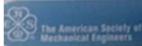


Safety Code for Elevators and Escalators

Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters With Automatic Transfer Devices

AN AMERICAN NATIONAL STANDARD



NEW YORK CITY Lift & Escalator Regulatory Landscape

PRESENTED BY

Harry Vyas

Director, Elevator Unit

NEW YORK CITY DEPARTMENT OF BUILDINGS

Inaugural International Panel Expert, Singapore

SEPTEMBER 14-15, 2016

Top 15 Tallest Buildings in New York City's



Image Credit: StreetEasy

Overview: Elevators in New York City

150.....Years of Elevator History (since 1857)

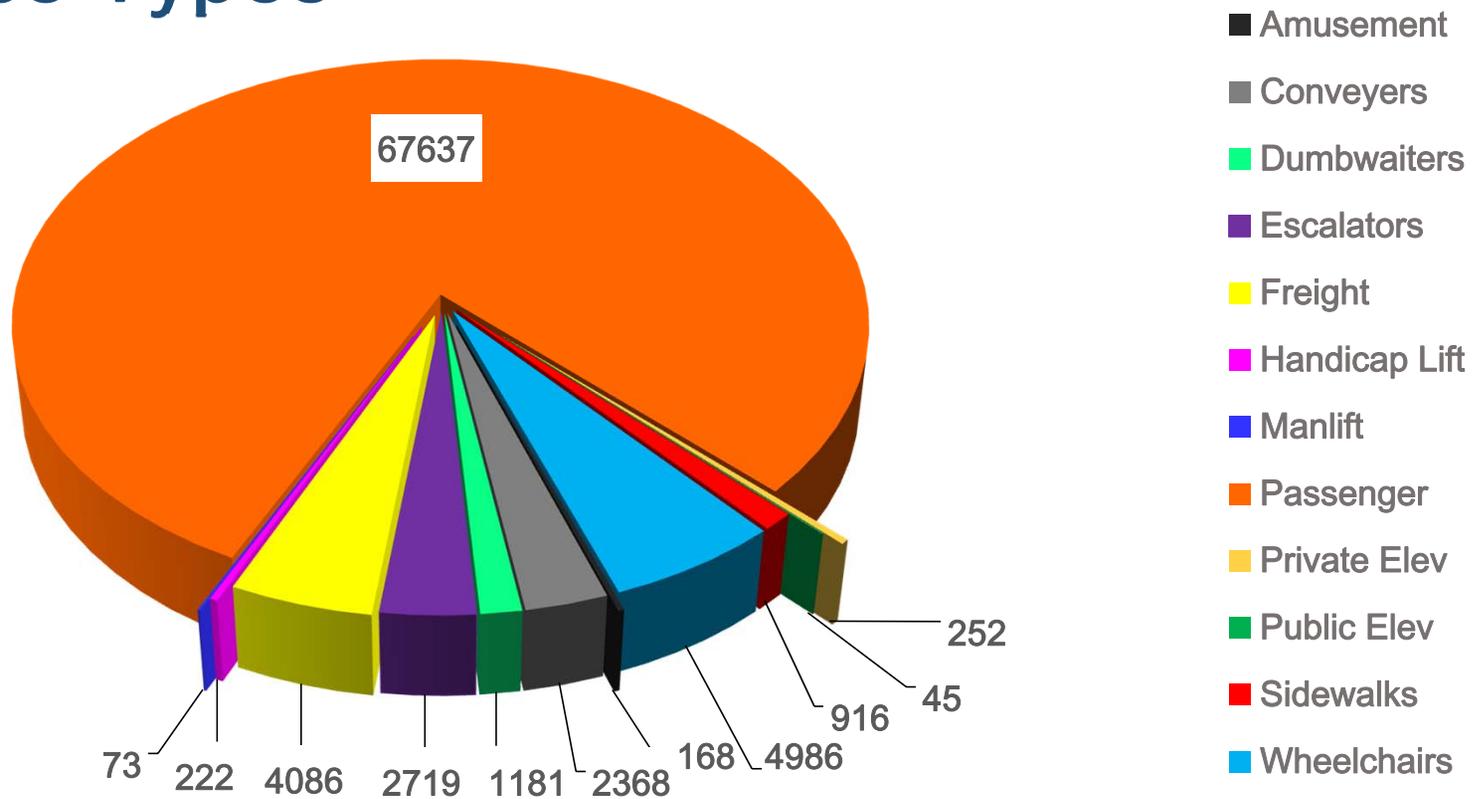
84,653.....Devices Under the Department's Jurisdiction

500.....Average Daily Elevator Trips

30 Million.....Daily Citywide Trips

12%.....Percentage of all Elevators in NYC

Device Types



Mission: DOB Elevator Unit

The Department's Elevator Unit supports the operational safety, reliable service and lawful use of elevators, escalators, amusement rides and other related devices throughout the City of New York by performing inspections and testing.

The Unit advances compliant development and safety awareness through the Department's various outreach programs. The unit supports development by permitting new technologies under pilot programs.

Elevator Safety

- Public
- Elevator Personnel
- Authorized Personnel
- Emergency Responders

Regulatory Process

- Development of Codes and Standards
- Application and Registration Process
- Inspection & Testing - Commissioning Inspection & Testing
- Training
- Quality Assurance
- Enforcement
- Outreach Programs
- Maintenance Requirements

Process: Codes and Standards

- Standards are communication vehicle for manufacturer's and users
- Serve as common language defining quality and establishing safety criteria
- Developed to protect the health and welfare of the public
- Lower costs with standardized procedures
- Simplified training

Process: Codes and Standards

- Allows for new development and technical advances
- Consumers accept products more readily when the products can be judged on merit of Codes and Standards
- Harmonization of standards enhance industry innovation, improve safety, reduce costs and can be used in all markets
- Code is a standard that has been adopted by governmental bodies or regulators and has the force of law

Code Committee

- The NYC Elevator Code Committee consists of elevator stakeholders, organizations, associations and government agencies.
- The Committee reviews each section of the Code and Standards and makes decisions to enhance the safety and reliable service for riders.
- The Committee uses a consensus-based process.

AFFILIATION/REPRESENTATION
NEII - National Elevator Industry, Inc.
NYCHA - New York City Housing Authority
REBNY - Real Estate Board of New York
ECNY - Elevator Conference of NY
Port Authority of NY & NJ
EMANY - Elevator Manufacturers Association of NY
FDNY - New York City Fire Department
ASME - Code Committee Member
BOMA - Buildings Owners and Managers Association of NY
Local Union - 1, 3
NYC DOB - New York City Department of Buildings
NAEC - National Association of Elevator Contractors
DCAS - Department of Citywide Administrative Services

2014 Building Code and Standards

IBC 2009 as modified by NYC Building Code 2014 – Elevators and Conveying System: Chapter 30

- **ICC/ANSI A117.1-2009:** Accessible and usable buildings and facilities
- **ASME A 17.1/2000** with 2002 and 2003 addendum as modified by NYC Building Code Appendix K; Chapter K1
- **ASME B20.1-2006:** Conveyors and related equipment as modified by Appendix K; Chapter K2
- **ASME A 17.3/2002:** Existing elevators and escalators as modified by Appendix K; Chapter K3

2014 Building Code and Standards

IBC 2009 as modified by NYC Building Code 2014 – Elevators and Conveying System: Chapter 30 (continued)

- **ASME A 17.1-2005:** Machine Room Less (MRL) elevators as modified by Appendix K; Chapter K4
- **ASME A 17.6-2010:** Standards for Elevator Suspension, Compensation and Governor System as modified by Appendix K; chapter K4
- **ASME A 18.1-2005:** Standards for Platform Lifts and Stairway Chairlifts
- **ASME A 17.2-2002:** Guide for inspection of Elevators , Escalators

2014 Building Code and Standards

Occupant Evacuation Elevators (OEE) – BC 403.5.2 and BC 3008

Required when...

- Option in lieu of providing an additional exit stair for new, non-residential buildings taller than 420 feet per BC 403.5.2

Fire Service Access Elevators (FSAE) – BC 403.6.1 and BC 3007

Required when...

- At least one FSAE must be provided in new buildings with occupied floors above 120 feet

NOTE: Read the NYC Building Code online at www.nyc.gov/buildings

Elevator Applications

- New Installations
- Removal
- Dismantle
- Alterations: Change in speed, capacity, rise, structural and location
- Replacement and Modification: Replacement/modification of controller, machine, governor, safety etc.

Elevator Applications

- Elevator use for Construction: New or amendment on existing application
 - Electrical permit must be filed for electrical work performed on device
 - Elevator Unit process average 5,000 applications per year

*NOTE: An acceptance test is required for all of the above applications and **must be tested and witnessed** by a New York City Department of Buildings Inspector.*

New Installation

All new elevators and escalators shall be in compliance with the following:

- Required application filing and reviewed by a registered design professional
- 2014 NYC Building Code
- Buildings Bulletin (if applicable)
- ASME A 17.1-2000 with 2002 and 2003 addendum as modified by NYCBC 2014, Appendix K, Chapter K1
- Section 8.2 contains certain design data, formulas and charts for design professionals

New Installation

- Section 8.3 Engineering tests, type test and certification/listed
- Section 8.4 and 8.5 Elevator and Escalator Safety Requirements for Seismic Risk Zone 2 or greater

NOTE: Non-compliance of the Code due to structural limitation shall be reviewed on a case by case basis and a variance may be issued by complying with an alternative method of compliance or proposed method shall be in compliance with the spirit or intent of the Code requirements.

Alteration and Modernization

Existing Installation

All elevator and escalator alteration and modernization shall be in compliance with following:

- Identify the scope of work during the application filing process and reviewed by a registered design professional
- Section 8.7 of ASME A 17.1-2000 with 2002 and 2003 addendum as modified by NYCBC 2014, Appendix K, chapter K1
- ICC/ANSI A117.1-2009: Accessible and usable buildings and facilities (if applicable)

NOTE: Minor alteration and ordinary repairs (that do not in anyway affect the safe use and operation of the elevator or escalator) do not require a permit to perform the work.

Alteration and Modernization

New & Existing Installation

All new and existing installations shall conform to the following Code requirements :

- Code at the time of Installation
- Code requirements at the time of any alteration or modernization
- ASME A 17.3-2002 as modified by NYC Building Code Appendix K, Chapter K3 (minimum safety requirement of every elevators and escalators, regardless of an age of the device)
- ASME A 17.1 2003, Section 8.6
- NYC Administrative Code Article 304 and 28-315.4 (Elevator Safety)

Accessibility

- ICC/ANSI A117.1-2009 - Accessible and usable buildings and facilities: Elevators (Sections 407 to 410)
- 2014 NYC Building Code, Chapter 11, Sections 1109.6 and 1109.7
 - Passenger Elevator (ASME A 17.1/2000 with 2002 and 2003 addendum as modified in the NYC Building Code Appendix K Chapter K1)
 - Limited-Use/Limited-Application Elevators (maximum rise 25 feet and serving not more than three contiguous levels)
 - Platform (wheel chair) lifts (ASME A 18.1-2005: Standards for Platform Lifts and Stairway Chairlifts)

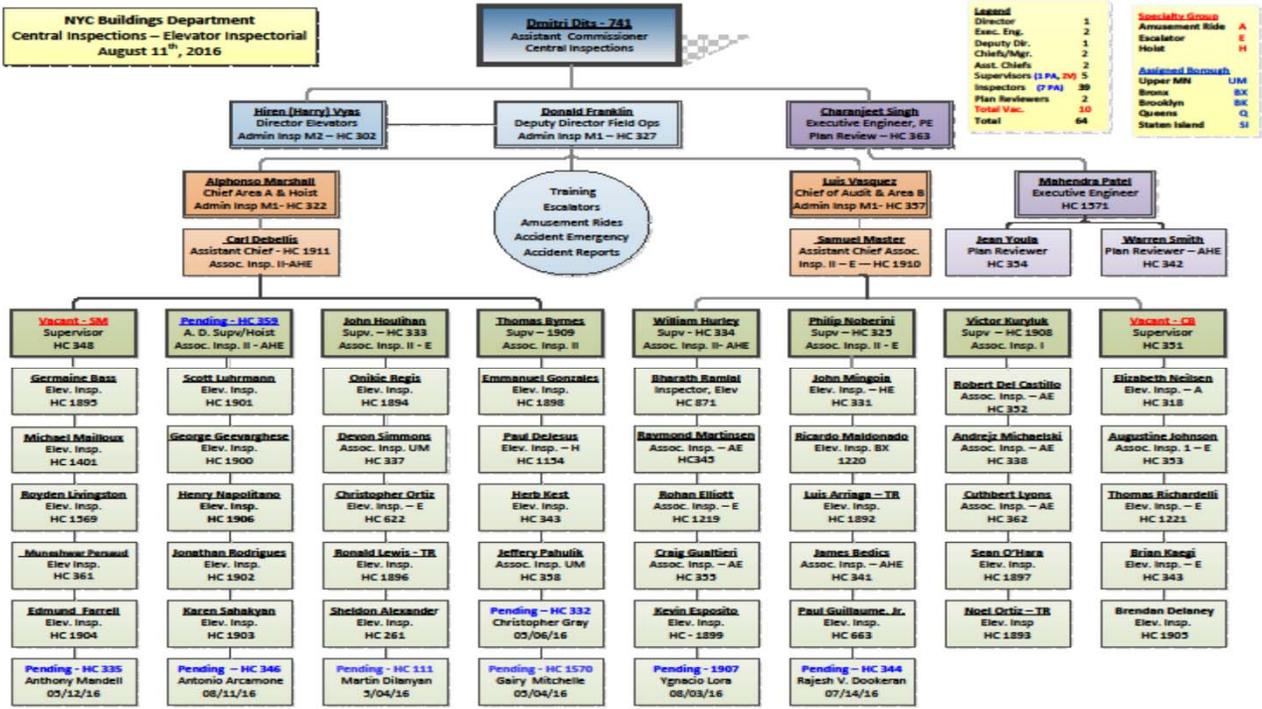
Maintenance and Repair

- Maintenance Control Program
- Maintenance Log
- Repair

Advantages of Maintenance (per MCP)

- Enhance safety
- Improve service reliability
- Increase life span of equipment
- Enhance efficiency of equipment
- Avoid costly repairs
- Avoid violations and penalties

Inspectorial Organizational Chart



Types of Inspections

- Acceptance Tests – performed on permitted applications for new installations and modernized elevators/devices
- Complaint Inspections (received through NYC 311 Call Center)
- Incidents/Accidents and Emergency Response (24/7) – the Department conducts in-depth inspections/test in all cases of injury and death
- Survey Inspections
- Periodic Inspections
- Violation Re-Inspections
- Amusement Ride Inspections
- Personnel Hoist Inspections (construction sites)
- Quality Assurance Inspection
- Expedited Inspections for handicap, elderly, high rise and single elevator buildings

Types of Inspections

New York City elevators and escalators are required to perform two inspections/tests yearly as per the NYC Building Code

- Periodic inspections performed by contracted inspection agency on behalf of the NYC Department of Buildings
- Category (1, 3 and 5) testing performed by approved agencies licensed by the NYC Department of Buildings
- Department Inspectors (in-house) perform all other types of inspections and tests that include: quality assurance, complaints, acceptance tests and accident investigations

Approved Inspections

All inspections and tests shall be performed and witnessed by an approved agency (licensed by the Department) not affiliated with each other on behalf of the building owner.

- **Category One Inspection (Cat-1): 1 Year Test** - performed between January 1st and December 31st each year (no load safety test)
- **Category Three Inspection (Cat-3): 3Year Test** - performed on water hydraulic elevators every 3 years from the date of installation
- **Category Five Inspection (Cat – 5): 5 Year Test** - performed every 5 years from the date of installation (performed with rated load and speed)

NOTE: Defects found during Cat-1 inspection/test shall be corrected within 120 days after inspection and submit correction report to the Department within 60 days from the date of correction.

Inspection Statistics

Total number of inspections performed in CY 2015 : 188,847

DOB Inspection Unit

- Inspectorial Staff: 54
- Inspections/Tests Performed: 22, 825

Contract Agency Inspections (on behalf of the Department)

- Agencies: 2
- Inspectorial Staff: 44
- Inspections/Tests Performed: 56, 560

Approved Licensed Agency Inspection (on behalf of building owner)

- Approved Licensed Agencies: 168
- Approved Agency Directors: 283
- Approved Agency Inspectors: 779
- Inspections/Tests Performed: 108, 539

Training

- All DOB inspectors attend Qualified Elevator Inspector (QEI) training
- All supervisors and chiefs regularly attend leadership training
- All amusement ride inspectors have attended the National Association of Amusement Ride Safety Organization's (NAARSO) training program
- Seminars on new technology/codes provided by outside speakers/vendors
- All newly hired inspectors are mentored by selected senior inspectors
- In-house computer and management training provided by the Department's training center
- All inspectors attend weekly in-house training classes

Quality Assurance

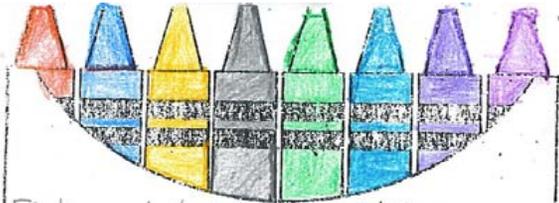
- Created to establish a higher standard of inspection **integrity**, **transparency** and to provide **enhanced training**
- All inspectors receive a quality assurance visit from a supervisor during and after inspection bi-monthly; the Unit has also published an **Operational Manual** to ensure **uniform standards**
- Periodic inspections performed by Department-contracted inspection agencies and audited by independent private sector audit agencies on behalf of the Department
- Department issues licenses to Private Inspectors and Agency Directors to perform inspections and testing on behalf of building owners; the Quality Assurance Team **monitors** the licensed inspector/agency director by performing double checks and spot check visits

Outreach Program

- Elevator Code Review and Interpretation Committee
- Safety and Code Presentation to the **real estate industry, elevator industry and other stakeholders**
- Elevator and Escalator SafeT-Rider Program in City Schools
 - Each November, the Department celebrates National Elevator and Escalator Safety Week. Representatives from the Department visit schools throughout the City to provide safety awareness classes to students in 2nd through 4th grade. This program is sponsored by the National Elevator and Escalator Safety Foundation.

Outreach Program

TO
Mrs. D
From
Myles
Olmeda
Class
2053



First we talked about safety rules. On escalators and elevators. We talked about what to do and what not to do on elevators and escalators. You should always check your stairs. If the door do not open you press the alarm button. You always hold on the rail or a person hand on the escalator. You do not play on the escalator or you fall. You do not look back on the escalator you follow the rules and look forward not sideways or the other side. You do not press the button and brake the elevator or you press one button. You do not jump on the elevator to push it down you press the



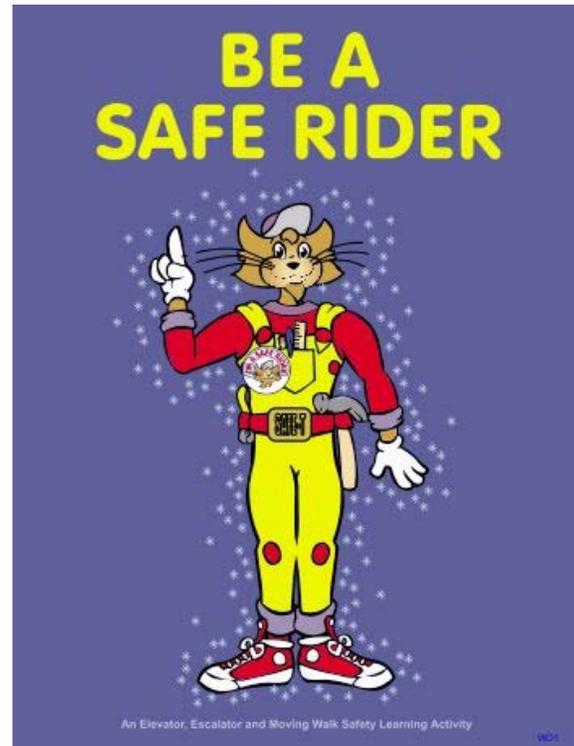
button to go down. You do not walk on the escalator backwards because people might be there and you will fall or if you are backwards you might fall. You do not do that you face forward and watch where you are going. You do not go in the elevator when the doors are closing you go when the doors are open you might get squished.

Thank you fair myles
Olmeda

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Outreach Program

Elevator & Escalator Safe T-Rider Program Materials



NYC Buildings
Michael R. Bloomberg, Mayor
Robert O. LiPuma, Commissioner

ELEVATOR SAFETY
How to Stay Safe

**Eric the Elevator Inspector says remember the
THREE RULES IF YOU GET STUCK:**

- 1. RING** the alarm.
- 2. RELAX.**
- 3. WAIT** for help.

And don't forget –
**IF THERE'S A FIRE
USE THE STAIRS!**

NYC JUNIOR INSPECTOR JUNIOR INSPECTORS KNOW HOW TO STAY SAFE: **NYC JUNIOR INSPECTOR**

- Don't crowd the elevator.**
It can get stuck if too many people are in it.
- Don't hold or force open the doors.**
It's dangerous.
- Don't jump in the elevator.**
Jumping can make the elevator and floor uneven. You can also get stuck.
- Don't play with the emergency stop button.**
It's not a toy.

Outreach Program

*NYC Department of Buildings
'Elevator Safety' ad campaign*



STUCK ELEVATOR?
STAY SAFE.
STAY PUT.

RING FOR HELP.
RELAX. WAIT.

New Yorkers have died trying to escape stalled elevators.
The safest place to be is inside the elevator.
Don't try to get out for any reason.

Bill de Blasio, Mayor
Rick D. Chandler, P.E., Commissioner



Elevator Safety

Public Safety Factors

- Car Control
- Jumper Management
- Caution Tape
- Deep Pit Protection
- Barricades

Mechanic Safety Practices

- Access/Egress MR
- LOTO/Electrical Safety
- Jumpers
- Mechanical Safety
- Hoistway Access Procedure
- Fall Protection
- Safety Culture, Creation & Maintenance



Job Site Safety

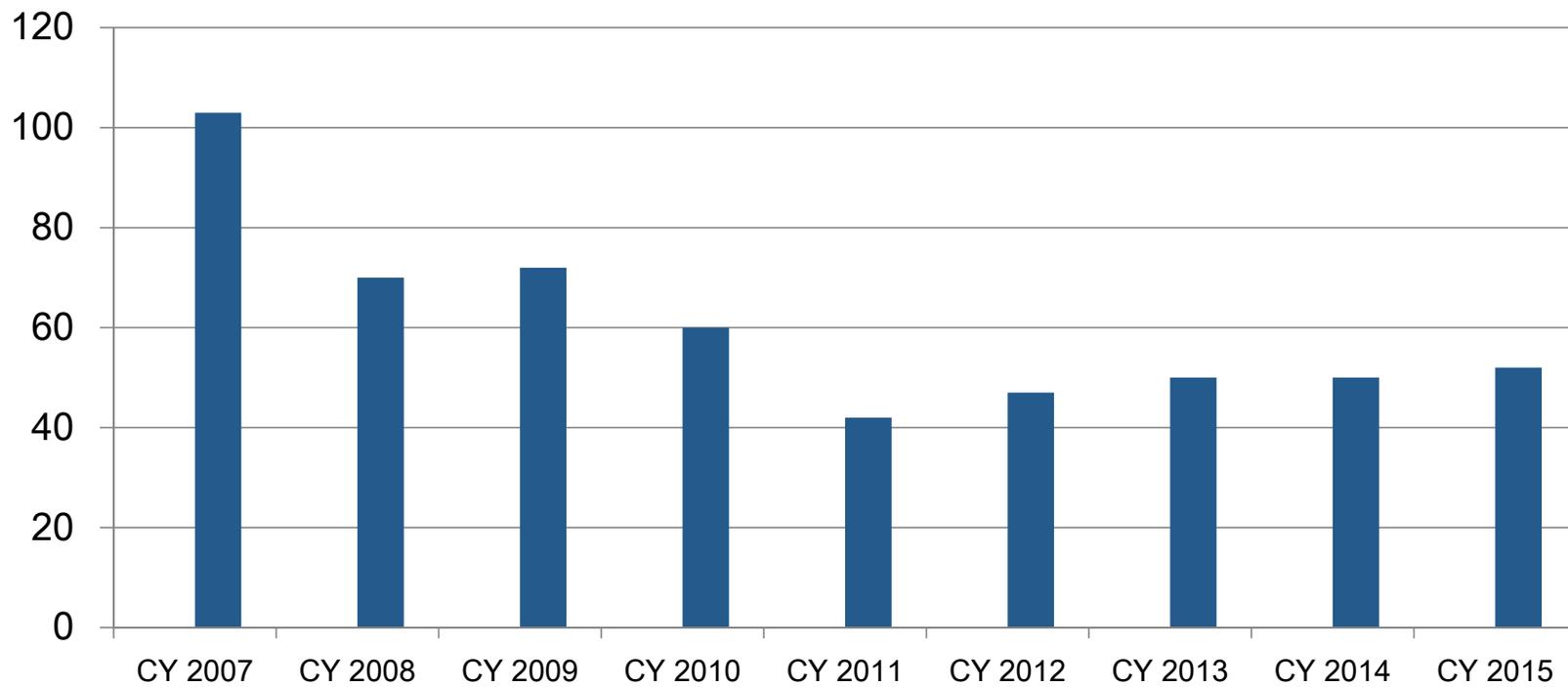


- No job takes priority over safety
- Plan safety into every job
- Take care of each other
- Safety is everyone's responsibility

Elevator Accidents

- Each accident involving injury to any person requiring the service of a **physician** or **damage** to the property or to apparatus **exceeding \$1,000**
- Owner of any device shall **promptly** notify the Department of every accident before commencing any repairs
- Department shall make an investigation immediately and prepare a full and complete investigation report
- No device parts shall be removed from the premises of an accident until permission is granted by the NYC Department of Buildings

Elevator Accidents



Enforcement

Failure to Maintain Violations

- Environmental Control Board (ECB) Violations - administrative judge hearing for non compliance and penalty
- PVT/DOB Violations - requires compliance to dismiss violation
- Aggravated I & II - repeated offense of violating conditions that creates an unsafe environment for the public
- Criminal Court Summons - falls under the Major Offenders Program (risk analysis-based inspection)

NOTE: Top ten offenders on the list are flagged on the DOB website

Sustainability

- Sustainable-Foster Greener Solutions (environment, climate and energy)
- Re-generative Drives (pulse-width modulation or PF-1 drive)
- PM A.C. Motor with Gearless Machines (MRL)
- Reduction of stand by power of elevator system
- Reducing carbon foot print at manufacturing plants and using materials that can be recycled
- Destination Dispatch System
- Reducing escalator speed when not being used

Our Vision

- Safety
- Reliable Service
- Comfortable Ride
- Sustainable-Foster Greener Solutions (Environment, Climate and Energy)

State of Future Inspections

- Implementation of barcode and star-rating system for device
- Develop risk analysis-based inspection protocol
- Zero tolerance for unreliable elevator service
- Increase percentage of audit/quality assurance inspections
- Computerized process for scheduling inspection/test, submission of checklist, inspection results, reviewing building profile, on line application filing, filing inspection reports and payments
- 'My Elevator' tab on the Department's Building Information System
- Support new technology for sustainable growth



Comments & Questions

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