



# HURRICANE SANDY

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## LESSONS LEARNED STUDY

Preparedness Committee  
Hurricane Sandy Lessons Learned Task Force  
January 2013

## HURRICANE SANDY TIMELINE

### WEDNESDAY, OCTOBER 22

A tropical depression forms in the southern Caribbean Sea off the coast of Nicaragua. The depression strengthens and becomes Tropical Storm Sandy with maximum winds of about 40 mph.

### THURSDAY, OCTOBER 24

Sandy moves north across the Caribbean and hits Jamaica as a Category I hurricane, with 80 mph winds. Sandy dumps more than 20 inches of rain on the Dominican Republic and Haiti to its east.

### FRIDAY, OCTOBER 26

Sandy moves from Jamaica to Cuba, striking Santiago de Cuba with winds of 110 mph, a strong Category II hurricane. It crosses the Bahamas and makes a turn to the north-northwest.

### SATURDAY, OCTOBER 27

Approaching Florida, Sandy moves away from the coast and turns northeast, weakening briefly to a tropical depression but regaining its strength quickly to a Category I hurricane.

### SUNDAY, OCTOBER 28

Sandy moves northeast along a track that parallels Georgia, South Carolina and North Carolina. The hurricane's eye remains offshore, but the storm punishes the coastline and North Carolina's Outer Banks, washing out highways in places.

Meteorologists warn that the storm will converge with other weather masses, causing a hybrid "super storm." A high pressure cold front to the north will block the storm's northward path, causing it to turn northwest into the mid Atlantic states. Baltimore, Washington, Philadelphia and New York will be impacted. A corresponding full moon and high tide will exacerbate the storm surge as it makes land fall. The storm is huge, with winds covering an area of 1,000 miles. The storm is forecast to dump heavy snow in the mountains of Virginia, West Virginia and North Carolina.

### MONDAY, OCTOBER 29

**Noon:** Sandy turns toward the northwest, heading for the Jersey Shore. The storm begins combining with the other weather systems and gains momentum. Sandy will travel 300 miles over open water before landfall, allowing it to build up a huge storm surge that will become even bigger due to the full moon.

**Afternoon:** Sandy delivers high winds and drenching rains from Washington, D.C. northward. It downs trees, power lines and halts air and ground traffic.

**8 p.m.:** Sandy makes landfall near Atlantic City, New Jersey. The storm is now classified as a post-tropical cyclone. As a cyclone, Sandy's strongest winds and highest storm surge are to the front and right of its circulation as it moves forward. New York Harbor sits in this region, relative to Sandy's path.

The full moon and high tide adds to the storm surge. According to the National Weather Service office in New York, the surge is close to 14 feet, which is a new record for a storm surge in the harbor. The previous record of over 10 feet was during Hurricane Donna in 1960. Sandy's massive size delivers winds, rain and flooding during the night and over the next three high and low tide cycles.

(Source: National Oceanic and Atmospheric Administration (NOAA); National Weather Service (NWS))

Cover Photo: "Hurricane Sandy Approaching the East Coast," October 29, 2012. Credit: NASA/NOAA

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## EXECUTIVE SUMMARY

Hurricane Sandy was, in retrospect, a storm for the ages which stressed New York City like no other storm; its impact on people, facilities and New York City's way of life was unprecedented. During preparation for, response to, and recovery and restoration from the storm (which portions of the city are still undergoing at the time of this report), the Building Owners and Managers Association of Greater New York, Inc. (BOMA/NY) members, (principal, associate, professional and allied), worked tirelessly and endlessly to mitigate and overcome the storm's impacts.

Shortly following the storm, BOMA/NY's president, Louis J. Mantia, along with his officers, sanctioned the development of a task force to study Sandy's impacts on BOMA/NY members, their properties and operations. The BOMA/NY Hurricane Sandy Lessons Learned Task Force, comprised of BOMA/NY members, was formed to study the effects of the storm on New York City's commercial high-rise community.

The task force scope was focused: to study BOMA/NY's role during Sandy and to identify lessons learned in building management and operations. Its objectives included developing this Hurricane Sandy Lessons Learned Report and sharing its findings with the commercial high-rise community, both within New York City as well as nationally and internationally. The study was neither intended nor designed to assess the adequacy of public or private sector response, although many who provided information for the study noted the need for a higher-level review of certain NYC codes and regulations pertaining to commercial high-rise preparedness.

The task force collected its information via two surveys (one for its principal and associate members and another for its professional and allied members), interviews, anecdotal information and media publications. Following is a synopsis of the findings:

### Observations

- BOMA/NY played an effective and important role as a communications hub and information fusion center before, during and after Sandy.
- While most people heeded the warnings of the storm's intensity, there were still some skeptics who believed it could never happen to New York City.
- Communications issues hampered effective preparations and response.
- There are misunderstandings about the role of response plans, (e.g. New York's Emergency Action Plans) and business continuity/disaster recovery plans.
- Pre-incident relationships with vendors and public agencies worked.
- BOMA/NY members' dedication to their buildings is strong; principal, associate, professional and allied members' resourcefulness mitigated storm impacts.

### Moving Forward

- Continue BOMA/NY's role as an information fusion center and communications conduit during incidents.
- Develop a BOMA/NY Incident Management Team, whose members are able to reach out quickly during an incident to public and private agencies to gain and de-conflict information.
- Develop a business continuity/disaster recovery planning checklist tailored for commercial high rise building preparedness.
- Continue to develop pre-incident relationships with local agencies and associations.
- Seek high level (city, state and federal) representation on commercial high-rise initiatives (studies, commissions, lessons learned reviews, and best practice development).
- Work with NYC officials to make reasonable and prudent changes to existing building codes and regulations.
- Continue post-incident studies and reviews and share findings with the local, national and international commercial high-rise community.

# PART I - Background

## Incident Overview

On October 29th, 2012 at approximately 8 pm EST (according to NOAA/NWS), Hurricane Sandy, (often referred to as “Superstorm Sandy” by the media and occasionally by some governmental agencies) made landfall near Atlantic City, New Jersey. Regardless of its title, it was a blockbuster storm that New York City knew was possible, had dreaded, and yet hoped would never occur. It was, indeed, a storm for the ages.

The destruction that Hurricane Sandy wreaked on the New York City metropolitan area has been well documented and need not be recounted here. In short, the damage to the city was epic. It affected people, homes, businesses, facilities, transportation and, in general, the New York City way of life. Only time will tell if and how it may change the city’s policies, procedures, codes and regulations. To quote from the title of the New York State Senate Committee on Veterans, Homeland Security and Military Affairs January 2004 report, “New York After September 11th,” the city was once again “shaken, but not stirred.”

As is the case with many regional catastrophic events, there were inconsistent impacts throughout the area. In some locales, there was debilitating devastation; in others, there was only minor damage. This was the case in Manhattan with New York City’s commercial high-rise buildings. Downtown, especially in the financial district, there was a shocking level of damage that rendered many commercial buildings uninhabitable, some of which are still out of commission as of this report’s date. In other areas of Manhattan, especially above 42<sup>nd</sup> Street, (with the noteworthy exception of a hanging crane), there was minor damage and building systems were operational one or two days following the storm. The event might be considered a “tale of two cities.”

## Scope

One of the first items on the task force agenda was to identify the study’s scope. Certainly there was a broad, almost overwhelming, range of possible topics. Should the task force look at local policies, codes and regulations? Should it assess the efficacy of public agencies or the adequacy of public utility response? Should it analyze transportation disruptions and commuting impacts or the ability of private vendors to provide goods and services?

The task force concluded that it would focus its efforts within BOMA/NY’s areas of direct expertise; BOMA/NY’s role and commercial high-rise building management and operations.

## Purpose

The purpose of this study was to examine BOMA/NY’s activities before, during and after Hurricane Sandy, to capture building management and operational lessons-learned, and to share findings with the national and international commercial high-rise community.

## Objectives

Study objectives were to:

- Review BOMA/NY activities during preparation for, response to and recovery from Hurricane Sandy and to identify lessons learned for its role in future incidents.
- Review high-rise building management and operations during preparation for, response to and recovery from Hurricane Sandy and capture what worked and what did not.
- Identify opportunities and develop strategies for BOMA/NY to enhance its value to its members and the commercial high-rise community.

## Task Force Membership

The following BOMA/NY members and staff comprised the Hurricane Sandy Lessons Learned Task Force:

- Louis J. Trimboli, RPA/FMA/LEED AP (Co-chair), Senior Real Estate Manager, CBRE
- Ronald S. Zeccardi (Co-chair), Vice President Property Management, The Moinian Group
- John C. Brandstetter, Managing Director, The Brandstetter Group Emergency Planning, Strategies and Recovery
- Sylvester A. Giustino, Director of Legislative Affairs, BOMA/NY
- John E. Osborn, Esq., Partner, John E. Osborn P.C., Attorneys & Counselors at Law
- Walter F. Ulmer III, CBCI, President, Remlu, Inc. Emergency Preparedness Planning



## Incident Timeline

To ensure a consistent approach to the study, the Task Force developed an incident timeline, specifying preparedness, response, recovery and restoration phases. For the purpose of the study, these periods were:

- Preparedness Phase: Saturday, October 27 - Monday, October 29 (until Sandy's landfall)
- Response Phase: Monday night, October 29
- Recovery Phase: Tuesday morning, October 30 - Friday, November 2
- Restoration Phase: Saturday, November 3 - present

## Methodology

The study used a combination of sources to compile observations. They included:

Surveys. Two surveys were developed. The first was a 79-question survey, designed for building owners, managers and staffs and provided to BOMA/NY principal and associate members. This survey focused on building management and operations. The second survey was a 36-question survey designed for BOMA/NY's professional and allied members and focused questions on logistical and support issues. The surveys were distributed and collected during the period November 30, 2012 - January 16, 2013. Approximately 60 owner/manager and 40 professional/allied surveys were completed. It is worth noting that many principal/associate members who responded to the survey provided information for more than one building; that is, portfolio managers and vice presidents of operations provided feedback for more than one property.

The surveys are not considered to be statistically significant; they provide anecdotal and trend feedback only. Nevertheless, they provide sound views from different perspectives. It must be noted that early survey respondents who cited systems as "still inoperative" at the time they completed the survey, may now have had those systems return to operability.

The survey was organized along the following general topics:

- Respondent Demographics
- BOMA/NY Operations
- Building Impacts
- Building Staffing
- Information Technology
- Disaster Planning and Preparation
- Information and Communications
- Tenants
- Security
- Vendors, Supplies and Equipment
- Codes, Regulations and Insurance

Survey results are located in Part IV (Owner/Manager) and Part V (Professional/Allied) of this report.

Anecdotal Information. During the study, anecdotal information was gleaned through interviews and informal discussions with colleagues. While anecdotal information has varying levels of reliability, "stories from the storm" did help to add richness and further collaborate information gained through the survey, interviews and media releases and articles.

Interviews. Interviews were conducted with selected individuals. Interviews were designed to allow interviewees to "tell their story." Interview questions were:

- Prior to Hurricane Sandy, did you put any disaster pre plans into effect? If so, what were they?
- Did your building sustain any damage from Sandy? If so, what?
- What worked well?
- What did not work well?
- What was your most important lesson learned?
- Do you have any personal experiences you would like to share?
- If you had to do it all over again, what would you do differently?

## PART II - BOMA/NY's Role during Hurricane Sandy

On Thursday, October 25 at 3:20 p.m. BOMA/NY formally began its Hurricane Sandy incident management operations with its first BOMA/NY Alert, a severe weather advisory. On Sunday, October 28, BOMA/NY representatives began continuous support at NYC's Office of Emergency Management (OEM) Emergency Operations Center (EOC). From October 25 through November 2, BOMA/NY provided nearly full-time incident support to its members, comprised primarily of information fusion and coordination with local agencies.

### BOMA/NY Alerts

From Thursday, October 25 to November 13, 2012, BOMA/NY sent 65 separate alerts and advisories to its membership. These BOMA/NY Alerts included various combinations of weather, transportation and safety/security advisories, as well as local agency policy and code clarifications, changes or waivers. A breakdown of the alerts is below:

Preparedness Phase Oct 25-Oct 29 (17 emails)		Response Phase Monday night, October 29 (10 emails)		Restoration/Recovery Phase Oct 30 - Nov 13 (38 emails)	
Advisory Type	#	Advisory Type	#	Advisory Type	#
Weather	7	Weather	1	Weather	7
Transportation	11	Transportation	3	Transportation	10
Safety/Security	6	Safety/Security	4	Safety/Security	10
Policy/Code	3	Policy/Code	6	Policy/Code	23
By agency		By agency		By agency	
Con Ed	6	Con Ed	3	FDNY	1
MTA	6	DEP	1	DOB	11
DOB	8	DOB	1	DEP	7
DOT	4	DOT	2	DOT	6
Mayor's Office	6	Mayor's Office	2	PA NY/NJ	2
PA NY/NJ	5	PA NY/NJ	1	MTA	4
Other State Agencies	2	MTA	1	Other State Agencies	4
				Federal Agencies	3
				Logistics Requests	5

Note: Many city agencies (e.g. NYPD) issued alerts through either the Mayor's Office during the mayor's press conferences and/or NYC OEM.

### Liaison with Local Agencies

BOMA/NY conducted liaison with local agencies through two primary methods. The first was its presence at the NYC OEM EOC. Beginning October 28, BOMA/NY provided a representative at the EOC BOMA/NY Desk. The representative's primary duties were to collect information within the EOC and feed the information to BOMA/NY operations and to be the city's commercial high-rise point of contact for information.

The second method was participating in conference calls with local agencies, primarily NYC OEM. During incident management operations, BOMA/NY participated in the following calls:

- Preparedness Phase: OEM Conference Calls 3
- Response Phase: OEM Conference Calls 1
- Recovery/Restoration Phase: DOB 1/DEP 1/OEM Conference Calls 13

OEM conference calls were extremely beneficial for information gathering; the calls functioned as a "clearinghouse" for information and provided the foundation for BOMA/NY Alerts. During these collaborative calls, questions were answered by OEM. The calls included information regarding status on incidents in the city, (e.g. bridge and tunnel status, status of supplies and Zone A status).

### Calls for Assistance

During incident management operations, BOMA/NY received approximately 25 calls for "assistance." These calls ranged from requests for assistance (tow trucks, clearance to pump in the streets, relief for permit applications, supplies) to requests for information (when will power/steam be restored, bridges and tunnels reopened, etc.). BOMA/NY provided information where possible but was not in a position to provide assistance or guidance regarding how to navigate local agency codes and regulations.

## Survey Feedback

95% of survey respondents characterized the effectiveness of BOMA/NY Alerts as either “excellent” or “good.” 95% of respondents shared the alerts with staff and colleagues and 68% shared the alerts with their tenants. Nearly all respondents found their membership in BOMA/NY to be of value during this incident.

Survey response also included areas for improvement, such as the need for more pre-storm information relating to expected storm surge and water levels; contact numbers for local agencies; enhanced logistical information (e.g. where to get gas for generators and pumps); additional information regarding power outages and status of transportation; and more sharing of information provided from other BOMA/NY members.

## Moving Forward

There were a number of items which worked well for BOMA/NY during its incident management operations:

- An internal Emergency Action Plan where critical staff was able to work remotely during the incident.
- A dedicated list of BOMA/NY NYC OEM EOC volunteers. At the time of the incident there were nine volunteers.
- BOMA/NY representation in the NYC OEM EOC before, during and after the storm.
- Relying on and expanding BOMA/NY relationships with key decision makers in NYC local agencies (e.g. Department of Buildings (DOB), Department of Environmental Protection (DEP), OEM, FDNY) and providing them with incident impacts on commercial properties and technical expertise.
- Operating as an “information fusion center” during incident management operations, collating and providing information to members in the form of BOMA/NY Alerts.

What can BOMA/NY do better in the future?

- Create a BOMA/NY Incident Management Team, a standing group of BOMA/NY members with functional area expertise which can advise BOMA/NY members on NYC codes and regulations and conduct liaison with local agencies during an incident.
- Enhance BOMA/NY Alerts to include additional information regarding availability of supplies and equipment and additional information regarding the status of buildings and city areas.
- Train additional BOMA/NY OEM EOC volunteers. The two BOMA/NY members who provided support at the OEM EOC performed splendidly and provided valuable and selfless service to the association. However, to minimize the impact on volunteers’ businesses and loved ones during a protracted incident, additional capacity must be developed.
- Develop a disaster preparedness and recovery checklist for commercial high-rise buildings. This checklist will be different from the mandated Fire Safety/Emergency Action Plans and focus on preparedness, restoration and recovery activities, rather than emergency response protocols.
- Reinforce BOMA/NY’s role during incident management operations as an information conduit and coordination center, with limited capacity to directly assist members. BOMA/NY provides assistance via providing timely and accurate information to members and searching for answers to member questions; BOMA/NY does not have the capability to provide or coordinate resources for its members.



## PART III - Observations

The observations and recommendations below are intended to be a starting point for a larger discussion and may provide viewpoints different from others in the commercial high-rise industry.

### Building Impacts

Forty-four percent of owner/manager survey respondents suffered physical damage to their building(s) as a result of Hurricane Sandy. Of those, 47% experienced flooding, 33% wind damage and 20% other. 53% lost power, most between 4-7 days. 47% lost steam power, most of which were out for 4-7 days. For those who experienced flooding, 50% took 1-3 days to pump the water out and 44% took 4-7 days to pump the water out. The preponderance of electrical outages was below 39<sup>th</sup> Street and flooding below Canal Street.

### Building Staffing

The overall staffing at the buildings throughout the storm for security, porters, engineers and managers was generally robust; pre-storm 79%, during the storm 63% and post storm 80%. The majority of buildings housed their staffs at the buildings. With limited public transportation in and out of the city and High Occupancy Vehicle (HOV) restrictions (which required at least three persons per car to enter the city through bridges and tunnels), many building crews could not leave and relief could not arrive. Buildings in Zone A or with utility disruptions faced additional challenges. Providing food, water and showers was a problem as well. It was, to say the least, a challenging situation.

#### Recommendations

- Develop building-level business continuity plans that identify minimum building staffing requirements. Plan to provide minimum staff for an extended period (greater than 1 week).
- Plan for staff inhabiting the building for an extended period of time; e.g. ensure supplies and equipment are on-hand or ordered in time to be available for the incident.
- Encourage staff to have family preparedness plans, to minimize stress on staff and family if they are separated during an incident.
- Know and understand the parameters that will impede public transportation; e.g. sustained winds of 39 mph and higher will usually suspend Long Island Rail Road (LIRR) operations and sustained winds in excess of 60 mph will disrupt traffic on bridges.
- Train and cross-train staff on building shut down procedures. Conduct a “full scale building shutdown drill.” Rehearse procedures which include a complete building shut down; e.g. how to power down all building systems, where to park elevators above the lobby level, what switches need to be shut down. Ensure the drill includes switching all systems powered by the emergency generator to the emergency generator. Include a rehearsal for specific procedures to power the building back up.

### Information Technology Systems

Most issues involving IT and telecommunications resulted from the failure of the system itself and/or in-building equipment. The survey reveals systems that failed most following the storm were email, building security systems, servers and server access and tenant management systems. For building staffs, the inability to access their servers meant lack of access to certain critical tenant information. Lack of server access was generally due to lack of power or flooding in the building. Phone carriers, for example, Verizon, suffered major damage to their downtown infrastructure, resulting in failure for many users downtown and, to a lesser degree, other areas in the city. It appears that many survey respondents had limited redundancy built into their systems. Some buildings had Uninterrupted Power Systems (UPS) as backup, but these systems lasted only hours, not long enough to sustain the systems for the duration of the incident. Other buildings had not tied their on-site servers and IT systems into their back up generators.

#### Recommendations

- If the building has generator back up, ensure that building servers and IT systems are tied into the system.
- Consider arranging for information to be housed in “the cloud” by a company that specializes in hosting email and data. This will ensure accessibility from anywhere that has power and internet access.
- Voice over Internet Protocol (VoIP) phones depend on the internet. If the internet is not available in the building, VoIP phones will not work. Some customers have portable VoIP plans that allow them to “port” their phones and access the internet other locations, yet retain the same phone number.
- Maintain an analog phone in the building. Since these phones do not require electrical power, they will work as long as the phone carrier’s system works.

- Consider establishing a social media account (such as Twitter) and have tenants and vendors subscribe to it. This is an easy way to provide current information to tenants and vendors, regardless of whether or not email, phone or computers are available.

## Disaster Planning and Preparation

The survey indicated that 62% of the buildings had a recovery/continuity plan at the time of the storm; 35% of those that had a plan activated the plan. The plans covered a myriad of areas (such as IT disaster recovery, supplies, staffing), and 53% of the buildings had plans which had planned for disruptions exceeding one week.

Once it became clear that Hurricane Sandy would be a major event, many conducted pre-incident planning meetings with critical vendors, tenants and building staff. Critical building systems were tested and many buildings ordered additional supplies. According to the survey, most received requested supplies and equipment prior to the storm.

There was significant feedback underscoring the importance of understanding the different types of plans. Some respondents referred to activating their Emergency Action Plan (EAP), per New York City rules. While an EAP is adequate for immediate response and may be implemented in such instances (e.g. the crane incident on 57<sup>th</sup> Street), the EAP is not designed to address building preparedness, recovery and restoration processes.

Finally, owner/manager survey respondents who did not have a disaster recovery/business continuity plan in place prior to the storm said that they would consider developing a post-incident continuity/recovery plan.

### Recommendations

- Understand the difference between emergency response (i.e. EAP and fire/life safety plans), disaster recovery (generally IT and telecommunications plans) and business continuity (identifying critical processes and planning for their restoration) plans.
- Plan for incidents which cause disruptions for greater than one week.
- Ensure provisions for operating without critical security and life safety systems are included in plans.
- Recovery and restoration plans differ, but should, at a minimum, include: emergency staff contact information, tenant emergency contact information, staff actions and responsibilities, vendor contacts for critical systems and supplies (to include equipment, food emergency supplies), communications and messaging templates, and prioritization of restoration activities.

## Information and Communications

As noted earlier in this report, BOMA/NY Alerts were the primary information conduit between BOMA/NY and its members and worked well. Lack of timely communications was one of the salient challenges during storm response and recovery. Communication gaps identified during the study included: a lack of offsite back up contact lists for building staff, tenants, vendors and local agencies; incomplete and outdated tenant contact lists; a lack of standard “message templates” for information and messages to tenants, and issues with building radio system repeater locations and back up power sources.

### Recommendations

- Develop as many redundant communications systems as possible, both within the building and at selected locations offsite designed as “communications hubs” where building management can assemble and have power, internet and analog phone.
- Develop and rehearse call forwarding procedures from individual building to corporate offices, to include messages for those answering forwarded calls at the corporate office. This can be used in the event that telecommunications at individual buildings have failed.
- Develop standardized message templates for tenant messaging. Message templates can be developed and approved at the corporate level and filled in and disseminated at the individual building level.
- Ensure contact information in mass notification systems is current and conduct periodic rehearsals with tenants. Some organizations that have a mass notification system do not use it until an incident. As a result, message recipients (by phone, SMS text, email) are neither familiar with the messages nor know how to respond. In addition, mass notification system rehearsals will validate the message recipient database.
- Position building radio repeaters out of potential flooding areas (e.g. basements) to higher locations within building. Ensure repeaters are tied into both UPS and emergency generation systems.

## Tenants

Most issues that arose with tenants involved communications, building access and re-entry. Seemingly routine preparedness items, (e.g. tenant contact lists), became major issues for those buildings that did not maintain or update lists prior to the storm. Lack of attention to detail during storm preparations caused unnecessary problems during recovery.

Many tenants were resolute in their desire to access their buildings following the storm, even if their building was not operational. Many building staffs overcame this challenge by escorting tenant representatives individually into the building. Likewise, many tenants did not (or were not able to) communicate to their employees that their building was inoperable; employees showed up at the building, expecting to be able to go to work. Finally, there was a broad range of building management understanding of tenant recovery plans; some managers knew of tenant plans and other managers did not. Fewer managers had actually coordinated building recovery plans with tenant recovery plans.

### Recommendations

- Establish a social network account for the building to provide building status updates, building events, projects, etc. Encourage tenants to sign up for the “feeds.” During an incident, update building status frequently.
- Reinforce to tenant points of contact the importance of their internal messaging to employees during incidents.
- Consider developing tenant access lists to allow entrance to designated tenants following an incident.
- Educate tenants on building minimum requirements for operations and safety (e.g. what systems must be working in order to allow tenants access to building).

## Security

The survey reports that 71% of the buildings used contracted security and 58% of those contracted security firms had additional personnel available. Some security firms designated mobilization areas and arranged for transportation of relief and additional security staffing. Security firms posted the highest pre storm planning and coordination meetings of all service providers. Security firms that provided security officers with familiarity of specific buildings and possessed required FDNY certifications provided added value.

The majority of buildings were staffed by guards throughout the duration of the storm. Buildings that lost power (and subsequently their electronic security systems, CCTV and other access controls) relied mainly on on-site guards. In some cases, buildings which suffered failure to their Class E (fire/life safety) systems or had no connection to the central station, required fire guards and assumed fire watch. In a few cases, buildings were locked down entirely.

## Vendors, Supplies and Equipment

Security, elevator, maintenance and fire/life safety vendors were the vendors most coordinated with prior to the storm.

According to the survey, most buildings had adequate supplies on hand or had ordered them before the storm. There were buildings that needed supplies but, for whatever reasons, did not order them. A few who ordered supplies immediately before the storm did not receive the supplies. During recovery and restoration, fuel was in short supply. Some survey respondents, both owner/manager and professional/allied, noted that finding food for staff members remaining in the workplace and in the buildings posed a challenge.

One of the complicating factors during recovery was that vendor operations were also disrupted and vendors could not provide support to buildings in a timely fashion. 42% of the vendors indicated in the survey that they had to acquire supplies and equipment outside the New York City metropolitan area. Most came from the mid-Atlantic region; 12% of the respondents said they acquired supplies and equipment from as far away as the west coast and 4% said they made acquisitions from international sources. Vendors that supplied pumps and vacuum trucks were short on supplies and a lack of disposal sites that were either inoperative, not staffed or under water further exacerbated the response time. Like buildings, many vendors procured hotel rooms for their staffs. Apparently, during the first few days after Hurricane Sandy, Second Avenue was used by the hotel industry, commercial building industry and others. This dedicated traffic lane allowed traffic to move quickly. Generally, however, traffic in the city the first three days after the storm was horrendous.

### Recommendations

- Recovery plans should include planning for logistics, to include identifying critical vendor contacts and prioritizing of supply requirements. Ensure pre-incident coordination meetings with all vendors.
- Owners and managers must acknowledge the fact that during regional incidents, vendor support, supplies and equipment may be scarce.

- Management should consider having pre-existing contracts with vendors, to ensure timely deliveries and service and reasonable costs and terms. A reasonable planning figure for pre-placement of equipment is a five-hour response time into the city.
- BOMA/NY, as part of its incident operations, should work with NYPD and OEM to identify the most accessible traffic routes into and out of the city. These routes should be included in the BOMA/NY Alerts.
- Management should ask vendors about their disaster plans, to include alternate office locations, alternate means of communications and plans for alternate suppliers.
- BOMA/NY should encourage a public and private initiative to explore available barrier-type systems that commercial buildings and other facilities can use to mitigate flooding. While BOMA/NY can not endorse any single product, it can provide members possible options for useful water barriers.

## Code Issues

In general, two types of code issues arose as a result of Hurricane Sandy. The first involved temporary waivers of codes. These types of waivers ranged from pumping water to operating generators. BOMA/NY's challenge was to ensure its members were aware of the various waivers granted for recovery operations. The second type of code issues were much more deep-rooted and involved long standing building codes, many of which were designed for building safety, and mandated requirements such as fuel storage locations.

### Recommendations

- BOMA/NY should develop an incident management team comprised of functional area specialists who are able to provide rapid liaison with city agencies to identify changing code requirements and/or waivers during an incident. Current code issues and waivers should be included as a section in each BOMA/NY Alert.
- BOMA/NY should work with city officials to make reasonable and prudent changes to existing building codes and regulations.

## Insurance

Most of the insurance issues are only now coming to light. When the survey was sent out and completed, insurance claims were in the very early stages and many issues were not known at that time.

A vast majority of survey respondents, 62%, did not coordinate with their insurance carriers before the hurricane. After the hurricane, 56% of respondents contacted their insurance company. Of owner/manager respondents, 40% eventually filed a claim with their carriers.

At the time the survey was taken, 11% had signed a Statement of Loss and 47% had not signed a Statement of Loss. This data might have been premature as the 60-day period for signing and returning the Statement of Loss had not been reached by the time most people filled out the survey.

### Recommendations

- Insurance issues covering general business liability, environmental insurance, pollution insurance, etc. should be on file and updated with management.
- Management should understand that the insurance industry is changing and policies may not be fully understood by their organizations. It is critical to know what is covered in policies and areas of limited coverage.
- Contracts signed by management assume that insurance claims monies will cover the entire cost of loss, or at least most of it. Most of these types of contracts contain wording which states that no matter how much the insurance company pays the insured, the management company/owner is responsible for the full cost of the invoice and is expected to pay in a timely manner.
- When purchasing insurance policies, management should have someone that fully understands what the policies cover and what limits are being placed on the insured.
- Management should make sure the following is up to date; building maintenance documentation, all DOB permits, any actions requested by the insurance company, any outstanding issues with FDNY and any other agency requirements. All of these areas may be reasons for claims denial.
- While management of insurance and insurance claims may be handled at the corporate level, building managers must have a basic knowledge of and types of issues that may arise during the insurance claims process.
- Some managers suggested having a public adjuster on call or an insurance coverage attorney on retainer. These specialists can help with the claims and reimbursement processes. As always, check references and credentials before hiring a specialist.

## Legal Issues

A myriad of legal questions surfaced as a result of Hurricane Sandy. They include:

- For the commercial property owner, what insurance covers property damage due to severe weather? What limitations and exclusions are there in your coverage?
- What do your leases provide in the event that a property is closed for a period of time? If the building is closed for a period of time, what payment obligations does the tenant have? What obligation does the landlord have to rebuild?
- What are the terms of the mortgage on the property damaged by a severe weather event? If the property owner pays off the mortgage out of a payment received from its insurance carrier, there will often be a prepayment penalty (to the extent of hundreds of thousands of dollars); in the event the pay off on the mortgage comes from the insurance company directly, there is no prepayment penalty.
- What are the local government's programs for limiting access to the damaged buildings once disaster strikes?
- What are the unique vulnerabilities which are faced by your building and what impact might the unique vulnerabilities have on insurance coverage (in terms of coverage and setting the insurance premium)?
- What pre-incident purchasing would be effective to get supplies, labor and triage services to protect the building?

## Recommendations

Building owners and managers should know the following:

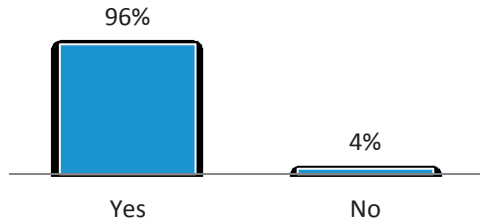
- **Know Your Insurance Program:** Even when hurricane and wind damage are covered, flood damage is often excluded, thereby posing a significant impediment to recovery and rebuilding. It is important to be aware that getting in early and making the best case for coverage is essential (pictures and documentation that show wind damage instead of flood damage go a long way toward obtaining coverage).
- **Know Your Lease Terms:** Many leases do not provide the landlord the right to terminate in the event of a catastrophe and in many instances, under this lease clause, the landlord is required to rebuild even when it is economically infeasible. It is also important to provide the tenant reasonable access to the rented space during the catastrophe; however, the landlord must be careful to avoid liability when access is allowed in a building without electric power.
- **Know Your Mortgage Terms:** In the face of catastrophe, a borrower may face additional liability based on obscure clauses. For example, if the borrower elects to pay off the mortgage on a property, there will be a pre-payment penalty, which may amount to hundreds of thousands of dollars. However, if the pay off of the mortgage comes from the insurance company directly, there is not a pre-payment penalty.
- **Know the Local Government's Program for Limiting Access to Damaged Buildings Once Disaster Strikes:** Knowing the ability of the local government to limit access to buildings to guard against looting, vandalism and unsafe conditions is essential. At the same time, it is critical to know what limitations are contained in the lease under which the landlord may restrict access once a catastrophe hits.
- **Know the Insurance Underwriting Process:** In order to best assure that coverage is in place, relationships between the insured and the underwriter are critical. This way, the underwriter can know unique features of the property and encourage the insured to take specific steps to avoid damage once the catastrophe is forecast.
- **Understand Business Interruption Coverage:** Business interruption coverage is often misunderstood. On both liability and damages, insurance carriers are often in a position to deny coverage. Among other factors, proof that the business was fully shut down may be difficult to establish; as one owner/manager survey respondent pointed out, the inability to pinpoint and document which government agency ordered a specific area shut down brought about a denial of coverage. Other issues exist in the area of proving and documenting the company's projected earnings if the catastrophe had not hit. New York State case law limits recovery for business interruption.
- **Know How to Collect Under the Claim:** The first call is to the insurance company and broker to put them on notice, followed by the restoration contractor. Quite often, a consultant with accounting background will be retained at the outset, as well. It is important to discuss with and get a commitment from the insurance company a reasonable time frame within which to complete the claim analysis. Good communications and a close working relationship with the insurer are critical.



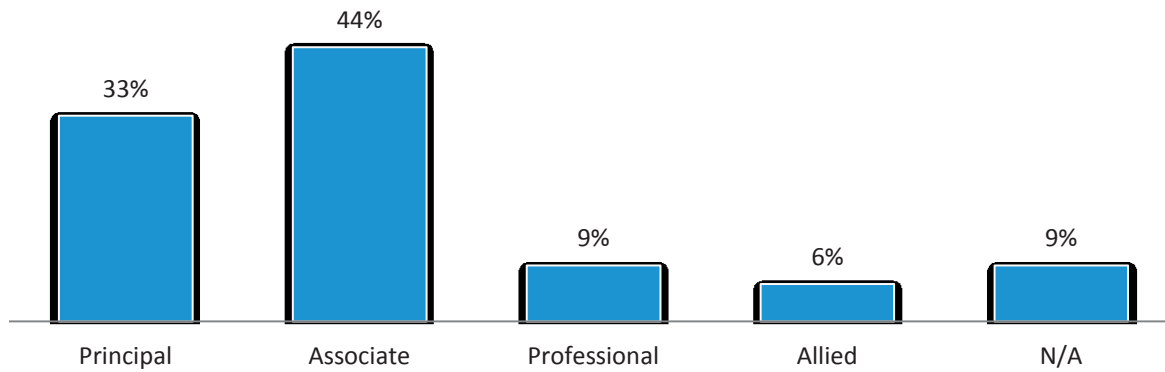
# PART IV - Owner/Manager Survey Results

## General Information

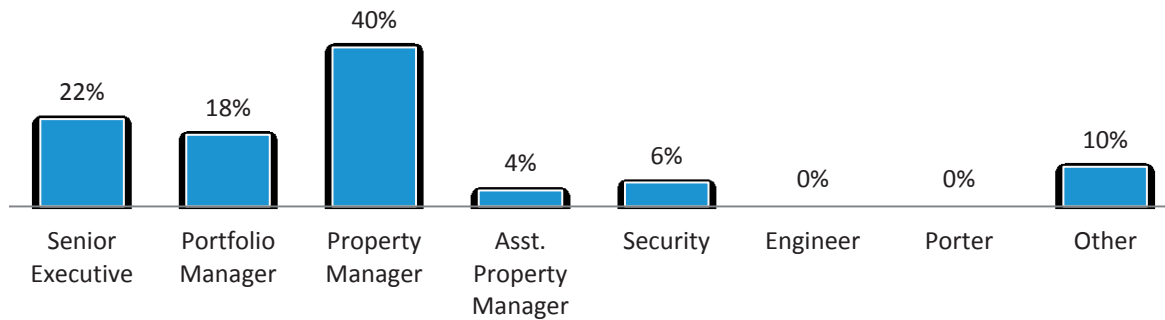
1. Are you a member of BOMA/NY?



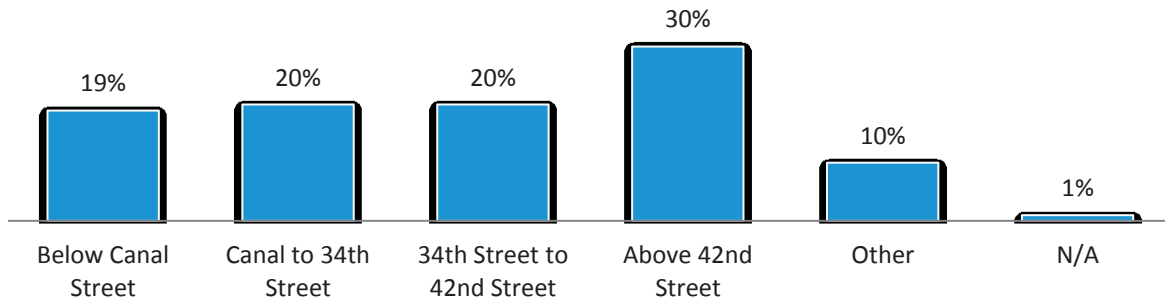
2. If you are a BOMA/NY Member, what is your membership category?



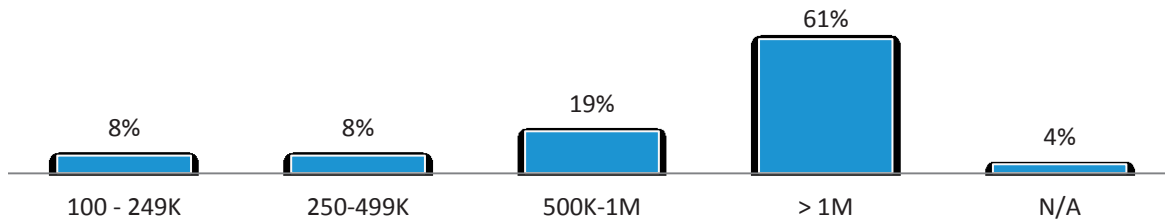
3. Please select the following job title that best describes your position?



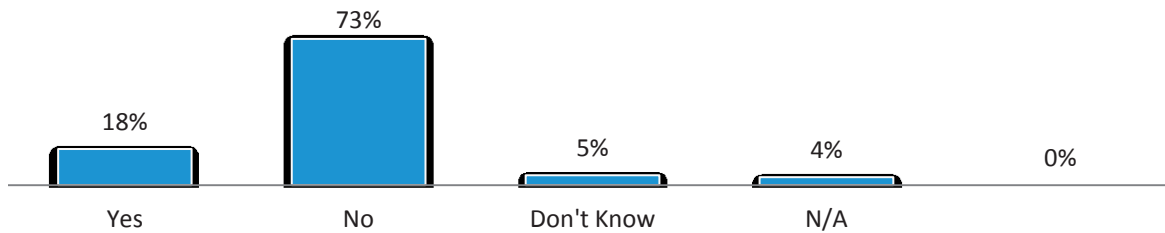
4. Where is your building located?



**5. What is the total square footage of your building(s)?**

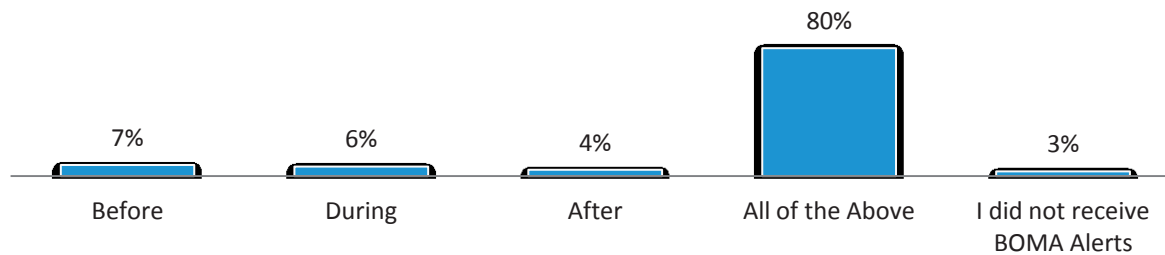


**6. Is your building(s) in Zone A?**

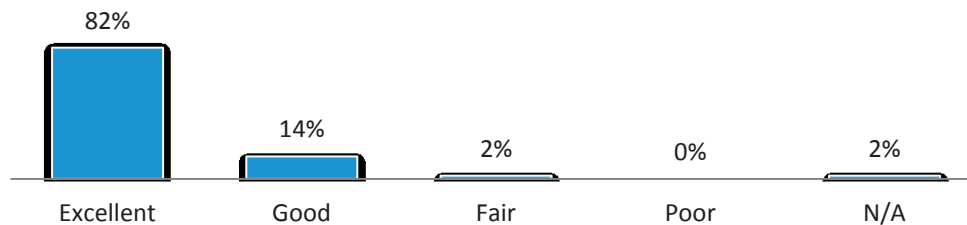


**BOMA/NY Operations**

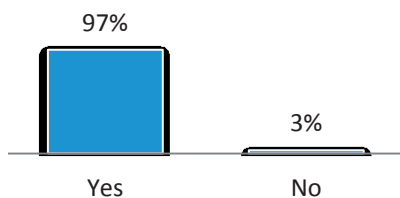
**7. Did you receive BOMA/NY Alerts before, during and after the storm?**



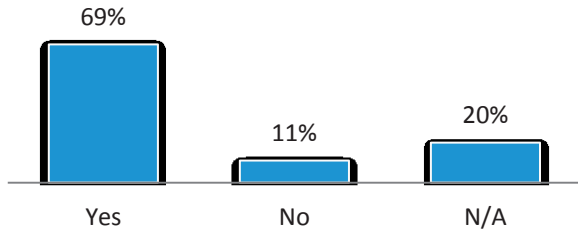
**8. Please rate the effectiveness of the BOMA/NY Alerts during Hurricane Sandy?**



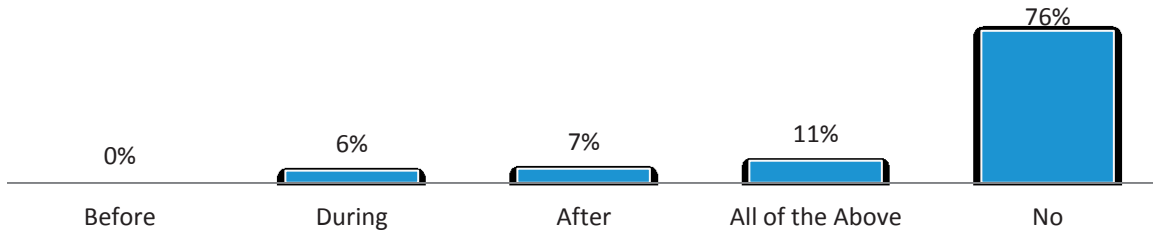
**9. If you received BOMA/NY Alerts, did you share them with your staff or other interested parties?**



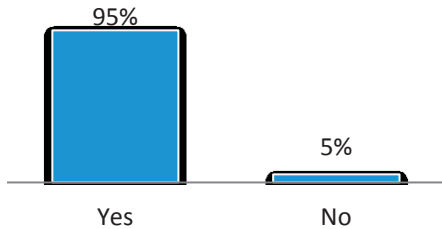
**10. If you received BOMA/NY Alerts, did you share them with your tenants?**



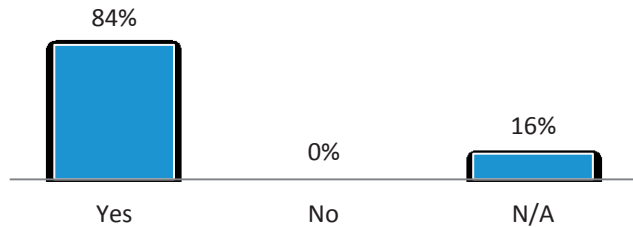
**11. Did you contact BOMA/NY for assistance before, during and/or after the storm?**



**12. If you contacted BOMA/NY, was the staff helpful to you?**



**13. Did BOMA/NY provide value to you and your building team during this incident?**



**14. What other information would you have found useful in the BOMA/NY Alerts?**

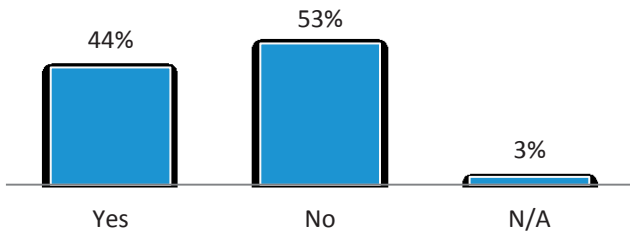
- Would not change anything, the alerts were perfect!
- Information was comprehensive and we relied on press and Ray Powers info network
- More pre-storm preparedness as related to expected storm surges and water levels
- Where to purchase gas for our drivers
- BOMA/NY did a great job with the alerts
- Boilerplate tenant updates
- Locations damaged
- Street Closures, Power Outages, NYPD/FDNY updates, Mayor's Office updates
- Con Edison info
- I feel that everything was covered as far as notification is concerned
- None...good job
- Info about traffic conditions. Share info about resources
- Best flow of information I have seen from BOMA/NY in years
- I thought it very informative and timely
- The information provided was sufficient - no other information needed
- The alerts were fine and addressed the various topics that affected my properties
- Damage tally by area

#### 14. What other information would you have found useful in the BOMA/NY Alerts? (cont'd)

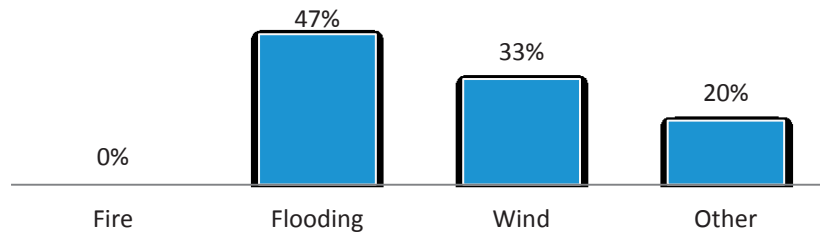
- We need better contacts for telephone/data providers
- If regulatory agencies restricted access to certain areas, the City / Governmental agency that issued the restriction should have been named - this is useful for tenants who file for loss of business claims
- Updates by area
- The information was excellent
- BOMA/NY did a good job sending out up to the hour condition reports
- Updates on what action city and state agency's were taking at the time
- Status of Con Edison, Re-occupancy requirements, City updates etc.
- Information was great reference but not real time
- Nothing. Excellent updates and informational bulletins that were helpful in establishing restorations of services
- Lists of available suppliers for the "hot" commodities such as fuel
- Numbers of agencies to call, where to get gas for generators and pumps, information that would be meaningful shared from other owners and managers and not just info that was already known either from the OEM, REBNY or the news. The information sharing was not conducted that well
- All was adequate
- Constant real time updates
- The alerts were very thorough
- None! I was also getting information from FEMA and NYC OEM
- Alerts were fine
- I believe all was covered in the alerts
- All accounts of the hurricane were accurate and the notifications, both storm or mass transit related, were helpful in our preparation of the storm. We were able to notify our employees and tenants of the storm's potential, and therefore many people left work early or even stayed home.
- Clearer correspondence with Con Ed and their schedule

### Building Impacts

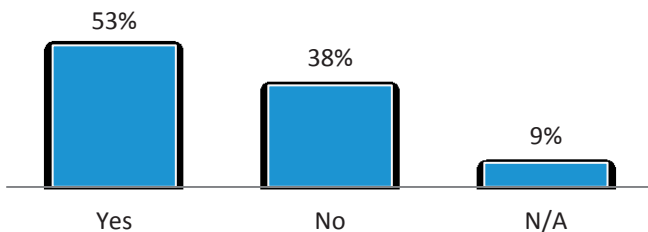
#### 15. Did your building suffer physical damage from Hurricane Sandy?



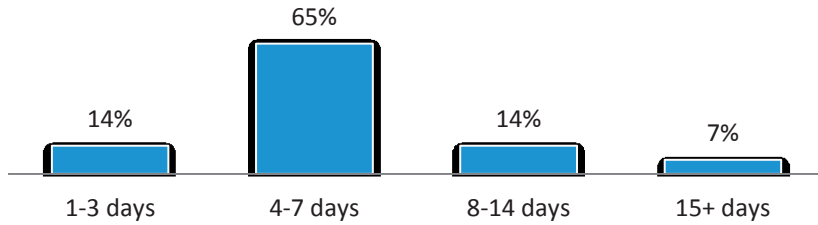
#### 16. If yes, what kind of damage did it experience?



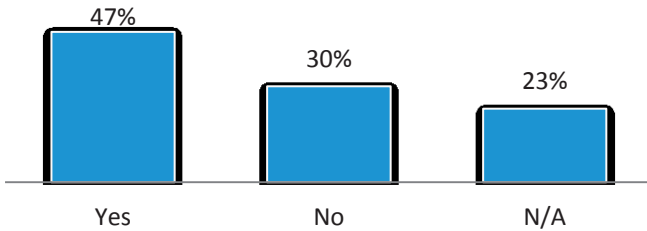
#### 17. Did your building lose electric power during the storm?



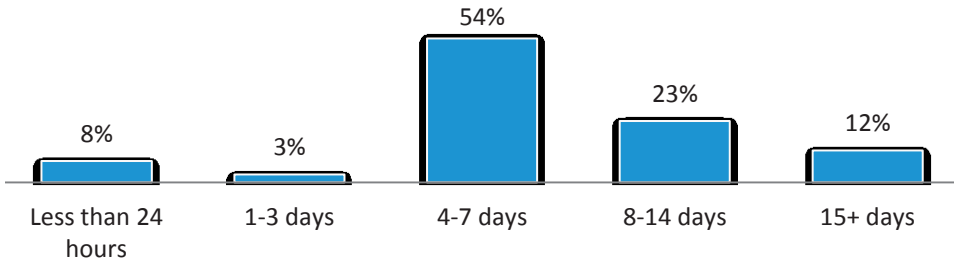
**18. If you lost power, how long were you out of service?**



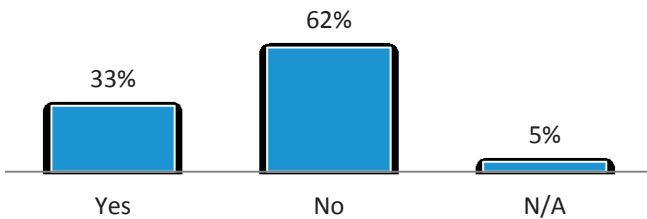
**19. Did your building lose steam power during the storm?**



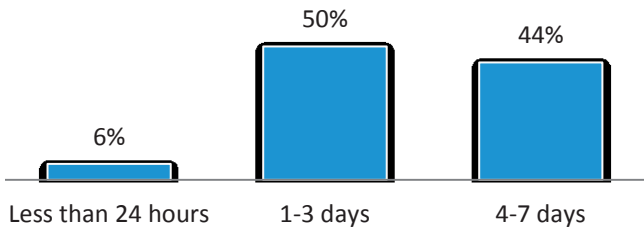
**20. If your building lost steam, how long was it out of service?**



**21. Did you experience flooding from the storm?**



**22. If your building did flood, how long did it take for you to pump out all of the water?**

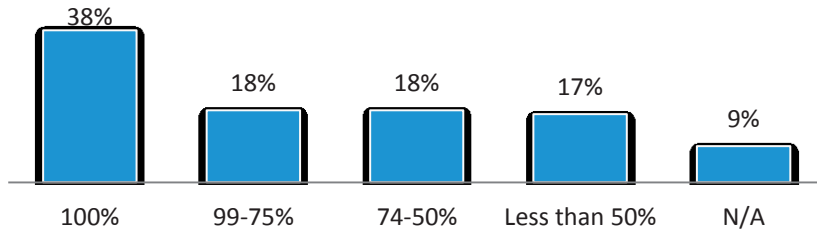




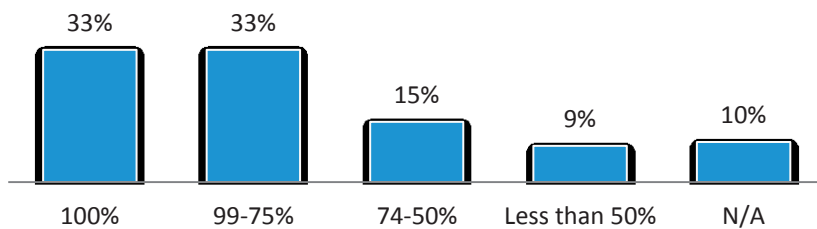
## Building Staff

23. During the preparation period before the storm (Saturday, October 27 through Monday afternoon, October 29), what percentage of your staff in the following areas available to your building?

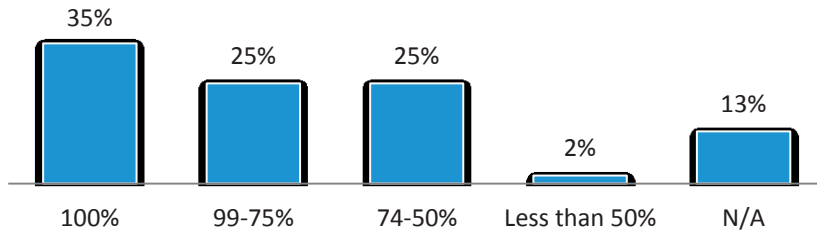
### Property Management



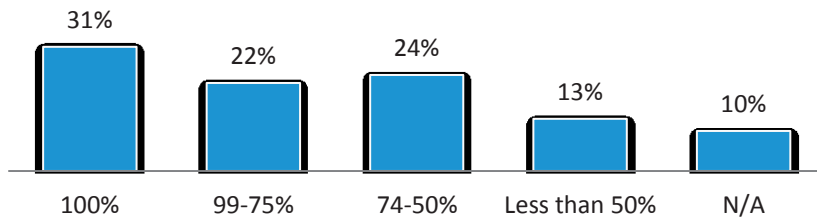
### Engineering



### Security

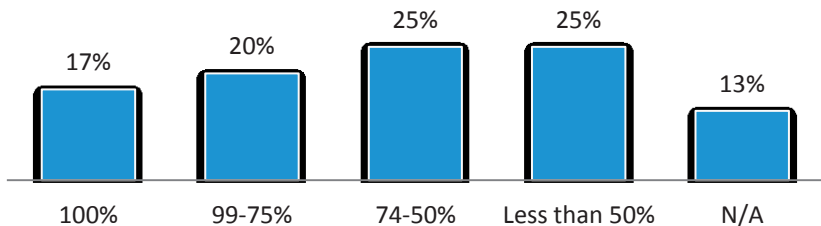


### Porter/Cleaning

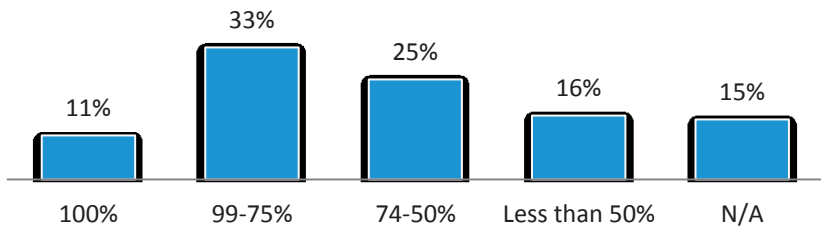


24. During the storm response (Monday night, October 29 until Tuesday morning, October 30), what percentage of your staffs were available at your building?

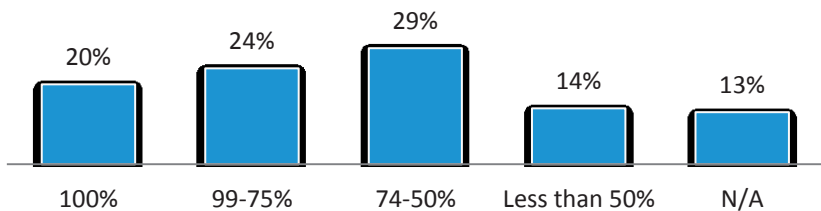
**Property Management**



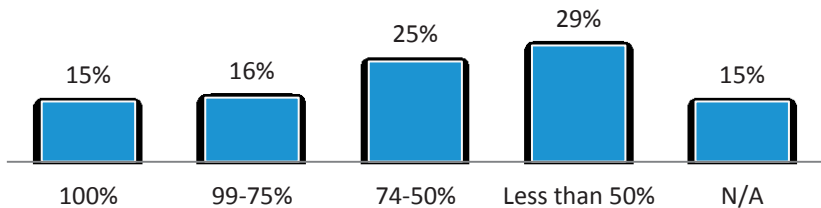
**Engineering**



**Security**

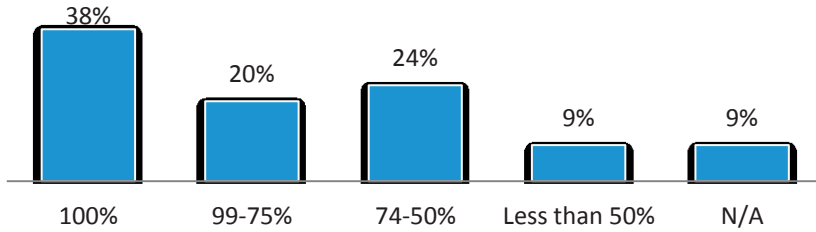


**Porter/Cleaning**

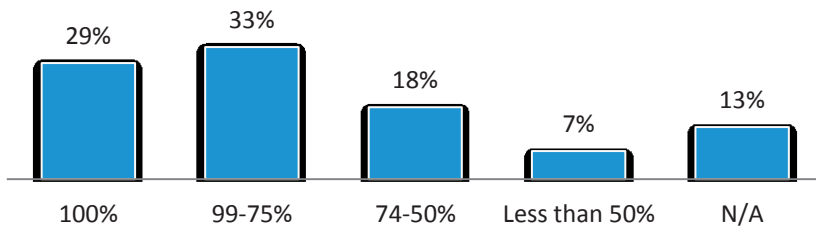


25. During the recovery period immediately following the storm (Tuesday morning, October 30-Friday, November 2), what percentage of your staff was available to your building?

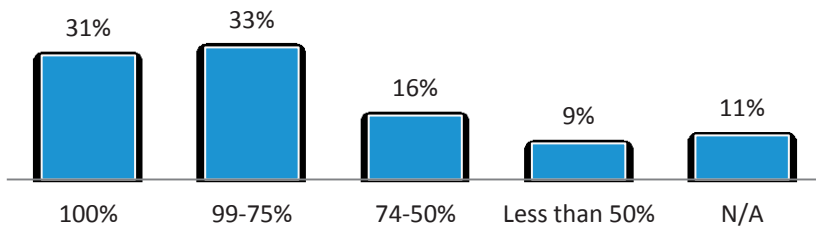
**Property Management**



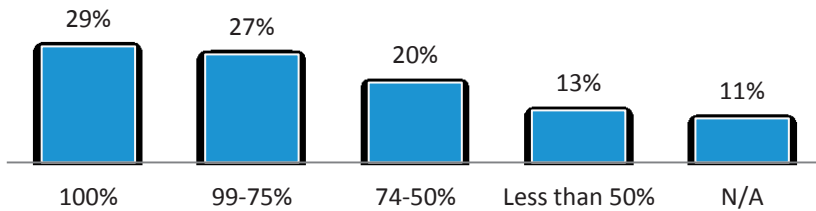
**Engineering**



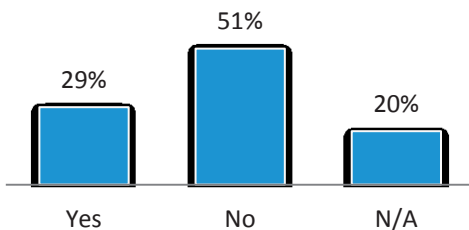
**Security**



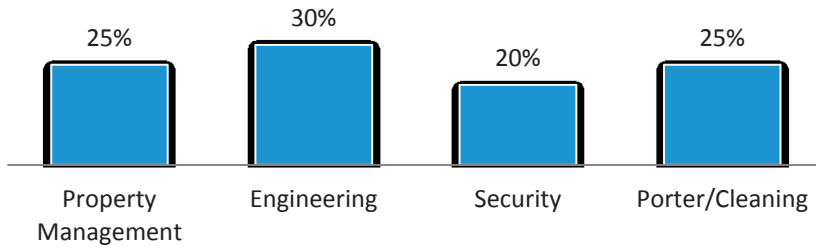
**Porter/Cleaning**



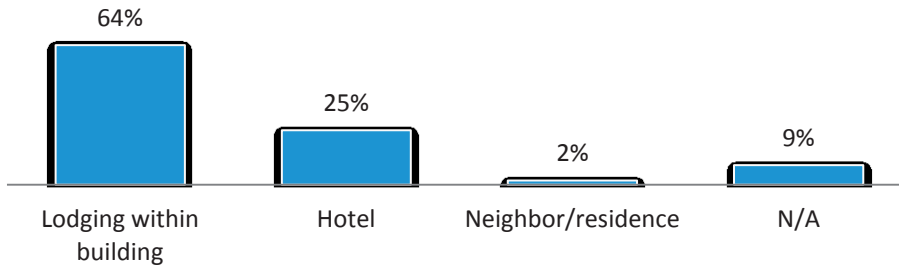
26. Did you receive additional building staff support for this storm from other properties within your company?



**27. If so, in which areas?**

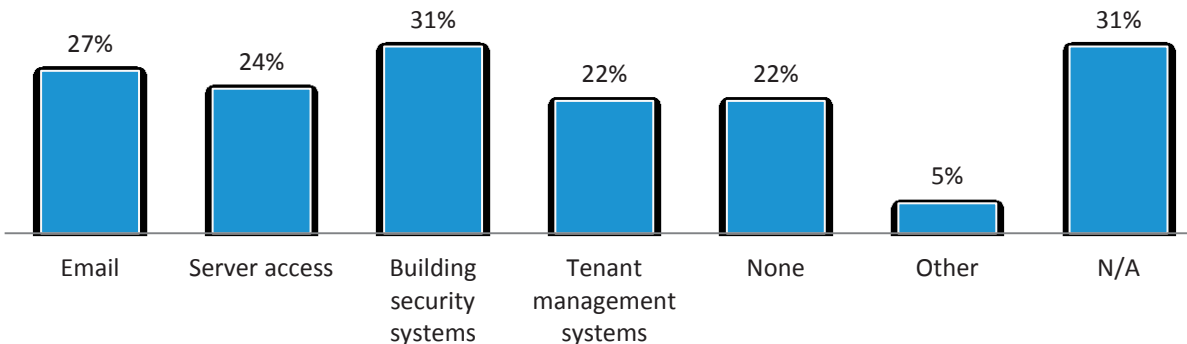


**28. During the storm, what accommodations did you make for your building staff?**



**Information Technology**

**29. Which of your information technology systems were NOT available as a result of the storm? (Respondents can select more than one).**

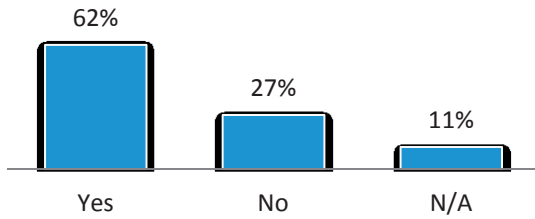


**30. List any changes you will make to your IT systems as a result of the storm?**

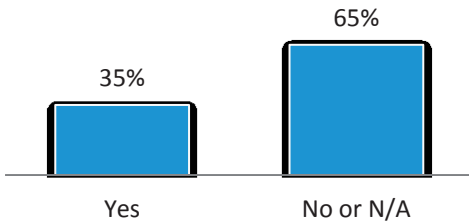
- Additional remote servers and database storage systems
- Looking at redundancy
- Not sure if we could have prevented any IT problems
- Better battery backup
- Require a longer life UPS system
- Increase our text messaging capabilities and possibly add repeaters in the buildings so building staff can communicate between buildings on radios
- Back up server and VOIP system, VPN service to server
- Multiple layers of resiliency will be added
- Telephone/data services being relocated above ground. Will look into wireless service for the building
- We obtained a Google Apps account for the enterprise with sub accounts for executives
- Assure a connection to the emergency generator for building servers and office
- More off site storage
- I would transfer power to IP phone system to emergency power
- We powered down our network proactively to ensure network was not impacted - also, shutdown generator located at street level. Infrastructure was not comprised vs. other tenants that ran equipment during flooding
- Increased on site fuel storage for backup generators
- Require IT Support to be on site

## Disaster Planning and Preparation

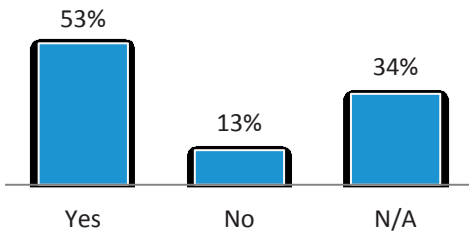
31. Does your building(s) have a disaster recovery/building continuity plan, which outlines post-incident recovery and restoration processes?



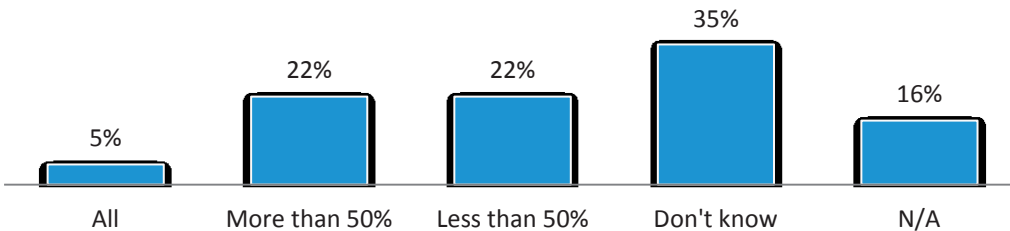
32. If yes, did the disruption to your building operations cause you to implement your disaster recovery/business continuity plan?



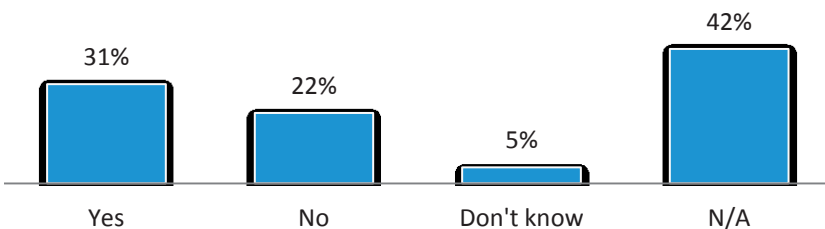
33. Does your disaster recovery/business continuity plan address a long-term (greater than 1 week) building disruption?



34. How many of your tenants have a business continuity plan that addresses their operations in the event of a long term (greater than one week) building outage?



35. If you have a disaster recovery/business continuity plan, was it shared and coordinated with your tenant business continuity plans?





### 36. What specific preparedness activities did you take to protect your building?

- We had PM, cleaning, engineering and security staff on site.
- review of EAP Plan, Emergency management Plan and Recovery Plan.
- All roof tops cleared of debris and furniture. All bulkhead and rooftop doors and windows shut tightly. Lower all mobile scaffolding rigs to sidewalk shed and clear all shed of material and tools.
- We provide security to many buildings. We arranged for additional manpower to be posted at sites, set staging areas and utilized patrols where possible to cover multiple sites.
- All items as per Hurricane preparedness manual.
- We are not in the flood zone however the subway is under our building so we purchased sandbags for the doors to the subway entrances.
- All Emergency Supplies were checked and all vendors were put on notice.
- Brought in staff on Sunday 10/28; tested critical equipment
- cleared all drains, removed loose items from the roof, brought roofing supplies to the roof move flashlights etc to the lobby purchased chains and locks to secure doors parked elevators in the lobby filled domestic water tanks to maximum capacity
- walk the buildings, secure the exposed areas, protect expected leak areas, etc.
- all perimeter office doors were shut prior to storm. All items on roofs were either removed or secured. All ashtrays and garbage cans were removed. All loading dock doors were kept closed.
- Shut down all non essential equipment. placed sand bags at the entrance to the loading dock ramp that leads to the lower levels
- remove any items from roofs that were not tied down and have tenants remove items from their window sill.
- covered all ground level penetrations.
- Checked roof and setbacks, checked all windows
- Planning and strategy meetings for each department Checking of all roof and setback drains ordering additional supplies and topping off fuel oil for emergency generators
- We conducted a meeting before the event and ensured we had current emergency tenant contact information.
- •All setbacks were inspected to ensure loose items and window washing rigs are secure
  - All setback doors were secured
  - All building drains were inspected
  - Sewage ejector pumps were inspected
  - The emergency generator was inspected and confirmed to have full fuel capacity
  - Trash receptacles and loose items were removed from the perimeter of the building
  - Additional staff/personnel were onsite during these times to include:
    - Additional onsite engineers
    - Additional onsite porters
    - Additional onsite security
    - Cleaning vendor on standby
    - Glazier vendor on standby
  - All setbacks and critical building areas were continually monitored for the duration of hurricane activity.
- Sand bagged Con Ed vault door that always leaks water into the basement. Started the generators and pumps.
- Additional engineers, Management, porters and security on-site early, anticipating transportation problems.
- Emergency staffing plan, purchase of additional supplies, testing and refueling of the emergency generators, emergency alerts to tenants and staff.
- Elevator brought to mid-shaft to protect both cab interiors and counterweights from possible water infiltration. Pre-tested Generators to ensure that they worked properly prior to the storm.
- Sand Bags
- Flood gates installed at loading dock/garage entrance, sand bags at all entrances, shutdown steam service, electric load shed
- test all equipment particularly boilers and pumps, removed furniture from terraces, clean the drains, make sure there is enough fuel,
- Sand bags at entry doors, sump pumps set up, check roof areas for loose items, windows all secured
- rooftop inspections, drains, window sashes etc.
- Had 2 employees in each building sleep there. Also booked a hotel room and had them rotate shifts.
- On site staff, sand bags, wet vacs. secured outdoor furniture
- Staff on site
- Removed planking and moveable parts on sidewalk bridge and scaffolding
- Installed WIPPs system around all door openings prior to storm to keep water levels back
- Proactively shutdown network and infrastructure
- Assesses potential areas of damage and coordinated accordingly.

### **36. What specific preparedness activities did you take to protect your building? (cont'd)**

- sand bags, power shutdowns, lifted elevators, tied off roof fans, removed loose equipment, tied down scaffolds, outdoor lifts, etc.
- sand bags, closing locking garages and doors
- Standard Hurricane Preparedness
- Secured roofs, setbacks and Plaza. Scheduled Engineering, Porter & Security staff for round the clock coverage.
- Manpower
- Rooftop tie-downs
- Remove lose items from open spaces, purchase additional fuel for emergency generators and have enough personnel onsite to address any incident.
- Remove all items from the roof, bring in all essential staff, have supplies on hand, establish multiple hotel rooms, communicate with the Tenants and provide contact information.
- Once power was lost we shut all of the main power panels to the floors so when the power was restored we had no surges.
- We provide security to many buildings. We arranged for additional manpower to be posted at sites, set staging areas and utilized patrols where possible to cover multiple sites.

### **37. If you had to prepare again for Hurricane Sandy, what additional actions would you have taken?**

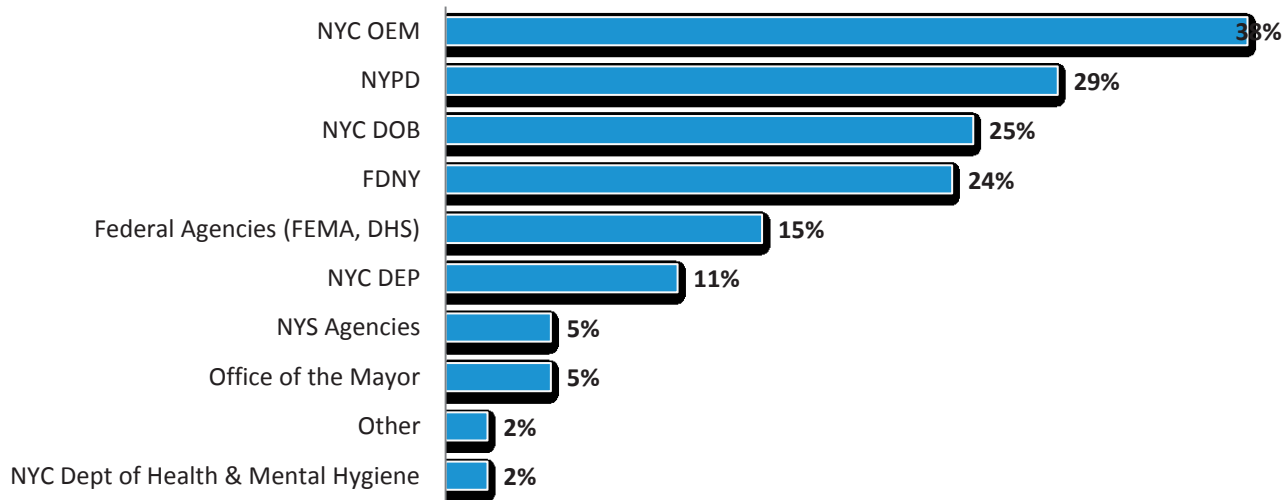
- More equipment, less staff
- I would have ordered a couple of portal generators and additional flood lights, as well stock up on food supplies for onsite staff.
- Rent additional vehicles prior to the storm. Try to make additional arrangements for fuel if possible. Rent additional hotel rooms for staff.
- Request landlords of leased spaces to provide copies of their emergency plans and advise how they were securing their building to mitigate flooding.  
Advise bldg occupants to not leave food, personal items, or critical paperwork in the office and to clear tops of desks and secure files in locked cabinets.  
Designate one staff person to monitor news/alerts and share info with team.
- We would have had various locations for the hotel rooms (the ones near us did not have power so it was a bit rough).
- We are purchasing a generator.
- Likely similar measures
- Additional staffing, back up keys from tenants, update emergency listing 72 hours prior to storm,
- Scheduled power shut down of certain equipment.
- Would follow our protocol (As we did this time)
- remove any items from roofs that were not tied down and have tenants remove items from their window sill.
- Have heavy duty gas powered pumps on hand.  
Have a second gas powered portable generator on hand.  
Have at least 100 gals of gas on hand.
- Provide equipment, food, for staff located in building
- Same as those taken
- We would have generator to power cell phones and radios
- We implemented a second area for emergency equipment & supplies on a higher floor level.
- Have fuel vendor on retainer
- Replace anemometer with one that reads over 100 mph.
- More food, preparing for lodging in NYC and wireless connectivity for laptop.
- Bring fuel pumps above grade  
Raise house pumps higher off the floor  
Bring fuel tank venting above ground level
- Build curbs around switchgears  
Installation of redundant emergency tank less electric water heating unit for one slop sink in cafeteria, executive kitchen, and shower
- More effective flood gates, larger pumping systems, seal as much penetrations as possible in lower levels around the incoming services and utilities. Also, move up as much critical equipment possible (i.e. switchgear, domestic water pumps, etc.)  
We need advocate to modify some of the code requirements (i.e. allow for fire pumps to be located above grade, fuel source for generators either outside building in blocked enclosure or higher floor, etc.) Additionally, Federal gov't should look into flood barrier at the rivers to control storm surges.
- get generators, enough gas to last the week, get extra lanterns for the stairwells and batteries for them
- Adequate fuel for generator, food for staff, sleeping arrangements

**37. If you had to prepare again for Hurricane Sandy, what additional actions would you have taken? (cont'd)**

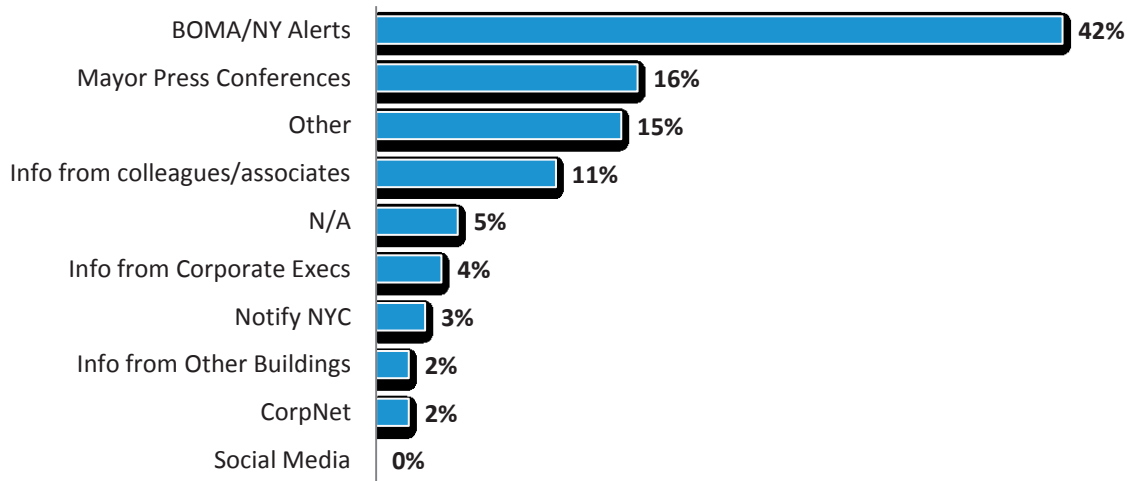
- More blankets on site in the buildings for my employees. All Tenants personal email addresses.
- Get lodging in advance, have more food and water on site
  - Arrange car pools
  - Cots and blankets
  - Arrange additional vendors - electricians
- Accommodations for more staff to be available
- would order more WIPPS
- Life Safety
- Not much different, unless we could stop tidal wave
- Keep a list handy or vendors for fuel, generators, pumps, lumber...
- Could not have prevented flooding, FDNY does not allow storage of fuel on site, could not have done anything different
- Sand bag doors.
- Additional staffing
  - Equipment
  - Fuel
- We were well-prepared
- Have a record logger rather than doing it all by myself.
- A disaster plan needs to be drafted.
- Rent additional vehicles prior to the storm. Try to make additional arrangements for fuel if possible. Rent additional hotel rooms for staff.
- Remove cars from parking garage, park elevators at an upper floor, remove personal items and important documents from below grade floors

**Information and Communications**

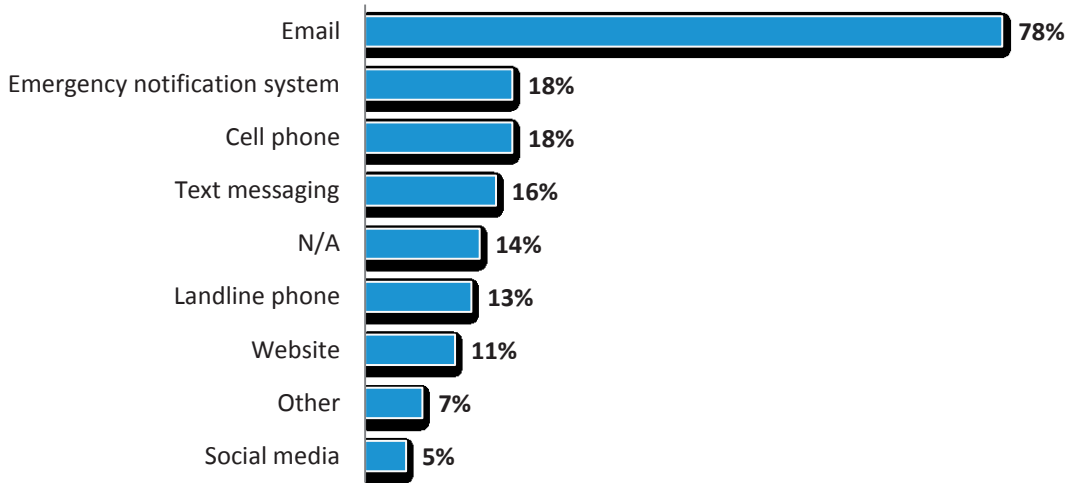
**38. What government agencies did you coordinate with before, during and/or after the storm?**



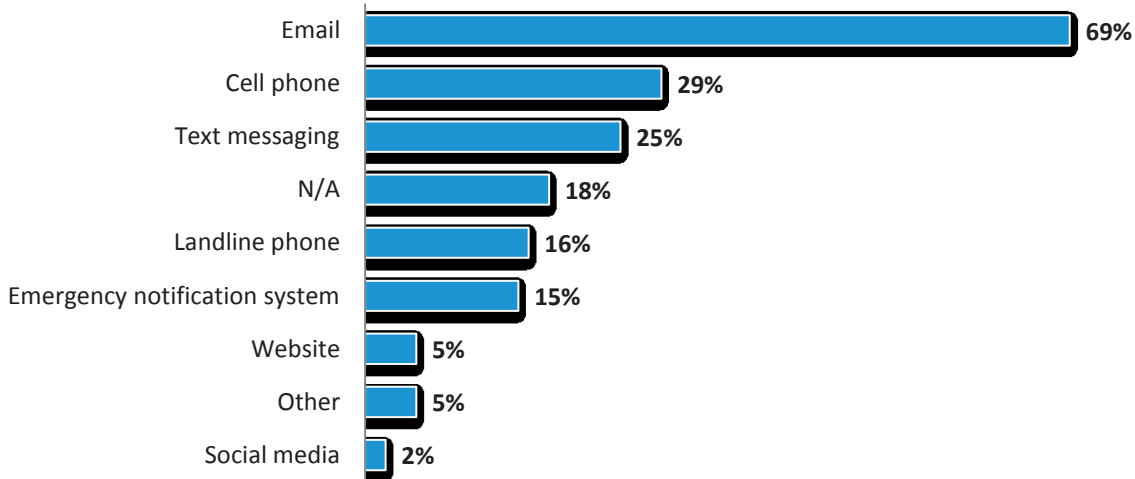
**39. What was your PRIMARY source of storm-related information relevant to your building?**



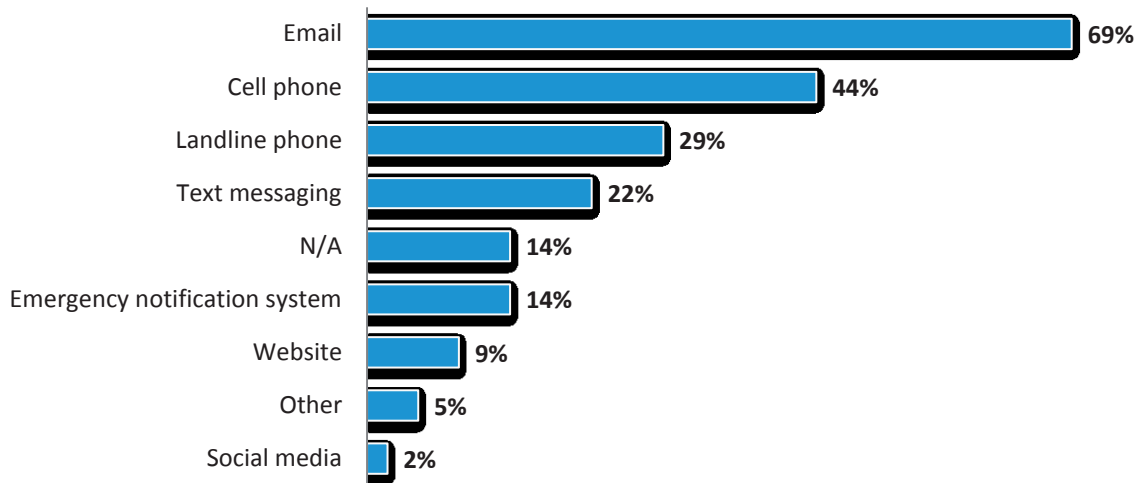
**40. How did you communicate storm-specific information to your tenants?  
Prior to the storm**



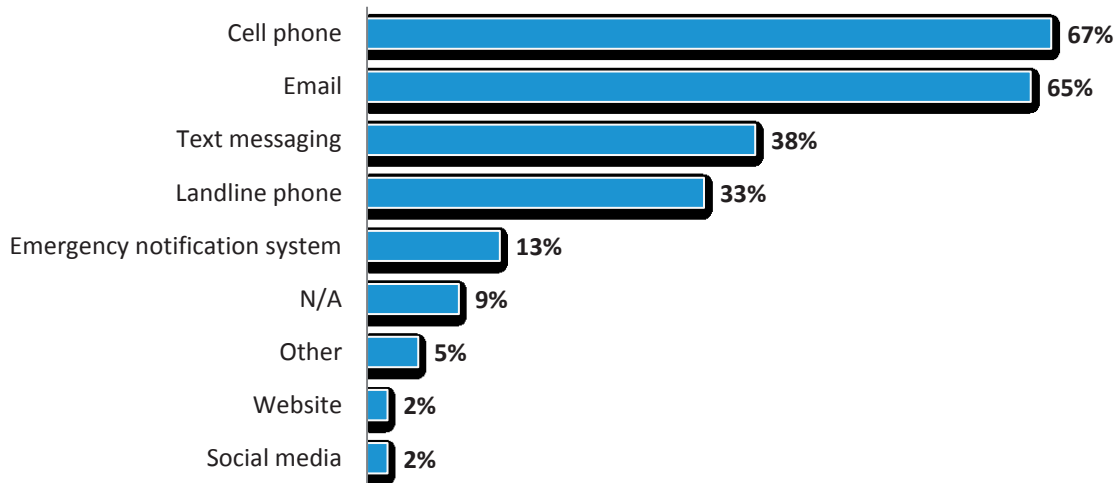
**During the storm?**



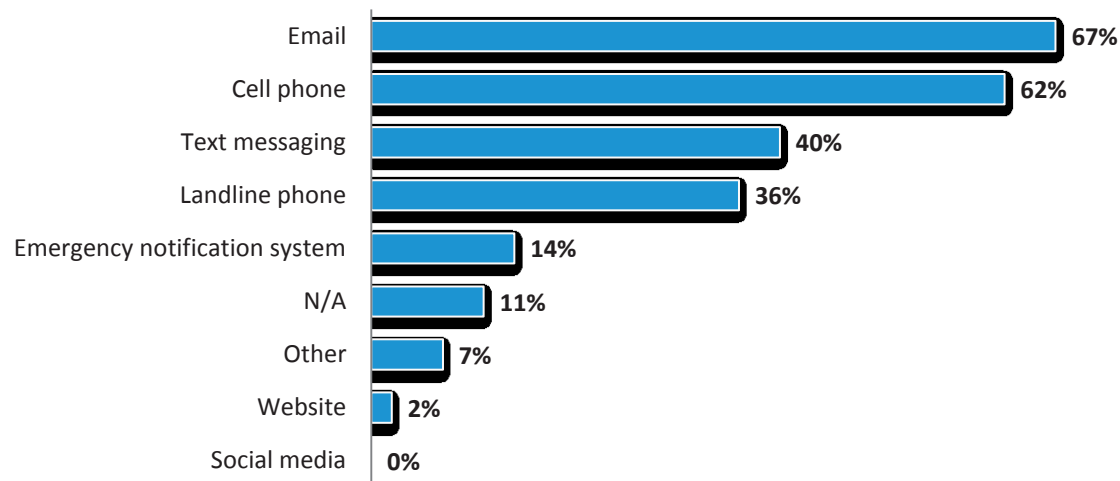
**After the storm (Tuesday, October 30-Friday, November 2)**



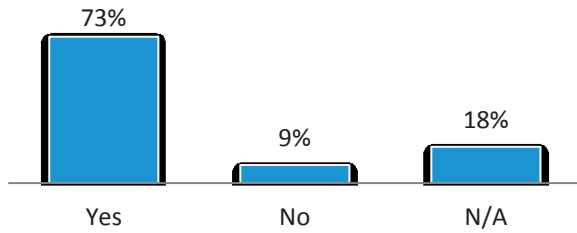
**41. How did you communicate with your building staff from prior to the storm (October 27-October 29)?**



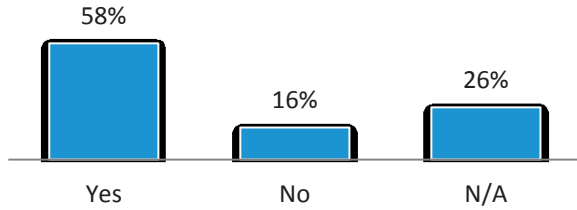
**42. How did you communicate with your building staff after the storm?**



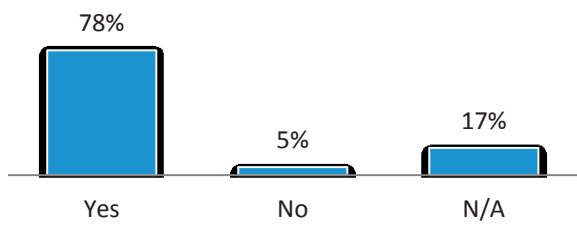
**43. Were you using a cellular or push to talk service?**



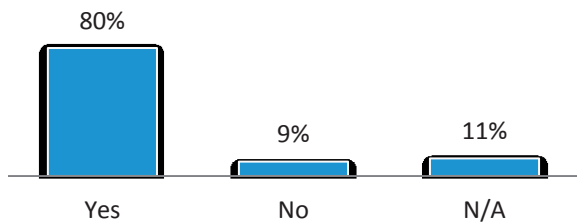
**44. If so did it work effectively?**



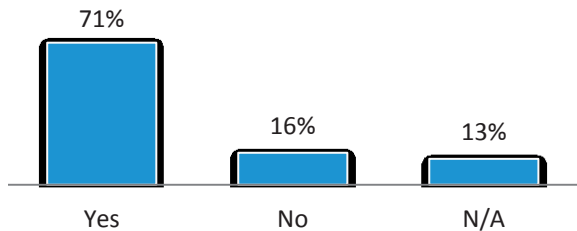
**45. Did you have enough radios for your building staff?**



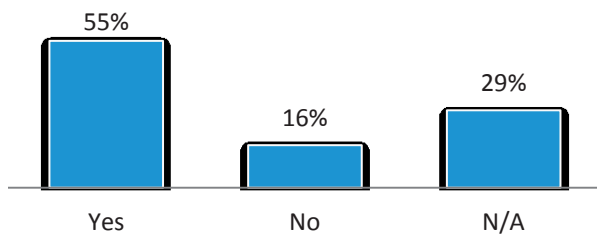
**46. Did you have enough spare batteries for your radio equipment?**



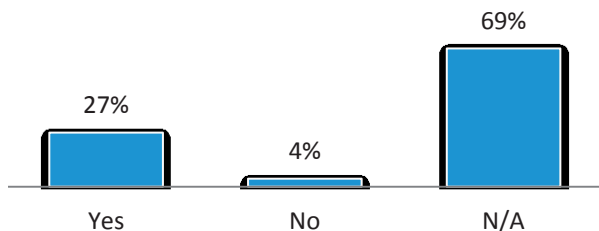
**47. Do you have a repeater in your building?**



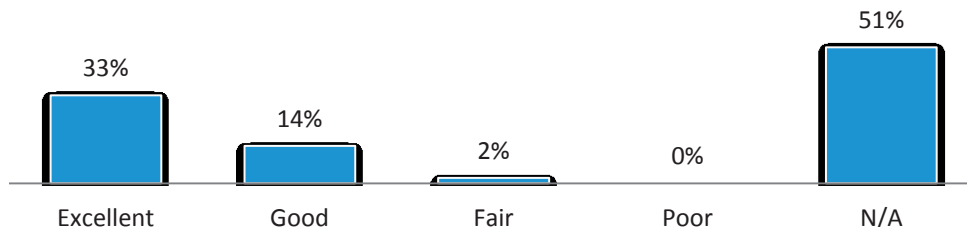
**48. If so, is your repeater connected to a generator or battery backup system?**



#### 49. If your repeater is not, did your radios function properly?



#### 50. If you do have an emergency radio system, how well prepared was your staff to operate the system?



### Tenants

#### 51. What tenant issues did you experience before, during and after the storm?

- Very hard for the tenant to understand that the building could not be accessed or occupied due to no electric. Many tenants wanted their employees to still report to work and stay in the office, we had to explain many times that this was against law due to no fire / life safety systems operational, at a minimum.
- NA. We provide service to multiple properties. No one issue was unique to any property. We are not providing a service to building tenants as a manager but as a provider.
- We did not have power to the building and tenants wanted to enter during the day to do work despite they did not have anything but emergency lighting on the floors.
- Access, communications, updates
- Issues with reentry floors during the blackout could not gain access to every floor. Cell phone services was spotty. Once power was restored getting heating system up and operational problems with vendor access. Problems with security staffing during the storm
- Just getting them to realize that the mgmt office was doing their best to protect the building.
- Some tenants did not receive email communications as there systems were down
- The only issue we had was transportation to and from the property
- Many were not prepared at all, there was not even a bat of an eye when we warned the tenants about the incoming storm. I feel that they simply thought that it was going to pass us or not be as bad as it was.
- Flooding caused loss of power which forced us to restrict access to the bldg for all tenants. Many tenants were unprepared to work remotely for long periods of time. They required access back into the bldg to recover files and equipment. Tenant contacts were unable to communicate to all their staff due to lack of preparedness on their end.
- No issues. Tenants were closed on Monday and Tuesday.
- Lack of communication and buildings were closed due to power outage and tenants wanted to get in.
- The main concern was whether the properties were open. Fortunately, they were with controlled access.
- One tenant did not have any services connected to the generator system and will be reviewing connectivity.
- Can we provide fuel for tenants in the event of a gas shortage such as we experienced after the storm?
- Before storm, we were fine. During the storm, email went down. Blackberry service (Sprint) was poor. Texting was more effective.
- What you would expect in a residential building without electricity or heat.
- They didn't have off-site servers and were not receiving my emails.
- Access to property was an issue, in particular tenant employees that lived in NYC.
- Tenants were looking to building staff to determine if they should open their offices
- Tenants showing up to work. Explained that there was no power or life safety.
- No emergency response notification in place from landlord to tenants. Emailed property manager's directly.
- Abatement requests.
- Giving them a timeline for return to building so they could make appropriate decisions re alternate space. We were aggressive and they were skeptical.
- With no power and steam we could not operate the buildings - they are clinical/medical office space.



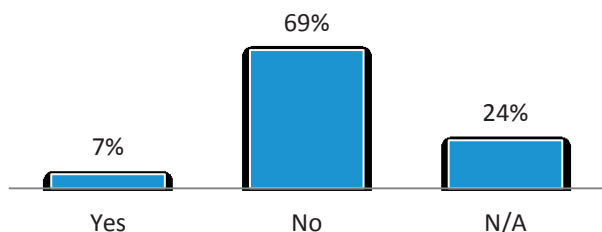
### 51. What tenant issues did you experience before, during and after the storm? (cont'd)

- Communication and factual information about when power would be restored as info was not exact from Con Edison or NYC
- Access to the property
- Very few Tenants occupied their space during the storm. The only issues were due to wind damage breaking tenant windows.
- Before: there were really no issues. During: The ability to communicate with the tenants. After: Keeping them out of the building until it was safe to go back in.
- Many retail tenants in the concourse did not have flood insurance the issue still unresolved. One tenant lost all their files in the flood - removed new files/mailroom and copier equipment to another location

### 52. How did you resolve these tenant issues?

- Conversations after the event
- Continually explaining to them of the tremendous liabilities that could impact us all if their employees were to access their space.
- We provided service to buildings and their tenants. Tenants could not get into their space at some buildings due to damages.
- We only allowed people access to retrieve items, the building was closed for the week.
- Implemented interim measures, worked through communications issues as best as possible
- Just had to live through it and do the best that we could
- Communication.
- Contacted all tenants via landline on Wednesday 10/31
- We did not. The MTA did.
- I texted, emailed and called them directly.
- We granted access on a limited basis as soon as fire alarms and elevators were restored.
- We texted when possible. We allowed tenants in 1 at a time to retrieve documents or equipment escorted by a security officer.
- We remained in constant communication via email, phone and the Code RED emergency notification system.
- Discussing load requirements and connection points.
- Develop a re-fueling system for tenants for this potential
- Installed "hot spot" Verizon in the office.
- On an ad hoc basis
- Got their personal email addresses
- Sent notice only critical staff would be permitted and asked tenant's security to manage their unscheduled visits.
- We told them if we were providing basic services it was up to them to make the call to open or not
- Allowed them to remove servers or laptops to work from home.
- AAR - After action recovery meetings to address lesson learned and what landlord could improve regarding communications to tenants.
- Leases state in acts of God we do not abate.
- We stayed aggressive and met our timelines.
- Utilities came back online
- Just talking to them
- Waited for safe and functioning conditions
- Gained access to tenant space and boarded broken windows.
- During: Texting the Facility Managers on a daily basis since most servers were down. After: Letting the tenants know that we had to perform certain system checks before it was safe for them to re-enter the building.

### 53. Did the storm surface any items in the tenant leases that you had been previously unfamiliar with?

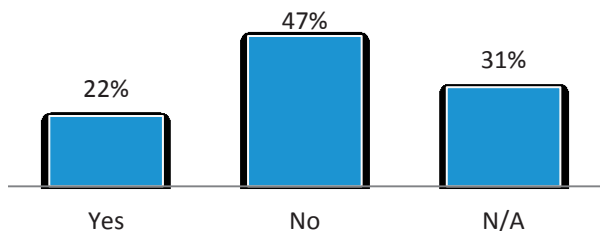


**54. If yes, what were they and how did you resolve them?**

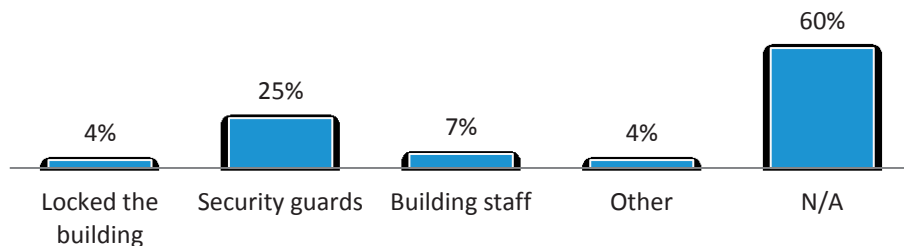
- Force Majeure clause was not clear or even present in many of the leases for certain properties.
- at other properties in which I'm not directly involved...we had work continuity issues.
- Rent abatement
- Tenants are typically unfamiliar with what the building insurance covers and what the tenant insurance covers MAJOR PROBLEM
- Restoration of below level space tied to a termination provision of office space in an older lease. New lease forms have corrected termination provisions in the event of casualties.
- Rent Abatement, responsibility for remediation; we read the leases for details.

**Security**

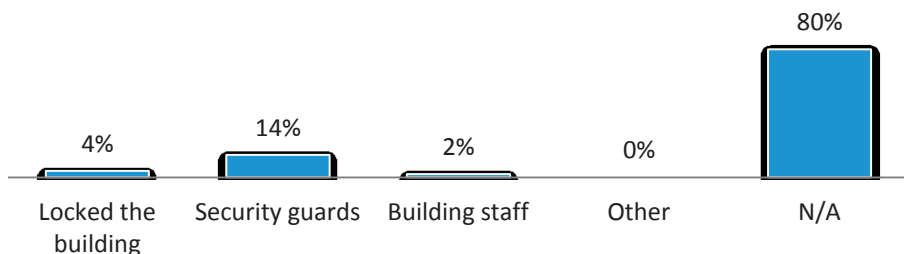
**55. If your normal building operations were disrupted during the storm, did you require additional security?**



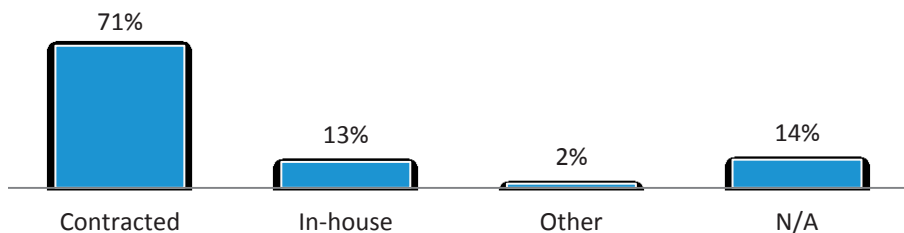
**56. If yes, how did you secure your building?**



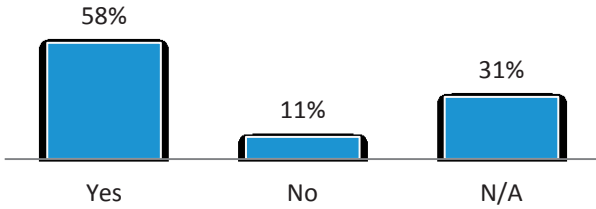
**57. How did you secure your building if it was Zone A?**



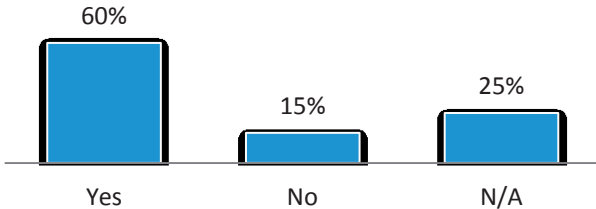
**58. Do you have contracted or in-house security guard services?**



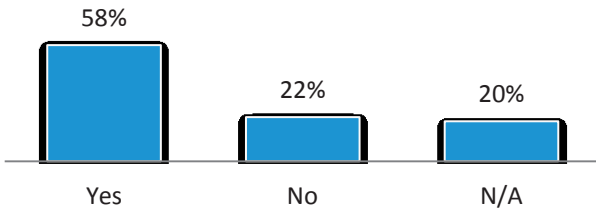
**59. Was there extra contracted security guard staff available and ready to work after the storm?**



**60. Did your contracted security guard account manager contact you prior to the storm to discuss a security plan?**



**61. Was transportation and lodging provided for your security guards at your site?**

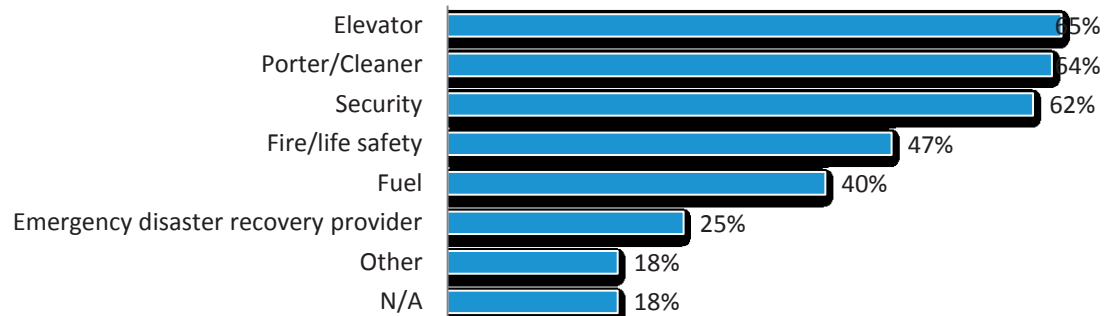


**Vendors**

**62. What vendors did you coordinate with prior to the storm?**



**63. What vendors did you coordinate with after the storm?**



## Supplies and Equipment

### 64. What additional equipment/supplies did you order and receive prior to the storm?

- Emergency supplies, sheet of plywood, sand bags etc.
- Water, fuel and sump pumps, extension cords, batteries and flashlights.
- Generators, chain saws, plywood, batteries, fuel
- Sandbags / tarps / food for sheltering in place.
- Sandbags, gas powered pump
- Tarps, batteries, roofing materials
- Just some water protection materials.
- Plywood, wet vacs, water
- Sand bags, Plywood, plastic tarps and some additional wet vacuums
- sand bags, portable generator, gasoline.
- Janitorial supplies and fuel oil
- Gas powered pumps, portable generators, water, fuel.
- Fortunately, we were stocked and prepared with emergency response equipment, and base building supplies.
- Water, canned goods and nonperishable. Refilled all Medical supplies
- Stock a large jockey pump in case of garage pump failure or flooding in the lower level of the building. Purchase hand crank and/or solar charging stations for critical employees. Purchased concrete barriers, Door Dams, or similar product [www.doordams.com](http://www.doordams.com) for buildings in flood prone areas
- Sand bags, topped out fuel for generators
- Pumps, batteries, flashlights, water, sandbags
- We normally have basic emergency supplies on hand, should have had more sandbags
- Plywood/lumber, plastic sheeting, tarps, screws, nails, top off fuel tanks on generators
- Pumps and motors
- Batteries, filters, fuel, water
- Fuel, oil, batteries, lamps, flashlights
- Sand bags, plywood, boots, gloves
- Sand bags, flashlights, batteries,
- Pumps, sand bags
- Batteries, water and granola bars.
- Plywood, 2 x 4's, batteries, gasoline, food, water, flash lights, cell phone chargers and batteries.
- Fuel for the generator and batteries

### 65. What additional equipment/supplies did you order and NOT receive prior to the storm?

- Portable generators
- Water
- Fuel

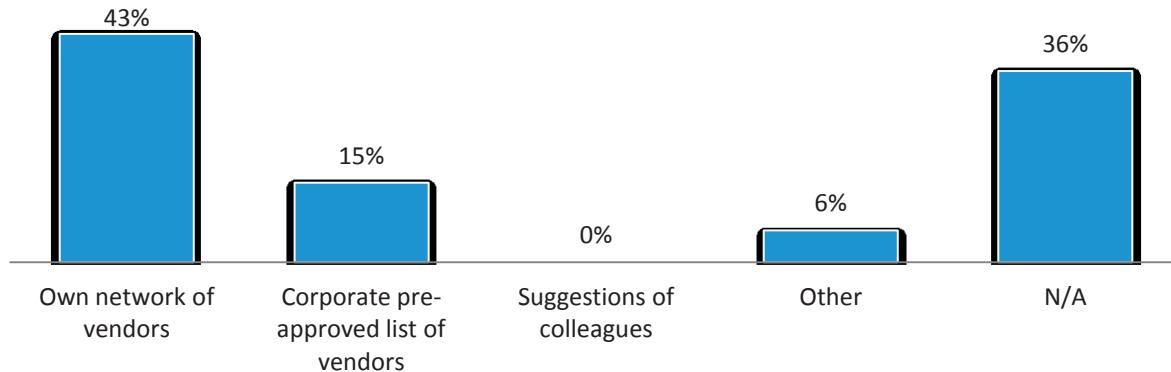
### 66. What additional supplies/equipment/vendor support did you require following the storm which you had not planned for?

- Access control and elevator systems to be reset and somewhat reprogrammed.
- Requested to identify suppliers who could provide generators for employees.
- Emergency Generator to run pump for Steam Condensate build up.
- Hand warmers, fuses, food
- Insulation work
- Life Safety. Elevators and Cleaning
- Wet vacs, flashlights, meals ready to eat.
- Food, items to support building staff
- Gasoline
- Had everything we needed. But, we are ordering more cots and blankets
- Hotel rooms
- We lost all equipment below the ground floor (walkie talkie radios on chargers, spare motors, pumps, electrical supplies, tools, etc.)
- Additional fuel for generator. Food for staff
- Food
- Electric support companies
- New fire hoses to pump out water from basement, New gas powered dewatering pump.
- Portable lighting, additional water, batteries.
- Pumps, desiccant heaters, Hazmat remediators

**66. What additional supplies/equipment/vendor support did you require following the storm which you had not planned for? (cont'd)**

- Miscellaneous supplies such as lumber
- Gas
- Diesel fuel for generator
- Portable steam boilers, additional pumps, fuel
- Autos - we needed more than we were initially able to obtain. Fuel; we did not fully anticipate the extent and duration of need
- Additional security clothing, food, medications
- Glow sticks

**67. How did you procure equipment/labor/supplies after the storm to clean your building?**



**Codes and Insurance**

**68. What code issues affected you before, during and/or after the storm?**

- Fire / life safety systems were inoperable due to no power.
- Fire & Alarm Code issues.
- Fumes from diesel spills in building and generator use.
- environmental concerns with mold concerns post storm
- fire code
- environmental - hydraulic fluid in elevator shafts.
- fire - loss of power (primary and emergency generator) took fire alarm off line.
- No phone lines. Impacts the fire alarm because the system cannot call 911 and neither could our staff. Our central monitoring station had problems weeks later when our systems were back to normal. FDNY gave us a violation for not having central station connection. Not our fault.
- Fire Alarm system notification system to central station went down
- Re-occupancy after flooding DOB codes
- Requirement for fire pumps to be at ground floor or below, fuel source for generators at lowest point in building. Also, Con Ed network protector being below grade
- after the storm we needed to get the Class E up and running before we could open the building.
- Fuel tanks in basement
- Fire Code-makes no sense, fire guards around the clock, etc
- Environmentally we called OEM and DEP for approval to pump water out of building. Restoration of fire alarm took a couple of days, there was no central station (AFA) connection for weeks! 3 lower floors are being rewired and new devices are being installed. FDNY to inspect system upon completion,

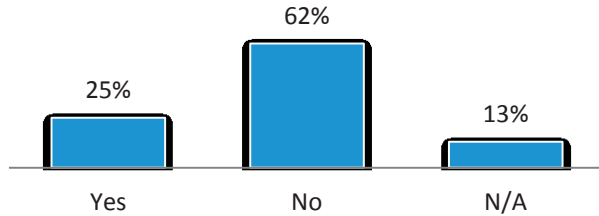
**69. How did you handle these issues?**

- OEM gave the ok for dewatering operations, had a fire watch set up for lower floors after dewatering operations still restoring the lower floors of fire alarm system
- Did not allow tenant occupancy or access due to fire / life safety systems being inoperable.
- Provided additional manpower for fire watch at various properties
- Indoor IAQ testing
- Environmental consultant brought in to do measure moisture/humidity levels. Wet drywall, carpeting, cardboard removed and replaced
- Issues with central station called central station and obtained alternate number in the event of a fire
- Vendors addressed problems as soon as able.

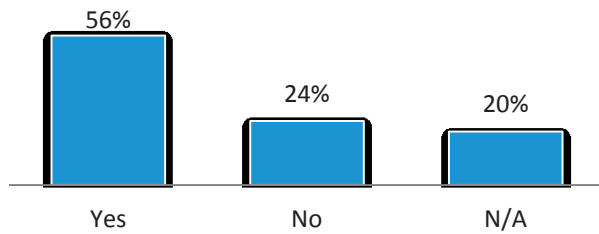
**69. How did you handle these issues? (cont'd)**

- POTS (plain old telephone) lines where available.
- Redundancy notification system
- Hire a CIH
- Consulting engineers researching alternatives or creating “submarine” enclosures to prevent future water infiltration and super pumping systems
- We had the entire system checked out and repaired prior to opening.
- \$\$\$\$
- Discussed with appropriate agencies with industry organizations

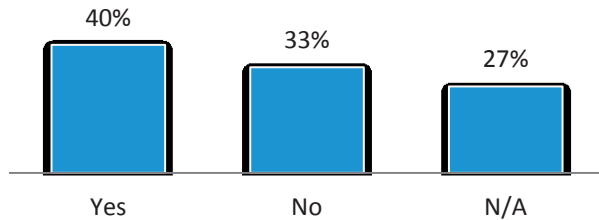
**70. Did you coordinate with your property/liability insurance company before the storm?**



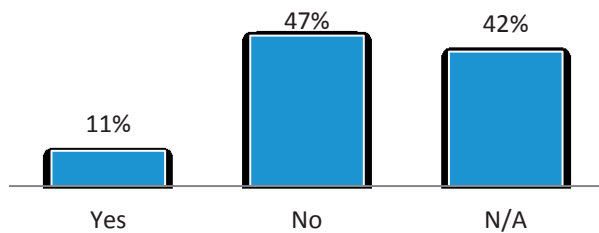
**71. Did you coordinate with your property/liability insurance company after the storm?**



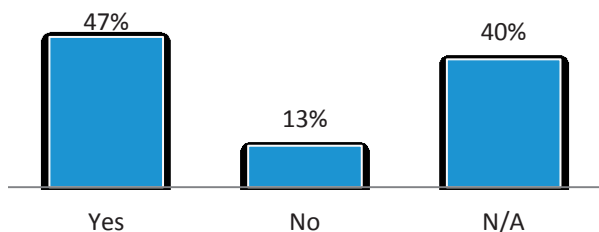
**72. Did you file a claim with your insurance company?**



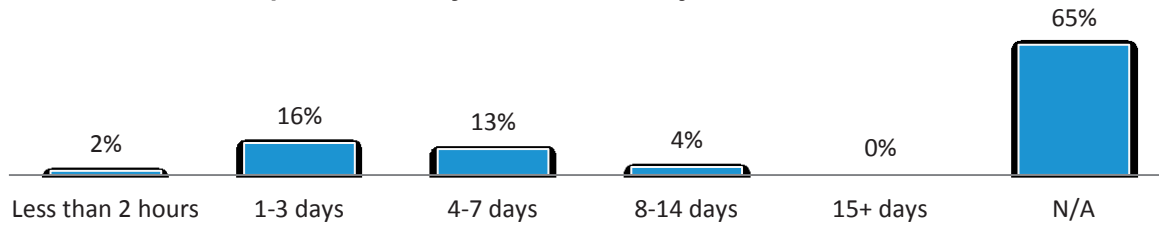
**73. Have you signed a Statement of Loss at this time?**



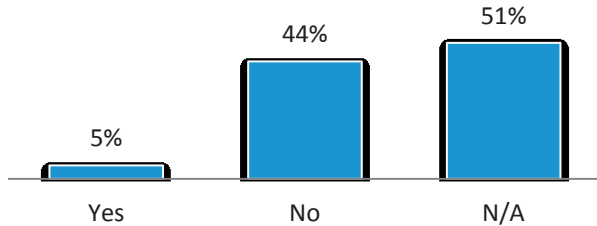
**74. Do you think that your knowledge of insurance was adequate for the recovery effort?**



**75. What was the response time of your insurance adjuster?**



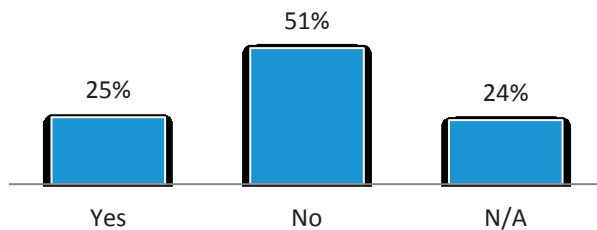
**76. Did you have any insurer/adjuster issues?**



**77. If you had insurer/adjuster issues, what were they and how did you resolve them?**

- This is a corporate matter not in my purview.
- Insurance handled by different group.
- just beginning the process
- Our insurance as well as our tenant’s insurance is claiming the power failure was due to flooding. The Con Ed station exploded on 14th St but they say that was due to flooding too. Many don’t want to pay for business interruption for having to close the buildings without power.
- LL adjuster for review
- Hire an Adjuster Intermediary

**78. Are there any issues which arose that you did not anticipate or plan for?**



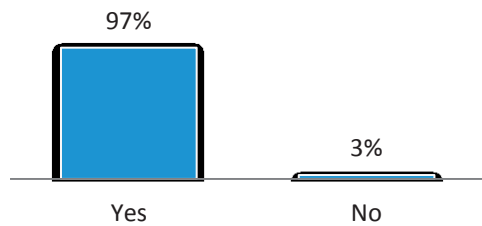
**79. If yes, what were they and how did you resolve them?**

- Need for additional lodging above what was contracted for.
- Failure of central station
- Loss of steam = no heat! We communicated with our tenants and asked for their patience, and blamed Con Ed.
- Con Edison responded and put the electrical power back on.
- Access to Manhattan after storm. Awaiting announcements of road and transit openings
- Sewage
- Transportation of staff to the buildings was handled on an ad hoc basis.
- HOV restrictions resulted in staffing access issues. A system needs to be out in place to allow building staff to drive in.
- Flood levels
- Lack of food.
- Shortage of gasoline.
- Diesel fuel
- Transportation
- Shortage of gasoline. Activated a lease clause that allowed us to access gasoline from a Tenants storage tank.

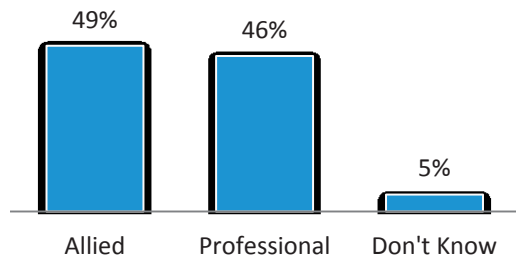


## PART V - Professional/Allied Survey Results

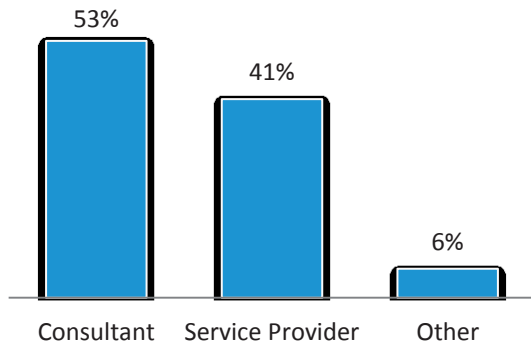
### 1. Are you a member of BOMA/NY?



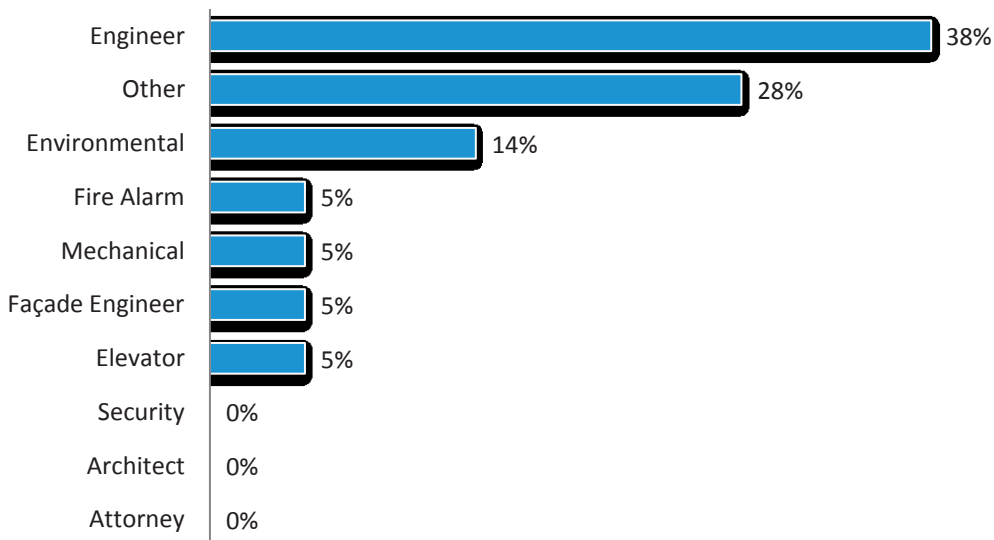
### 2. If you are a BOMA/NY Member, what is your membership category?



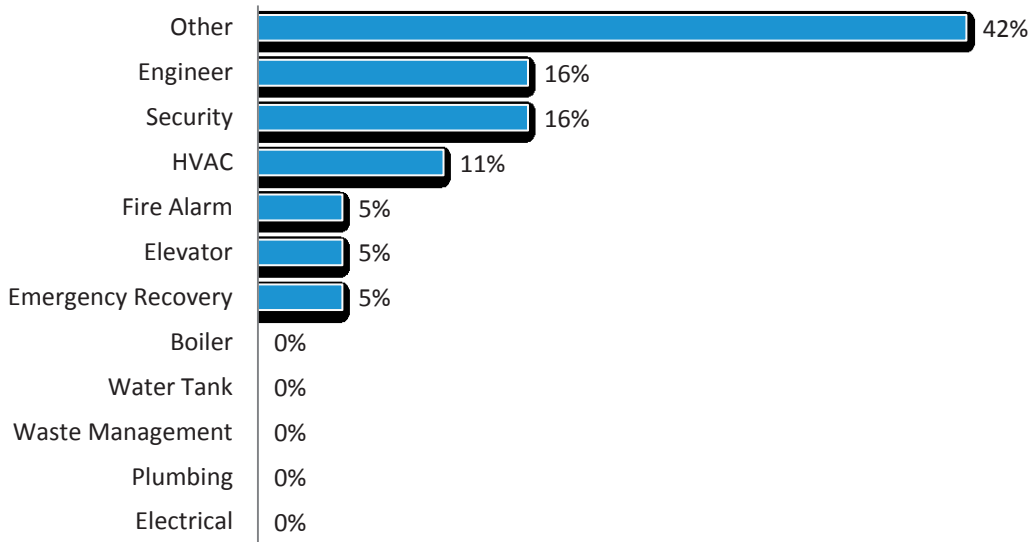
### 3. Are you a consultant or service provider?



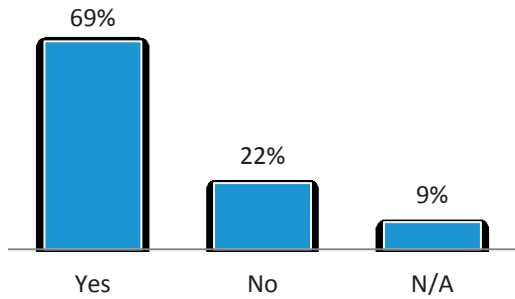
### 4. If you are a consultant, please specify which type.



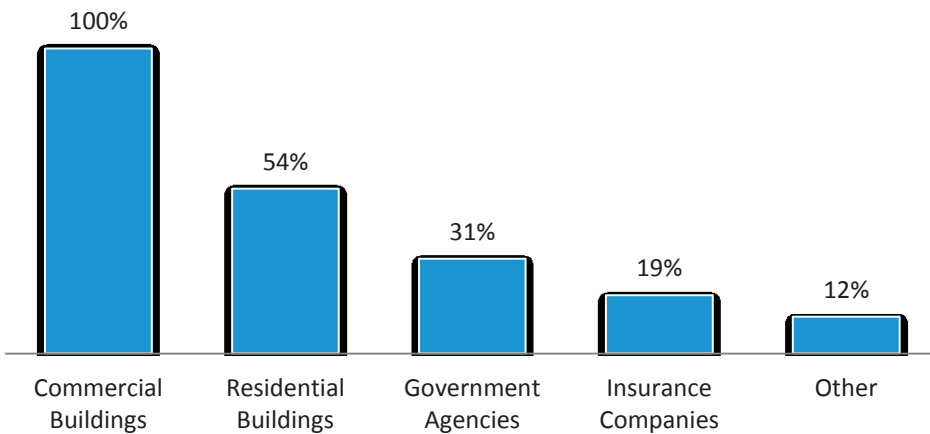
**5. If you are a service provider, please specify type.**



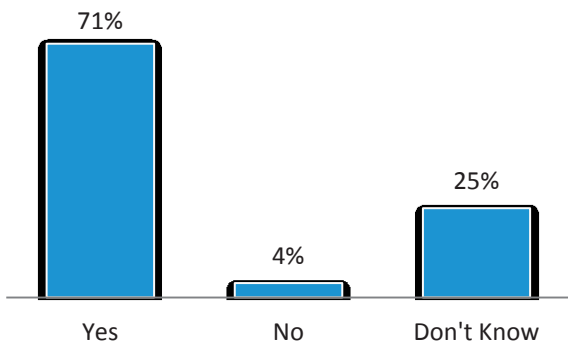
**6. Did your company participate in the recovery efforts of Hurricane Sandy?**



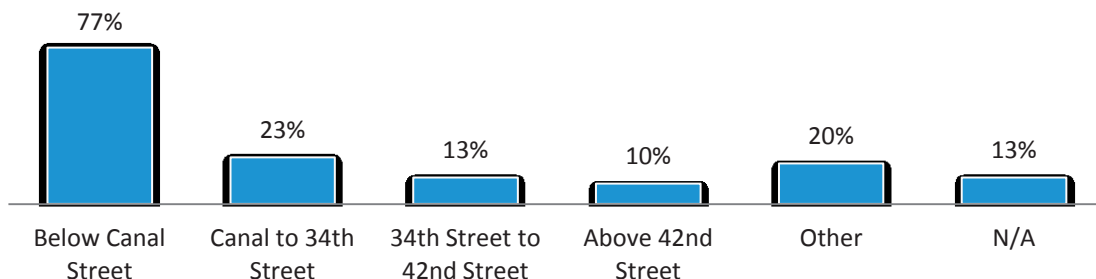
**7. If yes, what kind of customer(s) did you service?**



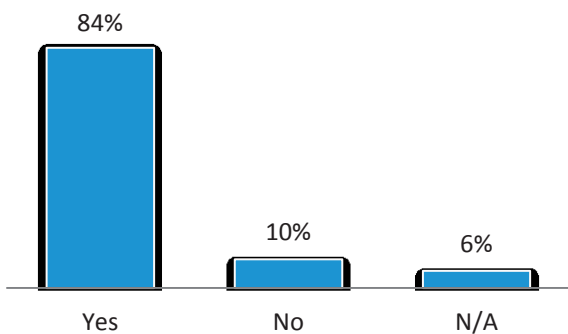
**8. Were your client(s) BOMA/NY members?**



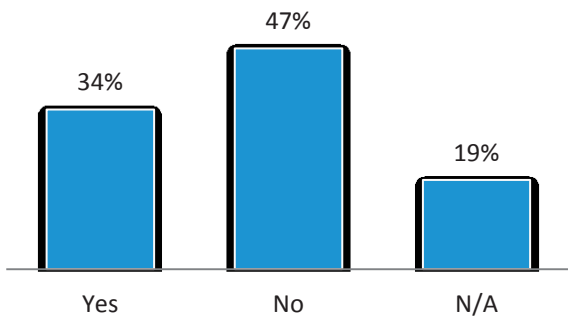
**9. In what area of NYC were the majority of your clients who contacted your company to respond to Hurricane Sandy?**



**10. Did you have clients who needed assistance that were located in Zone A? (Lower Manhattan and along the Waterfront)**



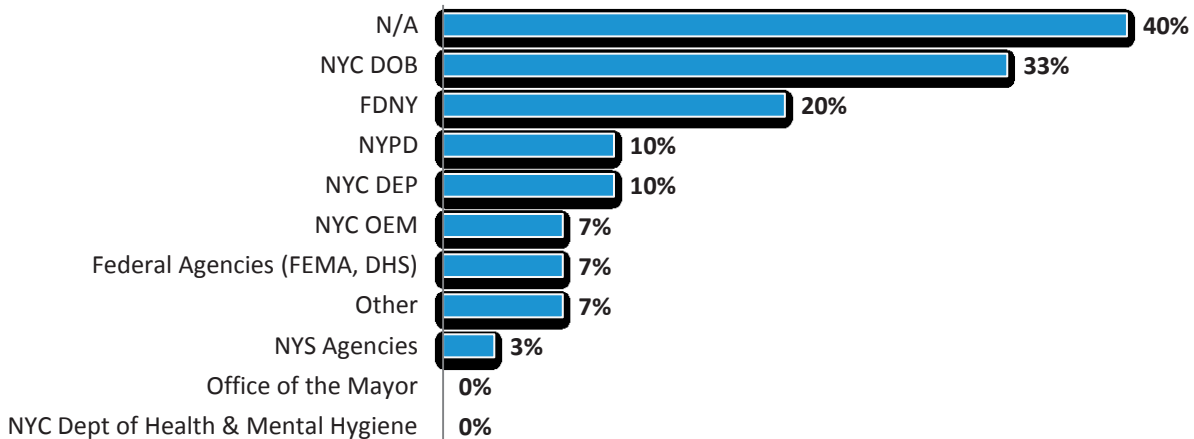
**11. Did you have difficulty responding and servicing your clients in Zone A (Lower Manhattan and along the Waterfront)?**



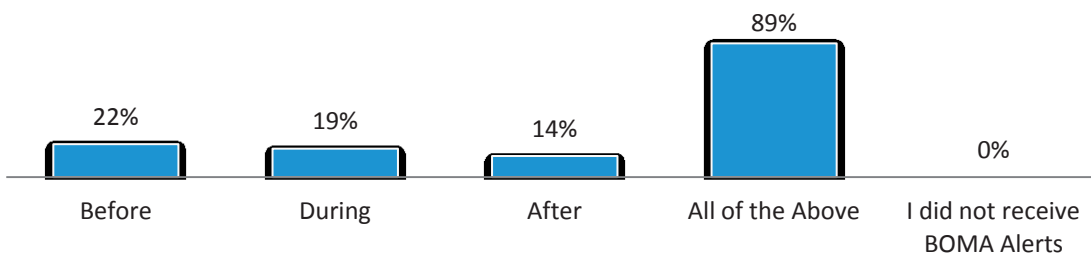
**12. If yes, what issues did you encounter and how did you resolve them?**

- Clients located in Zone A had limited or no telephone service , electricity and most major interior construction firms were off line: Turner, STI, Hunter Roberts etc..
- Access, had to wait until the building re-opened.
- The main issues were that our office was closed down for a week after the storm and we could not access our building because of our location.
- Mostly congestion and parking trucks
- Access inside the buildings.  
Clearly defining process of performing repairs and if/when the DOB was required to be notified for turning over elevators. It took a while, but notices were finally issued.
- Mainly communications issues with clients as our offices were down due to electrical outage.
- Traffic access
- Deliveries were severely hampered due to flooding
- These projects are challenging. Decisions have to made on the prudent reconditioning of flooded equipment thus saving time and thereby getting the building back up in operation so the tenants don't walk or installing new equipment. Life safety however cannot be compromised.
- Transportation to and from locations
- Getting labor in to locations

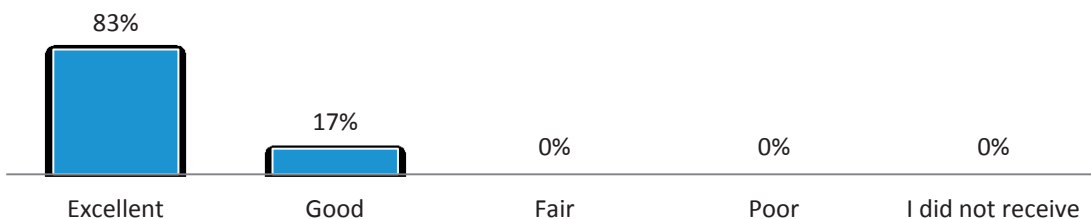
**13. What government agencies did you coordinate with before, during and/or after the storm?**



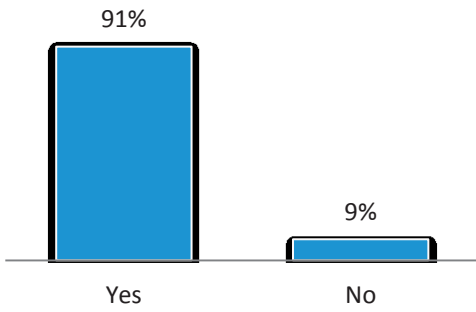
**14. Did you receive BOMA/NY Alerts before, during and after the storm?**



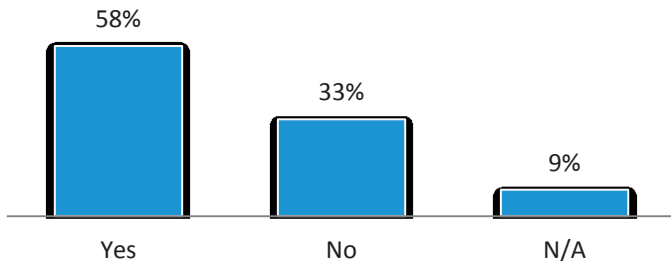
**15. Please rate the effectiveness of the BOMA/NY Alerts during Hurricane Sandy?**



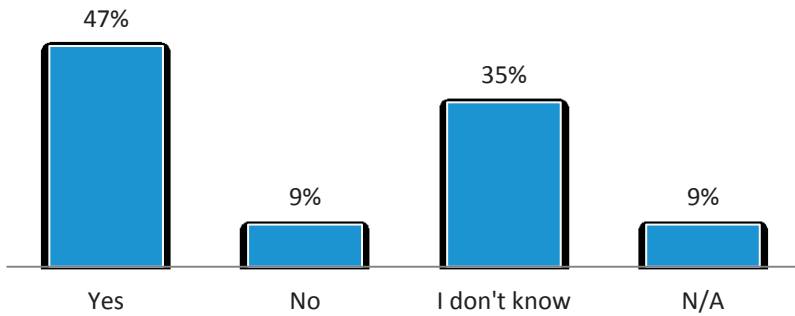
**16. Did you share the BOMA/NY Alerts with your staff?**



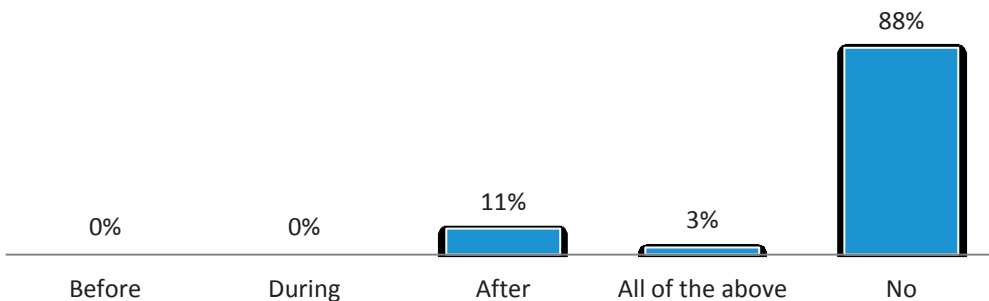
**17. Did you share the BOMA/NY Alerts with your clients who were directly affected by the storm?**



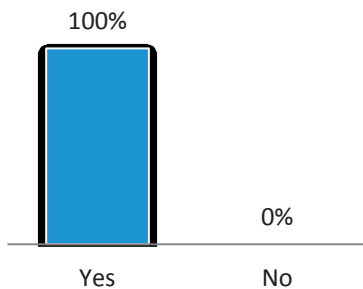
**18. Were your clients aware of the BOMA/NY Alerts throughout this storm?**



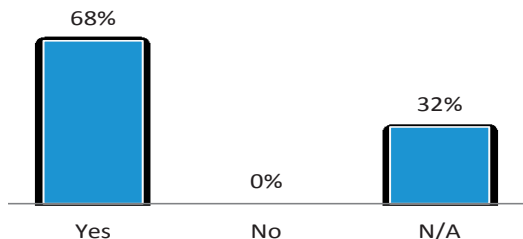
**19. Did you contact BOMA/NY for assistance before, during and/or after the storm?**



**20. If you contacted BOMA/NY, was the staff helpful to you?**



**21. Did BOMA/NY provide value to you and your company during this incident?**



**22. What other information would you have found useful in the BOMA/NY Alerts?**

- BOMA/NY provided us with all information necessary for us to conduct our business and prepare for emergency situations.
- I think BOMA/NY was outstanding. There were no communications from CORPNET or IFMA.
- Especially liked the notices of waivering permits

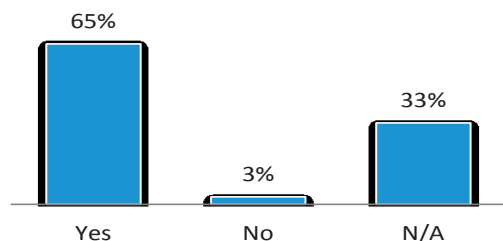
**23. What code issues affected you during and/or after the storm (for example, building code, fire, environmental)**

- Believe existing emergency generator fuel supply and storage/location codes require immediate review.
- We assisted with the re-occupancy of 15 commercial properties. Every issue and code was impacted.
- Underground fuel oil tanks & DOB & FDNY rules
- Building code for fire alarm systems, fire code for alarm system maintenance
- NYC Building code does not allow one to pump to the street. All our clients requested that we provide pumps and pump to the street. We referred them to other vendors who illegally performed the service.
- During height of storm, NYC DOB received reports of crane on WTC tower 4 spinning, it was set to weather vane and they inspected. Then crane failed in midtown and that lead to conference calls on what did we do with our cranes at WTC site vs. midtown. Re inspection of cranes and hoists following storm.

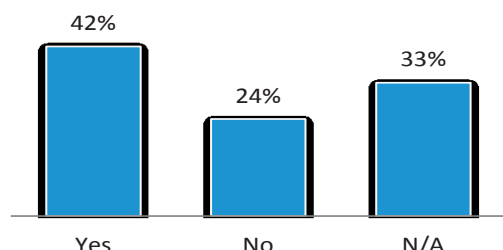
**24. How did you handle these issues?**

- We created a dedicated team for the recovery effort and shared our working experience with each successive owner. The benefits of shared intelligence helped ease the crisis. Information is key.
- Sent email to FDNY who gave ASAP solutions to repair
- We turned down the work.
- PA has crane expert on staff at WTC site. All cranes were rigged per design for hurricanes. The Crane's Prof. Eng. then re-inspected each crane on site before we allowed them to return to service.

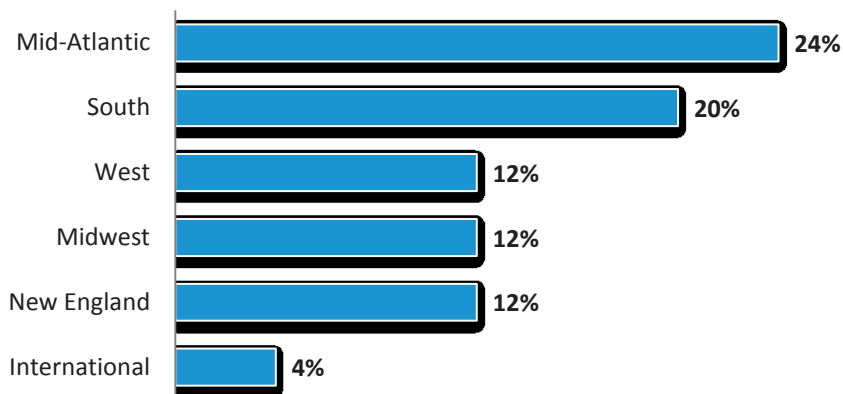
**25. Did you have the necessary equipment/labor/supplies to respond to your clients?**



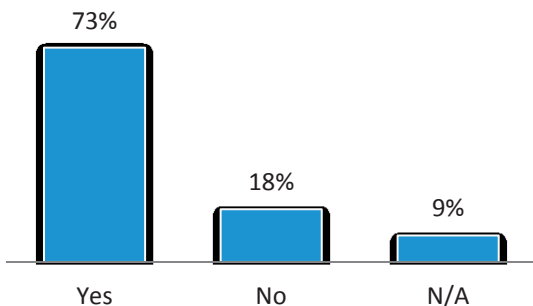
**26. Did you have to order additional equipment/labor/supplies from outside of the NYC Metropolitan Region?**



**27. If yes, where did your additional equipment/labor/supplies come from?**



**28. Did you have any issues with your employees not being able to report to work due to storm damage?**

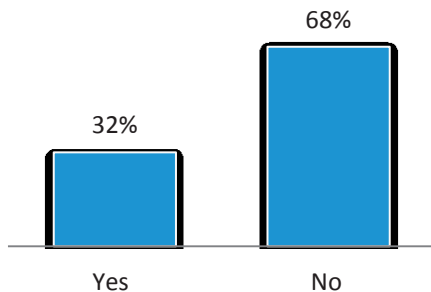


**29. If yes, how were you able to respond to customer calls?**

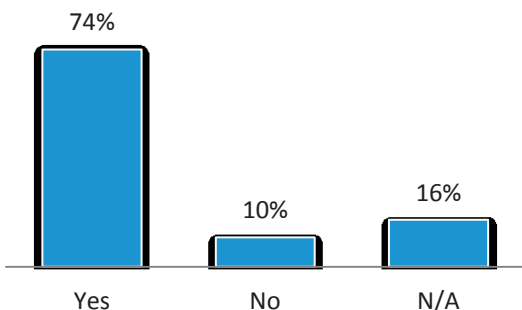
- Some of our team was able to work remotely via email/cell phone to handle calls.
- We had power and eventually phones. We maintain a data base on all clients including their cell phones.
- Yes, ran overtime to cover shifts
- Cell phones, e-mail.
- Lodge locally hotels.
- Reduced capacity for only a couple of days though the volume was also decreased.
- Folks worked out of their homes and were contacted by our team there.
- Emergency systems
- We rented hotel rooms for our techs to stay in Manhattan before & during the storm until tunnels/bridges were reopened.
- The first week, with little to no LIRR service for most of the week and tunnels closed or limited to 3 people, most of my Field Employees (Inspectors) were unable to get into Manhattan.
- Back-up server files (primary server no power or Verizon data lines), smart phones
- Via cell phone and alternate email accounts
- We carpooled employees and purchased gasoline for them for their cars from out of the area
- Not easy
- We have a large enough staff that we were able to respond to our clients with the staff that were able to report to work.
- We booked 15 hotel rooms for several days beginning on Sunday knowing that mass trans would be knocked out.
- With limited staff
- Although we had no damage, Verizon did not provide phone service.
- Cell phones and email
- We had multiple staff have to drive in and car pool to get downtown and work extended hours as we pumped out WTC basement



### 30. Was your business closed due to storm damage?



### 31. In working with your customers who were affected by storm damage, were you able to begin work quickly?



### 32. If no, what issues hampered your response time?

- Lack of transportation and access to lower Manhattan.
- Gasoline shortage had an impact
- Communications and transportation
- Reliable public transportation

### 33. What issues arose that you did not anticipate?

- Did not nearly anticipate the total scope of damage.
- Placement of emergency equipment on roadways and sidewalks that blocked emergency access to fire hydrants and siamese connections.
- Phones down for a week and a half. Had all calls forwarded to one cell phone that rang and rang.
- Magnitude of damage
- Fuel shortages were definitely a concern, but for the most part did not affect our operation.
- Backup batteries in flooded basements destroyed (corroded) everything in the basements. Good part was the acid was toxic to mold growth and most ecoli. The bad part was cleanup crews not aware of the acidic water on everything - their clothes got holes in them the next time they washed them.
- Elevators recalling during emergency power caused some elevators to be submerged where pits and lobbies were filled with water.
- Limited access into Manhattan.
- Problems getting over the road truckers to deliver into the NY area in order to replenish inventory
- Gas
  1. Availability of fuel
  2. Tunnel closures
  3. Mass transit closures
  4. Complete blackout areas
  5. Unsafe areas for our staff to travel through to service our clients
- We are still without Verizon service and we did not expect it to be out this long. The latest info we received from Verizon is the lines should be up in the spring.
- Street closures downtown Manhattan, restricted access on tunnels and bridges

### **33. What issues arose that you did not anticipate? (cont'd)**

- The total loss of power to the site by Con Ed substation failure was not anticipated. We had emergency power for key functions like police but we brought in additional units to power up 1 WTC construction hoists etc until we got Con Ed power restored.
- The swiftness and height of surge was more than we were told to expect by National Weather Service; conf calls with PA OEM.

### **34. What steps can your company take to improve its response time to customers in a future natural disaster?**

- Our supply must exceed the demand
- We could not have handled the clients and city agencies any better. We developed the affidavit process for the DOB with the help of AKF Engineer.
- Have more manpower available in terms of service techs and back-up generators.
- Tough question
- Testing ALL internal systems to ensure proper operation during power outage and being prepared for a longer than expected outage. Alternate emergency contact options would be helpful as well. Lastly, using an auto-notification for our employees would be helpful in communicating updates, information, etc.
- I never dreamed to put backup batteries for systems above the basement level!
- Change EP system to prevent automatic recall on EP.
- Locate email servers off site.
- We responded well.
- Get multiple 5 gallon gas storage.
- We were well prepared, but having an emergency generator installed in our building would be very helpful in the future.
- Rent more vehicles just prior to the storm.

### **35. Please name the things that worked well during this recovery effort.**

- Full cooperation and total communications between our management staff and employees
- BOMA/NY Alerts
- Staying in constant communication with clients (email, cell phones).
- Back up supplies, emergency phone system, back up power, dedicated staff
- Keeping technicians in the NYC prior to the storm arrival was key in keeping our response at proper levels.
- I had an emergency generator at my residence so I could survive 7 days of no power or phone service and still be able to respond to flooded buildings during that time by having my residence safe.
- Communications.
- Our employees made it to work and cooperate fully in our efforts to support our customers
- Not government
- Our team and our clients worked well together.
- We found temporary office space that worked well although it was very expensive.
- Cell phones and email
- Major construction contractors on site like 5 star electric, Skanska, Tishman etc Immediately swung from construction mode to getting ready for Sandy and when it hit we had a great deal of extra pumps etc ready, and great deal more immediately were mobilized once storm surge hit and basement was pumped out of 125 million gallons in roughly 5 days.

### **36. Do you have any comments that could help us in the future?**

- Keep up with all the great communications.
- Keep up the great job. This is a sign of leadership.
- BOMA/NY worked great - special thanks to Sly
- Keep your back up batteries out of the basement!
- Change EP system to prevent automatic recall on EP.
- Survey is too long
- Fire Bloomberg, stop electing mayors who don't care about businesses and make it hard to conduct business in NYC as well as more expensive. I'm to blame as well since I voted for him. lol.
- Keep doing what you're doing.

BOMA/NY is the greater New York association of BOMA International, the world's largest trade organization and leading representative of the real estate industry. BOMA/NY is the largest local association within the BOMA federation, with more than 750 companies as members, which own and/or manage 400,000,000 sf of commercial and retail real estate, including some of the world's most prestigious properties. BOMA/NY members represent the largest industry in New York City; generate approximately \$1.5 billion in annual tax revenue, and serve as the first line of defense for New York's working public, accountable for the safety, physical well-being and security of the City's 3 million office tenants. The Association is a leader in providing educational coursework leading to the RPA, SMA, SMT and FMA designations; an ardent advocate on issues such as green buildings legislation and preparedness, and sets the operational standards for excellence in New York City through its prestigious Pinnacle Awards, recognizing building teams and individuals for exceptional operational service and innovation.

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