	7	0	5	0	4	17
Total LAW	67	36	28	49	6	41	47	19	293
Vendor Abatement Report, January – October 7, 2022									
WO Category	Q1	April	May	June	July	August	Sept	Oct	Total
CU6 Abatements	9	11	7	2	14	48	31	11	133
DHS	5	0	14	29	13	20	27	5	113
Moveouts	85	34	61	59	44	63	66	15	427
PEG	61	28	4	0	0	0	0	0	93
Total Vendor	160	73	86	90	71	131	124	31	766
Total Vendor and LAW	227	109	114	139	77	172	171	50	1,059

Additional details are provided below:

1. XRF Testing Progress (.5 mg/cm2)

0.5 Threshold	Jan 3 – Oct 12	
Total Scheduled	30,498 **	
Attempted	26,117 (29,336**)	
Completed	24,077 (25,159**)	
Closed	16,110	
Diff (completed-closed)	7,884	
Positive	6,438	40%
Negative	9,778	60%
TNH	1,280 (1,456**)	
Unsafe	305 (111**)	
TR	325 (685**)	
Total	1,930 (2,252**)	

*XRF testing at 0.5 began January 3, 2022 with 1 vendor (KAM) at Edenwald. Currently there are 8 vendors assigned to 13 developments. Numbers are based on Dashboard unless otherwise indicated.
 **Based on internal tracking numbers. LHCD will visit units prior to vendors to aid in increases success rates. Therefore, these numbers are based on LHCD field reporting.

1.0 Threshold	October 12, 2022	
Total	133,934	
Attempted	118,907	
Completed	108,229	
Closed	104,009	
Diff (completed-closed)	4,220	
Positive	25,332	24%
Negative	75,164	72%
Not attempted	15,027	
TNH	7,165	
Unsafe (extreme hoarding)	2,948	
TR	2,162	
Total	12,275	

*New 1.0 XRF inspections have stopped. Review of reports continues.

2. TEMPO Repairs as of October 11, 2022

Work Stream: TEMPO Program	Obligation Description & Reference: A new cross-departmental team within NYCHA's Lead Hazard Control (LHC) and OACM departments	Status Meeting: 10/11/22
		Owner: OACM/Rapid Response

TEMPO Status:

Key Milestones/Deliverables	Current Reporting Period			Prior Reporting Period			Delta		
	Total Work Orders	Total Completed Work Orders	Completed WO's Last Week	Total Work Orders	Total Completed Work Orders	Completed WO's Prior Week	Work Order Change	Total Completed Change	Completed WO's Week By Week Change
Number of work orders currently assigned to TEMPO Repair Team ¹	16415	14246	123	16308	14140	168	107	106	-45
Go-Live ² Work Orders	11263	9630	99	11158	9537	140	105	93	-41
% of Total Universe vs. Go Live	69%	68%	80%	68%	67%	83%	0%	0%	-3%

Notes:
 1. This includes backlog work orders prior to TEMPO Program.
 2. Work Orders since TEMPO Program Creation (05/17/2021)
 3. Data Pull on 10/11/2022



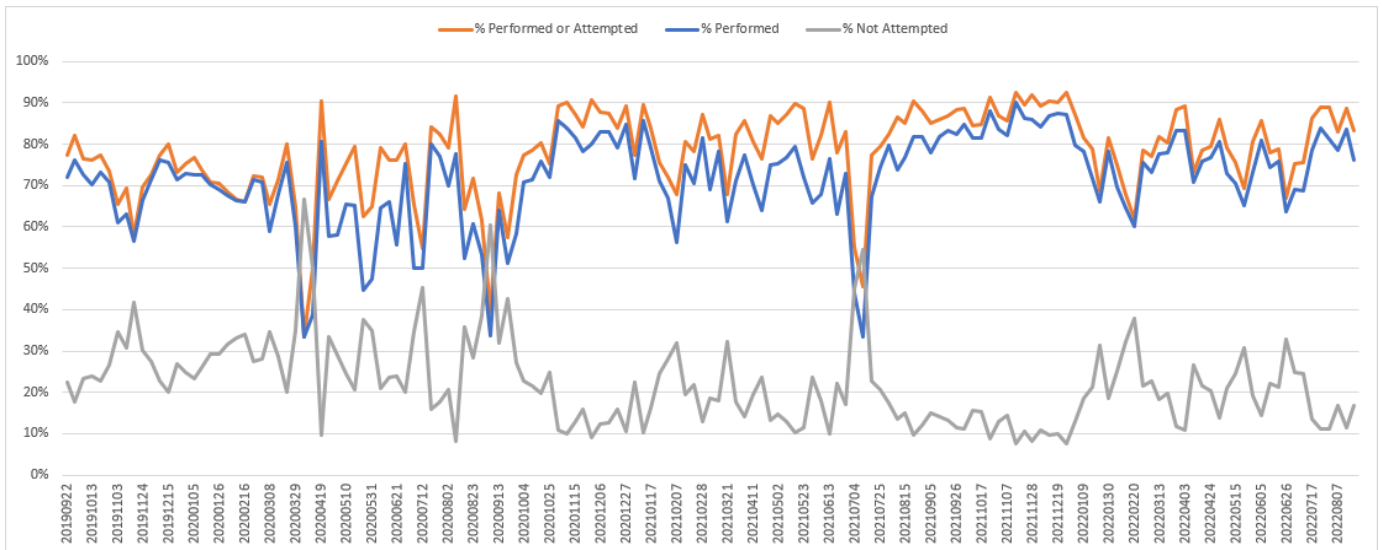
Dust Wipe Status:

- Total DW : 2317
- Failed DW : 342
- Failure mostly on Floor

Other Issues:

- August Refresh occurred 8/31/22 new universe 1483 which includes 61 Healthy Start Units
- Universe readjusted on 9/30 to account for Siebel data- new universe is 1234

3. Dust Wipe Reporting (Performance Trends Since 2019)



Overall, between the PACT abatements and the TEMPO program, NYCHA has started to transition from testing to abatement in 2022, a trend that will need to continue in 2023 and beyond to meet the Agreement abatement milestones.

F. Mold and Leaks

The HUD Agreement requires NYCHA to address mold and leak cases in a prompt and thorough manner. Exhibit B, Paragraph 17.b requires NYCHA to complete all “simple” repairs within seven days and all “complex” repairs within fifteen, or in the alternative to clean visible mold within five days. NYCHA has struggled with these performance standards since the execution of the Agreement in 2019, but is now taking well-considered steps to improve its performance.

In May 2022, NYCHA’s Office of Mold Assessment & Remediation (“OMAR”) launched the Mold and Leak Scorecard and Dashboard with the assistance of Stout, the Independent Data Analyst (“IDA”). The Scorecard and Dashboard are tracking tools ranking each NYCHA consolidation on its mold and leak work order performance.¹⁵ The Scorecard tracks 11 key mold and leak metrics correlating to the compliance requirements outlined in the *Baez* litigation and the HUD Agreement.

1. Mold and Leak Intervention Strategies

With the Scorecard, OMAR can see which developments are the most vulnerable and flag issues where they are underperforming. Developments that are the most underperforming are considered for entry into the Enhanced Oversight Program (“EOP”). The EOP leverages NYCHA’s Mold and Leak Scorecard data to improve compliance at vulnerable developments. This work is done using a combination of intervention strategies including enhanced monitoring as well as supplying additional resources to improve mold and leak compliance.

In July 2022, OMAR kicked off the first round of EOP at six sites including Sumner, Red Hook West, Unity Plaza, Wilson, St. Mary’s Park, and Astoria Houses. It was completed in October 2022. Through this round of EOP, OMAR deployed a team of certified mold inspectors and seasonal staff to address mold and exhaust fan cleaning and engaged the Skilled Trades Administrators to prioritize their work. OMAR also led weekly check-in meetings with each consolidation to monitor progress and address roadblocks. Throughout the EOP, the Independent Mold Analyst (“IMA”) made wall cavity assessments to identify the root cause(s) of plumbing issues faced by selected lines or buildings. Round II EOP is currently in progress. It began on October 1st and will continue until December 2022. Developments in EOP Round II include O’Dwyer Gardens, Jefferson, Queensbridge North, and Red Hook East. Finally, in partnership with the Ombudsperson Call Center (“OCC”), OMAR will conduct on-site outreach events at each consolidation to spread awareness about mold and leak resources and learn about issues faced by residents.

Separately from the EOP, OMAR also launched several new initiatives to improve NYCHA’s response to mold and leaks. The Maintenance Worker Inspection Pilot ran from September 2021 to May 2022, and it was intended to test the ability of Maintenance Workers to conduct mold inspections. By shifting some of the inspection responsibilities

¹⁵ A consolidation is a group of developments that are managed together.

to Maintenance Workers, NYCHA hoped to reduce its open mold inspection backlog as well as the time to inspect. Five developments in the Bronx were chosen for this pilot and they included Castle Hill, Edenwald, Mitchel, Melrose, and Marble Hill Houses. Overall, the pilot demonstrated positive results. The backlog of open mold inspections, as well as the average days to inspect declined at all pilot sites. Specifically, OMAR observed a decrease in open initial mold inspections from 1,154 in September 2021 to 196 in May 2022. Concurrently, the average days to inspect declined from 43 days in September 2021 to 25 days in May 2022. However, NYCHA has been slow to expand this initiative beyond the pilot developments. As of October 2022, NYCHA began rolling out the pilot Authority-wide, prioritizing the lowest performing consolidations on the Scorecard.

OMAR also launched a Mold Inspection Initiative utilizing three Property Maintenance Superintendents (“PMSs”) OMAR has on staff. These workers were tasked with reducing the backlog of mold inspections at developments where mold inspections were not being addressed in a timely manner. This initiative started in January 2022 at Jackson and Morrisania Air Rights. As an incentive, OMAR set a goal to complete 1,000 mold inspections by the end of 2022. As of November 1, 2022, they met that target having already completed just over 1,000 mold inspections.

In a similar manner, OMAR launched Operation Mold Cleanup prioritizing the cleanup and prevention of mold conditions across NYCHA. Beginning on May 3, 2022, this initiative flagged a total of 19,633 outstanding mold removal and mold resistant paint work orders assigned to Caretaker X staff and painters and challenged NYCHA staff to address the work as quickly as possible.¹⁶ As of September 12, 2022, for Phase I NYCHA was able to close a total of 9,254 of these work orders, or approximately 47.13%. In August 2022, NYCHA commenced Phase II of this initiative. Phase II will focus on closing the remaining open work orders identified at the start of the initiative (13,002) as well as any new work orders created since May 3, 2022 (6,631). As November 7, 2022, there are 7,464 open work orders for Operation Mold Cleanup, which includes work orders created since the start of the initiative. Caretaker X’s have made excellent progress and closed 99.18% of the 2,452 cleaning work orders assigned to them. In contrast, painters have closed 64.43% of their 8,161 cleaning work orders and 49.66% of their 9,020 mold-resistant paint work orders. Phase II will continue through November 15, 2022.

In addition, OMAR deployed seasonal staff to assist developments with outstanding mold cleaning work orders. Dubbed the Mold Cleaning Initiative, these seasonal staff assignments began in May 2022 and targeted mold cleaning work orders assigned to Caretaker X staff and painters. As of November 1, 2022, this program closed a total of 1,486 work orders.¹⁷

As a proactive measure at locations with a high number of mold and leak issues, OMAR is moving forward with its Building Line Initiative (“BLI”). BLI is a comprehensive plumbing

¹⁶ Caretaker X staff has specific duties such as driving development vehicles for garbage pickups, delivery of supplies/materials, snow removal, and prepping units for move outs.

¹⁷ 727 of those work orders were closed with work done and the remaining 759 work orders were closed after staff confirmed the work already had been completed.

and renovation project that aims to address mold and leaks by targeting their underlying root cause(s). This goal is accomplished by developing a comprehensive scope of work to replace aging infrastructure throughout an entire building line and replacing it with new equipment. The first BLI project, which impacted six apartments at Red Hook East Houses, started in June 2022. NYCHA is currently working to finish plumbing renovations and electrical work by the second week of November 2022. NYCHA is planning to return residents to their units by the end of the year.

Beyond the reach of this singular project, OMAR has also taken the lead on several large renovation projects across NYCHA's portfolio using its vendor contracts. These projects are chosen when OMAR determines that a mold or leak issue is so extreme that its impact to health and human safety necessitates immediate intervention. In total, these projects have renovated both tenants' apartments as well as vital community spaces across NYCHA.

To inhibit mold growth caused by faulty mechanical ventilation, in 2020 NYCHA committed through the Initial Mold Action Plan to a broad upgrade of its ventilation systems. NYCHA has since installed over 6,000 new roof fans, confirmed the functionality of over 2,000 other fans through rigorous inspection, and cleaned vents in some 66,145 units. Though the roof fan project has been ably completed, some 20,415 apartments remain to be cleaned, with resident cooperation remaining a significant challenge.

With the completion of the roof fan portion of the ventilation project, as well as the significant progress made cleaning vents, we note that mold cases have been reduced significantly in the past year. In October 2021, NYCHA reported 1,723 new confirmed mold cases. This September, NYCHA reported 872. In July, the number of new cases was down to 672. NYCHA will soon be conducting an analysis with the Independent Data Analyst in the Baez matter to assess the efficacy of the ventilation project in reducing mold cases.

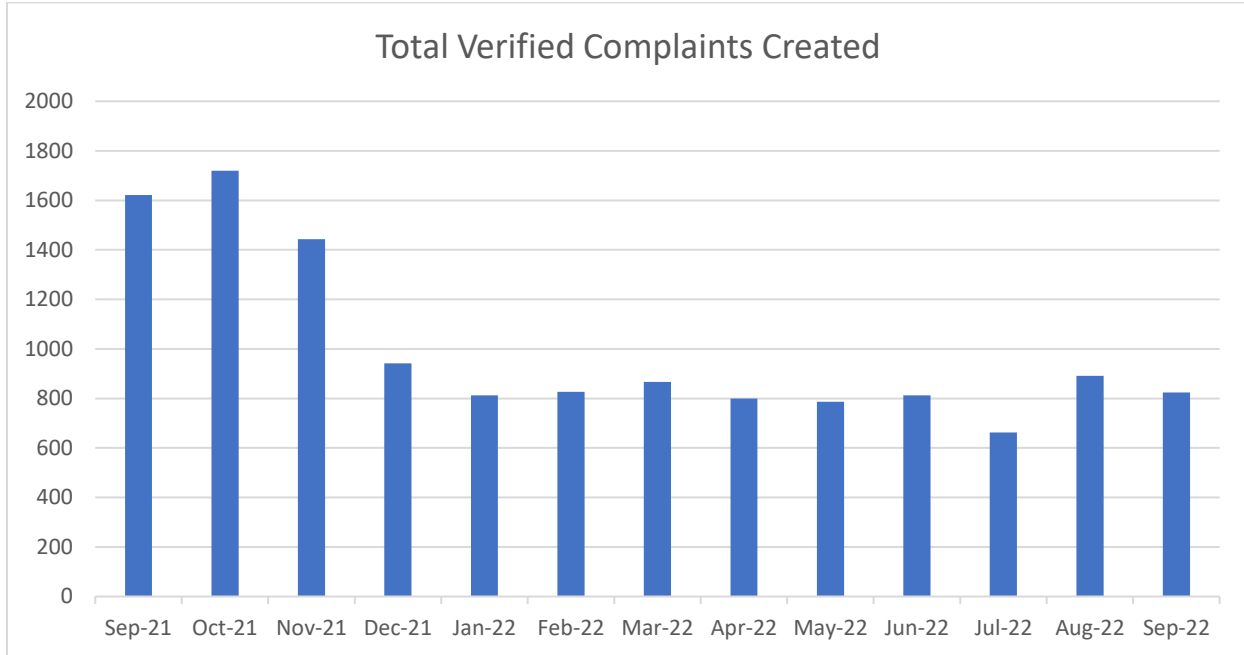
2. Mold and Leak Metrics

The graphs below show key measures of performance with respect to mold and leak complaints, as well as provide more details on the initiatives NYCHA is undertaking to improve its response to mold and leaks. The metrics indicate that:

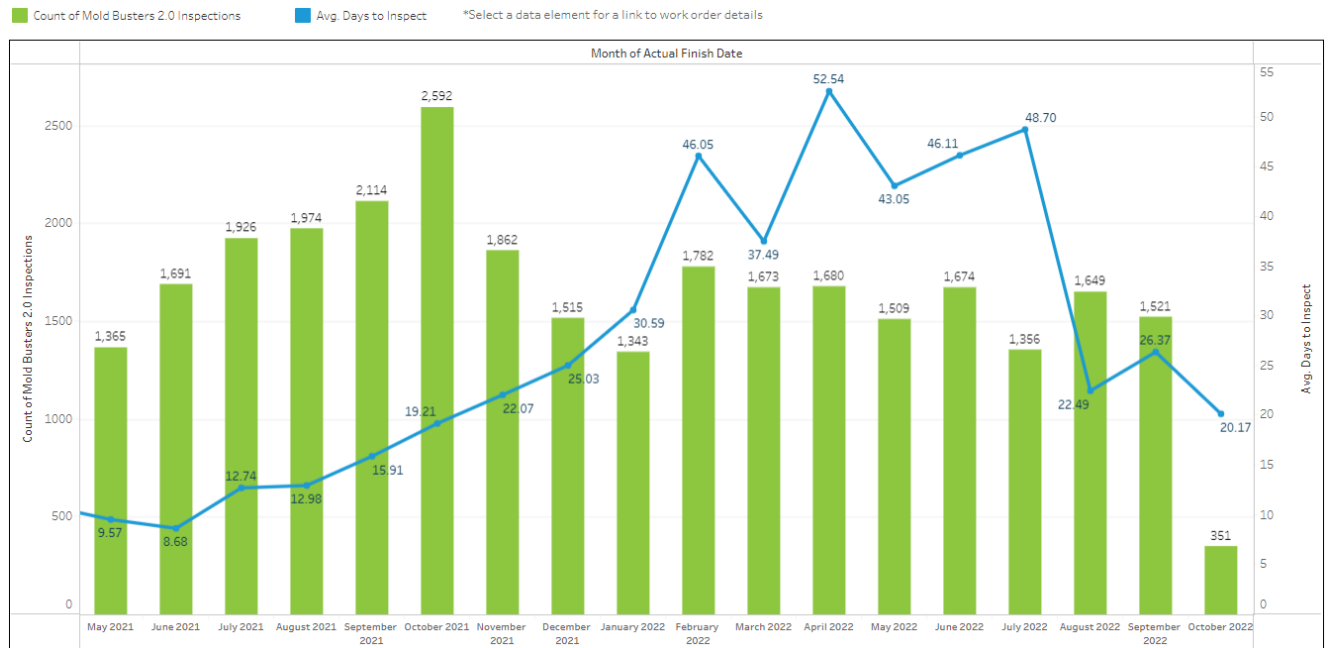
- Through June 2022, verified mold complaints have dropped significantly since October 2021 (as the ventilation project progressed).
- Mold inspection performance has eroded.
- The roof fan portion of the ventilation upgrade project was completed.
- As of November 2022, 66,944 vents have been cleaned through the ventilation project.

- As of mid-August 2022, NYCHA's performance in required mold cleaning and repair categories on a combined basis remains grossly deficient.

Total Verified Mold Complaints



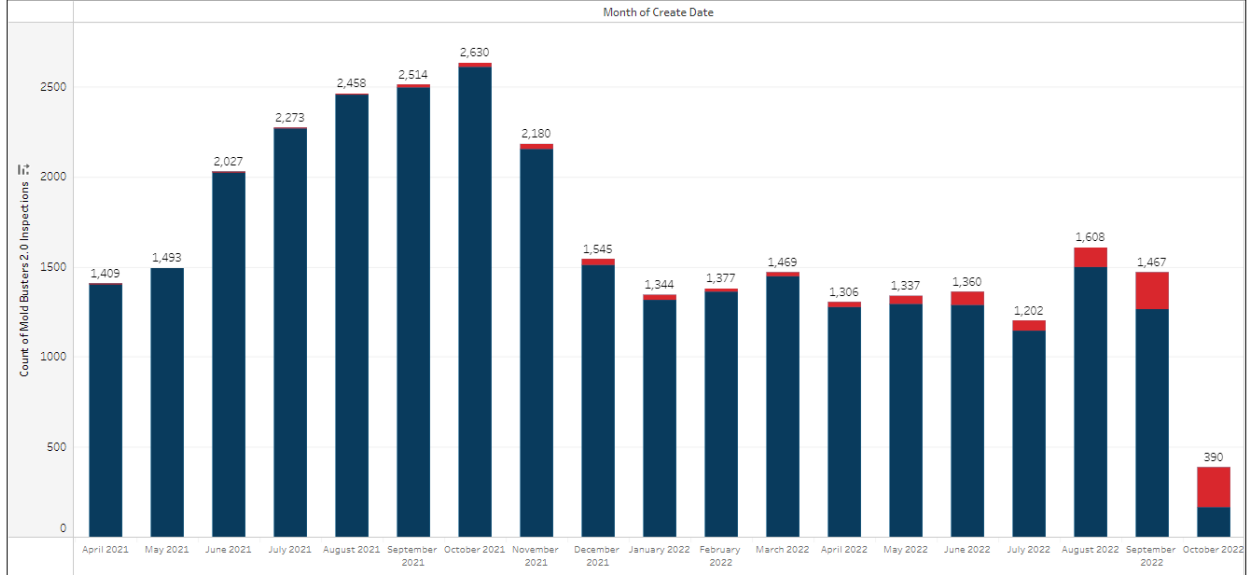
Mold Busters 2.0 Inspections by Month with Average Days to Inspect



Completed or Awaiting a Mold Inspection

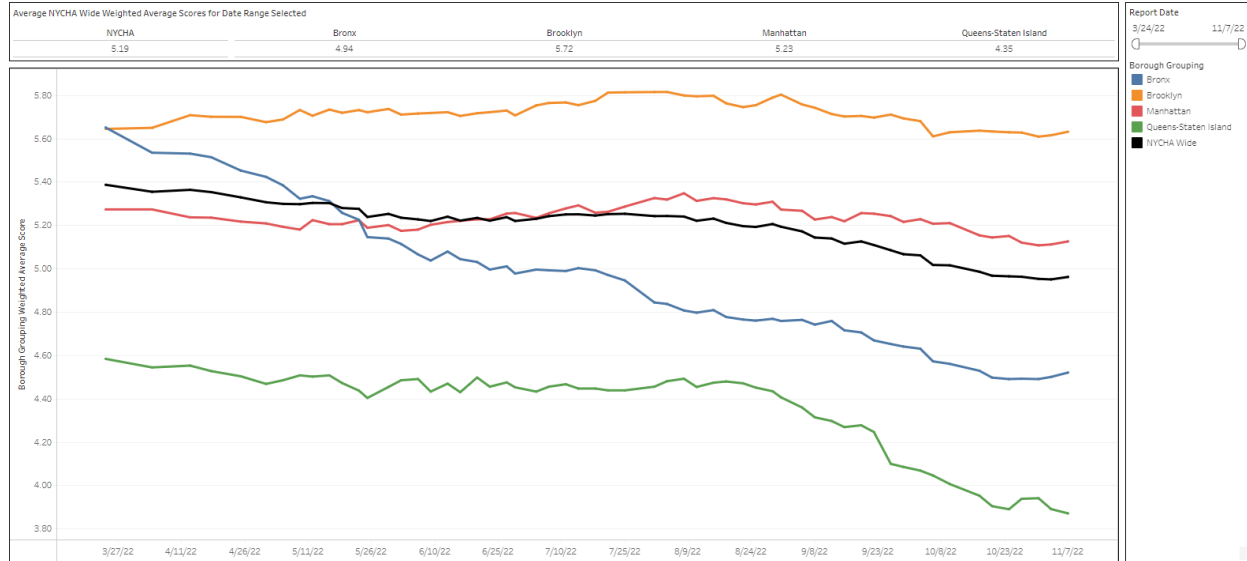
Inspection Status	Total	Monthly Average	October 2021	November 2021	December 2021	January 2022	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022
Awaiting Initial Inspection	669	56	20	28	35	27	18	23	31	46	72	58	108	203
Inspection Complete	18,156	1,513	2,610	2,152	1,510	1,317	1,359	1,446	1,275	1,291	1,288	1,144	1,500	1,264
Total Complaints/Inspections	18,825	1,569	2,630	2,180	1,545	1,344	1,377	1,469	1,306	1,337	1,360	1,202	1,608	1,467

■ Awaiting Initial Inspection
 ■ Inspection Complete



Overall Scorecard Trend for Each Borough (3/24/2022 to 11/7/2022)

NYCHA Mold and Leak Scorecard Overall Score Trend



Key Scorecard Metrics (All NYCHA Consolidations)

NYCHA Average of Consolidation	Report Date 3/24/2022	Report Date 11/7/2022	Change (% or points)
Weighted Average Score	5.39	4.96	-0.43
1: Median Days to Inspect or Pending Inspection	24.58	13.55	-44.87%
2: % of Skilled Trades Work Orders Over 100 Days	74.59%	72.84%	-1.75
3: % of Open WO with a Scheduled Date in the Future	8.19%	14.96%	6.77
4: % of Founded Mold Busters 2.0 Inspections	77.69%	70.97%	-6.71
5: % of Mold Busters 2.0 QA Inspections 45 Day Compliant	67.18%	82.44%	15.26
6: % Mold Busters 2.0 QA Inspections Passed	78.32%	80.73%	2.41
7: % Mold Recurrence	9.40%	13.32%	3.92
8: % of 48 Hour Compliant Emergency Leaks	78.17%	81.55%	3.38
9: Median Days to Complete Non-Paint* Repairs or Days Pending Non-Paint* Repairs from Create Date	184.34	239.56	29.95%
10: % of OCC Tickets Solved or Pending Solution within 30 Days of Create Date	16.05%	19.45%	3.41

Maintenance Worker Pilot – Overall Progress

Month	Total Open Inspections ³¹	Average Days Open – Initial Inspection ³²	Total Completed Inspections (All Staff)	Total Completed Inspections (MW Only)	Average Days to Inspect – Initial Inspection
Sept (2021)	540	46	169	62	43
Oct	469	48	365	231	40
Nov	435	58	288	125	29
Dec	380	65	247	94 ³³	42
Jan (2022)	315	73	239	158	39
Feb	206	79	307	196	36
Mar	121	46	376	242	29
Apr	56	72	329	195	14
May	41	22	241	131	25

OMAR Mold Inspection Initiative (data as of November 1, 2022)

Consolidation	Mold Inspection ₄₁	Founded	QA Inspection	Failed	Inspection Completed
Astoria	11	11 (100%)	20	8 (40%)	31
Bay View	35	32 (91%)	70	32 (46%)	105
Edenwald	1	1 (100%)			1
Howard	41	32 (78%)	25	9 (36%)	66
Ingersoll	188	147 (78%)	89	36 (40%)	277
Morrisania Air Rights	32	30 (94%)	43	22 (51%)	75
O'Dwyer Gardens	40	24 (60%)	26	8 (31%)	66
Red Hook East	102	86 (84%)	82	39 (48%)	184
Red Hook West	105	88 (84%)	53	28 (53%)	158
Sumner	5	3 (60%)	15	4 (27%)	20
Unity Plaza	34	22 (65%)	33	8 (24%)	67
Wilson	104	91 (88%)	26	13 (50%)	130
Total	698	567	482	207	1,180

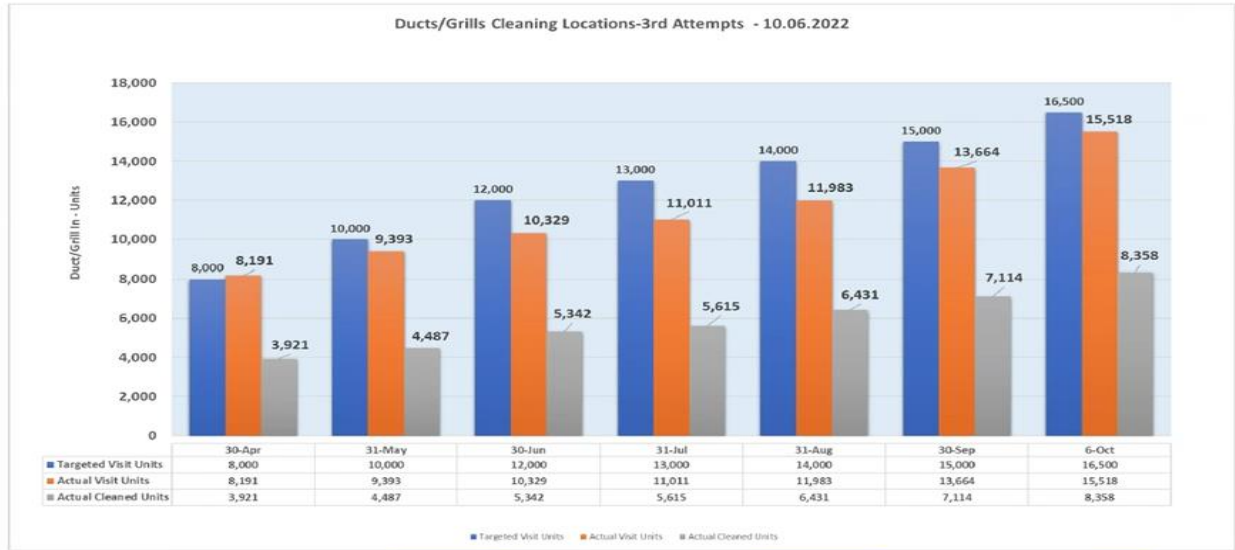
**Operation Mold Clean Overview by Borough and Work Order Type
(data as of November 7, 2022)**

Borough / WO Flag	Initial Work Orders (Phase I - 13,002; Phase II - 6,631)	Work Orders Open as of 11/7	Work Orders Closed as of 11/7	Ratio of Closed Work Orders
Bronx	5,657	1,383	4,274	75.55%
Caretaker X Mold Cleaning	934	3	931	99.68%
Painter Mold Cleaning	2,187	518	1,669	76.31%
Painter Mold Resistant Paint	2,536	862	1,674	66.01%
Brooklyn	6,717	2,876	3,841	57.18%
Caretaker X Mold Cleaning	949	17	932	98.21%
Painter Mold Cleaning	2,825	1,119	1,706	60.39%
Painter Mold Resistant Paint	2,943	1,740	1,203	40.88%
Manhattan	5,914	2,767	3,147	53.21%
Caretaker X Mold Cleaning	449	0	449	100.00%
Painter Mold Cleaning	2,521	1,084	1,437	57.00%
Painter Mold Resistant Paint	2,944	1,683	1,261	42.83%
Queens-Staten Island	1,345	438	907	67.43%
Caretaker X Mold Cleaning	120	0	120	100.00%
Painter Mold Cleaning	628	182	446	71.02%
Painter Mold Resistant Paint	597	256	341	57.12%
Grand Total	19,633	7,464	12,169	61.98%

OMAR Mold Cleaning Initiative – Work Orders Completed by OMAR Team (data as of November 1, 2022)

Consolidation	Completed	Work Done	No Work Done
Albany	40	8 (20%)	32 (80%)
Astoria	57	35 (61%)	22 (39%)
Edenwald	113	50 (44%)	63 (56%)
Howard	45	39 (87%)	6 (13%)
Ingersoll	216	105 (47%)	111 (51%)
Jefferson	45	22 (49%)	23 (51%)
Patterson	27	16 (59%)	11 (41%)
O'Dwyer Gardens	75	25 (33%)	50 (67%)
Queensbridge North	33	20 (61%)	13 (39%)
Red Hook East	124	74 (60%)	50 (40%)
Red Hook West	97	84 (87%)	13 (13%)
Roosevelt	44	37 (84%)	7 (16%)
St. Mary's Park	50	22 (44%)	28 (56%)
Sheepshead Bay	198	61 (31%)	137 (69%)
Sumner	135	63 (47%)	72 (53%)
Whitman	118	40 (34%)	78 (66%)
Wilson	69	26 (38%)	43 (62%)
Total	1,486	727	759

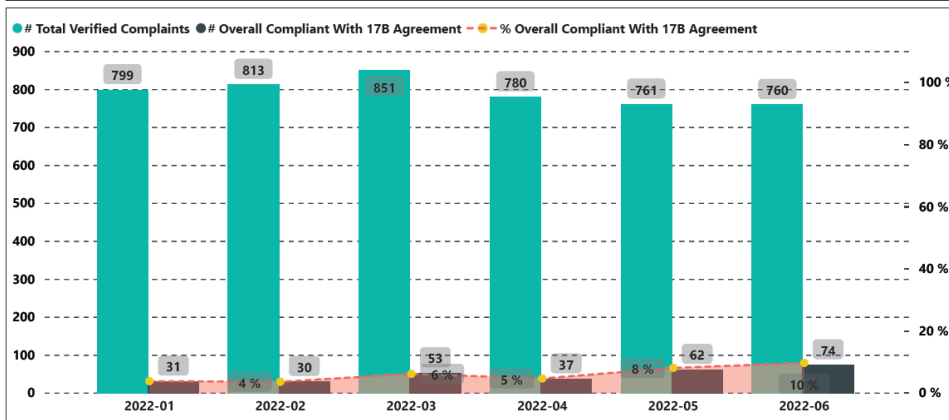
The NYCHA Mechanical Ventilation Cleaning Project



✦ **Target Units for 3rd Attempt = 29,701 Units**
 Total Units Attempted 15,518 = 52 %
 Successfully Cleaned 8,358 Units
Total Units Cleaned (1st, 2nd & 3rd Attempts) = 66,099 Units
 The Units Accessed & Cleaned Ratio = 76 %

“Blended” Paragraph 17.b Performance Combining Cleaning, Simple and Complex Repair Performance (per NYCHA)

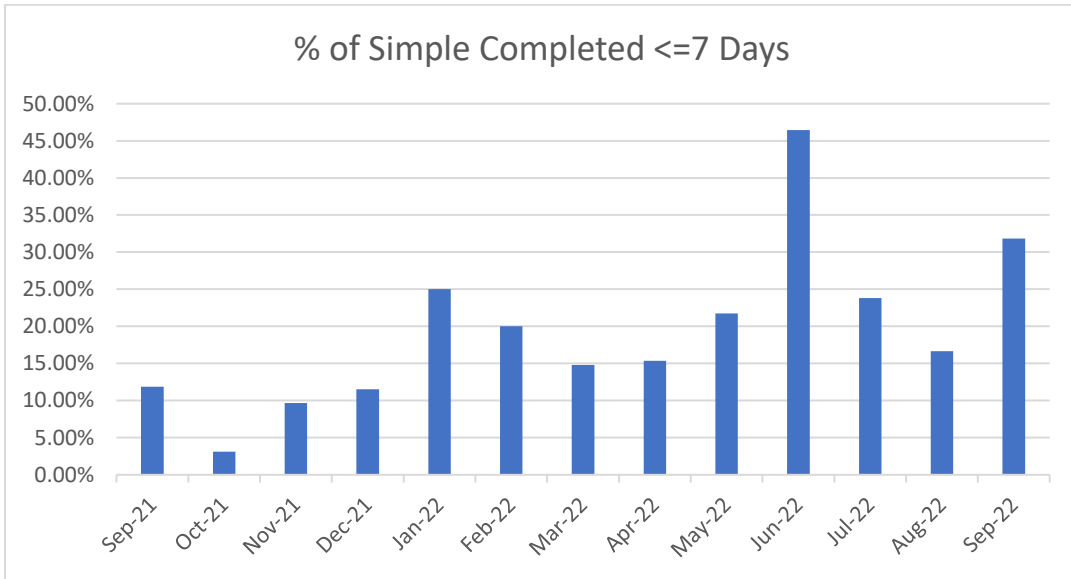
Reported Month	# Total Verified Complaints	# Removed Visible Mold In 5 Business Days	% Removed Visible Mold In 5 Business Days	# Total Complex Complaints	# Of Complex Completed <= 15 Days	% Of Complex Completed <= 15 Days	# Total Simple Complaints	# Of Simple Completed <= 7 Days	% Of Simple Completed <= 7 Days	# Overall Compliant With 17B Agreement	% Overall Compliant With 17B Agreement
2022-01	799	17	2 %	775	15	2 %	24	6	25 %	31	4 %
2022-02	813	21	3 %	793	12	2 %	20	4	20 %	30	4 %
2022-03	851	30	4 %	824	28	3 %	27	4	15 %	53	6 %
2022-04	780	24	3 %	767	19	2 %	13	2	15 %	37	5 %
2022-05	761	51	7 %	738	20	3 %	23	5	22 %	62	8 %
2022-06	760	59	8 %	736	23	3 %	24	9	38 %	74	10 %
Total	4,764	202	4 %	4,633	117	3 %	131	30	23 %	287	6 %



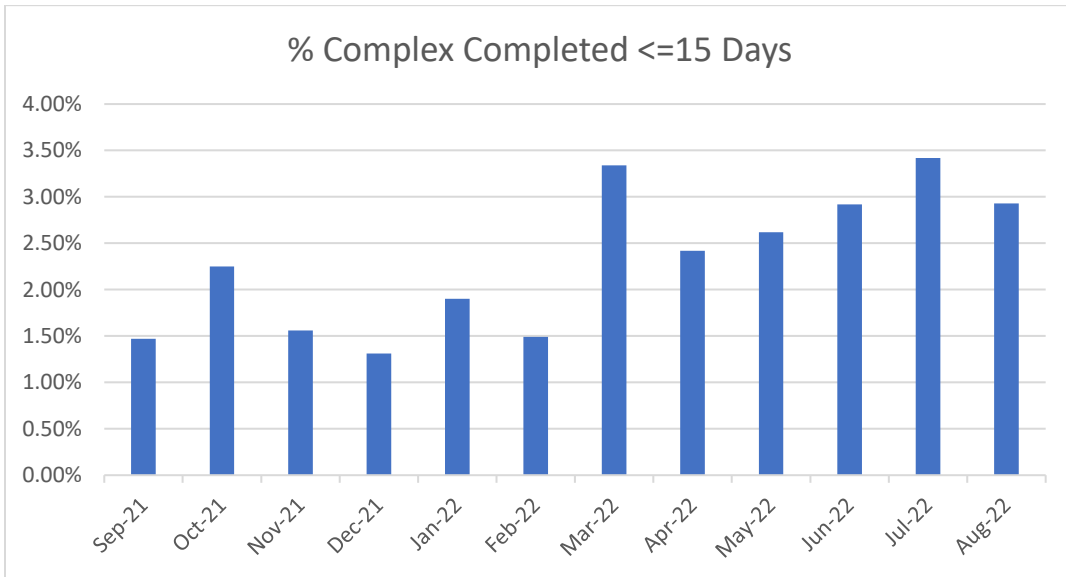
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Category	# Overall Compliant
Removed Visible Mold In 5 Business Days	140
Completed Complex Repairs In 15 Days	83
Removed Visible Mold In 5 Business Days And Completed Complex Repairs In 15 Days	34
Removed Visible Mold In 5 Business Days And Completed Simple Repairs In 7 Days	28
Completed Simple Repairs In 7 Days	2
Total	287

Paragraph 17.b: Simple (7-day) and Complex (15-day) Repairs



Simple Mold Remediation within 7 days



Complex mold Remediation within 15 days

G. Annual Unit Inspections

The Agreement requires NYCHA to conduct annual inspections of all occupied units and to perform minor repairs during such inspections. This is a critical task for development property managers and staff. The list of activities constituting minor repairs was developed by NYCHA and approved by the Monitor and HUD. The Agreement also

requires NYCHA to submit an Action Plan detailing how these inspections and repairs will be done. The dashboard tracks the number of inspections scheduled and completed, and when minor repairs were performed, among other data points. A second dashboard was developed to track the “child” work orders generated by the apartment inspections. NYCHA management utilizes these dashboards, a portion of which is shown below, to monitor the progress that boroughs, neighborhoods and developments are making towards completion of the required inspections and repairs.

Apartment Inspection Summary

Select Year from 2022

Borough: All Nycha | Neighborhood: All Neighborhood Administrator | Managed By: All In NYCHA | Development: All NYCHA Developments | Development LLC grouping: ALL

Exclude Rad

[Submit](#)

Borough Wide Summary

Borough	Total # of Occupied Units	Inspections Generated	Inspections Scheduled	Inspections Completed	All Moveout Inspection	Percent Complete	All Generated Open (Pending) IAs	Partially Completed App IAs	Percent Partially Completed	Attempted - No Apartment Access	First Attempt - No Access	Second Attempt - No Access	No Attempt	Deficiencies	Deficiencies Per Inspection	IAs with Minor Repairs Performed	IAs with Minor Repairs Deferred	% of IAs with Minor repairs Performed	IAs with other on the spot repairs performed	Total Child Workorders Created
Bronx	40,600	20,131	19,884	14,182	350	72.04	5,949	43	.723	3,243	2,684	559	2,575	34,617	2	4,169	1,132	29.31	4,462	43,793
Brooklyn	47,659	26,715	23,428	15,544	400	65.73	11,171	73	.653	4,396	3,417	979	6,602	30,042	2	3,660	1,932	23.44	4,146	37,388
Manhattan	49,067	25,390	24,217	14,739	420	59.87	10,651	72	.676	3,332	2,461	871	7,168	25,717	2	2,369	1,639	15.99	3,474	33,193
Queens	19,137	9,616	9,374	7,516	146	79.47	2,100	43	2.048	1,286	749	537	759	13,003	2	1,971	418	26.07	2,137	16,266
Total	156,463	81,852	76,903	51,981	1316	67.15	29,871	231	.773	12,257	9,311	2,946	17,104	103,379	2	12,169	5,121	23.31	14,219	130,640

Apartment Inspection Child Work Order Summary

Select Year from 2022

Borough: All Nycha | Neighborhood: All Neighborhood Administrator | Managed By: All In NYCHA | Development: All NYCHA Developments | Development LLC Grouping: ALL

Exclude Rad

[Submit](#)

Borough Wide Summary

Borough	Total Child/Related WOs Created	Open Child/Related Worked on	Open Child/Related with NoAccess and Other Labor	Remaining Open Child/Related with no Labor	Child/Related WOs Closed	All Child/Related High Priority	Open Child/Related High Priority	All Child/Related Skilled Trade	Open Child/Related Skilled Trade	All Child/Related WOs with MAINT Craft	Child/Related Maint Closed Same Day	Child/Related Maint Closed Within 1 Wk	Child/Related Maint Closed Within 2 Wk	Child/Related Maint Closed After 2 Wk	Total Child/Related Maint Closed	Child/Related Maint Open	Child/Related CM Maint - Percent Closed WOs	Child/Related CM Maint - Percent Oper WOs
Bronx	44,778	156	290	18,134	20,363	3,998	92	31,232	18,211	13,546	10,149	11,271	11,714	1,412	13,118	369	96.84	2.72
Brooklyn	38,100	111	209	17,013	14,711	4,027	149	28,407	17,086	9,693	7,573	8,767	9,019	403	9,419	247	97.17	2.52
Manhattan	33,817	94	171	17,287	10,878	3,193	58	25,694	17,491	8,123	6,223	7,290	7,592	438	8,030	61	98.86	.75
Queens	16,527	46	85	5,314	9,206	2,284	12	9,048	5,443	7,479	6,589	7,191	7,279	197	7,474	2	99.93	.02
Total	133,222	407	755	57,748	55,158	13,502	311	94,381	58,231	38,841	30,534	34,519	35,604	2,450	38,041	679	97.94	1.72

H. Capital Projects

While most of the Agreement obligations focus on meeting specific operational performance metrics for each pillar service area, the Agreement also requires that NYCHA repair, replace or install building systems using city capital funds. NYCHA's successful completion of these critical capital projects is closely connected to its ability to meet these performance objectives. To assess and oversee NYCHA's progress towards implementing these projects, the Monitor formed a Capital Projects team comprised of capital project and program manager experts with experience in the public and private sectors.

For heating and elevator services, the Agreement obligates NYCHA to deliver a specified number of new heating systems (mainly boiler replacements) and elevator replacements by certain dates. These new capital projects are essential for these two pillar areas because, as discussed above, much of the NYCHA's heating and elevator equipment is old and in poor condition. Both ESRD and HMSD are under strain to keep the worst of it operational.

The success of NYCHA's waste management services also relies on the completion of various capital projects. The Agreement obligates NYCHA to remove trash from buildings and grounds and then either store it in proper receptacles or remove it from development premises daily. This cannot be accomplished without providing developments with exterior waste yards, including exterior compactors, cardboard balers, and other equipment, to properly store trash for removal, and interior compactors in basements that facilitate the process of preparing trash for removal.

NYCHA's efforts to abate lead and fix leaks that cause mold also heavily rely on NYCHA's capital work to repair exterior and interior building infrastructure. Extensive building infrastructure upgrades and repairs are needed at NYCHA buildings, including repair of building "envelopes" such as exterior walls, roofs, foundations, interior piping systems for heat, water and waste lines, and replacement of many interior walls.

The Monitor Capital Projects team has been reviewing NYCHA's progress in delivering its capital projects, including new heating systems, elevators, and waste management projects, abatement of lead and comprehensive building modernizations ("Comp Mod") by the deadlines in the Agreement and the City Capital Action Plan ("CCAP").¹⁸ The team is also assessing the capital planning and management improvements that NYCHA's Asset & Capital Management Division ("A&CM," formerly known as the Capital Projects Division) plans to implement as part of the organizational plan changes in the Agreement and NYCHA's Transformation Plan.

¹⁸ Under the Agreement, the City committed to providing NYCHA \$2.2 billion in additional funding to support NYCHA's obligations under the Agreement. The funds must be spent in accordance with an Action Plan. In May 2021, the Monitor approved the CCAP which identifies the projects to be undertaken with the City funds.

1. Monitor Oversight

The Monitor team assesses A&CM's work largely by analyzing and auditing its project and portfolio documents found in NYCHA's capital project management software database *e-Builder* and in other sources such as the city's Department of Buildings website. We also assess NYCHA capital project tracking and reporting for accuracy. Accurate, detailed documentation is required for A&CM to effectively execute construction projects. The assessments also include: (i) a detailed analysis of the project documentation (schedule, risk, and cost), and (ii) an evaluation of A&CM's business processes and capabilities against a set of industry-standard criteria to ascertain the likelihood that NYCHA can successfully execute the full scope of the capital portfolio.

Each month, the Monitor team assesses a sample of capital projects, typically consisting of four heating projects and one elevator project. The Monitor's scheduler analyzes each project schedule to check quality of the schedule based on industry standards. The Monitor generates reports analyzing change orders to show the cost status of the project, and reviews and reports on the quality of the project document management, project reporting, and risk management of each project.

The team also attends onsite and virtual project meetings and interviews project managers and A&CM staff. Once project construction has started, the team's technical experts conduct field inspections that include interviews with personnel at the sites to validate the accuracy of the reporting in *e-Builder*. Field visit reports compare the observed project status with the project schedule details recorded in the computer software. In the field, the Monitor team also assesses whether the processes and capabilities in A&CM's newly revised procedures ("Change Plan") are being translated into practice and are having positive results.

2. Metrics and Findings

The Monitor generates summary information from the project-based assessments to identify risks and issues, and to determine whether NYCHA's project teams are appropriately managing and mitigating those concerns. The project is assessed against five core project control capabilities as shown below:

Capital Program Control Assessment Category	Capital Program Control Assessment Risk Score
Cost management	Amber – acceptable, but improvement required
Schedule Management	Red – not acceptable, significant improvement required
Risk Management	Red – not acceptable, significant improvement required
Document Management	Amber – acceptable, but improvement required
Project Reporting	Amber – acceptable, but improvement required

The outputs of all the assessments are used to identify variances between NYCHA’s reported progress and the Monitor’s assessment of progress. These results are shared with A&CM. Variances and recommendations are discussed at bi-weekly pillar meetings.

Since 2019, the Monitor team has been identifying problems with the quality and consistency of NYCHA’s capital processes and procedures, some of which do not reflect industry best practices. As a result, the project scoping process has been compromised, as has the management of project schedules, risks, and contract documents. The procurement process, including attainment of required approvals from the City’s Office of Management and Budget (“OMB”), is a significant challenge that NYCHA has not yet successfully navigated, and which greatly affects project schedules. The objective is to have project proposals submitted and then approved by OMB within the timescales NYCHA set out in its project schedules. There are heating system and elevator replacement projects as well as waste management projects, across the Capital Program that are still delayed and have project risks with no clear resolution, poorly defined schedules, and inconsistent project tracking and reporting.

While A&CM recently initiated important improvements to its project management procedures and is providing better project documentation in *e-Builder*, particularly regarding project schedules, our team remains concerned about persistent challenges to A&CM’s ability to timely deliver its capital projects. Project schedules for new heating system and elevator replacements are respectively approximately 10 and 9 months behind schedule, and A&CM forecasts further delays. Under the Agreement, NYCHA must replace 297 building heating systems (mainly boilers) and 275 elevators within the next few years. On the one hand, NYCHA has met its Agreement obligation to replace at least 70 heating systems by the end of 2022, and will likely complete 90 by the end of the year. On the other hand, NYCHA’s progress in the delivery of new elevators is dire. To date only two of NYCHA’s 3000-plus elevators have been replaced since well before

execution of the Agreement, and NYCHA is forecasting only six more elevator replacement completions by the end of 2022. The Agreement calls for NYCHA to replace 108 elevators by the end of 2022.

The Monitor team is also assessing A&CM's progress with the projects identified as part of the \$2.2 billion CCAP, which include those pertaining to lead and comprehensive mold abatement, heating, elevators, and waste management. The CCAP requires NYCHA to submit quarterly reports to the Monitor that provide a thorough project-level report on progress, including the budget, schedule, and risks in implementing the projects. These projects will be done as part of NYCHA's undertaking to complete the Comp Mod of two developments –Todt Hill Houses in Staten Island, with approximately 500 units, and Saint Nicholas Houses in Manhattan, with approximately 1500 units – to address mold, leaks, and failing building systems and components. The developments were selected after NYCHA performed a suitability analysis that considered various criteria including building conditions, history of capital repairs, degree of lead content, and volume of mold and leak work orders.

Units will be abated of asbestos and lead, piping in chase walls (including cold and hot water supply, return risers and branching, sanitary waste risers and branching, and sanitary vent risers and branching) will be removed and replaced and, where required, ventilation will be upgraded. Bathrooms and kitchens will be renovated. When possible, residential units will be upgraded to comply with the New York City Building Code.

The Comp Mod Program will require careful planning, strong organizational support and integration, and management with appropriate technical capacity. It will significantly affect residents and involve many risks that need to be carefully managed. NYCHA has assembled a project management team including NYCHA staff experienced in implementing the Sandy projects and other consultants. NYCHA did a significant amount of outreach to the contracting community to understand the risks and challenges associated with this type of project. NYCHA contemplates selective relocation of residents in temporary housing located on site or within the neighborhood. NYCHA has been meeting with residents at these developments with the intention to establish reliable communication, engage them in the planning process, and discuss and mitigate the impact to residents.

In addition to our ongoing oversight and assessment of A&CM's progress in improving its capital projects practices and procedures and completing its projects, we urge NYCHA to use the Monitor Capital Project team's expertise in addressing the challenges NYCHA faces in completing its capital projects. NYCHA's decision to use a Comp Mod strategy to rehabilitate its building stock is ambitious and has many risks. Our team stands ready to assist with our extensive background and experience (especially with the Design-Build process) as A&CM moves forward in planning, managing, and completing these projects.

IV. Conclusion

The metrics included in this report are continuously updated as NYCHA moves forward in meeting its obligations under the Agreement. We will continue to release these metrics periodically, in our Monitor letters or separate public reports, to document NYCHA's performance and progress in satisfying the Agreement's mandates.