NYC Housing Authority

Under the guidance of
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- Daili Peng
Mayor Fiorello H. LaGuardia speaking at the dedication of the Harlem River Houses in 1937. The development had 577 apartments.

“Tear down the old, build up the new. Down with rotten antiquated rat holes. Down with hovels, down with disease, down with fire traps, let in the sun, let in the sky, a new day is dawning, a new life, a new America.”

- Mayor Fiorello H. LaGuardia

Mayor Fiorello H. LaGuardia speaking at the dedication of the Harlem River Houses in 1937. The development had 577 apartments.

N.Y.C. Housing Authority
Agenda

1. What is the problem?
2. What has been done?
3. What could be done?
NYCHA - New York City Housing Authority

- Provides affordable housing for 600,000 residents of NYC
  - Through leasing
  - Section 8 vouchers
- 8% of the rental housing stock in NYC is owned by NYCHA
- 60% of NYCHA’s buildings were built before 1970s
- NYCHA has a vacancy rate of 0.6% and a waiting list of over 200,000 families.
A Snapshot of NYCHA’s portfolio

Units: 177,666
Buildings: 2,553
Total Square Footage: 175,174,242
Acreage: 2,473

Map of NYCHA Developments

BRONX
Units: 44,296
Buildings: 586

QUEENS
Units: 17,279
Buildings: 468

MANHATTAN
Units: 53,113
Buildings: 551

STATEN ISLAND
Units: 4,502
Buildings: 78

BROOKLYN
Units: 58,476
Buildings: 870

Data Source: NYCHA Department of Research and Management Analysis
1. What is the problem?
Established to provide affordable housing for middle income residents

1968
NYCHA relaxed its tenant selectivity and percentage of tenants on welfare doubled

1970
The crime rate begins to increase in NYCHA developments

2000
Disinvestment of NYCHA from all levels of government - federal, state, and city

Present
NYCHA requires $32 billion for repairs and maintenance of the existing housing stock
Financial

- Chronic underfunding in both operational and capital subsidies over the past two decades
- Operating funding loss of $1.05 billion
- Capital funding loss of $1.5 billion

Federal Operating Funding Cumulative Loss since 2001
Source: NextGeneration NYCHA
NYCHA conducts physical needs assessments every five years.

Only a small portion is addressed, this has caused the capital needs to balloon to unsustainable levels.

Operational

- Inefficient procurement process - “two-step” sealed bidding
- High cost of operations

PAST  →  PRESENT ???
Patricia Elcock, 59, used an open oven to heat the apartment she shared with her grandson Michael this winter
Sam Hodgson for The New York Times
The Frasier family in their living room in King Towers in Harlem in 1972
Chester Higgins Jr./The New York Times

In this apartment in the Bronx, sewage flows into the apartment when it rains and water leaks from the roof
Ángel Franco/The New York Times
2. What has been done?
NextGen NYCHA

- In May 2015, Mayor Bill de Blasio announced NextGeneration NYCHA
- 10-year strategic plan to improve NYCHA housing and operations
NYCHA 2.0

❖ Announced on December 12, 2018 to accelerate the NYCHA NextGen plan
❖ Ten-year plan to resolve $24 billion need for vital repairs
❖ Renovations of 175,000 units
❖ Launch new strategies for lead paint, mold, elevator, heat and vermin issues

Source: NYCHA 2.0 Part 1
Objectives

1. Pact to Preserve
2. Build to Preserve
3. Transfer to Preserve
Pact to Preserve

Source: NYCHA 2.0 Part 1: Invest to Preserve
PACT and Rental Assistance Demonstration (RAD)

- Conversion of Public Housing to Section 8 vouchers
- Done via Public-Private Partnerships
- All the capital needs in the Physical Needs Assessment (PNA) are covered while renovating
- Residents have the same rights as in public housing with the advantages of a private firm managing the building
NYCHA Average Monthly Per-Unit Rents, Subsidies, and Expenses, Pre- and Post-Conversion Under RAD, 2016

Pre-Conversion
- Operating Subsidy: $432
- Capital Subsidy: $147
- Operating Revenue: $514

Post-Conversion
- RAD Subsidy: $579
- Operating Revenue: $514

Expenses
- Operating Expenses: $995

Surplus
- $98

Source: Stabilizing the foundation - Citizens Budget Foundation
NEW CONSTRUCTION AT TULIP TOWERS SITES

<table>
<thead>
<tr>
<th>Scenario 1: Current Zoning</th>
<th>Scenario 2: Upzoning to Allow Taller Bldgs.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NYCHA Public Housing Apartments Preserved</strong></td>
<td>500</td>
</tr>
<tr>
<td><strong>Total New Apartments</strong></td>
<td>430</td>
</tr>
<tr>
<td><strong>New Affordable Apartments (30%)</strong></td>
<td>130</td>
</tr>
<tr>
<td><strong>New Market-Rate Apartments (70%)</strong></td>
<td>300</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Full renovations completed at Tulip Towers</td>
</tr>
</tbody>
</table>

Source: NYCHA 2.0 Part 1: Invest to Preserve
Transfer to Preserve
NYCHA 2.0 INITIATIVE | NEED ADDRESSED | TIMING
--- | --- | ---
I. PACT to Preserve | $12.8B | 10 Years
II. Build to Preserve | $2B | 10 Years
III. Transfer to Preserve | $1B | 10 Years
Existing Funding | $7.9B | 
| City (Mayor's Initiative + City Capital) | $1.4B | 5 Years
| State | $450M | **
| Federal (Capital Plan + FEMA + EPC) | $3.6B*** | 10 Years
| City (Consent Decree) | $2.2B | 10 Years
Total NYCHA 2.0 | $23.8B | 
Remaining Need | $8B | 

$31.8B (2017 PNA)

* Exact PNA reduction will likely range between 75% and 82% depending on the rate of PNA growth. Pie chart assumes that PNA grows at inflation (3% per year).
** Exact timeline to be determined.
*** 5-year funding is $2.1B. $3.8B is a forward-looking estimate assuming current annual funding rate.

Source: NYCHA 2.0 Part 1: Invest to Preserve
Physical Needs Assessment (PNA)

- In 2016, NYCHA engaged a joint venture between STV Incorporated and AECOM USA to perform a Physical Needs Assessment (PNA) of all NYCHA buildings
- Collected data for 10 months, May 2016 - Feb 2017, 325 developments, representative sample of more than 20,000 apartments
- PNA data was gathered using a software application called Mobile Validity® on iPads
**Areas of Concern Identified**

### Table ES-1. Total Costed Actions in First 5 Years by Discipline and Rank Order

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Cost ($000,000)</th>
<th>Percentage</th>
<th>Included Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td>$12,579</td>
<td>39.6%</td>
<td>Kitchen, bathroom, floor, doors, etc.</td>
</tr>
<tr>
<td>Architectural</td>
<td>$10,711</td>
<td>33.7%</td>
<td>Exterior (roofing, parapet, entry doors, etc.), and Interior (common areas,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>interior stairs, etc.</td>
</tr>
<tr>
<td>Mechanical</td>
<td>$3,058</td>
<td>9.6%</td>
<td>Boilers, piping, radiators, etc.</td>
</tr>
<tr>
<td>Elevators</td>
<td>$1,510</td>
<td>4.7%</td>
<td>Elevators</td>
</tr>
<tr>
<td>Site - Architectural</td>
<td>$1,471</td>
<td>4.6%</td>
<td>Fencing, playgrounds, sidewalks, etc.</td>
</tr>
<tr>
<td>Electrical</td>
<td>$1,358</td>
<td>4.3%</td>
<td>Lighting, panelboards, generators, etc.</td>
</tr>
<tr>
<td>Site - Mechanical and Electrical</td>
<td>$1,114</td>
<td>3.5%</td>
<td>Site lighting, underground piping, etc.</td>
</tr>
<tr>
<td>Total</td>
<td>$31,801</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** 1. \$000,000 = \$ million. $12,759 in the table above = $12,759,000,000, or roughly $12.8 billion
3. What could be done?
Proposal Outline

- Need 1: Apartments
- Need 2: Architecture
- Need 3: Mechanical Systems
- Need 4: Elevators
- Need 5: Site - Architecture
- Community Development
- Logistics & Phasing
Need No.1: Apartments (40%)

- Aging appliances
- Low energy efficiency (high cost)
- Ceiling/wall damage
- Aging piping system
- Poor user experience
Solution
Upgrade to IPS (Integrated Piping System)

- Resolve the aging problem once and for all
- Use domestic water system for heating and cooling
Solution

Existing Solution of NYCHA

Two-pipe fan-coil system + PTAC (Packaged Terminal Air Conditioner)

- Not cheap enough (two more pipes + fan coil unit + PTAC)
- High maintenance
- Low energy efficiency (high operating cost)
Solution

Upgrade to IPS (Integrated Piping System)

Integrate domestic water pipe and coil

Only one more pipe in addition to basic domestic water system

Based on Integrated Piping System
https://www.williamscomfortprod.com/integrated-piping-system/
Solution

Installation Costs for Upgrade to IPS (Integrated Piping System)

Based on Integrated Piping System
https://www.williamscomfortprod.com/integrated-piping-system/
Solution
System Efficiency for Upgrade to IPS (Integrated Piping System)

Based on Integrated Piping System
https://www.williamscomfortprod.com/integrated-piping-system/
Solution

Upgrade to IPS (Integrated Piping System)

- Low installation and operating cost
- High comfort
- High energy efficiency
- The disruption of this upgrade will be minimized during a renovation project.
Solution

Highly energy-efficient refrigerator (Haier)

- Basic Cost: $448
- Energy Cost: 0.6 kWh per day (+/- 15%)

<table>
<thead>
<tr>
<th>Savings</th>
<th>Energy (MMBtu/year)</th>
<th>Money ($000/year)</th>
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<tr>
<td>Refrigerator replacement</td>
<td>122,823</td>
<td>$14,064</td>
</tr>
</tbody>
</table>

Based on NYCHA PNA 2017

Save/year | Before | After
---|-------|-------
Water     | 40.15 m^3 | 25.55 m^3
Cost      | $60   | $38   

Integrated design of bathroom and kitchen
# Kitchen and Bathroom Renovation

<table>
<thead>
<tr>
<th>Cost Categories</th>
<th>Cost Analysis</th>
<th>Energy Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Direct material</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>Alteration</td>
<td>Direct labor</td>
<td>Integrated design</td>
</tr>
<tr>
<td>City permits</td>
<td>Fixed cost</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>Logistics</td>
<td></td>
</tr>
<tr>
<td>Demolition and site prep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overhead cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*Center for Buildings, Infrastructure & Public Space*
## Cost Categories

- **Materials**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>LOW-RANGE</th>
<th>MID-RANGE</th>
<th>HIGH-RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinets</td>
<td>$130 per linear foot</td>
<td>$1,000 per linear foot</td>
<td>$2,000 per linear foot</td>
</tr>
<tr>
<td>Appliances package (range, fridge, dishwasher, microwave)</td>
<td>$2,000</td>
<td>$5,000</td>
<td>$17,000 - $26,000</td>
</tr>
<tr>
<td>Vent hood</td>
<td>$200</td>
<td>$500</td>
<td>$2,000 and up</td>
</tr>
<tr>
<td>Countertop</td>
<td>$5 per sq/ft</td>
<td>$50 per sq/ft</td>
<td>$100 per sq/ft</td>
</tr>
<tr>
<td>Backsplash</td>
<td>$3 per sq/ft</td>
<td>$15 per sq/ft</td>
<td>$35 per sq/ft and up</td>
</tr>
<tr>
<td>Flooring (tile)</td>
<td>$3 per sq/ft</td>
<td>$15 per sq/ft</td>
<td>$35 per sq/ft and up</td>
</tr>
<tr>
<td>Kitchen sink</td>
<td>$150</td>
<td>$500</td>
<td>$2,000 and up</td>
</tr>
<tr>
<td>Cabinet hardware</td>
<td>$5 per piece</td>
<td>$30 per piece</td>
<td>$30 and up per piece</td>
</tr>
<tr>
<td>Lighting</td>
<td>$50 per piece</td>
<td>$200 per piece</td>
<td>$500 and up per piece</td>
</tr>
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</table>

### Kitchens

### Bathrooms

<table>
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<th>LOW-RANGE</th>
<th>MID-RANGE</th>
<th>HIGH-RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall and floor tile</td>
<td>$3 per sq/ft</td>
<td>$15 per sq/ft</td>
<td>$35 per sq/ft and up</td>
</tr>
<tr>
<td>Sink</td>
<td>$50</td>
<td>$150</td>
<td>$500 and up</td>
</tr>
<tr>
<td>Vanity</td>
<td>$250</td>
<td>$1,000</td>
<td>$2,000 and up</td>
</tr>
<tr>
<td>Sink and shower fixtures</td>
<td>$40 per fixture</td>
<td>$100 per fixture</td>
<td>$350 and up, per fixture</td>
</tr>
<tr>
<td>Bathtub</td>
<td>$150</td>
<td>$600</td>
<td>$2,000 - $3,000</td>
</tr>
<tr>
<td>Shower enclosure</td>
<td>$350</td>
<td>$1,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Toilet</td>
<td>$150</td>
<td>$400</td>
<td>$1,000 and up</td>
</tr>
<tr>
<td>Medicine cabinet</td>
<td>$50</td>
<td>$150</td>
<td>$500 and up</td>
</tr>
<tr>
<td>Accessories (hooks, towel bars, toilet-paper holder)</td>
<td>$10 per item</td>
<td>$50 per item</td>
<td>$100 and up</td>
</tr>
<tr>
<td>Lighting</td>
<td>$25 per fixture</td>
<td>$150 per fixture</td>
<td>$300 and up</td>
</tr>
<tr>
<td>Ceiling vent</td>
<td>$50</td>
<td>$200</td>
<td>$500 and up</td>
</tr>
<tr>
<td>Radiant floor heating</td>
<td>$6 per sq/ft</td>
<td>$8 per sq/ft</td>
<td>$12 per sq/ft</td>
</tr>
</tbody>
</table>
Cost Categories

- Alteration Agreement
  - Scope of work
  - Insurance: selection of contractor
  - Timeline: 10 am - 4pm
  - Wet-over-dry rule

- City permits
  - Plumbing services: $2,000 – $3,500 and higher
  - Plumbing permits: up to $2,000 and as high as $5,000 per permit
    - exceeds a minor repair or a direct swap of a similar fixture
  - Electrical permits: $900
  - Asbestos inspection: $500 to $1,000
    - Depends on plumbing plan
Cost Categories

- **Design**
  - Detailed drawings of layout, plumbing, cabinetry, appliances, etc.
  - Approximately $22,000 for a kitchen and $25,000 for a bathroom

- **Demolition and site prep**
  - Kitchen and bathroom, respectively
  - $600-$900 for wall and floor protection
  - $1,000 for waterproofing steps

- **Installation**
  - Approximately 30% of the material cost

- **Overhead Cost**
  - Management during construction
Cost Analysis
Materials | Demolition and Site Preparation | Installation

- Direct Material and Labor
  - Graphs showing Total Direct Cost and Direct Cost Per Apartment vs. Number of Apartments.

- Fixed Cost
  - Graphs showing Total Fixed Cost and Fixed Cost Per Apartment vs. Number of Apartments.
Logistics
Increase the number of apartments involved in one renovation project.

Reduce cost per apartment (How?)

- Complete renovation of eight apartments in two construction periods
- Reduce replacement from eight apartments to two apartments
Energy Performance
Highly energy-efficient refrigerator (Haier)

- Basic Cost: $448
- Energy Cost: 0.6 kWh per day (+/- 15%)

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Based on NYCHA PNA 2017

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<td>$38</td>
</tr>
</tbody>
</table>
Need No.2 : Architecture

- NYCHA’s 2nd largest need, estimated at $10.7 Billion
- Roofs are a major area of concern, and require approximately $1.4 Billion
- Repairs to/replacement of exterior components (roofs, parapets, chimneys, windows, awnings, main front doors) and interior components (lobby and corridor floors, walls, and ceilings)
Proposed guideline:

- Meeting with community and building staff
- Surveying and presenting design options to the community
- Community participation in review and decision-making
- Weekly field meetings
Roof Replacement

Coal Tar Roof

Metal Standing Seam

*The Best Roof for Solar Panels - 5 Common Materials
*Design Guidelines
Metal Roofing

- Allow rain water to flow
- Water-resistant
- Reduce energy consumption
- With standing seam, compatible with solar panels
Need 3: Mechanical

- NYCHA’s 3rd largest need, estimated at $3.1 Billion
- Heating plants are a major area of concern, and require approx. $1.33 Billion
- Heating plants and related components (boilers, burners, gauges, pumps, etc.); radiators; air conditioners; heating and ventilating fans; hot water heaters; potable water, drain, sewer and gas piping
- 744 boilers have Remaining Useful Life (RUL) of 5 years or less

Reference: Physical Needs Assessment - STV & AECOM (JV) - 2017
Need No.4 : Elevators

- NYCHA’s 4th largest need, estimated at $1.5 Billion
- Roughly 50% of NYCHA residential buildings are 7 stories or more, and about 9% are buildings of 17-31 stories
Proposed solution: Geothermal System for Heating and Cooling

NYC Geothermal Pre-feasibility Tool

Baruch Campus

Reference: https://www1.nyc.gov/assets/ddc/geothermal/index.html
NYCHA Campuses
Baruch
Dyckman
Fulton
Johnson
King Towers
Manhattanville
Rangel
Vladeck
Wagner
Washington

- Annual potential savings with closed loop geothermal system: $4,679,137
- Reduction in carbon footprint: 16,913 tons of CO2
- On average, incremental payback time with carbon credit is 7 years, and 10 years without

Reference: https://www1.nyc.gov/assets/ddc/geothermal/index.html
Social Benefits

- LEED Certification: 19 points for optimized energy efficiency, up to 7 points for onsite renewable energy, and 2 points for green power. Helps reach NY’s 40×30 and 80×50 goals
- Reduces stress on the community due to budget cuts and rise of fuel prices in the future
- Non-monetary benefits such as a sense of pride for NYCHA and its residents. Improve its negative reputation by tackling the issue of climate change
- Major part of the geothermal system is underground, and the land on top can still be used for various activities

Reference: https://www1.nyc.gov/assets/ddc/geothermal/index.html
Financing

- New York State Energy Research and Development Authority (NYSERDA) is making $26.5 million available for the installation of cutting-edge, renewable energy technology.
- Governor Cuomo announced proposal for $15 Million rebate program for renewable heating and cooling technology.
- Regional Greenhouse Gas Initiative (RGGI) offering incentives for decrease in carbon emissions. Has raised $3.143 Billion which will be used for investments in energy-efficient technologies.
- Department of Energy (DOE) as grants, with millions of dollars available for geothermal systems.

Reference: https://www.rggi.org/auctions/auction-results
Regulatory Requirements

- The New York State Department of Environmental Conservation (NYSDEC) Division of Mineral Resources requires a mining permit for drilling activity below a depth of 500 feet and can take up to 8 weeks for review in addition to review by the Department of Parks.
- Surveys for every 100 feet of drilling.

Potential Obstacles

- If open-loop is considered, a highly-detailed report on the potential effects of such a system to underground water is required.
- The initial costs of exploring drilling and installing a geothermal system are high.
Elevator Malfunctions

Issues Reported:

- 70 East 108th Street - Elevator breakdown at least four times a month
- 177 Sands Street - Brooklyn Elevator out of service for six days
- 400,000-plus public housing residents at greater risk of elevator accidents
Reasons for Elevator Malfunction

- Funding - NYCHA’s elevator requires $1.5 billion for repair and replacement
- 10 unskilled mechanics inspect 3,000-plus elevators
Research Analysis

Reference: Based on Singapore Research Methodology
Technical Modifications

Conceptual Modifications

1. Polyurethane-coated steel belts

2. Gearless machine

3. 30° before
### Feasibility for Elevators

**Baruch Houses:** typically 7- to 12-story buildings; some are 23-stories

**Cost of installing elevator varies with the height of the building:**

- 6-story building: $125,000
- 7- to 12-story building: $150,000 - $175,000
- Interior finishes: $7,500 - $30,000

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<table>
<thead>
<tr>
<th>Building</th>
<th>Floors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baruch Houses Addition</td>
<td>23</td>
<td>1977</td>
</tr>
<tr>
<td>Baruch Houses II</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses III</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses IV</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses IX</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses V</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses VI</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses VII</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses VIII</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses X</td>
<td>14</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses XII</td>
<td>14</td>
<td>1959</td>
</tr>
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<td>Baruch Houses XIV</td>
<td>14</td>
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<tr>
<td>Baruch Houses XVI</td>
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<td>1959</td>
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<tr>
<td>Baruch Houses XVII</td>
<td>14</td>
<td>1959</td>
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<tr>
<td>Baruch Houses XI</td>
<td>13</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses XII</td>
<td>13</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses XV</td>
<td>13</td>
<td>1959</td>
</tr>
<tr>
<td>Baruch Houses I</td>
<td>7</td>
<td>1959</td>
</tr>
</tbody>
</table>
Maintenance and Repair Costs

- The average cost of a service call for an elevator or stair lift is $120
- The cost of labor to repair an elevator averages $75 per hour
- An inspection fee or certification of safety varies by municipality, and averages $150 for an elevator
- With routine maintenance an elevator lasts 20 - 30 years
## Typical Elevator Repairs

<table>
<thead>
<tr>
<th>Task</th>
<th>Highest Avg. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door hardware (Electrical)</td>
<td>$800</td>
</tr>
<tr>
<td>Door hardware (Mechanical)</td>
<td>$1,200</td>
</tr>
<tr>
<td>Replace landing entrance doors</td>
<td>$2,800</td>
</tr>
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<td>Piston</td>
<td>$3,000</td>
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<td>Travelling cables</td>
<td>$3,000</td>
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<tr>
<td>Cab operating panels</td>
<td>$4,000</td>
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<tr>
<td>Cab wiring</td>
<td>$4,000</td>
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<tr>
<td>Replace controller wiring</td>
<td>$4,000</td>
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<tr>
<td>Piston gripper installation</td>
<td>$15,000</td>
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<tr>
<td>Motor replacement</td>
<td>$11,500</td>
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### Operational defects

#### Travelling performance
- 1. Ride quality
  - Car vibration
  - Jerky movement
- 2. Car acceleration
  - Long waiting time
  - Overspeed governor
- 3. Traction sheave drive
  - Drive sheave grooves
  - Wearing undercut grooves
- 4. Machine brake
  - Fail to operate
- 5. Overspeed governor
  - Fail to operate

#### Machine room
- 1. Room condition
  - Excessive heat
  - Dimming room
- 2. Controller
  - Exposed wires
  - Burned relay contacts

#### Hoistway & elevator pit
- 1. Accessibility
  - Inadequate accessibility
- 2. Suspension ropes
  - Breakage of ropes
- 3. Safety gears
  - Fail to operate
- 4. Car frame
  - Plunged to buffer
- 5. Counterweight
  - Detached from steel frame
- 6. Elevator pit
  - Leaking pit’s concrete floor
- 7. Water exposure
  - Leaking ceiling

#### Elevator car
- 1. Misalignment
  - Car unaligned with landing floor
- 2. Door
  - Jammed door
- 3. Door sensor
  - Unable to detect object
- 4. Elevator pit
  - Leaking pit’s concrete floor
- 5. Floor
  - Damaged floor covering
- 6. Wall
  - Corroded wall
- 7. Lighting
  - Bulb faulty
- 8. Car accessories
  - Loose panel
- 9. Fan
  - Faulty fan
- 10. Calcul button
    - Inoperative call button
Modernization - Replacement of Elevator Parts

Upgrade fixtures and railings inside: $200 - $300
Replace cab control system: $8,000 - $10,000
Installation of a new motor or piston: $10,000 - $15,000

There are several advantages to modernization:

- Improved energy efficiency
- Reduced wait times
- Faster and smoother ride
- Improved safety and reliability
- Reduced calls to service company
- Updated look and feel
- Minimized noise and vibration
Staircase Revamp
Need 5: Architecture - Site and MEP - Site

- Architecture - Site (Landscape) and MEP - Site represent 8% of the total needs
- $2.6 Billion investment needed to cover these needs
- Includes parks, landscaping, fencing, sidewalks, streets, parking lots
- Site Mechanical consists primarily of underground piping (installed during construction)
- Site Electrical consists of site lighting
Site Architecture (Landscape)

- Floodable parks improve landscapes and resiliency
- Efficient use of land

Resilient landscape project: Yanweizhou Park in Jinhua City, China.
source: Landezine, 2015
Architectural and Site

- Bioswale/Sidewalk as shown in the picture
- Sidewalks is one of the main needs in the Architectural and Site category

*Landscape resilient project in the city of Jinhua City, China.* (Landezine, 2015)
Electrical and Site

- Smart post
- LED touchscreen for public information and “panic button”
- Wi-Fi connection
- Security camera
- Independent of the current electrical system
- Reduces carbon footprint

Smart posts donated by Kaist University of South Korea, Grecia, Costa Rica

(Municipality of Grecia, 2019)
Adopt a NYCHA development program

- No money involved
- Improvement of NYCHA landscapes
- Private firms have the opportunity to show off their work and promote themselves
- Public-Private Partnerships

NYCHA Johnson Project, taken from the corner of 112th St & Lexington Ave.

Members of Lambda Chi Alpha Fraternity at Tarleton State University participate in the Texas Department of Transportation's Adopt-a-Highway program.
Disrupting the Superblock

- NYCHA developments are towers-in-the-park superblocks, where buildings cover less than one-quarter of the site
- Integrating the isolated campuses into the neighborhood fabric
- Creating more dynamic public spaces, adding new housing units
- Activating the street edge to repair the disconnection of the isolated block housing
Reference: Infill development would occur based on historic lot patterns, resulting in significant new density | Carly McQueen and Maryanne Barone (Pratt)
Based on: The proposed landscape mitigates flooding and provides an enhanced public space | Nishant Samir Mehta, Ziyang Zeng and Fei Xiong (Columbia)
Two options proposed:

1. Tenant in place
2. Tenant shifted to adjacent building
Projection of NYCHA Capital Needs if They Continue to Grow at Current Rate, 2018-2040

Note: Assumes construction costs and replacement costs grow at 4 percent annually and capital needs grow at an average annual rate of 10.6 percent, which was the annualized rate of growth between the 2011 and 2017 physical needs assessments.

Sources: CBC staff analysis of New York City Housing Authority, 2017 Physical Needs Assessment and Development Data Book 2017 (December 2017).
Gaining Public Trust

- Develop good faith among residents
- First renovate common spaces such as corridors, lobbies, and elevators to gain the trust of people
- Develop proof-of-concept to test the market
1. Tenant In Place

1. Renovate empty apartments first, then move people incrementally
2. Dividing apartments with kitchen and toilet on one side and other rooms on the other
   ○ Create a common hospitality space for food services (lobbies, basement, etc.)
   ○ In case of space shortage food trucks can be used
   ○ Temporary pantries on each floor
   ○ Temporary toilets provided at regular intervals
2. Tenant Shifted to Adjacent Building

- NYCHA 2.0 - private developers to build new towers on NYCHA sites
- Towers to consist of both affordable and market-rate housing
- Current tenants can be shifted to these new apartments
- Old apartments can then be renovated and allocated to others
- Skepticism of NYCHA residents eliminated by providing them with new apartments within the same complex
Community Involvement

“NYCHA engaged 32,688 residents in Authority initiatives via outreach events, canvassing and resident meetings.” Number of NYCHA-operated senior centers is 14 and the utilization is 132%. (*Preliminary Mayor’s Management Report*, Feb. 2019)

32,688 of 400,000 represents 8.172% of NYCHA residents
14 of 325 represents 4.31% of NYC senior centers


Percent of families with one or more employed: 46.9% (*Residents Data Summary*)
Community Involvement

Public space
Community meetings
Job placement
Activity centers
Social events
Mentoring programs


“People need to be educated about how to see themselves as part of a community that has a stake in the upkeep and safety of these places.”
## Public Recognition

### NYCHA News in The New York Times

<table>
<thead>
<tr>
<th>Lead</th>
<th>Misconduct</th>
<th>Solution</th>
<th>Regulation</th>
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<td>Dispute the blood test</td>
<td>Possessed appliances</td>
<td>London</td>
<td>HUD and money</td>
<td>No heat for 10 years</td>
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<td>Toxic dust</td>
<td>Drank and sex</td>
<td>Michael Che raise fund</td>
<td>Sanitation chief named as chairwoman</td>
<td>Mold, lead, leaks and broken locks</td>
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<td>Decline in # of children</td>
<td>Staff sex parties</td>
<td>Bring it private</td>
<td>Cold hypocrisy</td>
<td>conditions from the ground level</td>
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<td>Inquiry to health department</td>
<td>Scandal of Olatoye</td>
<td>Marketable food skills</td>
<td>Federal monitor</td>
<td>$31.8 billion for 325 developments</td>
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<td>Lead tests</td>
<td>Olatoye resign</td>
<td>Duomo: City pay for repair</td>
<td>Crisis</td>
<td>Oral history</td>
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<td>820 children under 6 tested high for lead</td>
<td>Police patrols draw scrutiny</td>
<td>Advocate called for coop b/t Cuomo and de Blasio</td>
<td>Reject deal to overhaul</td>
<td>Leaky roof and lead paint</td>
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<td>Endangering residents</td>
<td>$82 million for boilers</td>
<td>Noncompliance in other areas</td>
<td>Lawsuit with poor living condition</td>
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<td>New lead inspection</td>
<td>Private developers for 500 units</td>
<td>Separate inquiry</td>
<td>Playground perils</td>
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<td>Lead-paint testimony</td>
<td>Private donors</td>
<td>Expected to federal monitor</td>
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<td>Filed false paperwork on lead paint inspections</td>
<td>New housing plan</td>
<td>Federal monitor and $1billion for repairs</td>
<td>Refund for heating</td>
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</tbody>
</table>

**Center for Buildings, Infrastructure & Public Space**
Thank you!

Any questions?
References

- NYCHA Next Generation, Strategy #7: Pursue a comprehensive sustainability agenda aimed at reducing NYCHA’s carbon footprint Existing Conditions, energy and water efficiency;
- NYCHA Physical Needs Assessment 2017, key findings, existing conditions;
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