

New York City Housing Authority

Action Plan – Elevators

Obligations: Exhibit B. C.21, C.22, C.23, C.24, C. 25, C.26, C.27, C.28, C.29, C.30, C.31, C.32, C.33, C.34

January 31, 2020

Contents

- 1. Executive Summary 2
- 2. Introduction 4
- 3. Background 8
- 4. Elevator Criticality and Risk Map..... 12
 - A. Single-elevator buildings 12
 - B. Operational data and condition ratings 12
 - C. Vulnerable populations..... 13
 - D. Elevator risk heat map..... 14
- 5. Elevator Outage Response..... 15
 - A. Elevator Complaint Intake 15
 - B. Elevator Response Prioritization 16
 - C. Elevator Mechanic Maintenance Procedure 17
 - D. Preventive Maintenance 22
- 6. Resident Communications Plan 25
 - A. Elevator Complaint Intake 25
 - B. Resident Notification during Outages and No-Service Conditions 25
 - C. Additional Protocols for Vulnerable Residents 27
 - D. Stair Climber Machine Process..... 28
 - E. Future of Reasonable Accommodations 29
- 7. Interactions with Internal and External Partners..... 31
 - A. Maintenance, Repair, and Skilled Trades (MRST) Protocol..... 31
 - B. External Partners – City Agencies 32
- 8. Contracts and Warranties 33
 - A. Third-party Management Contracts 33
 - B. Warranties..... 33
- 9. Performance Improvement Plans..... 34
 - A. Capital commitments 34
 - B. Maintenance commitments 38
 - C. Other commitments 42

1. Executive Summary¹

The New York City Housing Authority (NYCHA) owns, operates, and maintains 3,224 elevators across 266 developments: 3,163 passenger traction elevators that transport residents from lobbies to residential floors and 61 lifts that serve freight needs, community centers, and police stations.

This Action Plan responds to 14 elevator-related obligations in the 2019 Agreement between NYCHA, the U.S. Department of Housing and Urban Development, and the City of New York.²

Exhibit B, Paragraph C.21 of the Agreement requires:

“an Action Plan that identifies, for each building that contains an elevator designed for resident use, how NYCHA will respond when all elevators are out of service at that building (a “no-service” condition).”

In addition, Paragraph 35 of the Agreement requires:

“NYCHA will prepare Action Plans setting forth policies and practices to be adopted and specific actions to be taken by NYCHA to achieve the obligations set forth in Exhibit A and Exhibit B and comply with the terms of this Agreement.”

This plan is NYCHA's comprehensive response to both requirements. It includes a detailed step-by-step response plan for all elevator outages and no-service conditions to meet Obligation C.21, and a set of capital and operational commitments designed to meet the requirements outlined in Obligations C.22-C.34.

NYCHA's elevators—managed by the 428-person Elevator Service and Repair Department (ESRD)—pose particular challenges, including high volume use, rapidly aging stock, and building envelope decay that has caused structural issues in elevator shafts.

One of the key challenges for the Authority is the prevalence of single-elevator stairhalls across the portfolio—resident units accessible only by a single elevator. Of the 3,163 passenger traction elevators, 1,560 are in single-elevator configurations. Because any outage in a single-elevator configuration eliminates all elevator service to affected residents, these configurations are uniquely vulnerable to service disruptions and require a heightened response from mechanics, dispatchers, and property management staff.

Data limitations and understaffing have created additional difficulties for the elevator operation. For example, changes in protocols and outage calculations limit the usability

¹ For a detailed list of terms and definitions, see Appendix 6

² Paragraphs C.21-C.34 of the 2019 HUD Agreement. For full text of obligations, see Section 9.

of pre-2018 elevator operating data for historical analysis. To address these limitations, NYCHA will continue working with the Monitor team to define and establish business rules associated with data storage and collection.

A 2016 reduction in elevator mechanic teams has reduced coverage and lowered preventive maintenance completion rates for the monthly, semi-annual, and annual checks. This Action Plan addresses these underlying issues that have historically prevented NYCHA's elevators from operating at the levels required by the Agreement.

For example, while elevator outages can spike in the evening, ESRD's staffing coverage model is weighted towards traditional weekday business hours of 8am-4:30pm. 130 elevator mechanic teams are staffed during the primary shift, while 12 teams work the 4:30pm-12:30am shift and six teams the 12am-8am shift. On the weekends, 12 teams work the 8am-4:30pm shift, 6 teams work 12pm-8pm, 12 teams work 4:30pm-12:30am, and 8 teams work 12am-8am. Given the overlap in shifts, weekend staffing coverage peaks at 18 teams between 12pm-8pm.

With this mismatch of staffing to work volumes, corrective maintenance work orders back up and mechanics are unable to complete their preventative maintenance schedules.

Elevator mechanics are assigned to one of four sectors; each sector has close to 800 elevators and 40 or 41 elevator response teams each. At peak capacity—the 8am-4:30pm shift—each response team is responsible for corrective and preventative maintenance on an average of 25 elevators, a ratio of 25:1. However, during the 12am-8am shift, that coverage ratio grows to 537:1.

NYCHA has proposed a new balanced schedule for mechanics, redistributing some portion of the 130 teams serving the 8am-4:30pm shift to cover alternate shifts on nights and weekends. The proposal remains under review by the City's Office of Labor Relations.³

The remainder of this Action Plan is organized as follows: Sections 2-4 provide additional background information and context on NYCHA's elevator operations, Sections 5-8 address NYCHA's operational response to elevator outages as required by Obligation C.21, and Section 9 details the improvement plans underway to ensure NYCHA meets the operating metrics outlined in Obligations C.22-C.34.

³ Since the proposed shift change may have an impact on the "economic terms" of the existing labor agreement—and Elevator Mechanic is a city-wide title—the city's Office of Labor Relations must conduct analysis on outside rates of pay before proceeding with any negotiation on the existing contract. NYCHA will update the Monitor's team on progress by February 14, 2020.

2. Introduction

As noted above, this Action Plan responds to the 14 elevator-related paragraphs of the January 31, 2019 agreement between the New York City Housing Authority (NYCHA), the U.S. Department of Housing and Urban Development (HUD), and the City of New York. The Agreement outlines a number of obligations and requirements for NYCHA's elevator performance, detailed below:

Table 1: Agreement Elevator Obligations

Obligation	Requirements (as stated in the Agreement)	Action Plan Sections
C. 21	Within 120 days of the Effective Date, NYCHA shall establish an Action Plan that identifies, for each building that contains an elevator designed for resident use, how NYCHA will respond when all elevators are out of service at that building (a "no-service" condition). Such plan shall take into account the resident population of each building, any individuals with self-reported mobility impairments, historical data about prior outages or service disruptions, the availability of personnel to assist residents, the terms of any elevator support contract, and historical response and repair times. Such plans shall be made available to the residents and posted online.	Sections 5-8
C. 22	Within 120 days of the Effective Date, NYCHA shall provide HUD and the Monitor with sufficient data to identify elevator service interruptions in the prior three years. This data shall be updated at least quarterly.	Section 9
C. 23	<p>Within three years of the Effective Date, NYCHA shall comply with the following:</p> <ul style="list-style-type: none"> • (a) 70% of buildings containing more than one elevator will have no more than one instance per year where all elevators are out of service (whether planned or unplanned) at the same time, and no such building shall have more than three instances in a year.⁴ • (b) 70% of elevators in all buildings shall have an unplanned outage no more than eight times per year, and no elevator shall have unplanned outages more than 15 times a year. 	Section 9
C.24	<p>Within five years of the Effective Date, NYCHA shall comply with the following:</p> <ul style="list-style-type: none"> • (a) 85% of buildings containing more than one elevator will have no more than one instance per year where all elevators are out of service (whether planned or unplanned) at the same time, and no such building shall have more than three instances in a year. • (b) 85% of elevators in all buildings shall have an unplanned outage no more than eight times per year, and no elevator shall have unplanned outages more than 12 times a year. 	Section 9
C. 25	Notwithstanding anything else herein, NYCHA will take an elevator out of service where required for health and safety reasons.	
C. 26	An outage that NYCHA demonstrates to the satisfaction of the Monitor to be the result of an act of vandalism by a third party shall not be counted as an outage for purposes of paragraphs 23 and 24, provided that (i) the Monitor concludes that NYCHA used and continues to use best efforts to	

	prevent such vandalism in the affected building, and (ii) such outage is resolved within the response times set forth herein.	
C.27	As of one year of the Effective Date, NYCHA shall have no planned outages that result in a no-service condition between the hours of 6 a.m. and 10 a.m. or between 3 p.m. and 8 p.m., except for planned elevator rehabilitation or replacement or outages mandated by another governmental agency or regulatory entity.	
C.28	For the first year after the Effective Date, NYCHA shall reduce the duration of service outages by 10%, and 75% of no-service conditions shall be resolved within 18 hours of the time NYCHA learns of them. The response rate shall improve each year thereafter as determined by the Monitor and HUD based on the data NYCHA provides to the Monitor and HUD and the steps NYCHA has taken in executing its action plans.	<i>Section 9</i>
C.29	<p>Within five years of the Effective Date, NYCHA shall resolve all outages within the following timeframes:</p> <ul style="list-style-type: none"> • (a) For outages that result in a no-service condition: <ul style="list-style-type: none"> ○ (i) 85% shall be resolved within 4 hours of NYCHA learning of such condition, and ○ (ii) no no-service condition shall last more than 12 hours, unless the no-service condition is in a one-elevator building and results from either (A) an outage due to an elevator rehabilitation or replacement or (B) an outage for which the industry-accepted repair time is longer than 12 hours or that requires NYCHA to order unavailable parts. • (b) For outages that do not result in a no-service condition: <ul style="list-style-type: none"> ○ (iii) 85% shall be resolved within 10 hours of NYCHA learning of such condition, and ○ (iv) no outage shall last more than 18 hours, unless the outage results from either (A) an outage due to an elevator rehabilitation or replacement or (B) an outage for which the industry-accepted repair time is longer than 18 hours or that requires NYCHA to order unavailable parts. 	<i>Section 9</i>
C.30	Within six months of the Effective Date, NYCHA will institute and maintain a system that identifies every elevator outage and the start and end times of such outages identified by remote monitoring systems, work-order records, or any additional sources of outage information, and make that system accessible and available to all NYCHA personnel responsible for elevators and to other relevant personnel, including all development managers and the General Manager.	<i>Section 9</i>
C.31	Within five years of the Effective Date, NYCHA will establish continuous remote monitoring in 70% of its elevators.	<i>Section 9</i>
C.32	Within six months of the Effective Date, NYCHA will establish a system to provide residents of buildings affected by a planned outage 24-hours advanced notice, and to provide residents of buildings affected by an unplanned outage notice within two hours of NYCHA learning of the outage. Such notice shall include instructions regarding what assistance NYCHA has available for individuals with mobility impairments during the outage. Notice shall occur by robocall and via postings within the affected building and on NYCHA's website.	<i>Sections 5-8 Section 9</i>

C.33	NYCHA will provide the Monitor 24 hours advanced notice of any planned outage, and shall notify the Monitor of any unplanned outage within two hours of NYCHA learning of the outage. Notice shall occur in the method prescribed by the Monitor.	
C.34	<p>In addition to meeting the requirements of paragraphs 15 to 33, and except where otherwise provided in an approved Action Plan, NYCHA shall perform the following tasks:</p> <p>(a) NYCHA will adopt a new seven-day, extended schedule for caretakers to enable more frequent cleaning of elevator door tracks at the start of each shift.</p> <p>(b) NYCHA will replace or address at least 425 elevators by 2024:</p> <ul style="list-style-type: none"> ○ 275 elevators will be replaced by December 31, 2024 through its capital plan. (108 within three years plus another 167 within five years) ○ NYCHA will transfer 150 additional elevators to third-party management through the PACT program by December 31, 2024. The developer selected through PACT will replace elevators as needed in buildings under its purview. 	<i>Section 9</i>

As approved—and updated as necessary—this Action Plan reflects the policies and practices NYCHA will adopt, and specific actions NYCHA will undertake to fulfill elevator-related requirements under the Agreement. This Action Plan will be reviewed and updated at least quarterly, or as necessary per the Agreement's milestones.

To ensure implementation and ongoing compliance with this Action Plan, NYCHA commits to the following steps:

1. NYCHA's IT Department will post this Action Plan on NYCHA's public-facing website, as required by the Agreement, upon approval.
2. The Elevator Service and Repair Department (ESRD) Director and Senior Vice President for Support Services will host trainings for all ESRD Sector Administrators and Supervisors of Elevator Mechanics (SEM). The Director will communicate to all SEMs and elevator mechanics the expectations under this plan.
3. SEMs will distribute copies of the plan to Mechanics and Mechanics Helpers within two weeks of approval.
4. The General Manager will e-mail this Action Plan to all Property Management staff.
5. The ESRD Director and Senior Vice President for Support Services will host two kick-off meetings with the Regional Asset Managers (RAMs) to discuss the Action Plan and answer all questions. Follow-up meetings with RAMs will be scheduled as necessary to ensure compliance.

6. Each Property Manager will distribute the Action Plan to development staff during their daily morning muster.
7. The Senior Vice President for Support Services, the ESRD Director, and the Community Engagement & Partnerships team will meet with Tenant Association Presidents throughout January and February 2020 to discuss the Action Plan and answer any questions.
8. NYCHA will develop a mechanism for ongoing staff and resident feedback to refine and improve our service to residents.

3. Background

As noted above, NYCHA owns 3,224 elevators, making an estimated 3.2 million trips daily. 3,163 elevators provide access to residential hallways, while the remaining 61 service community centers, freight needs, and police stations. Over 90 percent of NYCHA residential units are in stairhalls served by elevators.

NYCHA elevators are managed by the Elevator Service and Repair Department (ESRD), which employs 473 full-time staff, including 207 elevator mechanics, 193 elevator mechanic helpers, and 23 supervisors of mechanics.⁵ Thirty-nine ESRD employees have NYC Department of Buildings-issued Director, Co-Director, or Inspectors Licenses. The department's total FY19 budget was \$74,440,375.

Elevators are essential in the portfolio's taller buildings—Atlantic Terminal is the tallest in the portfolio at 31 stories—and are particularly important to residents with mobility impairments who cannot easily navigate and traverse stairs. The mission of NYCHA's elevator operation is to ensure safe, reliable, and consistent service.⁶

Outages and No-Service Conditions

An elevator outage is a disruption in service for a single elevator that prevents a resident from using that specific car to reach their floor. A no-service condition is a full disruption to all elevator service to a residential floor. For single-elevator stairhalls, each outage is a no-service condition. In a two-elevator stairhall, a no-service condition means simultaneous outages in both elevators. As discussed in detail below, no-service conditions receive a high priority response relative to outages that do not trigger a no-service condition.

Single-elevator configurations pose a particular challenge since each outage is also a no-service condition. Of NYCHA's 3,163 passenger traction elevators, 1,560 are the only elevator serving a specific stairhall.

⁵ These numbers include the 20 new response teams that were approved in 2019 and detailed in Section 9. 10 mechanic teams are fully dedicated to inspections conducted under an MOU with the Department of Buildings.

⁶ For a detailed regulatory overview, see Appendices 8-10

EXHIBIT 1: Single-elevator configuration at Boulevard Houses⁷

Boulevard Houses – Building #2

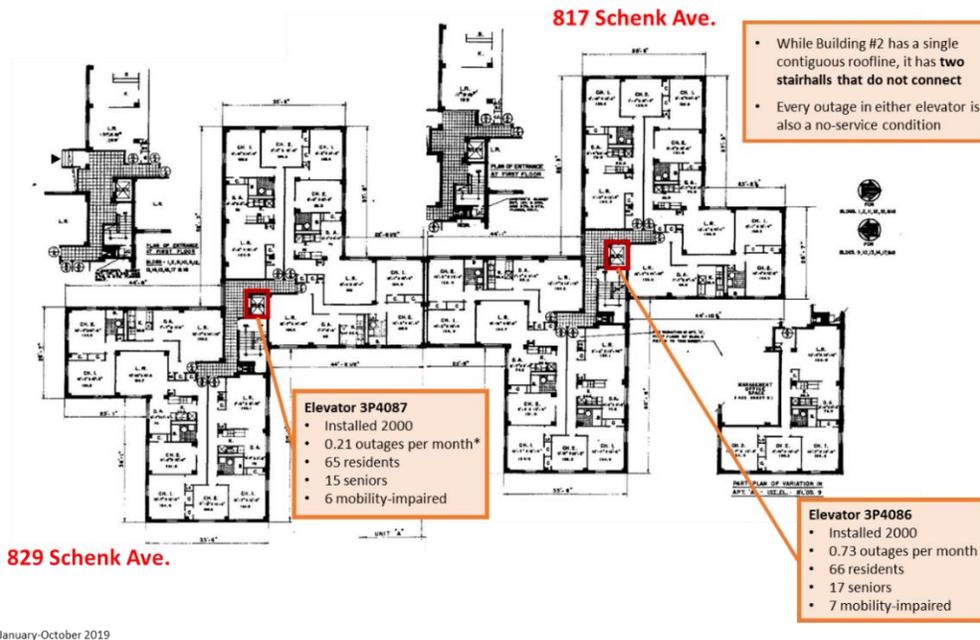
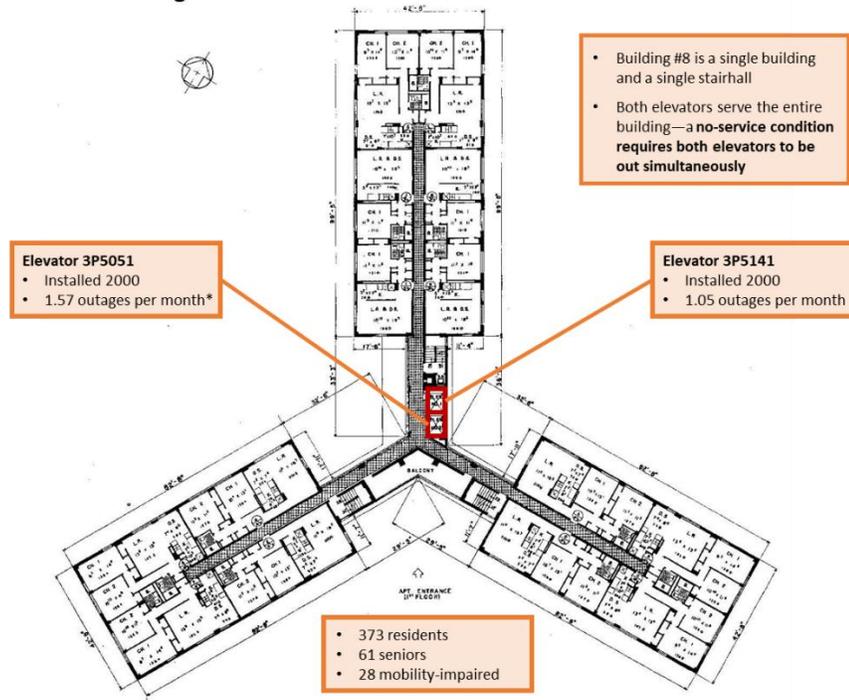


EXHIBIT 2: Multiple-elevator configuration at Linden Houses

Linden Houses – Building #8



⁷ Outage numbers and operational metrics in this Plan, including in Exhibits 1 and 2, are as reported by NYCHA and have not been confirmed by the Monitor's team.

Organizational Roles⁸

While the day-to-day responsibility for preventive and corrective maintenance lies with the Elevator Service and Repair Department (ESRD), providing safe, reliable, and consistent elevator service at NYCHA requires work from a wide variety of departments. Descriptions of each relevant department are below.

1. **Elevator Service and Repair Department** – principal front-line responsibility for all preventive and corrective maintenance on NYCHA's elevators, as well as inspections and some equipment installation. ESRD has a staff of 473. ESRD reports through the Senior Vice President of Support Services, who reports to the General Manager. ESRD includes the following teams:
 - **Elevator dispatch:** intakes all elevator complaints, prioritizes responses, and routes individual work orders to elevator mechanic teams.
 - **Elevator response teams:** 2-person teams of an elevator mechanic and mechanic's helper that conduct corrective and preventive maintenance on NYCHA's elevators. Response teams are assigned to one of four geographic sectors, each serving roughly 800 elevators each.
 - **Special Teams/Major Repairs:** NYCHA's most experienced mechanics who focus on particularly challenging outages and long-term shutdowns that require lengthy repairs. This team also focuses on developments with frequent outages to identify patterns and solutions.
 - **Inspections/Violations Unit:** performs all DOB-mandated elevator inspections, including Category 1 and Category 5.

2. **Property Management** – responsible for the day-to-day operation of NYCHA's developments and provides accommodations to residents during elevator service disruptions. Caretakers—members of the property maintenance staff—are responsible for cleaning elevator tracks as part of their daily routine. Each development's property maintenance staff reports up through a Property Maintenance Superintendent, who in turn reports to the Property Manager. The Property Manager reports through the Regional Asset Manager, Borough Director, and Vice President of Operations.

⁸ For additional detail on responsibilities by individual roles, see Section XV of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

3. **Capital Projects Division (CPD)** – responsible for NYCHA's capital investment program, including elevator replacements and other capital repairs to a building that permit elevators to run (e.g., roof repairs to prevent flooding in elevator shafts). CPD develops the elevator replacement pipeline using condition ratings and operational data. The CPD Project Management team is responsible for overseeing vendors who perform the modernization and replacement work. The Vice President of Capital Planning and Vice President of Project Management report to the Executive Vice President of Capital Projects.

4. **Maintenance, Repair, and Skilled Trades (MRST)** – responsible for providing plumbing, electrical, and other skilled trades assistance during elevator repairs as required. MRST also leads some equipment installation work, including the air conditioning unit installations in elevator motor rooms. MRST is led by a Director who reports to the Senior Vice President of Support Services, who reports to the General Manager.

5. **Emergency Services Department (ESD)** – responsible for responding to some corrective maintenance work orders after normal business hours. ESD mechanic teams check elevator conditions, address immediate hazards, and post out-of-service notices for unplanned outages. ESD teams do not, however, perform actual repairs on NYCHA elevators. Some major incidents—including pit flooding and water-damaged cabs—may require ESD assistance. ESD also receives notifications of all outages and communicates with outside partners—including FDNY and NYPD.

For organizational charts of each of the divisions listed above, see Appendix 7.

4. Elevator Criticality and Risk Map

With an expansive portfolio and finite resources, NYCHA must identify those elevators that require the most attention and service. NYCHA will use the factors below to build an elevator risk map to help manage the portfolio and deploy resources where they are most needed.

For a full list of NYCHA elevators with physical condition ratings, operational data and population overlays, see Appendix 1.

A. Single-elevator buildings

As noted above, 1,560 NYCHA elevators are functionally “single elevators”—the only elevator providing access to a specific set of residential floors. 1,516 of these are true “single elevator stairhalls,” with only one elevator within a stairhall. The other 44 are configured to provide high-rise or low-rise service only. For example, at 68 Cumberland Walk—a 13-story building at the Walt Whitman Houses in Brooklyn—there are two elevators, but one serves the lower floors and one serves the upper floors. An outage to either elevator is functionally equivalent to an outage in a single-elevator building. The 44 high-rise/low-rise elevators are spread across three developments—Ingersoll, Whitman, and East River, all built in the early to mid-1940s.⁹

The 1,516 single-elevator stairhalls are spread across 103 developments, most often serving six-story buildings built in the 1940s and 1950s¹⁰. Single elevators are particularly vulnerable to an outage, since any individual outage also represents a no-service condition, precluding all elevator access to any residential floor. Single elevators receive a high-priority response from ESRD dispatchers, but NYCHA will also explore committing additional resources to reducing outage frequency at single-elevator sites.

B. Operational data and condition ratings

NYCHA's elevator stock is old—the longest-running traction elevators in the portfolio were installed in 1990, and 954 elevators are at or beyond their useful life of 20 years as of this plan's publishing. An additional 1,237 will reach the end of their useful life in the next five years. The 2017 Physical Needs Assessment (“PNA”) generated individual condition ratings for each elevator, ranging from 1-5, with 5 being the worst. 525 NYCHA elevators have a “5” condition rating; 500 received a “4.” All passenger traction elevators with a “4” or “5” rating are beyond their useful life as of this plan's publishing.

⁹ Ingersoll and Whitman were built as a single development known as the Fort Greene Houses

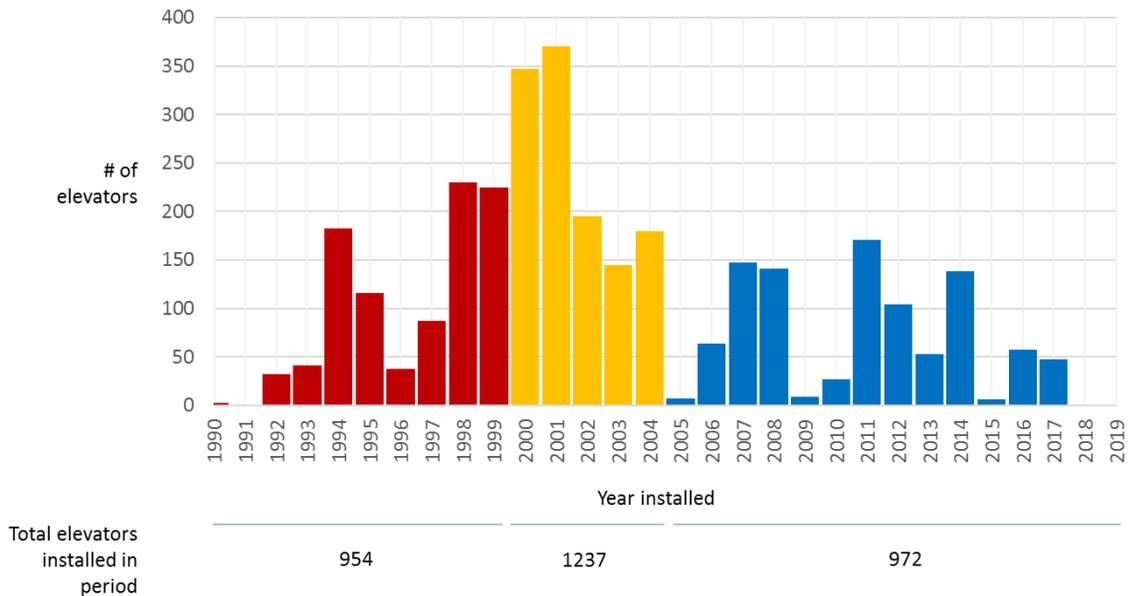
¹⁰ These developments include (ordered by number of elevators): Marcy, Woodside, Pomonok, Queensbridge South, Queensbridge North, Reed Hook East, Vladeck I, and Ravenswood.

EXHIBIT 3: NYCHA’s aging elevator stock

NYCHA elevators by installation year

of elevators; Total = 3,163 Traction Passenger Elevators

■ 5+ years of useful life remaining
■ 0-5 years remaining
■ Past useful life



Operational data, including the frequency and duration of outages, is also important in assessing the vulnerability of an elevator. Appendix 1 includes operational data for each elevator dating back to 2016. Outage frequency, however, does not always correlate with equipment age.

C. Vulnerable populations

Consistent elevator service is particularly important for our senior and mobility-impaired residents. NYCHA has over 80,000 residents above the age of 62—over 76,000 of them reside in elevator buildings. Nearly 40% of NYCHA households are headed by a resident over 62. NYCHA operates 41 senior-only developments, along with 13 senior-only buildings, although many seniors live in units within non-senior-designated developments as well. NYCHA elevators also serve over 31,000 mobility-impaired residents.^{11 12}

When service interruptions occur, property management staff can access NYCHA’s Tenant Data System to identify all affected senior and mobility-impaired residents. A

¹¹ The senior and mobility-impaired populations are not mutually exclusive and have significant overlap.

¹² The columns for senior residents and mobility-impaired residents in Appendix 1 will not sum to the totals listed here because Appendix 1 lists each elevator individually. For example, there are two elevators that serve 2440 Boston Road; the 270 senior residents and 87 mobility-impaired residents will appear on two lines.

communications plan for senior and mobility-impaired residents in the event of an elevator no-service condition is detailed in the Resident Communications section.

D. Elevator risk heat map

With all of these inputs, NYCHA will work with the Monitor's team to develop an elevator risk map by April 1, 2020—identifying those elevators in the portfolio that require additional resources, including the stocking of frequently-used parts within proximate store rooms, prioritized preventative maintenance schedules, and prioritized capital replacements. NYCHA participants will include members of the Performance Tracking & Analytics team, ESRD personnel, and Project Managers from Support Services. Identifying high-priority elevators will require numerous overlays of operational data, physical condition information, and population data. A preliminary set of input data is included in Appendix 1.

The elevator risk map will become a day-to-day and long-term planning tool for ESRD leadership, providing easy access to information that can be used to allocate resources and trigger specific interventions.

5. Elevator Outage Response

The following sections outline the steps NYCHA will take in response to an elevator outage or no-service condition. For additional detail, see Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

A. Elevator Complaint Intake

An elevator outage is routed to the ESRD response team through the following steps:

1. A **resident** calls the CCC to report an elevator complaint.
2. The **CCC customer service agent** generates and submits a service request that includes the development name, building address, elevator location, and other details of the elevator complaint.
3. **Siebel**—NYCHA's customer relationship management system—automatically transfers the service request information into Maximo, which creates a corrective maintenance (CM) work order containing the basic information about the elevator complaint, the actual reported time, as well as the elevator problem codes and service priority levels.¹³
4. The **customer service agent** provides the resident with the CM work order number before ending the call.
5. If the condition is a HAZARD (including stuck passengers, fires, open hatch doors—full list below), the **customer service agent** calls 911 and escalates the elevator complaint to FDNY.¹⁴
 - a. the **customer service agent** notes in the Siebel service request that FDNY is responding to the elevator complaint.
 - b. the **elevator dispatcher** reviews the elevator's service condition in the Remote Elevator Monitoring System (REMS), if the elevator is remotely monitored.
 - c. the **elevator dispatcher** assigns an ESRD response team as soon as possible.

¹³ The duration of elevator outages is measured from the time the first complaint was received.

¹⁴ If the hazard is first noticed by a NYCHA employee, the employee must call 911 and the Emergency Services Department directly.

6. When FDNY cannot respond to a hazardous service condition complaint:
 - a. the **customer service agent** notes the ID number of the FDNY dispatcher along with the statement that “FDNY cannot respond.”
 - b. the **customer service agent** calls ESRD dispatch operations and advises the dispatcher of the hazardous service condition and that FDNY cannot respond.
 - c. the **elevator dispatcher** reviews the elevator’s service condition in REMS, if the elevator is remotely monitored.
 - d. The **elevator dispatcher** assigns the CM work order to the elevator response team and provides the team with the following information: development name, building address, elevator car, and details of the elevator service condition and service priority.
7. If the condition is not a HAZARD, the **elevator dispatcher** reviews the corrective maintenance work order in Maximo and assigns an ESRD response team based on the prioritization below.¹⁵

B. Elevator Response Prioritization

To ensure NYCHA is properly allocating its resources in responding to elevator outages and no-service conditions, ESRD follows clear prioritization rules that account for the resident population and building characteristics.¹⁶ The elevator dispatching system follows a strict rubric in assigning specific Maximo flags and priority codes, based on the severity of the problem and impact on our residents.

Table 2: Priority code details

Circumstance	Details	Maximo Failure Code	Maximo Flag	Priority Level	Maximo Code
Immediate threat to life, limb, or property	Stuck passengers, fires, accidents, NYPD pit searches, and open hatch doors. Often requires coordinated response with FDNY and NYPD.	ELEVOOO	HAZARD	HIGH PRIORITY	“Super 9”

¹⁵ ESRD dispatchers are trained on elevator response prioritization and routing individual work order tickets to the appropriate mechanic team.

¹⁶ Also see p. 117 of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

No-service condition¹⁷	An outage or outages have disrupted all elevator service to a residential floor.	ELEVOOO	NSC	HIGH PRIORITY	9
Senior building	Elevator outage in a building restricted to senior residents.	ELEVOOO	SNR	HIGH PRIORITY	9
Mobility-impaired residents	Mobility-impaired resident observed waiting in lobby; service request from mobility-impaired resident.	ELEVOOO	WHL	HIGH PRIORITY	9
Outages not triggering an NSC	An elevator outage that does not trigger an NSC and does not have any of the flags above.	ELEVOOO		PRIORITY	5
Elevator running with a problem	An elevator issue that has not disrupted service.	ELEVRWP		LOW PRIORITY	3

Outages with higher priority codes receive faster responses and thus are generally shorter in duration. From 2016-2018, an outage coded “high priority” lasted an average of 6.8 hours, while an outage coded “priority” had an average duration of 15.3 hours. As noted in Section 9, adding new teams will reduce durations across priority codes and close the gap between high priority and priority responses.

Table 3: Outage duration by priority code¹⁸

Priority Level	Maximo Code	Average Duration (Hrs; 2016-2018)	Median Duration (Hrs; 2016-2018)
High Priority	9	6.8	3.5
Priority	5	15.3	6.4

C. Elevator Mechanic Maintenance Procedure

ESRD response teams primarily work from 8:00AM to 4:30PM.¹⁹ At the beginning of each shift, elevator response teams address any outstanding corrective maintenance work orders, and conduct preventive maintenance in the absence of any pending

¹⁷ ESRD Dispatch Operations prioritizes NSCs in high-rise buildings (6+ stories) before NSCs in low-rise buildings (6 or fewer).
¹⁸ The operational data throughout this Action Plan relies on NYCHA’s Maximo data, which has not been independently verified by the Monitor.
¹⁹ The proposed shift change detailed in the Executive Summary and Section 9 would spread ESRD coverage more evenly throughout the day.

corrective maintenance. For additional detail on the steps below, see Section VII.E in Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

1. At the start of every shift, the **elevator response team** checks their handheld device for any outstanding work orders at their location. If clarification is required, they contact the elevator dispatcher.
2. If there are no open corrective maintenance work orders, the **elevator response team** follows their preventive maintenance schedule and procedure. See Section D “Preventive Maintenance” below.
3. When an outage occurs during a shift and a new work order is created, the **elevator dispatcher** calls the elevator response team and assigns them to the work order.
4. Upon arrival at the location, the **elevator response team** presses “Start” on the Maximo work order to start the job and record the work start time.
5. The **elevator response team** locates the elevator and determines if there is a hazardous elevator service condition (e.g. open hatch, passenger entrapment, alarm ringing, car drifting, fire, etc.)
 - a. If there is an open hatch, the **elevator mechanic helper** must remain on site while the **elevator mechanic** posts the required notices, visits the motor room, and takes control of the elevator following Section VII. 8(b) in Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.
 - b. If a passenger is trapped in the elevator, the **elevator response team** travels to the floor nearest the inoperative car, speaks to the passengers, and determines if anyone has been injured.
 - i. If someone is injured, the **elevator response team** calls 911 and the supervisor of elevator mechanics (SEM) to advise that 911 was called
 - ii. The **elevator response team** advises passengers that steps are being taken to release them as soon as possible and instructs passengers to keep clear of all doors and remain in the car until directed.
 - iii. The **elevator mechanic** proceeds to the machine room to take control of the elevator and take action to safely remove the passengers, while the **elevator mechanic helper** remains with the elevator car and in contact with passengers.

- c. If there is a hazard, but no passengers are trapped, the **elevator mechanic helper** stays with the car to ensure no one enters, while the **elevator mechanic** takes control of the elevator.
6. The **elevator response team** notifies the Property Maintenance Superintendent of the outage and estimated time to complete.
7. If there is a flood condition and the elevator is operating normally, the **elevator response team** moves the elevator car one floor above the flood before conducting any repairs.
8. If the elevator is water damaged, the **elevator response team** follows separate protocols detailed in Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair* before performing work on the elevator.
9. The **elevator response team** performs a series of operational checks, including:
 - a. All hatch, cab doors, and interlocks.
 - b. Proper leveling at all floor stops with a maximum of ½ inch at each landing.
 - c. All alarm bells.
 - d. The stop switch.
 - e. The machine brake monitor.
 - f. The door re-opening device (safety edge).
 - g. The car door restrictor (zone lock).
 - h. The Fireman Service Operation – Phase I and II.
 - i. The machine room door lock.
 - j. The car and hall call operation.
 - k. All hatch and cab door glass and grills.
 - l. All hatch doors, and the door checks for swing doors.
10. After the operational checks, if the elevator is operating normally, the **elevator response team** enters the observation time into the handheld and closes the work order as “RUNNING ON ARRIVAL.”

11. If the outage results in a no-service condition, **Maximo** immediately autogenerates a separate robocall to residents in the affected building who have provided NYCHA with their phone numbers, notifying them of the no-service condition and providing instructions regarding what assistance NYCHA has for individuals for mobility impairments (see *the Resident Communications section below*).
 - a. The **SEM or ESRD sector administrator** must call and inform the Property Manager, Property Maintenance Superintendent, and the Emergency Services Department.

12. If the elevator response team has not yet confirmed the outage, but 2 hours have elapsed since it was reported, **Maximo** autogenerates a robocall to residents in the affected building, notifying them of the outage.²⁰

13. If the elevator needs repairs, the **elevator mechanic helper** stays with the elevator car to ensure no one enters until instructed by the elevator mechanic.²¹
 - a. The **elevator response team** selects “Yes” on the handheld device to confirm the outage, triggering a robocall to affected residents who have provided NYCHA with their phone numbers and building-specific notifications on the NYCHA website.
 - b. The **elevator response team** posts NYCHA Form 061.091 *Emergency Notice – Elevator Out of Service*, on elevator doors on all floors.

14. The **elevator response team** begins repairing the elevator.

15. If a no-service condition has reached 2 hours in duration, the **SEM or ESRD sector administrator** must call and update the Property Manager, Property Maintenance Superintendent, and the Emergency Services Department.
 - a. The **Emergency Services Department** sends a page with no-service condition information to FDNY and NYPD, informing them of the service disruption and current status.

16. If repairs require a skilled trades craft, the **elevator response team** notifies the sector SEM and ESRD sector administrator, who coordinates with the required department (for additional detail on communication with skilled trades, see *the Interactions with Internal and External Partners section below*).

²⁰ As noted below, NYCHA has recently implemented interactive voice response to existing robocalls, allowing residents to indicate if they are mobility-impaired or in need of assistance.

²¹ The mechanic’s helper stays with the car due to prevent danger to residents, especially children. NYCHA has not found any alternative means of prevent access to the elevator cab upon the start of repairs.

17. If repairs are not completed within 90 minutes of arrival, the **elevator response team** notifies the sector SEM of the problem.²²
- a. The **sector SEM** provides troubleshooting tips to the elevator response team to attempt to resolve the problem.
 - b. The **elevator response team** attempts to troubleshoot the problem and informs the sector SEM if still unsuccessful in restoring the elevator to service.
 - c. The **sector SEM** determines the next steps to restore elevator service, which includes the following:
 - i. Providing additional troubleshooting tips to the elevator response team.
 - ii. Assigning a different elevator response team, if the Special Teams or Major Repairs units are required.
 - iii. Contacting the special team or major repair team SEM to request the assignment of either team to the CM work order.
 - d. If a different elevator response team is assigned, the **original elevator response team** follows the lockout procedure in Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*, complete the machine room log entry, and sign out of the machine room on NYCHA Form 060.142 *Elevator Machine Rooms Visits Register*. The lockout procedure will vary depending on the controller type, but will require mechanics to apply locks to all energy isolation points (e.g. a control switch in the control panel).
18. When repairs are completed, the **elevator response team** restores the elevator to service following the steps in Section VII.A of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.
19. The **elevator response team** enters the corrective maintenance information into the Maximo work order on the handheld device and closes the work order.
20. If a repair is not possible due to a separate structural or building issue, the **elevator response team** enters corrective maintenance actuals in the Maximo work order and notifies the SEM and the ESRD Sector Administrator. The ESRD Sector Administrator notifies the ESRD Director and SVP of Support Services for possible coordination with the Capital Projects Division.

²² The SEM is involved in discussions with the elevator response team throughout and will generally know of a repair issue prior to this threshold; 90 minutes is the upper limit at which the response team must notify the SEM.

As noted throughout, for additional detail on specific maintenance procedures or contingencies, see Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

While the steps above are followed for all outages beginning during normal business hours—8:30 AM to 4:30pm, Monday through Friday—corrective maintenance work orders outside these hours are routed to the ESRD After Hours elevator response teams. In some cases, the CCC dispatcher will route after-hours corrective maintenance work orders to the Emergency Services Department (ESD), whose mechanic teams can perform operational checks, address immediate hazards, and post notifications of unplanned outages. ESD mechanics do not, however, perform repairs. All REMS-triggered corrective maintenance work orders are also routed to ESRD's after-hours coverage.

D. Preventive Maintenance

Preventive maintenance is critical to breaking the cycle of disrepair in NYCHA's elevators and making sustainable improvements in performance. Completing monthly, semi-annual, and annual preventive maintenance allows mechanics to address vulnerabilities prior to a service disruption and keeps machines in good working order. Preventative maintenance takes approximately 2 hours on a six-story building and can take upwards of six hours on a 31-story building like Atlantic Terminal.²³

An outline of the preventative maintenance procedure NYCHA will follow is below.

For the full procedure NYCHA will follow, see Section VII.G of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

1. **Maximo** automatically generates PM work orders for each elevator on the first day of the month. The PM work order lists the monthly, semi-annual, and annual preventive maintenance tasks and any open deficiencies identified during an inspection.²⁴
2. At the start of the elevator response teams' shift, the **elevator dispatcher** provides them with a list of elevators scheduled for preventive maintenance during their shift.
3. During the course of their shift as they plan to perform preventive maintenance work as scheduled, the **elevator response team** provides the elevator dispatcher

²³ See the Monthly Preventative Maintenance Guide in Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

²⁴ With additional staff coverage and higher preventive maintenance completion rates, NYCHA can use data collected during maintenance to inform resource allocation in the future.

with the development name, building address, and elevator car where the work will be performed.

4. The **elevator dispatcher** assigns the elevator response team to the PM work order for that location and provides the elevator response team with the status of preventive maintenance work remaining for that elevator.
5. The **elevator response team** goes to the location and performs preventive maintenance. Upon arrival at the location, the elevator response team presses the Start tab on the Maximo work order on the handheld device to start the job.
6. The **elevator response team** notifies residents of the preventive maintenance outage per Section VII.B of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.
7. The **elevator response team** takes control of the elevator in the motor room.
8. The **elevator response team** begins to work through their Maximo preventive maintenance checklist:
 - a. Monthly Checks:
 - i. Motor Room: Check hoist motor, generator/drive unit, gears, sheaves, controller, governor ropes, hoist ropes, brake, rope gripper, brake monitor switch, inspection switch, governor switch, main line switch.
 - ii. Hatch: Check hatch doors, door locks, car door operator, zone restrictor, limit switches, IP Gibbs, gate switch, kick off blocks, emergency exit/switch, tiller ropes, traveling cable, car & counterweight guide shoes/rollers, switches (final limit, normal limit, slowdown limit), compensation sheave, emergency top-of-car stop, plank, safety operated switch, top of car inspection, car top.
 - iii. Cab: Check car station buttons, door open button, acknowledgment lamps, alarm bell, emergency in-car stop switch, car door operation, hall stations, PI, door re-opening devices, handrails, mirror, floor leveling, saddles, in-car communication, cab lighting.
 - i. Pit: Clean pit. Check limit switches, buffers, pit switches, governor tension sheave, pit lights, pit ladder, whisper flex.
 - ii. Fireman Service Phase I: Test phase I and repair as needed.

- iii. Fireman Service Phase II: Test phase II and repair as needed.
 - b. Semi-Annual Checks: Check motor, governor, traveling cables, door operator cams, car safeties, tiller ropes, safety & safety switches, hatch switches.
 - c. Annual Checks: Check rope gripper & check unintended motion, controller, compensation system. Perform brake maintenance. Iron Work: Check rails, fish plates, brackets, bed plate, pit steel.
9. If preventive maintenance scheduled for the shift cannot be started because there is insufficient time due to unanticipated delays:
- a. The **elevator dispatch team** contacts the SEM and the elevator dispatcher to advise them of the schedule preventive maintenance that could not be started.
 - b. The **sector SEM** reschedules the preventive maintenance following the notification protocols in Section VII.B of Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

6. Resident Communications Plan

Elevator outages and no-service conditions are a serious burden on our residents; NYCHA will improve communication with residents during all service disruptions. In addition to the steps outlined below, NYCHA will work closely with residents to continue enhancing our communication plans.

For additional detail on resident communications or accommodations that NYCHA will provide, see Appendix 2: *NYCHA Standard Procedure 060.62.1: Elevator Service, Maintenance, and Repair*.

A. Elevator Complaint Intake

Residents play a critical role in identifying elevator outages:

1. The **resident** telephones the CCC to report an elevator complaint.
2. The CCC **customer service agent** documents all information in Siebel and provides the customer with the CM work order number prior to ending the call.
3. The **MyNYCHA application** allows residents to report non-hazardous elevator conditions directly through the app.
4. The **resident** can notify a member of the Property Management Staff, who will create a corrective maintenance work order or call the elevator dispatcher.

B. Resident Notification during Outages and No-Service Conditions

As detailed in the steps below, once an outage has begun, ESRD and property management staff communicate with residents to relay safety information, updates on repairs, and offer various accommodations.

1. Once the elevator response team arrives at a location, the **elevator mechanic helper** stays with the car to ensure no resident enters the car while the elevator mechanic posts the required notices.
2. Once the **elevator response team** confirms an outage, OR if two hours have passed since a reported outage:
 - a. **Maximo** automatically triggers a robocall to all residents in the building whose phone numbers have been provided to NYCHA, informing them of the service disruption.
 - b. The outage is logged in the Elevator Outage section **of NYCHA's public-facing website**.

- c. **NYCHA Alerts** (a notification function of MyNYCHA) sends emails to all affected residents that have an active e-mail address on file (email addresses stored in Siebel and sourced from annual reviews and the MyNYCHA app)
3. For all no-service conditions during 8am-4:30pm, the **Property Manager** will call the Tenant Association President—or their designee—of the affected development to inform them of the outage and relay any information on repair status and accommodation plans.²⁵ After hours, **ESD** will contact the Tenant Association President.
4. If the outage results in a no-service condition, **Maximo** automatically triggers a robocall to all residents in the building who have provided NYCHA with their phone numbers, providing instructions regarding what assistance NYCHA has for individuals with mobility impaired residents.
 - a. NOTE: NYCHA has released an enhanced no-service condition robocall using interactive voice response technology that follows this script:

Hello, this is the New York City Housing Authority calling to inform you that there has been an interruption in elevator service due at your building on (Date/Time). We will inform you when the work has been completed. If you are mobility impaired or require additional assistance, please press 1 now. For more information, please check MyNYCHA online or call the CCC. Thank you.

5. The **elevator response team** posts NYCHA Form 061.091: *Emergency Notice – Elevator Out of Service* on the elevator doors at each landing. The team must check the “Out for Repairs” box and add the date removed from service, and the estimated return to service.
6. Residents who have opted-in to **MyNYCHA push notifications** will receive real-time updates to elevator outages and no-service conditions.
7. If a no-service condition existed, once the repairs are completed **Maximo** automatically triggers a robocall to all residents in the building who have provided NYCHA with their phone numbers, informing them that elevator service has been restored to the building.
8. **NYCHA’s public-facing website** lists details for every current elevator outage and no-service condition, including: development, address, planned/unplanned status, reported time, status, and impact.

²⁵ NYCHA is also exploring the use of resident networks to disseminate information during all types of outages.

C. Additional Protocols for Vulnerable Residents

In addition to the communication plan for all residents listed above, NYCHA will conduct supplemental outreach to senior and mobility-impaired residents during no-service conditions. Each Property Manager has access to the Tenant Data System, which includes a list of senior and mobility-impaired residents in their development—also known as the *Tenant Data System Disability/Handicap Detail and Life Sustaining Equipment/ Wheelchair Report*. The database includes information submitted during annual reviews, interim recertifications, and other touch points between residents and property management staff. Property Managers and Housing Assistants access the system during all service interruptions to ensure those who need assistance will receive it.

For data on the number of seniors and mobility-impaired residents served by each elevator, see *Appendix 1*. When a no-service condition begins during normal business hours, NYCHA will take the following steps—in addition to the steps listed above.

1. The **Property Manager** and **Property Maintenance Superintendent** are informed by the elevator response team of an outage triggering a no-service condition.
2. The **Housing Assistant or their designee** accesses the Tenant Data System and identifies the units with senior or mobility-impaired residents.
3. The **Housing Assistant or their designee** will contact all residents who pressed “1” in response to the robocall.
4. After the robocall is triggered, the **Housing Assistant or their designee** will call each resident who did not pick up the robocall.
5. The **Housing Assistant or their designee** will then conduct a welfare check at each unit of senior or mobility-impaired residents who did not answer the robocall or individual call.
6. If the resident has not picked up either phone call or answered the door, the **Housing Assistant or their designee** leaves written notification of the no-service condition.
7. All communications with residents—including the robocall, door notice, and in-person interactions—will offer residents access to the accommodations available during no-service conditions.
8. If a no-service condition is anticipated to, or has, lasted more than four hours, the **Property Manager** will trigger a broader reasonable accommodation policy, including operation of the stair climber machine, assistance with carrying groceries, and coordination of medical needs.

D. Stair Climber Machine Process

NYCHA currently uses stair climbers to assist residents in the event of a no-service condition. Due to civil service title and union contract restrictions, the operation of stair climber machines and the transport of resident-owned motorized and portable wheelchairs and walkers is performed on a voluntary basis by trained property management staff.²⁶ Individual developments and the Emergency Service Department (ESD) recruit volunteers through staff meetings, postings on employee bulletin boards, and issuance of NYCHA form 040770: *Stair Climber Machine Operator Volunteer Sheet*.

Each development maintains a list of trained stair climber machine volunteers on NYCHA Form 040.773. If a development is unable to provide sufficient staff to operate the stair climber, Property Managers are required to use alternate measures to accommodate residents.

When a no-service condition occurs, the following steps are taken to ensure residents have access to stair climbers:

1. The **elevator response team** or **SEM** notifies the Property Manager and Property Maintenance Superintendent of a no-service condition that is expected to last more than two hours
2. The **Property Maintenance Superintendent** radios the building Caretaker to check if any wheelchair-bound or mobility-impaired residents are waiting in the lobby.
3. The **Property Manager** or **Assistant Property Manager** directs the **Housing Assistant** to access the TDS *Disability/Handicap Detail and Life Sustaining Equipment/Wheelchair Report* to verify the list of wheelchair-bound or mobility-impaired residents who might require stair climber service during the no-service condition.
4. If the **Housing Assistant** identifies residents who are mobility-impaired, they advise the **Property Maintenance Supervisor**, who arranges for the pickup of the appropriate type of stair climber from the cluster-based storage locations. For a list of cluster-based stair climber locations, please see *Appendix 4*.
5. A **resident** may inform any member of the Property Management staff to request use of the stair climber; staff members must inform the Property Maintenance Supervisor.

²⁶ NYCHA will explore alternate titles to operate stair climber machines and has released an RFEI for ambulette services to augment current capacity. By April 1, 2020, NYCHA will report this information to the Monitor, to allow for the development of an Action Plan amendment.

6. The **Property Maintenance Supervisor** notifies trained stair climber volunteer staff when a resident is in need of stair climber service.
7. If the resident uses a wheelchair or walker, the **Property Management staff** ensures that appropriate volunteer staff is available to carry equipment up or down stairs.
8. If a no-service condition is likely to last beyond 24 hours, Property Management Staff may invoke NYCHA Standard Procedure 040.00.9: *Elevator Modernization – Reasonable Accommodations For Residents with Disabilities*, enabling temporary relocation if possible.

After regular business hours, all stair climber needs are routed to ESD. For additional details on NYCHA's stair climber protocol, see *Appendix 4: Memorandum DGM#20090016, Stair Climber Service Procedure for Authority and Privately Managed Developments During Unanticipated Elevator Service Interruptions*.

E. Future of Reasonable Accommodations

NYCHA is reevaluating the use of stair climber machines, which present logistical and safety challenges. The use of stair climbers can be physically strenuous on staff as well as tenants and the machines are not suitable for residents with motorized wheelchairs or those who exceed weight limits.

NYCHA is unable to require development staff to operate stair climbers due to restrictions in civil service titles and labor agreements. However, each property management office maintains a list of volunteer staff who operate the machines when needed. Between December 2018 and May 2019, stair climbers were used on 10 occasions. NYCHA will continue to look for measures to ensure consistent stair climber service, while also seeking out vendor-provided alternatives.

NYCHA—in consultation with the Mayor's Office, city agencies, other public housing authorities, and private landlord organizations—has researched a variety of possible solutions to serve mobility-impaired residents during NSCs.

NYCHA Support Services released a Request for Expression of Interest (RFEI) to determine the capabilities of suppliers to provide services for assisting mobility-impaired residents during extended NSCs. The RFEI was released in November and remained open until January 14, 2020, receiving one response. Support Services is evaluating this response and will explore re-issuing an RFEI or RFP if appropriate.

The RFEI outlined the following goals:

- **Provide research and identify alternatives** to stair climbers and make recommendations as to new equipment type and number of units required.

- **Perform a needs analysis** of anticipated usage of stair climbers and/or other equipment and develop a staffing plan for NYCHA employees to address that usage.
- **Identify alternative means and methods** Responder would utilize instead of or in addition to stair chairs to assist mobility impaired residents to enter and exit their apartments and their buildings.
- **Secure third-party services** for the transport of mobility impaired residents for a number of years, as needed.
- **Provide strategies for expedient and efficient activation of the mobility service** to residents at individual developments throughout NYC, as needed by NYCHA.

For additional details on the RFEI, see *Appendix 3*.

NYCHA will continue to improve its provision of reasonable accommodations during NSCs and reduce the frequency and duration of outages that trigger these conditions. All the strategies outlined above are designed to reduce outage frequency and minimize outage duration, thus reducing the frequency and duration of mobility-impaired residents being displaced from—or stuck in—their apartments.

NYCHA will provide a report to the Monitor on the results of assessment described in this section by March 1, 2020, so that an amended Action Plan may be developed.

7. Interactions with Internal and External Partners

A. Maintenance, Repair, and Skilled Trades (MRST) Protocol

Occasionally an elevator repair job will require the assistance of another craft. In those situations, the following steps will be taken to ensure coordination and limited disruption:

1. The **elevator response team** notifies the sector SEM of the problem
2. The **elevator response team** enters the corrective maintenance details into the Maximo work order on the handheld device and notify the dispatcher to interrupt the work order.
3. The **sector SEM** notifies the ESRD sector administrator.
4. The **sector SEM** directs the elevator dispatcher to create a parent corrective maintenance work order for the required craft.
5. The **ESRD sector administrator** or designee contacts the relevant department to confirm availability and provide them with a work order number.
 - a. For a Maintenance Worker, the **ESRD sector administrator** calls the Property Maintenance Superintendent.
 - b. For a Skilled Trades Worker, the **ESRD sector administrator** calls the Maintenance, Repair, and Skilled Trades Department (MRST).
 - c. If an MRST Skilled Trades worker is unavailable, **the ESRD sector administrator** calls the Property Management Department's Planning Unit at the Borough to confirm additional availability.
6. The **Maintenance Worker or Skilled Trades Worker** performs the required work.
7. The **Maintenance Worker or Skilled Trades Worker** enters the corrective maintenance details and closes the maintenance or skilled traded work order.
8. The **Maintenance Worker or Skilled Trades Worker** calls the sector SEM or ESRD sector administrator when the work order is closed.
9. The **sector SEM** calls the elevator dispatcher to reassign the elevator response team to the corrective maintenance work order in order to restore the elevator to service.

B. External Partners – City Agencies

As noted above, NYCHA contacts FDNY when there is a hazard condition in an elevator. NYPD is contacted when a pit search or motor room search is required. When a no-service condition exists, the Emergency Services Department sends an inter-agency notification—recipients include FDNY and NYPD—to inform our partners of service disruptions and the latest status on repairs.

8. Contracts and Warranties

A. Third-party Management Contracts

Of NYCHA's 3,224 elevators, 27 are at sites managed by third-parties. NYCHA has active management contracts with Kraus Management and Building Management Associates, both of which are developing their own action plans to ensure ongoing compliance with the Agreement. NYCHA will ensure these plans are consistent with this Action Plan and both plans will be released publicly once approved by the Monitor.

The terms of the private management contracts require the firms to conduct all necessary preventive and corrective maintenance for the elevators in those buildings. However, there may be occasions when the private management teams are unable to correct an issue and will reach out to NYCHA through the Emergency Services Department.

Under the terms of the contracts with Kraus and Building Management Associates, both parties are required to employ or sub-contract elevator corrective maintenance staff. Per the NYCHA-Kraus contract:

“Notices are posted in the buildings and the Supers/Porters knock on all doors informing residents of the service interruption...the list of Handicapped tenants is kept on site, for quick access. If there is a need for those tenants to leave their apartment, security is called, and safe transportation for the handicapped tenant(s) down the stairs is arranged.”

If the corrective maintenance repair cannot be made immediately, “NYCHA emergency service hotline is called and NYCHA personnel is informed.”

While Kraus and BMA manage the corrective maintenance for these 27 elevators, ESRD conducts the required Category 1 and Category 5 inspections.

B. Warranties

Currently NYCHA does not systematically track or use warranties on elevator cars, machinery, or parts. Recognizing the need to implement new controls over warranty management—and the potential to use those warranties to deliver improved service to our residents—the Maximo team has begun integrating all warranties tracked in the Apex system—used by Capital Projects to store all warranties and guarantees. Once this integration is complete, Capital Projects will be required to directly input any new elevator warranties directly into the Maximo system. This integration will be completed by February 29, 2020.

9. Performance Improvement Plans

The spending plan below outlines a number of improvement initiatives designed to meet the operating metrics in Obligations C.22-C.34 of the Agreement. NYCHA will use capital and operating funds to improve elevator performance—reducing the frequency and duration of outages and no-service conditions. The chart below also includes anticipated ESRD personnel costs to provide a holistic view of NYCHA's total investment in elevators through 2024.

Exhibit 4: Summary of spending commitments

\$ Millions; 2019-2024

	Cost item	2019	2020	2021	2022	2023	2024	TOTAL
Federal capex	Elevator replacement		\$0.9	\$10.1		\$36.0	\$11.2	\$58.2
Federal opex	Personnel costs	\$61.8	\$63.7	\$65.6	\$67.6	\$70.0	\$71.7	\$400.0
	Water resistant elevator doors	\$0.2	\$2.5	\$2.4	\$2.4	\$2.4	\$2.4	\$12.2
	Motor room AC installation	\$0.5	\$2.0					\$2.5
	Hoist motors and generators		\$4.3	\$4.3	\$4.3	\$4.3		\$17.4
	REMS installation		\$1.5	\$1.5	\$9.4	\$9.4	\$3.5	\$25.3
	Mechanic shift change		\$4.4	\$4.4	\$4.4	\$4.4	\$4.4	\$22.0
	Additional mechanic teams		\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$15.0
TOTAL FEDERAL		\$62.5	\$82.3	\$91.4	\$91.1	\$129.1	\$96.1	\$552.5
State capex	Elevator replacement				\$32.4	\$35.5		\$68.0
State opex								
TOTAL STATE					\$32.4	\$35.5		\$68.0
City capex	Elevator replacement		\$3.7	\$39.5				\$43.2
City opex								
TOTAL CITY			\$3.7	\$39.5				\$43.2
TOTAL		\$62.5	\$86.0	\$130.9	\$123.5	\$164.7	\$96.1	\$663.7

A. Capital commitments

1. Five-year capital plan

While the elevator capital plan is a standalone Agreement obligation (C.34), it is also a primary strategy for reducing outages across the portfolio. The Agreement requires a

minimum of 275 elevator replacements by 2024; currently, 281 are scheduled in that window.

These elevator replacements include 99 state-funded modernizations under the General Disbursement Agreement Action Plan, approved on November 6, 2019. For additional detail on the GDA, see *Appendix 8: General Disbursement Agreement Action Plan*.²⁷

The Capital Projects Division (CPD) and ESRD built the elevator replacement schedule using the following inputs:

- Condition rating of elevator (blended), which includes:
 - Physical Needs Assessment rating based on remaining useful life and other deficiencies
 - Operations rating data based on number of outages, work order tickets, and availability of parts
- Number of residents impacted by the investment

NYCHA will perform the following 281 elevator replacements in the timeframe listed in tables 4 and 6 below:

Table 4: Schedule of elevator replacements through 2024

	2019 (calendar)	2020	2021	2022	2023	2024	TOTAL
Elevator replacements	0	4	102	40	121	14	281
Funding source		City, Federal	City, Federal	State	State, Federal	Federal	City, State, Federal

The 281 scheduled replacements will impact 36,358 residents across 21 developments, including 9,209 seniors and mobility-impaired residents. Of the 21 developments receiving elevator replacements:

- 1 is in the construction phase
- 1 is being re-bid for construction
- 6 are awaiting City OMB and Comptroller design funding approval
- 11 are beginning design survey work
- 2 are awaiting Project Management task orders.

²⁷ The GDA also includes the replacement of 49 elevators at Queensbridge North, tentatively scheduled for completion in 2024. Those elevators are not included in this asset plan's schedule in case project delays push completion to 2025.

Table 5: Residents impacted by elevator replacements

	2019 (calendar)	2020	2021	2022	2023	2024	TOTAL
Federal		272	1,428		4,918	2,403	9,021
State				4,003	11,903		15,906
City		451	10,980	-	-	-	11,431
Total		723	12,408	4,003	16,821	2,403	36,358

Table 6: List of elevator replacements by development; 2020-2024

Development	Borough	Funding source	Year completed	# of elevators	Residents impacted	Senior or mobility-impaired residents
Boston Rd	BX	Federal	2020	2	272	270
McKinley	BX	Federal	2021	10	1,428	341
Morrisania Air Rights	BX	Federal	2023	13	1,677	693
Queensbridge South	QN	Federal	2023	49	3,241	843
Lafayette	BK	Federal	2023	14	2,403	462
TOTAL FEDERAL				88	9,021	2,609
Highbridge Gardens	BX	State	2022	12	1,611	390
Richmond Terrace	SI	State	2022	12	1,250	175
Unity Plaza	BK	State	2022	16	1,142	195
Atlantic Terminal	BK	State	2023	3	566	192
Butler	BX	State	2023	18	4,282	661
Carey Gardens	BK	State	2023	9	1,617	461
Coney Island (4&5)	BK	State	2023	6	501	146
Coney Island (1B)	BK	State	2023	3	997	198
Mitchel	BX	State	2023	20	3,940	896
TOTAL STATE				99	15,906	3,314
Hylan	BK	City	2020	2	451	119
Adams	BX	City	2021	14	2,295	486
Amsterdam	MN	City	2021	30	2,211	715
Dyckman	MN	City	2021	14	2,249	745
Saratoga Village	BK	City	2021	2	297	59
St. Nicholas	MN	City	2021	28	3,422	801
Hernandez/Meltzer	MN	City	2021	4	506	361
TOTAL CITY				94	11,431	3,286
TOTAL				281	36,358	9,209

During the design phase, CPD will ensure that the equipment specified is suitable for NYCHA's needs—including integration with existing Remote Elevator Monitoring Systems. Prior to, and during construction, the CPD Project Manager will communicate with development staff to implement resident notification protocols. For example, when a service outage is unavoidable, the contractor must provide written notification to the

development Superintendent five days in advance, and no more than one elevator may be removed from service at a time in multiple-elevator buildings.

Upon completion of the work, CPD specifications require that the contractor coordinate with ESRD to provide four eight-hour training sessions on maintenance and service of the equipment. Contractors must also provide manuals and any software required.

2. Permanent Affordability Commitment Together Plan

Like the capital plan, addressing elevators through the Permanent Affordability Commitment (PACT) program is both a standalone obligation (C.34) and a strategy for reducing outages. NYCHA uses HUD's Rental Assistance Demonstration (RAD), Section 18, and 2 CFR Part 200 programs to raise capital for needed repairs—including elevators. The RAD program requires that transactions address all physical needs arising now and for the 20-year period after conversion—a standard NYCHA has applied to all PACT transactions. For any elevator building included in PACT, the 20-year window will likely require full replacement of existing elevators.

To date, NYCHA has transferred 53 elevators under PACT.

The PACT planning process used several criteria to build the preliminary five-year pipeline, including capital needs and operating metrics—elevator outages were one of the key criteria in identifying potential developments.

Under the latest five-year PACT plan, an additional 500-600 elevators will be addressed by 2024.²⁸

Table 7: Elevators addressed through PACT by 2024

	2019	2020	2021	2022	2023	2024
NYCHA elevator portfolio - start of year	3,277	3,224	3,137	3,067	2,949	2,835
Elevators addressed through PACT	(53)	(87)	(70)	(118)	(114)	(138)
NYCHA elevator portfolio – end of year	3,224	3,137	3,067	2,949	2,835	2,697

²⁸ Selected developments and timing are subject to change if required by exigent circumstances—including XRF lead testing results and other action plan items.

B. Maintenance commitments

1. Elevator mechanic shift change

Elevator outages can occur at any time of day and across all days of the week. ESRD's current coverage model is concentrated between 8:30am and 4:30pm on Monday through Friday; outages that occur outside of these hours have longer durations given the reduced coverage model over nights and weekends.

NYCHA has proposed a new shift model that would more evenly distribute ESRD response teams across the day and week. Under the current schedule—with 130 teams on the primary weekday shift and as few as 6 teams on weekend nights—many outages beginning on weekends are not addressed until Monday, given resource constraints, prioritization obligations, and outage volumes.

The shift change could cost as much as \$4.4 million dollars annually, which may be partially offset by reduced overtime. This remains under negotiation with the City's Office of Labor Relations.

NYCHA will provide a report to the Monitor on the results of this negotiation by February 14, 2020, so that an amended Action Plan may be developed.

For current elevator mechanic shifts, see *Appendix 5*.

2. Water-resistant elevator door operators

Flooding and other water-related conditions are ongoing threats to reliable elevator service. Not only can water cause immediate outages, these conditions can have a long tail of effects on elevator operations, despite not being captured in Maximo causal codes. For example, if a major flood incident causes an immediate outage, it will be coded as "INCIDENTALWATERDM." That same incident, however, may cause long-term corrosion and rusting of the cables and rails, leading to future outages. When those future outages are coded in Maximo, they will likely not have the same code in the absence of a proximate water condition.

Water-resistant elevator door operators can reduce the likelihood of a water-related incident causing an immediate elevator outage. NYCHA has begun—and will continue—installing water-resistant elevator door operators on 52 elevators that have frequent flooding and other water-related conditions, with portfolio-wide replacement scheduled by 2024. Heavy rain, snowfall, and melting ice can all cause mechanical and electrical damage if roof leakage occurs. Water resistant elevator door operators—which sit on top of the elevator cab and mechanically open the doors upon arrival at a landing—contain fully enclosed drive units with optical sensors as well

as water-resistant motors. These operators will replace old units that have well-worn mechanical contacts and resistors.

Table 8: Water resistant door operator installation

	2019	2020	2021	2022	2023	2024	TOTAL
TOTAL	\$193,077	\$2,397,024	\$2,397,024	\$2,397,024	\$2,397,024	\$2,397,024	\$12,178,197

Installations will be managed by ESRD staff and may trigger overtime costs that are not included in the above table. NYCHA and ESRD will also explore additional solutions that can mitigate the impact of water on elevator operations.

NYCHA has installed 37 waterproof door operators to date and will complete 640 installations each year through December 31, 2024.

NYCHA will ensure that the specifications for new elevators being purchased are consistent with continued use of these door operators.

3. Motor room air conditioner installation

NYCHA elevators experience a spike in outages during the summer months, due to overheating conditions in motor rooms and occasional voltage issues. Motor rooms are located at the top of a building and can run many degrees warmer than outdoor temperatures and internal temperatures at lower floors. High heat can cause lasting damage to elevator systems—reducing reliability in older relay systems and melting processors in newer solid state systems.

NYCHA will install air conditioners in elevator motor rooms to reduce the frequency of heat-related outages. Phase I began in March 2019 with machine room surveys to assess room size and identify ventilation fans in need of repair or replacement. The motor room survey identified 2,972 motor rooms in need of AC installation. MRST has completed installation of 734 motor room air conditioners as of December 6, 2019, leaving 2,238 motor rooms still in need of AC units. 250 additional units were delivered in December 2019 and MRST continues to install an average of 4 new units per workday. NYCHA will complete the installation of these remaining AC units by October 31, 2020.

Maintenance of air conditioner units will occur during monthly Preventive Maintenance. This task will include removing the front cover of the Air Conditioner, removing the filter that's behind the front cover and removing dirt, or dust particles that may be present on the filter and air conditioning coils.

Table 9: Motor room AC installation

	2019	2020	TOTAL
Phase I – materials	\$158,050		\$158,050
Phase I – labor	\$355,294		\$355,294
Phase II – materials		\$1,397,800	\$1,397,800
Phase III – materials		\$598,850	\$598,850
TOTAL	\$513,344	\$1,996,650	\$2,509,994

4. Hoist motor and generator replacement

In August 2019, over 30% of NYCHA elevator outages were caused by issues in the motor room, which includes the hoist motor, generator, and controller. NYCHA elevators experience high usage throughout the day, creating acute strain on mechanical systems. While hoist motors and generators are replaced during capital elevator replacements, NYCHA has not installed a new elevator since 2016.

NYCHA will contract with vendors to repair and replace 2,112 hoist motors and generators across the portfolio. The 2,112 elevators exclude all elevators modernized in the last 10 years, all elevators in the capital and PACT plans, and all wheelchair lifts.

Hoist motors are electrically powered and provide the mechanical means of operating the elevator. Generators provide electricity to power the hoist motor on some equipment. ESRD will utilize a service contract to replace and repair hoist motors and generators on an ongoing basis. ESRD and the Technical Services Division have engaged an A/E firm on the scope. ESRD plans to release a solicitation in February 2020. Installation of generators and hoist motors will be completed by December 31, 2023, with 528 installations each year.

Table 10: Hoist motor and generator replacement

	2019	2020	2021	2022	2023	2024	TOTAL
Generators - materials		\$1,848,000	\$1,848,000	\$1,848,000	\$1,848,000		\$7,392,000
Generators - labor		\$670,180	\$670,180	\$670,180	\$670,180		\$2,680,719
Hoist motors - materials		\$1,161,600	\$1,161,600	\$1,161,600	\$1,161,600		\$4,646,400
Hoist motors - labor		\$670,180	\$670,180	\$670,180	\$670,180		\$2,680,719
TOTAL	\$0	\$4,349,960	\$4,349,960	\$4,349,960	\$4,349,960	\$0	\$17,399,838

5. REMS installation

Remote Elevator Monitoring Systems are connected to elevator controllers and cabs, providing dispatchers with notifications each time a “fault” is detected. The dispatcher can then use these faults to create a new work order or confirm an existing work order. REMS are also a powerful tool for diagnosing systemic issues underlying breakdowns

and can be used to inform predictive maintenance. Under the Agreement, 70% of NYCHA elevators must be equipped with REMS by 2024. NYCHA and ESRD will install REMS for 100% of the portfolio by 2024, ensuring consistency in systems and monitoring strategies.

Table 11: REMS installation

	2019	2020	2021	2022	2023	2024	TOTAL
Phase I - materials		\$1,395,000	\$1,395,000				\$2,790,000
Phase I - labor		\$147,554	\$147,554				\$295,107
Phase II - materials				\$8,478,000	\$8,478,000		\$16,956,000
Phase II - labor				\$896,747	\$896,747		\$1,793,493
Phase III - labor						\$3,484,173	\$3,484,173
TOTAL	\$0	\$1,542,554	\$1,542,554	\$9,374,747	\$9,374,747	\$3,484,173	\$25,318,773

The scope for REMS installations was finalized on November 4, 2019 and the final A&E estimates were received by the Technical Services Department on December 10, 2019. ESRD will trigger the procurement process and issue a solicitation release a January 2020.

Under the Capital Plan, CPD will install 281 new elevators by 2024, all of which will be equipped with REMS. By 2024, ESRD will use a vendor to install REMS in all remaining elevators. 171 REMS will be installed by December 31, 2021 and 942 additional REMS will be installed by December 31, 2023. 1,830 elevators are already equipped with REMS but will require an upgrade to a cloud-based system by December 31, 2024.

6. Additional elevator mechanic teams

Reductions in elevator mechanics and helpers have strained ESRD's coverage, often delaying or deferring preventive maintenance that could inoculate the elevator from future problems. Currently, if an ESRD team is working on a preventive maintenance ticket and a corrective maintenance work order is triggered in their sector, they are often forced to stop their preventive maintenance work, put the elevator back in service, and travel to the corrective maintenance need. Their ability to complete the preventive maintenance work is entirely depending on the volume of corrective maintenance calls.

NYCHA will add elevator response teams to increase overall maintenance capacity—increasing preventive maintenance rates and likely reducing outage duration. An additional 20 teams have been approved for FY20—at a preliminary cost of \$3 Million annually. NYCHA and the Monitor team will jointly evaluate performance over six months to determine if additional resources are required.

Table 12: Additional elevator mechanic teams

	2019	2020	2021	2022	2023	2024	TOTAL
Additional teams		\$3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	\$15,000,000
TOTAL	\$0	\$3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	\$15,000,000

C. Other commitments

1. Maximo enhancements (fully funded)

Maximo is the system used to manage and track elevator related work orders.

ESRD and the Maximo team have worked on several upgrades to enhance ESRD's analytical and reporting capabilities. The system has been modified to provide elevator work orders with more distinct causes to better identify trends and issues. With better data controls, ESRD and the Monitor can establish a baseline of performance as operations data is submitted each quarter, per Obligation C. 22.

Completed 2019 updates

- As of July 30, 2019, the following features were released:
 - Mechanic or Maintenance workers can confirm outages by flagging WO as a "True Outage" on their handheld devices for unplanned outages.
 - Maximo will allow users to create planned elevator outage work orders.
- As of July 31, 2019, the following features were released:
 - Robocalls are triggered based on planned/unplanned outage and no service conditions.
- As of August 2019, elevator mechanics can close work orders on their handhelds. This will further reduce discrepancies in work order creation, closing of tickets, and the recorded length of an outage.

Elevator Dashboard

A new Elevator-specific dashboard will provide real-time data on the number of outages and no service conditions. It will also list the number of apartments impacted by no service conditions. It will provide the total work orders open, including the number of outages, "Super-9" hazardous work orders (i.e. Accidents, passenger stuck, etc.) Reporting will be provided by elevator sector and will be able to be drilled down to managing developments and developments. The dashboard is in beta testing and ESRD will integrate it into daily operations once testing is complete.

Remote Elevator Monitoring systems (REMS) will be incorporated into the Dashboard. REMS "open critical" and "open-hazardous" warnings of a priority 2 or 3 will be

illustrated on the Dashboard. The drill down will include the warning type, the location and device identifier. REMS notifications will include all notifications within 24 hours throughout NYCHA and will provide a drill down to the locations and devices.

One Maximo upgrade previously scheduled for July 2019—a clear delineation between NSCs and other outages—was released in September 2019 and currently undergoing data validation.

2. Alternative work schedule

The Authority has implemented a new schedule that provides a wider range of hours where NYCHA caretakers are in the buildings. Alternative Work Schedule (AWS) is a new way of scheduling certain front-line staff to ensure coverage from 6 AM to 7 PM at our developments, 7 days a week, through 5 staggered schedules. The fourth and final phase of the AWS rollout will occur approximately February 23, 2020.

Cleaning elevator door tracks is a daily responsibility for NYCHA Caretakers, as noted in NYCHA's Janitorial Operations Guide—additional cleanings should aid in reducing outage frequency from debris.

3. Door lock monitoring

The NYC Department of Buildings has mandated that each passenger and freight elevator in New York City be equipped with door lock monitoring by January 1, 2020. To date, NYCHA has installed 793 door lock monitors, with 2409 installations pending. NYCHA has secured a vendor to perform 1400 installations and has ordered parts to self-install the remainder. NYCHA will complete all installations by December 31, 2021.

NYCHA has been in communication with the Department of Buildings about its progress and will provide quarterly updates to the Monitor team.