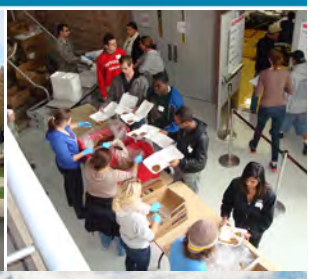
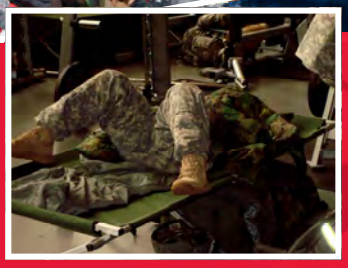
RUTGERS





EMERGENCY PREPAREDNESS TASK FORCE REPORT

Hurricane Sandy, 2012

RUTGERS

THE STATE UNIVERSITY
OF NEW JERSEY

EMERGENCY PREPAREDNESS TASK FORCE REPORT
HURRICANE SANDY 2012

This report was prepared at the direction of President. Robert L. Barchi.
Its discussion and distribution will be governed by the Office of the President,
Rutgers, The State University of New Jersey.

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Publication Date: March 2013

March 28, 2013

President Robert L. Barchi
Rutgers, The State University of New Jersey
83 Somerset Street
New Brunswick, NJ 08901

Dear President Barchi,

On behalf of the members of the Rutgers Emergency Preparedness Task Force, I am pleased to present this report. The task force was created in response to directions received from you to investigate and report on the devastating impacts Hurricane Sandy had on the State of New Jersey and, more specifically, the Rutgers community.

The Emergency Preparedness Task Force was charged with documenting the lessons learned as a result of Hurricane Sandy and comprehensively evaluating:

- the needs of the Rutgers community during emergencies;
- what services are essential for the continuity of operations on our campuses;
- the adequacy of the procedures we have in place for Emergency Management;
- methods to improve communication of life safety information; and
- how we can better prepare for, respond to, and recover from emergencies and other potential disruptions of services.

I look forward to discussing the task force report with you as Rutgers continues to work collaboratively to implement the recommendations that will further improve the emergency preparedness of Rutgers.

Sincerely,

Jay Kohl
Vice President
Administration & Public Safety

ACKNOWLEDGEMENTS

Greatest appreciation must be given to Vice Chair Barbara Bender, for her valuable and constructive contributions during the planning and development of this report. Her willingness to give so much of her time, as a member of the Emergency Management Team and in the writing of this report, is deeply appreciated.

Particular gratitude should be extended to the members of the Administrative Sub-committee (Steve Keleman, Melissa Marrero, and Lauren McLelland) as well as to Jay Rimmer, Senior Program Coordinator for the Graduate School-New Brunswick, who ensured that this project stayed on task and provided editorial support.

Special thanks is also provided to Kate Immordino, Director of Organizational Research and Assessment, and Alicia Raia, graduate student and teaching assistant in the Graduate School-New Brunswick, for their development of the student and faculty/staff surveys distributed to assess Rutgers response to Hurricane Sandy .

Thanks should be given as well to the sub-committee chairs and their work groups, who submitted their own individual reports in addition to providing editorial feedback on this full report.

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EMERGENCY PREPAREDNESS TASK FORCE
HURRICANE SANDY 2012

EXECUTIVE SUMMARY

Publication Date: March 2013

EXECUTIVE SUMMARY

When Hurricane Sandy hit New Jersey on October 29, 2012, the force of the storm far exceeded predictions. Sandy was extremely powerful and had a devastating impact which resulted in the loss of power for the majority of New Jersey's residents and businesses. The storm left a trail of significant destruction and problems for the Rutgers Camden, Newark, and New Brunswick campuses and satellite locations.

As a result of a combination of good luck, an excellent emergency preparedness system, an all-hazards university emergency operations plan, and dedicated personnel working together as a unified team, Rutgers was fortunate to report that no on-campus injuries were suffered. Of all our locations, and despite the initial forecasts as being the site for the greatest likelihood for the storm's landfall, the Camden campus had the fewest number of problems and avoided a direct hit from Sandy. The Newark campus lost power and the satellite locations had various damages, but, overall, the New Brunswick campus had the most challenging and complicated problems to resolve. Residence halls and laboratories lost power, trees and downed power lines blocked streets, networking capabilities were compromised from unit-based servers that lost power, and the New Brunswick water supply was threatened. Still, Rutgers emergency operations plan worked and the years of collaborative emergency training and preparation made a difference in the execution of critical decisions before, during, and after the storm.

In preparing for, responding to, and addressing the aftermath of Sandy, Rutgers leadership monitored the needs of its 70,000 students, faculty, and staff across New Jersey and kept personal and community safety as its primary mission when making decisions. Rutgers has one of the largest university residential student populations in the United States and a vibrant, electricity-dependent research enterprise. Accordingly, staff needed to be on-site to prioritize and coordinate the use of limited resources and to ensure the safety of individuals and continuity of our most critical operations, services, and research activities on all campuses. These staff led the safe evacuation and transportation of approximately 6,000 student residents to alternate on-campus evacuation sites when the power supply was lost and the water systems were threatened. The exchange of information, sharing of resources, providing of support and expertise, and collaborations between campuses during this extremely challenging and stressful time was exceptional. As a result, all campuses were involved in decision-making, kept informed throughout the storm, and received assistance when needed.

At the same time, during this catastrophic event, Rutgers University provided services far beyond the scope of the campuses and served in a vital leadership capacity in the state's survival and recovery network. The university successfully activated, directed, and coordinated sheltering projects for displaced state and county evacuees and other on- and off-campus populations. A regional food distribution site was also established at Rutgers to provide desperately needed food and supplies to multiple states on the east coast.

Within days of Rutgers returning to full operations, President Robert Barchi directed Vice President Jay Kohl to form a Task Force to conduct a thorough assessment of the university's emergency preparedness by evaluating problems that occurred and actions taken to ameliorate them in response to Hurricane Sandy. Additionally, the Task Force was charged with identifying

strengths, areas requiring improvement, and making major recommendations to improve the university's preparedness for future emergencies. The complete report that follows this Executive Summary contains the details related to all aspects of managing the storm's impacts and the reports from the twelve sub-committees that were formed to assess our specific responses to Sandy-related problems. Given the mission of our academic community, it is important to specify that this report is an operational analysis of our administrative planning and actions in light of the best practices in emergency management and higher education administration; this is not a research report.

The report also includes results from surveys that were sent to all members of the Rutgers community. In addition, sub-committees representing all three campuses focused on research, technology, facilities, student affairs, academic affairs, communications and media, emergency operations, finance, employee relations/human resources, and business continuity. These sub-committee reports are included as appendices to the full report. To complete this project, the Task Force established a regular meeting schedule and its leadership had many individual communications with sub-committee members. Additionally, four academic leadership meetings were attended by the leaders of the Task Force, and students were consulted in an effort to seek feedback on the university's response to Hurricane Sandy. The survey sent from President Barchi also provided broad opportunities to comment on the university's response to the storm.

While many positive findings are highlighted in the report, numerous areas for improvement were also identified. The Emergency Management Team, comprising representatives from all divisions of the university, was recognized as one of the university's strengths. This group's ability to work collaboratively during emergencies reinforced the value of this professionally diverse team. Clearly, prior training and partnership building paid huge dividends during this catastrophic event. Similarly, many other dedicated faculty, staff, and students worked around-the-clock, spending countless hours at university shelters, sleeping on cots, in offices, or labs as they contributed to the response and disaster relief efforts provided by Rutgers.

It was instructive to note that many of the areas acknowledged as requiring improvement only emerged as a result of this exhaustive review. Clearly, a review of the university's preparedness was important and turned out to be extremely informative. This assessment, however, was not performed to assign blame or fault, but to help establish a foundation for the recommendations that follow. In many cases, the challenges identified by the sub-committees have already been addressed and some of the recommendations have been implemented. A complete list of all recommended improvements is included in the 12 sub-committee reports.

The most significant areas of concern that resulted from this review involve the lack of business continuity and contingency planning, the need for a better understanding of the emergency management functions, the apparent lack of clarity of the adverse weather policy, and confusion over the designation of essential personnel. Additionally, recommendations regarding electronic communications, access control, generators, and power supply issues are addressed. Finally, recommendations will include the need for developing better and alternate communications systems between and among departments and their constituencies.

The following is a summary of selected major task force recommendations:

1. **Develop a university policy for business continuity planning**
   The policy will prescribe actions to preserve and protect assets and ensure the continuity of operations during emergencies.

2. **Identify locations that need emergency generators and re-architect RUNet**
   The Office of Information Technology will analyze how RUNet's topology could be revised to leverage any deployed emergency generators to improve the responsiveness and resiliency of the university's systems.

3. **Designate emergency work sites**
   Specific Rutgers building will be designated as emergency worksites where units can relocate their staffs during an emergency or major power outage. Business units will identify essential services, establish hardware and software requirements, and deploy business continuity plans in order to remain operational.

4. **Procure a Rutgers private IT cloud**
   Rutgers will identify essential services currently deployed in spaces without backup power and relocate them to resilient areas with redundant power.

5. **Improve IT infrastructure at Rutgers University**
   The Office of Information Technology will evaluate the RUNet Infrastructure to harden/secure the necessary pathways for essential resources that need to remain in fixed locations with access to the Internet. Hardening all RUnet pathways will require extensive funding.

6. **Identify mission critical research operations**
   Critical services, operations, research areas, and animal facilities must be both identified and prioritized to prevent future losses. These areas require a comprehensive business continuity plan and should be the first to be surveyed.

7. **Mandate adequate staffing of EOC**
   The Emergency Management Coordinator will ensure adequate staffing of the EOC during activations of the EOC to address unnecessary operational problems and reduce excessive burdens placed on those who are required to fill voids created by limited staff.

8. **Develop a university policy for emergency management**
   The policy will articulate the roles and responsibilities outlined in the Emergency Operations Plan for the Executive Leadership Group, Emergency Management Coordinator, Emergency Management Team and the Emergency Operations Center during times of crisis.

9. **Revise University Policy 60.3.16 *Attendance During Adverse Weather Conditions***
   The policy will confirm that the safety of all employees is the highest priority while clarifying roles and responsibilities during weather and other emergency events.

10. **Test the cogeneration plant**
    The co-generation system will be tested from a "power failure status" and then restarted with careful monitoring of all facilities and systems during the 8-12 hours that such a test would require. This exercise would reveal the number of buildings we can put under load, power down and re-energize under normal conditions.

11. **Clarify communications procedures**
    An information center will be established to coordinate incoming and outgoing information, with a particular focus on emerging trends and rumor control. University Relations will designate a liaison for the EOC and the information center and develop a checklist for communications to ensure all important points are addressed and distributed quickly.

In light of the lessons learned during Hurricane Sandy, the Emergency Preparedness Task Force has prepared this report for your review and consideration. We believe that there is a need to support and move forward with these recommendations. We also believe that implementing these proposed changes will further enhance our ability to deliver exemplary public safety services to the Rutgers community and improve the university's overall emergency preparedness.

EMERGENCY PREPAREDNESS TASK FORCE
HURRICANE SANDY 2012

TASK FORCE REPORT

Publication Date: March 2013

EMERGENCY PREPAREDNESS TASK FORCE REPORT
HURRICANE SANDY 2012

OVERVIEW

Hurricane Sandy was the worst storm to ever hit the Mid-Atlantic States. "With a 940 mile storm diameter, wind gusts reaching near 100 mph, a storm surge of 12.5 feet and the lowest ever recorded atmospheric pressure in New Jersey of 940 millibars, the impact of the storm on October 29-30, 2012, was devastating."[1] Power was lost to 94% of New Jersey, trees were uprooted, all mass transit was suspended, homes were flooded, landline and mobile telephone service was disrupted, Internet access was unreliable, and the tri-state region was in a state of emergency. According to the National Weather Service Forecast Office in Philadelphia/Mount Holly[2] "Preliminary estimates suggest Sandy was the second-costliest Atlantic hurricane on record (behind Hurricane Katrina)."

Rutgers University's campuses and outlying properties were not spared from the impact of the storm. Multiple problems and emergencies arose in Camden, Newark, New Brunswick, and our satellite locations, but the most important detail for this report is the fact that there were no on-campus injuries related to the storm. As documented here, Rutgers proactive and collaborative approach to emergency management, coupled with extremely dedicated staff, faculty, and students clearly influenced this positive outcome. The monitoring, pre-planning efforts and immediate mobilization of trained emergency management teams, representing the most critical areas of the university, enabled proven and established protocols to be effectively applied to the unique challenges presented by Sandy. Although the Rutgers Office of Emergency Management conducts routine training exercises to test the university's emergency preparedness, prior training scenarios, unfortunately, did not envision an event that would deliver so many problems and infrastructure failures, both community and campus-based, in such a short period of time that was not resolved for weeks. Consequently, we learned a great deal from this storm and were able to identify a myriad of vulnerabilities.

This report will detail Rutgers Emergency Management's planning for, response to, and recovery from the storm. Developed through the collaborative efforts of the university community on all campuses, a steering committee was appointed to provide coordination for the work of 12 subcommittees. Data were collected through two surveys that were distributed to all faculty, staff, and students. The report is comprehensive and provides specific information that will assist with policy development and planning for future emergencies. The Executive Summary highlights the most important details related to the storm, the strengths and challenges pertaining to the Rutgers response, and the major recommendations for the future. The report includes the work of the subcommittees and all subcommittee reports are in the appendices.

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[1] "Sandy is already the largest hurricane to ever hit the U.S. mid-Atlantic and Northeast regions." (Scientific American, November 7, 2012, Fischetti, Mark http://www.scientificamerican.com/article.cfm?id=sandy-vs-katrina-and-irene.

[2] http://www.erh.noaa.gov/phi/storms/10292012.html.

BACKGROUND

I. Office of Emergency Management

Under the auspices of the Division of Administration and Public Safety, the Office of Emergency Management (OEM) became a separate department within the Division of Administration and Public Safety in 2007. Preparing for emergencies and working with key university leaders on major events, however, has been an institutional mandate since the 1980s. Viewed nationally as a benchmark program,[3] Rutgers OEM is staffed by certified professionals and provides leadership in preparing the Rutgers community for a broad range of emergencies. The ultimate goal of OEM is to ensure the safety of the community while continuing daily functions in as seamless a manner as possible. Joined by representatives from across the university, local law enforcement, and public safety representatives, the group utilizes the Emergency Operations Center (EOC) as a base of operations (See Appendix C for the names of the members).

Rutgers' OEM historically focused on campus-based emergencies such as laboratory explosions and crowd-control issues. After September 11, 2001, however, the mission and training of emergency management expanded significantly to include terrorism related concerns, and, following the Virginia Tech shootings in 2007, active shooter episodes and related incidents. Ultimately, the OEM developed the current "All-Hazards Emergency Operations Plan (EOP)"[4]. These events resulted in the formation of expanded partnerships with local, state, and federal agencies. Rutgers took the initiative in developing and implementing both table-top and full-scale exercises which incorporate real world scenarios that have included the New Jersey National Guard, the New Jersey Office of Homeland Security and Preparedness, state and local municipal police, and other public safety personnel (both internal to Rutgers and external representatives from other institutions of higher education) from across the state. These major training events, involving hundreds of participants, were, and continue to be, very successful and earned Rutgers the reputation for being a leader in the field of emergency management and preparedness. The long-term mutual aid partnerships that have resulted from these collaborations have been invaluable and have made an enormous difference as Rutgers addressed the broad range of issues, both campus-based and state-wide, caused by Hurricane Sandy.

The following chart represents how the mutual aid partners would respond to an emergency at Rutgers and demonstrates why it is so important to have regular drills that test their preparedness.

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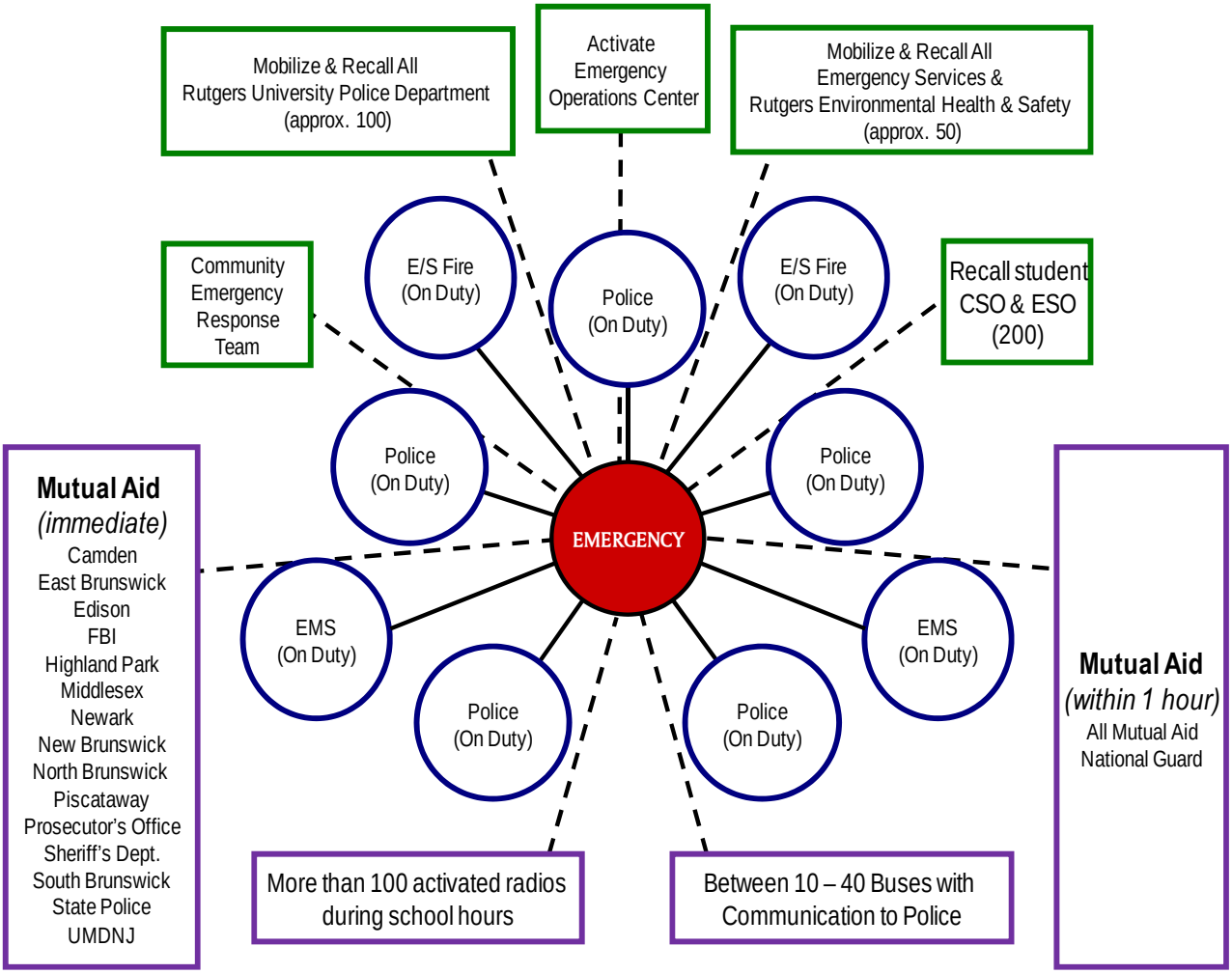
[3] The New Jersey Office of Homeland Security and Preparedness (OHSP) has utilized the services of Rutgers OEM to train the other NJ colleges and universities in conducting emergency management exercises. The International Association of Campus Law Enforcement Administrators (IACLEA) featured the Rutgers' Emergency Operations Plan as a model at its 2011 annual conference.

[4] This is the Federal Emergency Management Agency (FEMA) model that is based on the National Incident Management System (NIMS) and Presidential Directive #5. Rutgers is in compliance with these guidelines making us eligible for federal funding and support.



The extensive training and preparedness of the OEM has resulted in the expansion of services far beyond the scope of Rutgers campuses. Designated as a key provider of support for those in need in New Jersey, Rutgers provides shelters, regional food distribution and preparation sites, and other forms of assistance to residents from across the state during adverse weather conditions or other emergencies. The university's success in providing shelter during Hurricane Irene not only prepared us for Sandy but was publicly recognized by Governor Christie and further illustrated the multiple roles that our OEM performs. The OEM serves not only Camden, Newark, New Brunswick, and our extension locations throughout the state, but fulfills an extraordinarily important service function by providing the facilities, support systems, and expert staff to direct and implement successful evacuations for fragile and displaced populations during times of crisis in New Jersey. (See http://emergency.rutgers.edu for a complete description of OEM's activities).

In keeping with best industry practices and as a benchmark program in emergency management, Rutgers OEM always develops an after-action report following major events that require the activation of the Emergency Operations Center (EOC). These reports describe the nature of the

activation event, actions taken, how problems were resolved, lessons that were learned, and recommended changes for the future. The reports are then reviewed by the entire EOC group and the recommendations, where appropriate, are adopted when preparing for future emergencies. This Emergency Preparedness Task Force Report, however, is unique in that it was commissioned by President Barchi and is broader in scope than the typical after-action report.

II. Operational Responsibility and Authority of the Emergency Operations Center

The university's Emergency Operations Plan[5], in section A of *Continuity of Government*, provides the authority to compel personnel to perform needed services. This authority was exercised during Sandy. During Emergency Management exercises that are held during work hours, the lack of participation has not been a problem. During periods of an actual EOC activation (i.e., during Sandy and other emergencies) voluntary participation has proven to be an issue and might require the exercising of this authority in the future. In addition, section E of that plan under *Operations and Control* of the EOP states: "Upon declaration of a University Emergency, university resources will be coordinated by the Emergency Management Coordinator."[6] Not only is it critically important to exercise this authority when it is required, it is equally important for vital personnel to understand their responsibility to comply and perform their duties as directed. While there is clear authority for decision-making, it was not uniformly executed or understood. In some cases, unilateral unit-based decisions were announced or made independently without appropriate vetting or consideration; in hindsight, some of these decisions should have been overturned and selected personnel should have been required to provide their needed services. In recent years, the opportunity to participate in EOC activations by telephone conference has been offered and expanded. In light of the significant telephone and Internet service disruptions experienced during Hurricane Sandy, this option should be reconsidered and be used only as a last resort. It should be made clear to all members of the EOC that attendance, in-person, is required if at all possible.

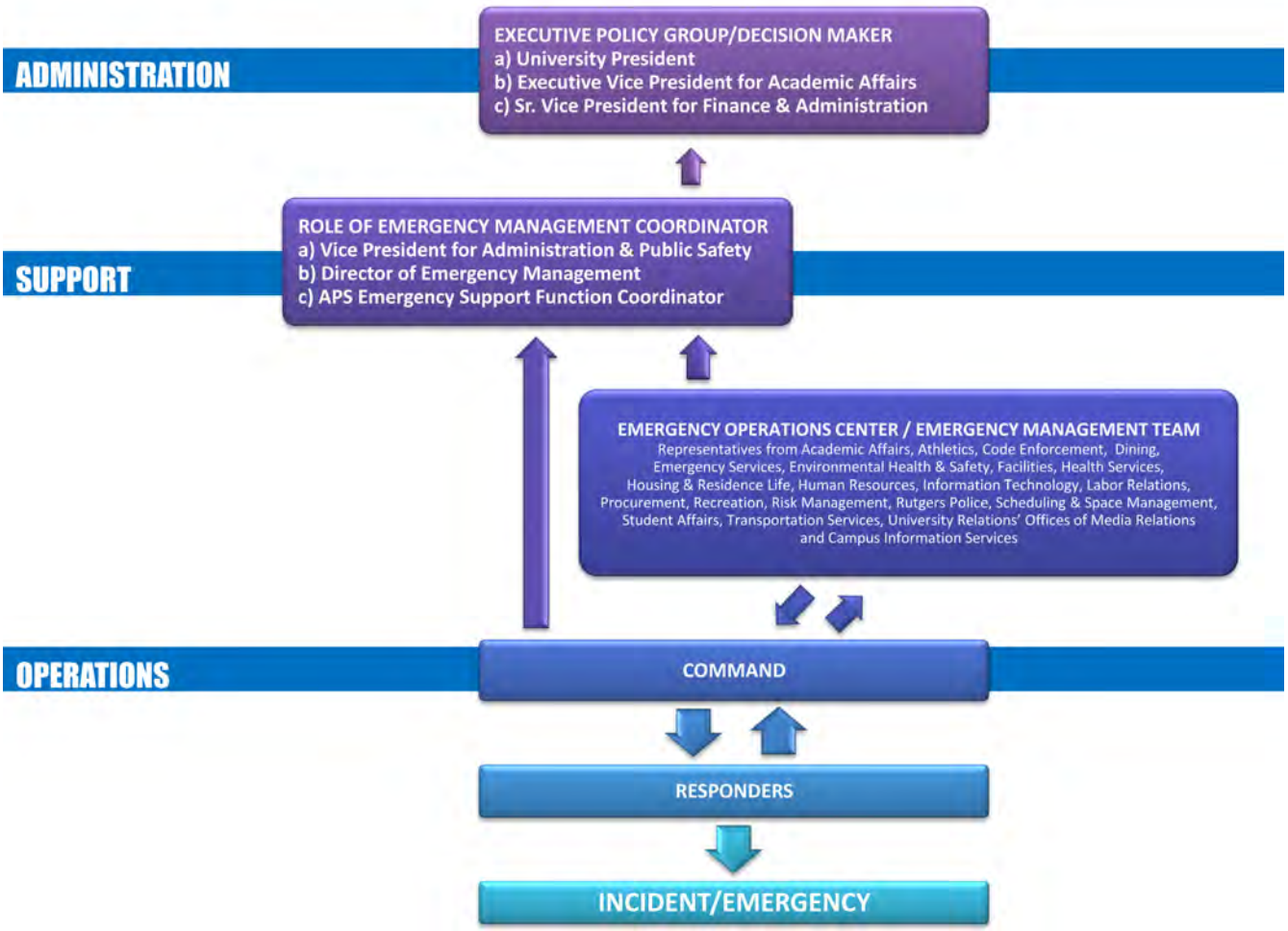
During the evaluation of actions prior to, during, and after the hurricane, it became clear that there was significant confusion for some about the chain of command during the emergency and who should have been involved in decisions that were being made. While there was little question about who was in charge when President Barchi or Senior Vice President Edwards presided over meetings and made immediate decisions, many university officials did not understand the scope of authority vested with the EOC and the Emergency Management Coordinator during emergencies. Subsequently, without an understanding of the emergency "chain of command," questions arose about why so few university officials were involved in the decision-making process. Additionally, there were multiple questions about why certain

[5] The Emergency Operations Plan (EOP) for Rutgers University is a Homeland Security protected document and cannot be published in its entirety as part of this report. Therefore, while the EOP will be shared with the President, it cannot be included as an Appendix item.

[6] The university's Emergency Operations Plan was reviewed and adopted in its entirety by the Board on June 6, 2012, in accordance with Public Law 2011 Chapter 214.

everyday protocols were not followed in communicating decisions. These questions made it clear that there was a lack of understanding, even among higher-ranking members of the university, of the need to make immediate decisions; emergencies do not provide the time for broad consultation or normal vetting processes. The decision-making process during Sandy, while clearly distinguishable from day-to-day decision-making, followed best practices in emergency management that require a significantly abbreviated chain of command, quick but well-considered decisions, and a mechanism to cut through normally accepted bureaucratic channels.

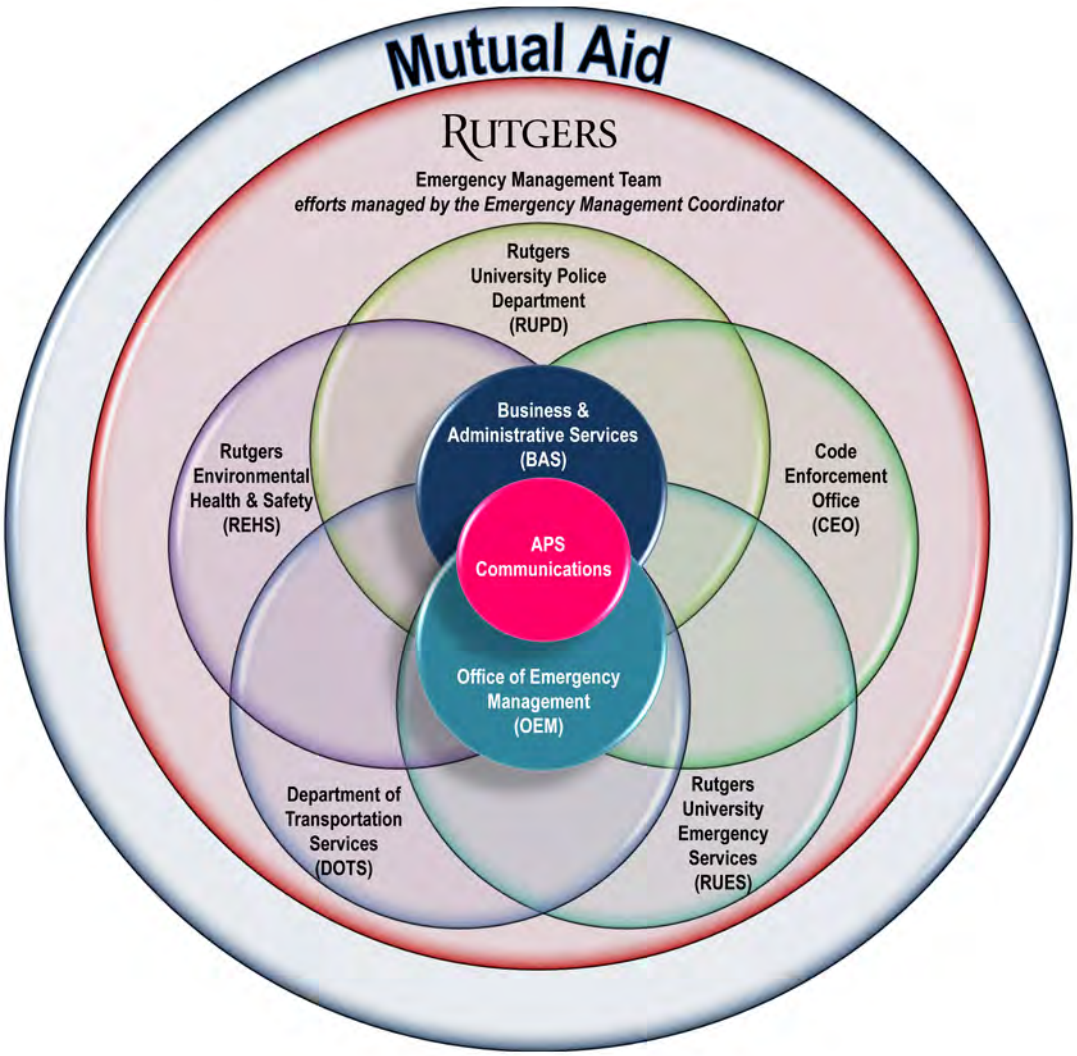
Rutgers Emergency Operations Plan not only designates the responsibilities of the President and Emergency Management Coordinator, it follows FEMA guidelines and identifies a succession of responsibility at "three deep" levels for each of those duties. The following outlines the decision making responsibility and the line of succession for the University President and the Emergency Management Coordinator:



This organizational structure is streamlined and clear. Specifically, during a declared emergency, the department heads or designees that comprise the Emergency Management Team report to the

Emergency Management Coordinator while retaining control of their personnel.[7] It is important to note that during Sandy, this design worked as intended and there was excellent support provided by all university leaders who directed their resources and staff to where they were most needed.

The following is a visual representation of how the Emergency Operations Center connects the multiple departments at Rutgers and all the external mutual-aid partners into an interdependent and synchronized team. This broadened span of control model allows for the efficient prioritizing, coordinating and directing of services during an emergency.



The Rutgers Emergency Management Team includes representatives from Academic Affairs, Athletics, Code Enforcement, Dining, Emergency Services, Environmental Health & Safety,

[7] Emergency Operations Plan at p.14 (f).

Facilities, Health Services, Housing & Residence Life, Human Resources, Information Technology, Labor Relations, Procurement, Recreation, Risk Management, Rutgers Police, Scheduling & Space Management, Student Affairs, Transportation Services, and University Relations' Offices of Media Relations and Campus Information Services.

Serving Multiple Campus Communities

In preparing for the storm and addressing its aftermath, Rutgers senior leadership and the OEM were acutely aware of the many differing needs of our multiple campus communities; the impact of the storm varied greatly depending on one's role within the university, where one was located, and, of course, whether one's home was secure after Sandy. With more than 70,000 faculty, staff, and students in various locations, decision-making was driven, first and foremost, by the need for safety. With one of the largest university residential student populations in the United States and a vibrant, electricity-driven research enterprise, staff needed to be here to prioritize and coordinate the use of the limited and available resources to ensure the continuity of our most critical operations, services, and scholarly activities on all the campuses. The sharing of information and resources, provision of support, and the collaboration between campuses will be examined in detail later in the report.

THE STORM AND ITS IMPACT

I. Preparation for the Storm

In response to advanced weather predictions, specific Emergency Management planning for Hurricane Sandy commenced during the week of October 22, 2012. While not yet certain of the storm's path, various precautionary measures were implemented including securing loose exterior equipment and construction site debris. Generators were "topped off" with fuel, and staff from Facilities, Housing, and Dining initiated their standard regimen for emergency preparedness while Athletics personnel deflated the training bubble. At the same time, the Office of Emergency Management worked with Campus Information Services to email notifications to the entire university community.

With Governor Christie's declaration of a State of Weather Emergency on Saturday, October 27, 2012, representatives from the State contacted Rutgers to plan for the sheltering of evacuees. While the leadership of the Emergency Management Team (EMT) had been preparing for the storm for several days, the first activation of the Emergency Management Team was initiated for an information sharing meeting on Friday, October 26. The team met again when the Emergency Operations Center (EOC) was operationally activated for the storm on Sunday, October 28. At the Sunday morning meeting, in consultation with senior university leaders, the decision was made to cancel classes for Monday and Tuesday and to place the university in a Weather Alert Status (see appendix F for definition of Weather Alert Status).

Executive leadership was provided initially by Richard Edwards, the Executive Vice President for Academic Affairs. When the EOC was activated on Sunday, October 28th, Executive Vice

President Edwards attended the planning session and ordered the cancellation of classes for Monday and Tuesday and put the university in a Weather Alert Status. President Robert Barchi's trip to California was cancelled and he was subsequently available to oversee all operations. Following several unsuccessful attempts to communicate with President Barchi by phone, he decided to come to the EOC to participate in person. This decision led to multiple trips to the center where the President was given daily briefings, communicated with the satellite campuses, and received direct information from operational leaders, administrators, and line personnel.

II. Weather Event and Actions Taken

What forecasters called "the perfect storm" made landfall in New Jersey on Monday evening, October 29, unleashing a storm surge into communities along the shore and throughout the state (see Appendix A for complete storm timeline). All classes for the week were, ultimately, cancelled in Newark and New Brunswick and offices were closed through 5:00 p.m., Wednesday, October 31[8].

During this period, PSE&G and JCP&L suspended service to mitigate damage to their infrastructure and substations. In addition to the controlled power outages, loss of electricity due to severe tree damage and downed power lines caused multiple problems in the residence halls, dining facilities, research laboratories, libraries, offices, and many buildings housing departmental servers.[9] Rutgers core networks, as well as phone and directory services, were not affected by the hurricane. Connection to the Internet and to phone providers continued uninterrupted. Online directory services remained operational. However, access to these services from locations that depended on grid power was compromised. Although the services were operational, they could not be accessed due to loss of PSE&G grid power. Unreliable communication was exacerbated by the users' reliance on directory service. Many planned to use their cell phones for communication but failed to keep a physical copy of the essential phone numbers. When access to directory services was lost, cell phone communication became useless.

At the same time that the Office of Emergency Management (OEM) was managing all Rutgers-based information, the members of the EOC were performing a multitude of tasks to implement the opening of the state evacuation shelters at the Livingston and the Sonny Werblin Recreation Centers. As one of the state's major evacuation sites, individuals from Atlantic County started arriving by bus on Sunday, October 28. Rutgers staff insured code requirements were met for sheltering individuals with pets, set-up cots, cleaned and prepared bathrooms, planned food deliveries, provided for the health needs of ill evacuees (including those needing skilled nursing care), identified students to help present programs for children, among many other duties. The level of detail required to administer shelters is extraordinary. During the storm, additional supplies were deployed at the Louis Brown Athletic Center (RAC) in anticipation of needing a

[9] University-wide servers located at Hill Center remained fully operational.

location for county shelters to evacuate to in the event one of the other shelters was compromised by the storm. The State also positioned resources at Rutgers if the need arose for a Mega Shelter.

Concurrently, Rutgers OEM and public safety departments served in both leadership and mutual aid capacities and worked collaboratively with multiple municipalities and state and federal entities. Rutgers dispatchers assumed 911 duties for Highland Park when they lost their communications system and also provided assistance to the Newark campus with telephone and other communications support. The scope of the storm's devastation was such that absolutely everyone in the region was affected.

III. The Impact

Given the track of the storm, the Camden campus had the fewest number of problems and classes and activities returned to Normal Operating Status on Thursday, November 1. The research faculty and staff located in the Science Building in Camden, prepared by rolling out refrigerators containing specimens and cultures into the hallways to ensure back-up power would preserve critical research activities in the event of a power outage. The Camden building housing the main data rooms and servers also lacked adequate back-up power compromising network communications including security cameras for the campus, email, and the Camden website. Camden's off-campus populations from the Brookdale, Monmouth, and Atlantic Cape campuses were severely impacted as well. Rutgers Camden off-campus operations are subject to the emergency plans of the host campuses. Ultimately, Camden did not lose power but experienced roof damage to the library and trees on the west side of student housing and along the "Gate Way" needed emergency removal.

As a result of this experience, it is clear that emergency plans and provisions for back-up power sources need to be considered a priority in Camden.

Except for power outages and the loss of all PBX telephone systems providing all telephone service for the campus, Newark was spared. Given that all mass transit and roads were closed in the region, however, Newark was not able to open and classes were canceled for the entire week. The Rutgers Police Department headquarters on the Newark campus seemed to be the only on-campus facility with back-up power so that location became the electric charging-station center for the campus. Prior to the storm, the Newark campus prepared scripted messages for a variety of circumstances. These proved to be an invaluable and effective means of sending timely updates to the campus community. The university worked collaboratively to ensure that all campus community needs were met. Back-up diesel fuel was provided to Newark by colleagues from the Camden and New Brunswick campuses.

Especially important, Newark campus students, faculty, and staff rely on public transportation. Even though campus buses were operational, NJ Transit, Path, and Amtrak were all paralyzed by damage to overhead equipment and flooded tunnels. This loss of mass transportation limited people's ability to travel to and from the city of Newark and the Rutgers campus.

In New Brunswick, where classes were canceled for the entire week and offices were closed for portions of the week, the impact of the storm was significantly more challenging. While students were advised to go home prior to the storm if possible, there were still thousands of residential students who needed safe facilities with potable water, working bathrooms, fire suppression and smoke detection systems and food. The New Brunswick campuses lost power, access to IT systems that remained operational proved unreliable due to loss of grid power, the Public Safety Building lost power, trees were strewn across streets, alarm systems were malfunctioning, email capability was sporadic, residence halls were evacuated when alarm systems and swipe card access became inoperative as a consequence of the power outage. Also, laboratory freezers were compromised, electronic access to scholarly collections in the libraries was limited with major national grant deadlines approaching and athletic events were postponed. All activities were suspended other than those that required services to protect 1) the safety of the community and 2) the buildings and infrastructure.

The off-campus locations such as the Cooperative Extension of Cape May County (Cape Shore Facility), the Cooperative Extension of Cumberland County (the Haskin Shellfish Research Laboratory), the Marine Field Station in Tuckerton, and 4-H Campuses (Branchville and Sussex County) were also compromised.

The following timeline highlights significant activities related to the storm.

Tuesday, October 23, 2012
Advised of Atlantic Hurricane Region

Wednesday, October 24, 2012
Hurricane turning north toward Cuba and move Northeast toward Bahamas

Thursday, October 25, 2012
- Hurricane path moving Northeast
- Communication to EOC

Friday, October 26, 2012
- Hurricane predicted path has storm changing course toward Mid-Atlantic
- Messages to secure debris and loose materials
- Message to research community
- Campus Information Services messages to students
- Communications to extension sites along coast

Saturday, October 27, 2012
- Football game
- Hurricane projected path includes tri-state area
- Update to EOC members
- Governor declares State of Emergency
- State contacts RU about shelter

Sunday, October 28, 2012
- State Shelter readied and occupied
- Regional Food Distribution set up
- Meeting of EOC and Executive Leadership of RU
- Storm forecast decreased rainfall & wind velocities
- Message to University Community: *Weather Alert Classes Cancelled Monday and Tuesday*
- New Brunswick travel ban

Monday, October 29, 2012
- President Barchi briefed at EOC
- Storm track projects landfall in NJ
- Reduced rainfall amounts from 10+ to <4
- Winds projected 36-45 mph gust
- University closed at noon and later extended through Tuesday at 5pm

Tuesday, October 30, 2012
- President Barchi and Chancellors create one university message and extend closure
- Significant power outage
- Public transportation closed
- New Brunswick water issues (students evacuated)
- Roads filled with debris
- Loss of technology - text message

Wednesday, October 31, 2012
- Fuel Issue / Public Transportation
- Damage Reports
- University-wide Message Update

Thursday, November 1, 2012
- University-wide Update
- Cook/Doug Power Restored
- Camden Classes in Session

Friday, November 2, 2012
- State Shelter Demobilized
- Livingston Shelter on Standby for County

Saturday, November 3, 2012
- EOC Demobilized at Noon
- Communicated to EOC
- Public Safety still staffing

Tuesday, November 6, 2012
Classes cancelled on Cook/Douglass for scheduled PSE&G repairs

Wednesday, November 7, 2012
Message to University re: Weather Advisory

Monday, November 5, 2012
- All campuses return to normal operating status
- EOC meets to discuss PSE&G outage and pending Nor'easter
- President Barchi directs Jay Kohl to create Emergency Preparedness Task Force

ASSESSMENT OF THE RESPONSE

The following information details various impacts of the storm and the strengths and weaknesses of Rutgers' response. The final segment enumerates the recommendations for improvements as the university prepares for future emergencies.

I. Emergency Operations

As noted above, Rutgers Emergency Management supervises and coordinates all Emergency Support Functions through the implementation of Rutgers Emergency Operations Plans. These plans, while dynamic, are developed in keeping with the national Emergency Support Functions (ESF) standards (see Appendix X for all ESF standards). This portion of the report will focus on the Emergency Management Team's decisions and actions during Hurricane Sandy pertaining to communications, environmental health and safety, facilities, law enforcement and public safety, mutual aid, transportation, and the Emergency Operations Center (EOC). Subsequent sections of the report will contain additional information about these areas as well.

Transportation

The Department of Transportation Services (DOTS) monitored the progress of the storm and worked with Rutgers' bus vendor, First Transit, to maintain safe operations of the university transit system. In addition to serving students, faculty, and staff during storms, DOTS is responsible for providing buses to aid in sheltering, evacuation, and transportation of aid workers during emergencies. As such, DOTS' functions are multi-tiered and include mass transit duties and specialized services all within the context of adapting to changing conditions (e.g., reduction of drivers, buses and/or fuel, and service provision during wind safety warnings, road closures, and travel bans).

While Rutgers and First Transit had staged the buses and stored fuel in preparation, it was unclear, as the storm progressed, to what extent the drivers would be able to travel to New Brunswick to perform their duties. To address this issue, five buses were staffed in case students needed to be relocated and/or to provide assistance with evacuees from Atlantic County. (During Hurricane Irene, for example, evacuees were transported to dining facilities for meals.) These standby buses were utilized during Sandy to transport students from the New Brunswick campuses (Cook, Douglas, and College Avenue) to the Busch and Livingston Campuses when the City of New Brunswick notified Rutgers that the water supply had been compromised.

Rutgers transportation plans must, of course, be considered in light of the operational decisions of the local municipalities. Prior to the storm, the City of New Brunswick declared a state of emergency and a travel ban within city limits. Initially, this ban also included State Highway Route 18, but the ban was rescinded upon the order of the New Jersey State Police; cities do not have the authority to close state highways[10]. These actions were taken by the City of New

[10] See Appendix D Governor Chris Christie's Executive Order No. 104.

Brunswick without any consultation with Rutgers and created additional challenges for Rutgers personnel and emergency managers. When notice of the travel ban was communicated to the Rutgers EOC, the City and Rutgers agreed that anyone with a Rutgers ID card would be allowed to travel through New Brunswick. This information was communicated to the Rutgers community via two email messages on Sunday, October 29. The travel ban greatly hindered bus operations across the campus as they sought alternate routes to reach their destinations.

Emergency Communications, External Relations

The first and foremost role of the Emergency Management Team is to ensure first responders have the best information available in order to effectively respond to and mitigate damages from all critical incidents that pose a potential threat to the university community. Below is a visual demonstration of the emergency management cycle:

The communications functions and the actual dissemination of accurate information to the senior leadership and the university community are among the most important tasks provided by the staff of the EOC. The scope of this aspect of the EOC's work is considerable and includes the 911 center, emergency text notifications, cell phones, landline telephones, two-way radio communications, emails, social media, "NextBus" notifications, and RU-tv radio and networks. In the case of this storm, ultimately, and despite all the system provisions and contingency planning, the devastating loss of power, both on and off-campus, greatly impacted Rutgers ability to communicate with its constituencies in a timely fashion.

As with all weather events with the potential of a significant impact, the initial information comes from a host of outlets including the National Weather Service and Weather Works. Monitoring Sandy's trajectory commenced on October 24, 2012, and, as the forecast clarified, the Emergency Operations Team was notified and the communications process was initiated. A weather message was sent to the campus community on Friday, October 26, at 3:00 p.m. At the same time, Rutgers Environmental Health and Safety (REHS) notified appropriate individuals with laboratories to evaluate and prepare their operations for the approaching storm. Satellite facilities, especially those associated with the School of Environmental and Biological Sciences (SEBS) near Atlantic City and along the South Jersey coast, were evacuated.

On Saturday, October 27, the New Jersey Office of Homeland Security and Preparedness (OHSP) made the decision to activate the regional evacuation shelters in a fashion similar to what took place during Hurricane Irene. Using established Rutgers protocols, Housing, Facilities, Recreation, and Athletics staff members were informed of OHSP's decision and initiated plans to open the Rutgers shelters on Sunday, October 28. Information sharing continued with all agencies including the New Jersey Regional Operations Intelligence Center (NJ ROIC), Middlesex County, and local emergency management officials.

Determining the campuses' operating status was complicated by the uncertainty of the weather predictions. On Saturday, October 27, the storm appeared to be headed to Delaware, although some models predicted that it would go north toward Long Island, New York with indications of reduced rainfall amounts. Not leaving anything to chance, a meeting of the EOC was scheduled for the afternoon of Sunday, October 28.

At the Sunday meeting, the decision was made to cancel classes on Monday, October 29, and Tuesday, October 30, while formally announcing that the university was in a "Weather Alert Status." This decision was made based on the latest predictions that the storm would make landfall the evening of Monday, October 29, and last into the morning of the 30th. When Sandy hit New Jersey on October 29, she did so with forces that far exceeded predictions. Consequently, the campuses and outlying areas of Rutgers were subjected to the frenzy of the second worst storm in American history. Weather forecasters later explained how the merging of multiple conditions, while not foreseen, resulted in the creation of "the perfect storm" and inaccurate weather predictions. While this explanation provided little comfort to those staffing

the EOC, it did require on the spot decision making that resulted in changes to the university's operational status with little to no advanced notice to university constituents. Likewise, it reinforced the need for streamlined communications between the EOC and the key executive decision makers.

The Division of Administration and Public Safety's communications equipment remained operational throughout the storm. Mobile Data Computers (MDCs) were fully-functional in both RUPD and RUES vehicles. The "walkie-talkie" radios and the Communications Center worked on generator power from Monday, October 29, through Saturday, November 3. The dedicated emergency radio "tie lines" between Newark, Camden, and New Brunswick worked during the storm and provided essential aid to the Newark campus when their phone system became inoperable. The Public Safety Communications Center also aided the Borough of Highland Park when their Police headquarters was compromised by a fallen tree; Highland Park 911 calls were successfully transferred to the Rutgers Public Safety Answering Point (PSAP).

While the emergency networks continued to function, the widespread power outages wreaked havoc on the university's general communication systems. The core communication and phone systems remained operational, however, the widespread loss of grid power made access to these services unreliable. Email services provided by over 100 departmental and decanal units that depend on grid power failed and further compromised our ability to communicate. Many individuals' home phones that relied on Digital Subscriber Line (DSL) based networks were also inoperable. Cell phone service was limited, both for voice and data, leaving only text messages working with a fair amount of reliability. These failures greatly compromised our ability to communicate across the university and with external agencies.

The text messages that went out in the days following the storm utilized the Emergency Notification System (ENS)[11]. While the ENS is primarily dedicated for use in life threatening emergencies to warn the community of imminent danger, during Sandy it was used as a redundant communications method because it was uncertain to what extent the other means of communications were working, especially for those who were off-campus. When the EOC lost the ability to communicate over the university network, in order to access the ENS, a call had to be placed directly to the Hill Center Computer Operations desk to provide access to the application.

While many communication methods and protocols were in place, the systems could not provide assurances that everyone "got the message." Information was also disseminated from the EOC via email, text, social media, and funneled through Campus Information Services and Media Relations. This redundancy apparently worked (some people received multiple similar messages) and most faculty, staff, and students learned about closures, etc. Of all groups, the parents of undergraduates seemed to raise the most concerns about the availability of accurate and timely

[11] For details relating to issues with the delivery of text messages to a subset of the student population, see the Technology Appendix I.

information, although survey responses received from faculty and staff also indicated there was a significant amount of frustration felt about the availability of information and the methods by which updates were communicated.

Facilities

The OEM has a strong collaborative relationship with Facilities. In addition to the campus-based responsibilities that include prepositioning assets, clearing roads and walkways, staffing their help desk, monitoring fuel and water supplies, and conducting damage assessments, they worked tirelessly to support the functions necessary to maintain Rutgers evacuation sites.

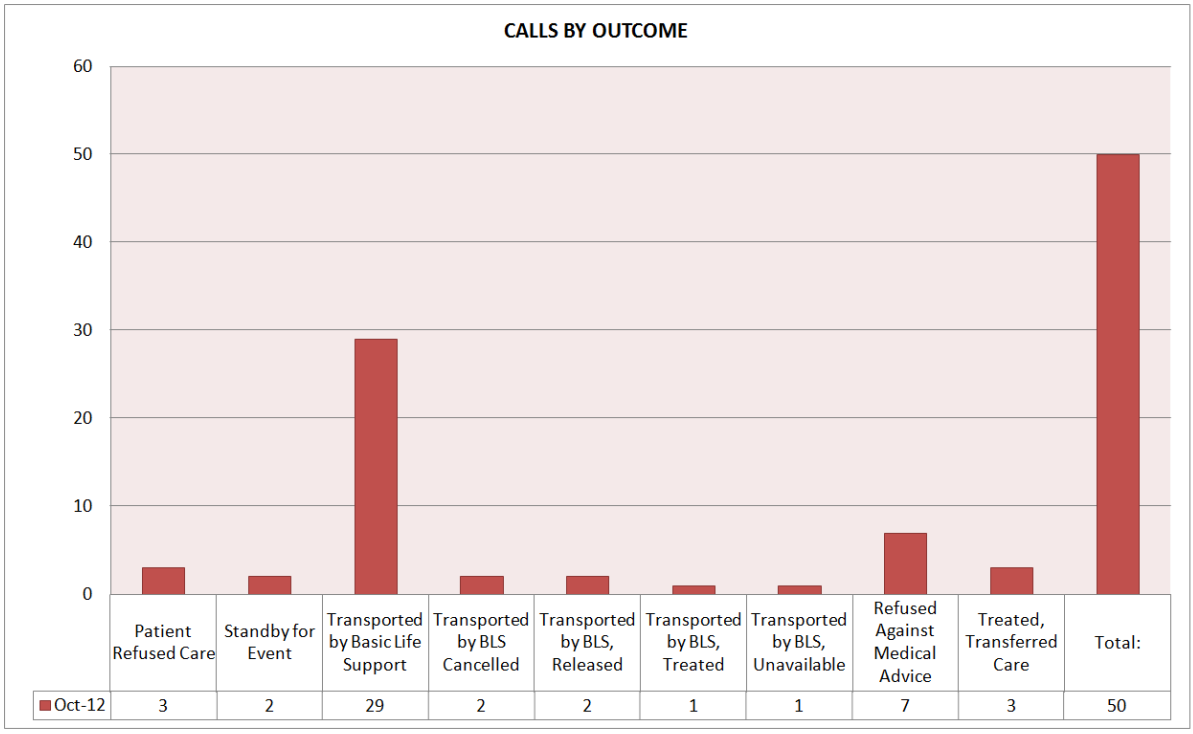
During weather events, communications generally flow through what is referred to as the "Snow" or "Help" desk, but due to the severity of the storm and the power outages, in this instance the dispatcher was placed at the EOC; this system worked exceptionally well and has resulted in an agreement that similar arrangements will be utilized in future emergencies.

The Utilities staff members (a subunit of Facilities) were responsible for refueling generators throughout the storm; approximately 55,000 gallons of fuel were used. This group also served as the main liaison between the university and PSE&G. Outage updates were shared, and Rutgers personnel assisted with checking the campus infrastructure to ensure that the transmission wires were intact. The Utilities unit and Facilities personnel assisted with starting generators and placing mobile generators at various locations across the campuses. They also assisted in providing power to ASB II with a portable back-up generator when it was learned that their power would not be restored for several days (restoration occurred on Sunday, November 4).

The number of portable generators and the staff to maintain and secure them was limited. Some generators were chained to prevent theft, but this required the positioning of power cords through exterior doors thereby preventing the proper securing of the buildings. There were a few instances where well-intentioned employees deployed their own generators, but this posed a risk if the equipment was not properly prepared. Facilities' excellent relationship with the university's fuel vendor resulted in additional fuel deliveries even though fuel supplies were scarce across the region. Subsequently, we were able to provide fuel to UMDNJ Public Safety, the New Jersey Army National Guard, the Red Cross, JFK Hospital and to New Brunswick's Police and Water Departments in the days after the storm.

Law Enforcement, Emergency Medical Services, Mutual Aid

Rutgers University Emergency Services (RUES) was responsible for the medical response during the storm and served as the liaison with the State evacuation shelters. Having learned from Hurricane Irene, when shelters were not appropriately staffed, the Emergency Services Team worked with the Rutgers EOC and the State EOC to maintain adequate coverage for the shelters. During the storm Rutgers Emergency Services provided assistance to evacuated medical patients with the help of the Disaster Medical Assistance Teams (DMAT) from Kentucky and Tennessee. There were 35 transports to the hospital.



	Patient Refused Care	Standby for Event	Transported by Basic Life Support	Transported by BLS Cancelled	Transported by BLS, Released	Transported by BLS, Treated	Transported by BLS, Unavailable	Refused Against Medical Advice	Treated, Transferred Care	Total:
Oct-12	3	2	29	2	2	1	1	7	3	50

Coordination with Middlesex County's Department of Health and the Medical Coordination Center (MCC) at Robert Wood Johnson University Hospital was difficult during the early stages of the storm. The DMAT appeared to have made plans, unilaterally, without consulting with Rutgers personnel regarding the location and placement of their staff and services. Eventually, the DMATs were deployed to the shelters at the Sonny Werblin and Livingston Recreation Centers.

Emergency Services staff members assisted with the maintenance of the fire protection systems, established fire watches where necessary, and responded to calls for service. Following the storm, additional residence hall spaces needed to be identified to temporarily house students who were displaced from Rockoff Hall (which remained without power longer than other facilities). Housing staff and Emergency Services worked in concert with the New Jersey Division of Fire Safety to allow for the temporary occupancy of the vacant Bishop Quad residence halls. Emergency Services also assisted with the evacuations and the reoccupation of student housing once the power was restored.

During the New Brunswick water emergency that resulted in reduced water pressure, Emergency Services facilitated the placement of fire department water tankers at the Public Safety Building in case any fires occurred. Rutgers EOC also identified water refill locations on the Piscataway campuses providing service to both Busch and Livingston.

Rutgers Environmental Health and Safety (REHS) assisted with many facets of the storm response. Before the storm arrived they sent alerts to the research community urging that appropriate measures be taken in advance of the storm. REHS also worked with several operational units to secure any loose items and/or construction sites that could potentially be affected by the high winds. The Agricultural Extension facilities were also contacted by REHS to secure their sites and relocate what resources they could to ensure an alternate, safe work location for personnel after the storm. In the middle of the storm, the North Carolina Baptist Men's Kitchen requested assistance from Rutgers to establish a regional food preparation and distribution site. REHS identified a location and arranged for delivery of propane, power, water, portable toilets, and provided grease containers. After the storm, REHS surveyed laboratories to identify damage and system outages.

The Rutgers University Police Department (RUPD) staffed the EOC and aided in providing emergency response and security throughout the storm. They provided personnel who served as liaisons at each of the shelters, and worked in a coordinating fashion with the New Jersey State Police, New Jersey National Guard, and New Jersey Office of Homeland Security and Preparedness (OHSP) to ensure that there was adequate staffing at the shelters. Police operations during the storm were coordinated through the EOC and the Public Safety Dispatch Center. RUPD was also instrumental in coordinating services and information with local municipalities and played a significant leadership role when 6,000 students had to be relocated from their residence halls. Assisting RUPD were two Michigan State police officers who came to Rutgers to provide mutual aid. Along with other law enforcement volunteers, RUPD provided security at the long-term shelters for 17 days. Especially innovative, RUPD also instituted the use of Nixle (a text-based notification system) as an alternate method of communication after the storm.

Emergency Operations Center

The Emergency Management Team first met on Friday, October 26, 2012, to make its members aware of the storm's progress and to notify members of the team that the State had placed Rutgers on standby to ready shelters. Responsible for resource management and deployment, the EOC was operational from Sunday, October 29, at 1:00 p.m. to Saturday, November 2, and subsequently was staffed by Public Safety personnel.

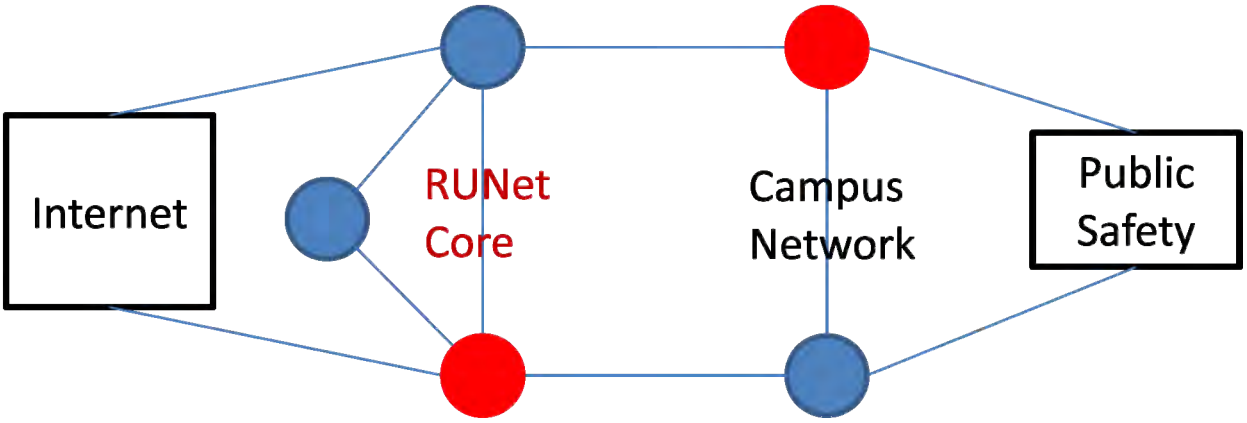
On Saturday, October 27, the Office of Homeland Security and Preparedness notified Rutgers (while the Public Safety staff was at a Rutgers home football game) that the shelters should be opened. Housing, Facilities, and Recreation staff were notified and a plan to ready the Livingston and Sonny Werblin Recreation Centers for a Sunday, October 28, 8:00 a.m. opening was finalized. Given the relatively short notice, Rutgers cots were used since the State's equipment would not arrive in advance of the evacuees.

With Governor Christie's proclamation of a State of Emergency on Saturday, October 27, resources became available for communities to prepare for the storm while broadening the powers of the State Police. Evacuees began to arrive Sunday afternoon and evening. While supplies for the shelter that were expected earlier in the day did not arrive until 2:00 p.m., a total

of five tractor trailers filled with supplies were unloaded by Rutgers Material Services staff at the Louis Brown Athletic Center (RAC) and Sonny Werblin and Livingston Recreation Centers' shelters. The supplies included such items as water, food, cots, blankets, and hygiene kits.

While the RAC received supplies for sheltering evacuees, it remained on "stand by" status since it was not in compliance with federal specifications for a shelter in that 1) personnel were needed to staff the shelter, and 2) the RAC needed to have a robust back-up power source. The RAC, however, only has limited back-up lighting and any more extensive emergency power would have required a generator. A representative from the Army Corps of Engineers toured the site and had the appropriate generators for use, but the building lacked the transfer switches necessary for safe installation.[12]

When the Public Safety Building lost power on Monday, October 29, the EOC relied on back-up power until Sunday, November 4. Using back-up power, Administration and Public Safety's email server was operational but lost connectivity to Rutgers core network when two independent pathways failed due to loss of grid power. The following diagram highlights the failure. The network's built in redundancy guarantees that no single point of failure (e.g. node or edge) will disconnect the core from either Public Safety or the Internet. However, when the two red nodes failed (as noted below), Public Safety lost connections to Rutgers core network; email to and from Public Safety became impossible. The email failure presented considerable difficulties since the State and County updates were received on the APS email server. The EOC and the Emergency Management Team, as a result, communicated by cell phone and two-way radio.



For the first time, the EOC received requests to house out-of-state utility workers and FEMA Disaster Response personnel. Historically, when we have received inquiries from various agencies during emergencies, we have been able to meet the demands for housing requests. As a

[12] For future emergencies, it should be noted the Army Corps of Engineers was ready to wire the generator direct in to the panels conditioned on the State's authorization.

result of the evacuation of Rockoff Hall residents, however, all available excess housing spaces were used. We hope to be able to accommodate these requests in the future.

II. Business Continuity/Risk Management

The Department of Risk Management and Insurance, represented on the EOC, oversees preparation and planning to help institutional operations cope directly with hazards and crises. With the highest priority on protecting the members of the Rutgers community, they are responsible for overseeing business continuity when there is damage to Rutgers property.

During Hurricane Sandy, they focused on innumerable issues related to the loss of power, and the provision of fuel, water, transportation, and communications to keep Rutgers operational. After the storm, they worked to provide funding for the timely repair and replacement of damaged property including buildings and equipment, roads, office materials, and the intellectual property in our research operations. Risk Management and Insurance is also responsible for providing timely and accurate documentation for reported losses and damages to Rutgers insurance providers for all Rutgers owned properties across the state. The OEM works collaboratively with Risk Management for the submission of losses to FEMA for recovery funding through the request for public assistance.

The collaborative working relationships that Risk Management and Insurance has established over the years with the university's insurance providers proved to be invaluable. Returning the campuses to their normal operations was facilitated as a result of these important partnerships.

III. Finance

To support Emergency Management Operations, the senior leadership of the university authorized the EOC to make necessary purchases in advance of the storm to prepare for and address problems pertaining to emergencies. Additionally, to facilitate the implementation of materials acquisitions during times of crisis, a staff member from University Procurement Services is a permanent member of the EOC. The emergency operations plan authorizes the purchase of goods and services, once an emergency is declared, without going through the normal procurement channels[13]. The utilization of this authority resulted in the unimpeded purchase and transfer of university property and resources.

[13] The Emergency Operations Plan (EOP) is a Homeland Security protected document and cannot be published in its entirety as part of this report. Section E under *Operations and Control* of the EOP states "Upon declaration of a University Emergency, university resources will be coordinated by the Emergency Management Coordinator." Additionally Section B under *Administration and Logistics* states "The Emergency Management Coordinator is responsible for the record of expenditures associated with the general operation of the Emergency Management Team and Emergency Operations Center."

During Hurricane Sandy, a number of buildings which house key central administrative departments (including offices that provide procurement services) lost power; in some cases the power was not restored until days after the university officially reopened. To further complicate the situation, most of the individuals who work in those offices did not have power at home either, so working remotely was difficult if not impossible. While many of the affected departments were able to find secondary locations by making phone calls to colleagues, they were still operating in a limited capacity. Most of these offices experienced some confusion since they did not have procedures in place to deal with a sustained loss of power.

ASB III, unfortunately, was among one of the critical areas of the university that did not have power or back-up generators in place. Consequently, University Procurement Services was not fully operational but RIAS, the university's central payment processing software, was operating and able to process payments for units that could gain access to the online system.

IV. Facilities

Charged with the stewardship of the university's physical assets, Facilities is among the most proactive operations at the university when preparing for the possibility of extreme weather conditions. With a staff of more than 650 people located on all campuses and our state-wide sites, from High Point to Cape May, their responsibilities include the maintenance of all properties, building power, and water and sewer services. In preparation for Hurricane Sandy, Facilities staff implemented full emergency planning and secured outdoor equipment (including garbage receptacles), purchased necessary supplies, including additional fuel for generators and vehicles, tarps, rope, duct tape, plywood, and small pumps, and "topped off" vehicles with fuel. All staff personnel were notified that they should expect to work during and after the storm. Managers met to review emergency plans, including the effort to support evacuees from various locations in New Jersey. When Rutgers was notified that evacuees would be arriving, Facilities readied the evacuation sites. After the storm, Facilities worked to restore utilities systems, including power, and to maintain generation units where possible.

V. Technology (see Appendix H for detailed charts and data)

Rutgers expects its technology infrastructure to work 24 hours a day, 365 days a year to support all aspects of its tripartite mission which includes:

- providing for the instructional needs of New Jersey's citizens through its undergraduate, graduate, and continuing education programs;
- conducting the cutting-edge research that contributes to the medical, environmental, social and cultural well-being of the state, as well as aiding the economy and the state's businesses and industries; and
- performing public service in support of the needs of the citizens of the state and its local, county, and state governments.

During the storm, all constituencies relied on the web for access to information about our operating status and to send and receive email. Overall, the university's IT infrastructure performed as the IT staff expected it would during a weather emergency with a widespread multi-day loss of grid power. The two university data centers as well as the university's access to the World Wide Web remained operational. The loss of connectivity occurred at the local or building level where there was no power to run the local IT systems (servers, routers, network and email). There were a few exceptions: power was lost when a generator ran out of fuel; text messages were sent to only a subset of the students who had registered for emergency texts; the network connection to the Public Safety Building, and consequently the EOC, was lost. But, for the most part, the majority of systems performed as expected. Most important is that all university data resources were preserved.

Still, the emergency highlighted deficiencies in Rutgers IT preparedness for a widespread multi-day loss of grid power. These deficiencies, however, were not caused by the failure of deployed systems but rather by the lack of effective business continuity plans. Local IT users need to address the potential loss of connectivity and/or house severs at a location with backup power. Business continuity plans at the departmental level should also address how servers and data can be accessed remotely. Insufficient attention has been given to how we maintain services in emergency situations. IT Services have been designed and deployed without addressing the possibility for catastrophic conditions or based on assumptions that are inaccurate during an emergency (e.g., grid power outages will be short term and localized). Services located in, or dependent on, buildings that lost power and did not have an emergency generator were suspended. Sandy further highlighted the fact that many operations that are considered essential by the community have been deployed in, or are dependent on, buildings that are neither reliable nor resilient.

Inter-system communications (e.g., workstation to server, cell phone to server, server to server), are dependent not only on the two communicating systems operating properly but also on all technological resources along the communication pathway. While reports were received during and after the hurricane that systems were down, investigation often showed that the system was operating normally but that the communication pathway between the site reporting the problem and the system reported as down had failed. Web services operated by the Office of Information Technology (OIT) remained operational and were available to the community. Information was hard to access for most in New Jersey, however, due to the communications issues mentioned above and the decentralization of many departmental servers. Those outside the region, in Montana and Indiana for example, gave Rutgers high marks for the information provided.

The following is a sampling of services and their operational status during Sandy.

Service	Operational Status	Number Impacted
OIT email	Functioned normally	
Email systems located in buildings without generated power	Not available while grid power was out	Well over 100 affected
Emergency text notification	Technical problem	Sent roughly 50,000 messages

Wireless services	Operational	7,000 users served
The Rutgers Portal and myRutgers	Operational	14,000 users served
Admissions systems	Operational	1,000 applications accepted
Rutgers RIAS	Operational	
Phone fabric	Operational - System transitioned to secondary connections when primary connections failed	
The RUNet Core and Astra VoIP system	Remained operational but campus-wide loss of grid power caused systems in numerous buildings to fail. Communication pathways rendered inoperable.	
Newark PBX phone system	Located in building without generated power. Not available while grid power was out.	
Various Verizon circuits.	Failed but back-ups were sufficient to maintain operations. The Verizon Central Office remained operational but flooding and downed lines led to on-campus outages.	
The Hill Center and ASB Data Centers	Transitioned from grid to generator power and then back without problem. All services operational.	
Connectivity from the Hill Center and ASB Data Center to Internet carrier hotels in Newark and Philadelphia	Maintained	
Generator responsible for the Cell and DNA Repository	Failed when it ran out of fuel	

The power and communications situation at the School of Environmental and Biological Sciences (SEBS) was more dire than at most other places at Rutgers during that week. They lost power on Monday, October 29, and it was not restored until Thursday, November 1. AESOP email services as well as departmental systems were down. Additionally, all SEBS and New Jersey Agricultural Experiment Station (NJAES) web servers and numerous ancillary services as well as the critical areas housed in ASB II and III were without power.

At the Business School in Newark, all non-essential equipment in the data centers was shut down prior to the storm on Friday, October 26. On Monday, October 29, the loss of power at 11:09 p.m. resulted in the loss of the network. Shutdown procedures were successfully implemented and services were restored by Tuesday, October 30, at 8:00 p.m.

OIT data centers and their services continued to function during Hurricane Sandy without any disruption. Email, web, and on-campus wireless services provided by OIT continued to function properly. One important note is that while the New Brunswick and Newark data centers have

back-up generator power available, the same is not true for the Camden campus. The Camden campus data center has no generator and only about 20-30 minutes of back-up battery power. Any power outage to the Camden campus data center that lasts more than 20-30 minutes would bring down the systems and services for the entire campus for the length of the outage.

Telecommunications

Telecommunication was dependent on whether operations relied on traditional landline service or the new VoIP service and whether or not there was power to the facility. The following is an overview of the issues.

- VoIP service remained connected to providers. The Main SIP trunks feeding our VoIP telephone system failed due to flooding at 75 Broad Street, New York City. Back-up Primary Rate Interface (PRI) circuits feeding the VoIP telephone system kicked in automatically upon the Session Initiation Protocol (SIP) failure. Telephone service was not interrupted.
- Various Verizon circuits failed, but sufficient back-ups were able to carry the load and service was uninterrupted.
- The Verizon Central Office (CO) was up and running, but there were various outages throughout the state due to damaged telephone poles and cables, as well as manholes that were flooded.
- The Aastra VoIP telephone system was up and running, passing telephone calls. Service was not interrupted.
- [redacted] in Newark and [redacted] in Philadelphia, which are our co-location facilities for Internet connectivity, were unaffected. They were both functioning and passing data.
- The core network, RUNet, was functioning and unaffected. There were several buildings without power; their services were unavailable until power was restored.
- The Public Safety building is fed from network routers in the [redacted] and [redacted]. Both buildings were without power, constituting a double failure. The Telecommunications Division was able to create a work-around thereby negating the double failure. It is important to note that even though the system was redundant there was a loss on both legs of the network due to unrelated equipment failure.
- There were buildings, such as the Eagleton Institute and 31 Mine Street, that were out of service due to downed telephone poles and loss of power. Once power was restored, these buildings came back into service.

These findings, while identifying a common theme, reinforce the need to address the many

challenges that were experienced by the distributed/independent networks.

VI. Communications/Media

The communications-related issues resulted not only from power failure, but from the actual nature of the messages, their tone and clarity, and the uncertainty of what to do once those messages were received. Students and their families seemed to want more communications, especially since the storm hit during mid-term season and those students who left the campus wanted more advanced time to learn when and whether they needed to return to classes. Some criticized that the initial cancellation of classes came late and that notification of the entire week's cancellation should have been made earlier. Faculty and staff criticized the lack of empathy and clarity in the messages, and the timing in which the messages were sent. However, the timing of class cancellations was affected by the storm's changing course; once it became clear that there was a direct risk, the decisions were announced immediately. In the future, it would be useful to include additional information in messages to the community so that recipients have a better understanding of the basis for decisions. In this particular case, for example, the notice about class cancellations might have started with the simple phrase: "Due to new information about the changing course of the storm, …"

Given the importance of Campus Information Services and Media Relations staff in creating and disseminating emergency messages, their on-site participation in the EOC is vital. To help facilitate this work during emergencies, dedicated space for an information center should be provided in the same facility as the EOC. One person within the University Relations (UR) team should be designated as the liaison between the EOC and the information center so that communications flow quickly and messages are both accurate and reflective of the institution's values.

With greater reliance on websites and email, the longstanding practice of having printed EOC and departmental "telephone trees" has fallen by the wayside. As a result, even some of those who had telephone service were unable to find the telephone numbers of their colleagues. It should be noted that this situation was not unique to an emergency as severe and widespread as Hurricane Sandy; paper-based directories have been useful during other storms and power outages. The practice of maintaining and distributing paper-based directories in addition to electronic directories should be revived by departments that have discontinued this practice.

To further compound the difficulties for employees, many individuals at the supervisory level did not understand the meaning of "Weather Alert Status" (see Appendix F for definition in updated Weather Policy) when that status was posted for Monday, October 29. Those in staff positions perceived the announcement that offices would be open on Monday morning as a lack of institutional concern for their well-being and safety. The mixed message of road closures in New Brunswick combined with Rutgers' expectation for staff to report to work further complicated the situation.

Of all the topics and issues that caused the greatest discussion across the university, the ability to get up-to-date and accurate information was the most often mentioned problem. Of the 1,258 faculty and staff who responded to the university-wide survey, 38% noted that they thought they were notified about the campus operating status in a reasonable amount of time, while close to 40% did not feel the notification was timely, and 22% of respondents were neutral on the issue. Of the 1,149 student respondents, 59% agreed that they were notified in a reasonable timeframe regarding the week-long cancellation of classes, while 26% disagreed, and 15% were neutral on the subject (see page 39 for survey results). The decisions regarding campus operating status followed established procedures based on standard emergency management industry practices: the EOC communicated directly with the President and the Executive Vice President for Academic Affairs and Interim Chancellor of the New Brunswick Campus, as well as the chancellors in Newark and Camden. Once decisions were reached, emails were developed and distributed. For some individuals, the receipt of communications was delayed due to their compromised cell phone and/or network services. Some complained that they wished decisions could have been made earlier, even days earlier. Given the evolution of the storm and its extraordinary impact both on- and off-campus, it is unclear how good decisions regarding closings could have been made any sooner.

A specific issue was communication related to the evacuation of the residence halls. Students were unclear about the timing and details of their departure, which led to some confusion and concern. Clear procedures for communications with our large residential community will be developed and implemented into our planning for future emergencies.

VII. Student Affairs

Given the scope of student affairs and the multi-tiered fashion in which it served the campus and evacuees, this portion of the report will be presented following the organizational model of the services provided.

Recreation

The Division of Recreation was notified by the EOC on Thursday, October 25, that the Sonny Werblin and Livingston Recreation Centers would be used as evacuation centers for the Atlantic City area evacuees. While the College Avenue Gymnasium's leaky roof prevented its use, the Cook/Douglass Recreation Center was designated as an evacuation site for Cook Residence Life in case the residence halls lost power. Recreation staff members were notified that they should plan to work from Sunday, October 28, at 8:00 a.m., when cots were being set-up at the recreation centers by Rutgers Housing, until the buildings were no longer needed as shelters.

Prior to the storm, New Jersey State Troopers, a National Guard unit, volunteers from the American Red Cross, and members of the Salvation Army were assigned to each building. Rutgers provided custodial coverage and a mechanic for each facility as well as Recreation staff to assist where needed. The Red Cross was responsible for registration and the daily operation of

the center. The State Police handled security, the National Guard handled logistics, and the Salvation Army provided meals. The various groups met to determine how each building would be used and the roles each group would fulfill during the storm.

The largest number of evacuees arrived at 4:00 p.m. on Sunday, October 28, and continued to arrive in smaller groups until Monday morning, October 29. By that time a registration area with a metal detection security system, a dormitory, a communications center, and a control area were established in both buildings. Large supplies of meals ready to eat (MREs) and water were delivered and medical personnel were on site with 600 sheltered evacuees at the start of the storm.

When the electricity failed, Livingston Recreation Center lost its lights as well as toilet facilities. The problem was handled by Recreation staff members who secured a generator and portable lights and devised a system for flushing the toilets. Werblin fared much better during the blackout because the building is serviced by a gasoline-powered generator; fuel deliveries, as planned, were made to Werblin by Rutgers Utilities every few hours with assistance from an outside vendor. For a 15-hour period, Livingston Recreation Center was without heat and hot water and the ventilation was poor.

Werblin and Livingston Recreation Centers had telephone landlines that facilitated communication between the buildings and with other areas of the State. A wifi hotspot provided by Recreation also aided the State Police as they communicated with their headquarters. In the future at least one landline should remain in all recreation centers to aid in communicating during emergencies. Fax lines could be used for this purpose and we recommend that phones be acquired for fax lines at the recreation centers.

Although students in Cook/Douglass residences needed to be evacuated, the original site for receiving them, the Cook/Douglass Recreation Center (which was readied with cots, etc.), could not be used since it lacked a generator. A generator at this recreation center would make it a viable sheltering option if there is ever another emergency; without back-up power, it cannot be used.

Evacuees left the Werblin facility on Friday, November 2, and the facility was demobilized at 8:00 p.m. that evening. The building continued to house members of the National Guard who were waiting to be reassigned and personnel from the North Carolina Baptist Men's Kitchen, who were cooking meals for the region in the golf course's parking lot. Werblin reopened for the students on Saturday, November 3, after a thorough cleanup and a removal of the cots by Facilities.

The Livingston Recreation Center closed as a State Evacuation Center on Friday, November 2, as well, but on the evening of Sunday, November 4, it was reopened as a County shelter to house families that had been displaced in nearby towns when their local shelters were closed. Livingston continued as a shelter until Wednesday, November 21. Rutgers provided Recreation

staff, representatives from RUPD and the EOC, a mechanic, and custodial services. This period of time was challenging since no one knew how many people would appear each day nor when those families that were being sheltered would get other lodging or be able to return to their homes and when the Center could return to normal operations for students.

Housing and Residence Life

On Thursday, October 25, the senior staff and associate directors convened to review storm planning protocols; subsequently all professional, graduate, and undergraduate Housing and Residence Life staff members were advised to plan to work throughout the storm. While prepared for a strong and serious storm, the impact of simultaneous power outages on all five campuses was not foreseen and, one-by-one, the five New Brunswick/Piscataway campuses began to lose power within a matter of hours. Once power was lost, the water supply also became a problem on the Cook, Douglass, and College Avenue campuses.

Once residence halls lost power, initial evacuations were implemented and students were advised to pack an overnight bag and move to nearby residence halls that had generators; without power for fire/safety systems, the buildings could not be occupied. Some shared rooms with friends, others stayed in lounges. These decisions were difficult to implement with failed communications systems and the fact that some supervisors were responsible for facilities on opposite sides of the campus.

The Housing and Residence Life staff faced the challenge of remaining flexible while taking on new roles, and keeping up with a situation that kept evolving by the minute. With decisions being made and new events occurring, sometimes information given to the students was rendered unimportant minutes later. The largest challenge during the crisis was logistics: determining how to relocate thousands of students, keeping track of them, providing meals for the apartment students, and monitoring the challenges each campus had to address on a daily basis.

On the morning of Tuesday, October 30, residents were relocated a second time since the start of the storm. Because of electrical issues and water pump failures in the city of New Brunswick, the College Avenue and Cook/Douglass Campuses needed to be relocated to Busch and Livingston, but there was not enough room in the residence halls on those campuses, which resulted in the use of the student centers as shelter space for residents; some stayed in those spaces for several nights.

College Avenue residence halls were reopened on Wednesday, October 31, at 7:00 p.m., Cook/Douglass campuses, however, still had residents who could not return to their buildings for several days; Rockoff, Old Gibbons, Helyar House, and Henderson were the last buildings to reopen. On Sunday, November 4, all residence halls were officially open.

In the immediate aftermath of the storm, feeding the students became a concern especially for apartment residents without a meal plan. The Housing and Residence Life staff partnered with Dining Services to insure that those students were fed.

Dining Services

Dining Services focused on their staffing and available supplies in advance of the storm. The Busch and Livingston Dining Commons made the necessary preparations to ensure that students, staff, and members of the campus community would have access to food using historical data and previous weather-related situations to inform their preparation decisions. With a history of flooding in the local area, access to clean water was the paramount concern when framing their strategic plans. Without clean water, dishwashers would be unusable, produce could not be washed, beverage machines could not function, and the thermal readiness of many menu items would not be possible. Livingston Dining Commons collected and stored hundreds of extra gallons of water in commercial containers. In addition to the clean water, staff prepared three days' worth of Nap-Packs (including a napkin and a plastic spoon, fork, and knife) and Styrofoam plates and cups. Both the Busch and Livingston Dining Commons prepared propane grills and butane burners to ensure that they would be able to cook if power was lost.

With the Piscataway campuses hosting New Brunswick students, and the recreation facilities hosting evacuees from across New Jersey, the dining facilities were heavily utilized. Both Piscataway dining facilities also served members of the National Guard, National Disaster Response team, State Police, and Rutgers staff. All Dining Services staff, who could safely do so, were required to report to work. To assist their employees, the management teams of the dining halls mapped out alternate routes for employees to safely travel.

On the first night of the storm, the Busch and Livingston Dining Commons lost power; they relied on back-up generators to supply some lighting and power for refrigeration. But, normal operation of equipment such as dishwashers and venting systems was not possible. Comprehensive advanced preparation helped alleviate the loss of operations and aided the accommodation of additional consumers even when Brower Commons lost power for multiple days. Dining Services was able to bring in a refrigerated trailer truck to preserve perishable food and send supplies from College Avenue to Busch and Livingston. While there may have been some initial confusion among students regarding the availability and hours of the dining halls, Dining Services was able to utilize their social media, such as Facebook and Twitter, to send updates and information about hours to its constituents. Before the storm, Busch Dining Hall was serving both breakfast and dinner to about 1,700 students and faculty daily- during the storm this number doubled. The Livingston Dining Commons alone served 13,586 meals from October 30 to November 1 while residents were displaced (typical Tuesday-Thursday service is approximately 7,000 meals). Throughout the emergency, Dining Services provided meal service without interruption.

Student Life

The Student Centers house university offices, manage external food operations and host events sponsored by departments, students and external clients and remain open even when the university cancels classes. But, four of the centers (Cook, Douglass, Rutgers, and the Student Activities Center) have no back-up emergency power and the other two centers (Livingston and Busch) have only very limited emergency lighting to help with egress from the building.

Prior to the storm the staff restocked emergency supplies, updated and confirmed staff and vendor emergency contact lists including alternatives to university assigned emails (especially if they were on the Student Affairs "Echo" server), cell phones, etc. Plans were also put into place to print and take home paper copies of any reservations occurring in the Centers on Monday through Wednesday of the expected storm.

Initially, plans were made to have cots available at the Rutgers Student Center for stranded commuters, but as planning progressed it was determined that the center did not have the appropriate emergency systems and the cots were removed. Student organization officers were contacted and asked to notify the staff if they were cancelling their events. Similarly, external clients were contacted to learn what they planned to do and, as early as Saturday, October 27, many events were cancelled by the clients.

Following standard procedure for any weather emergency, student Facilities Managers at the student centers were scheduled to work in the event professional staff could not get to campus. Given the storm predictions, staff assignments were reconfigured to align more closely with their campus of residence; this turned out to be one of the most critical and effective decisions implemented during and after the storm. Anticipating the loss of grid power and resulting loss of access to phone, email, and network services, walkie-talkies were borrowed from Dining Services. Responsible for several social media sites, including the Parents' Association site, additional staff members were provided with administrative access to post updates and respond to inquiries.

The loss of power throughout the region and intermittent cell phone service, made university update notices challenging to manage. Staff ended up relying heavily on unreliable and delayed commercial text messages to communicate with each other. While most centers closed on Monday, October 29, at about 2:00 p.m. (after the notice the university was closing at noon) the Douglass Campus Center was asked to remain open for students from Jameson Residence Hall; this decision enabled Jameson students to access the Café for food service because Neilson Dining Hall was too far for students to walk during the storm.

On Tuesday, October 30, Housing and Residence Life requested that Livingston and Busch Campus Centers prepare to shelter evacuated students. These facilities were running on emergency power, but still had water service so these buildings were safer options than residence halls without any power and water in New Brunswick. The plan to use student staff to open and

help manage facilities was activated and staff who were able to drive to campus were sent to Livingston and Busch Campus Centers to open and prepare the facilities for sheltering purposes. Some staff, however, were blocked by New Brunswick Police and had to try a few different routes to reach their assigned facility. Others were unable to reach the facility because of closed roads due to storm damage. The power outages also affected access to the buildings since external doors use electricity-dependent swipe card access. Conventional key access is limited- as a matter of regular secure key management- and those with keys were unable to get to campus. RUPD was contacted to open the centers.

To better coordinate the planning for the sheltering of students, senior staff from Housing and Residence Life and student center staff met at Busch to inspect the facilities and develop an accommodations and logistics plan for both Busch and Livingston. Plans for students in the centers included how to manage student access between 1:00 a.m.-7:00 a.m., quiet hours and zones, as well as how to keep students occupied during the extended stay.

Residents from the College Avenue and Cook/Douglass Campuses were relocated to Piscataway to be housed on the Busch and Livingston Campuses. During the process of relocating students, however there was a miscommunication. Initially, the plan was to bring students to residence halls on Livingston and once the residence halls were filled, any remaining students would then be sheltered in the campus centers. All of the students, however, were initially brought to the Livingston Student Center. While not prepared for the large numbers, Residence Life quickly modified the plan and with the assistance of Public Safety personnel, student center staff were able to direct students to the Livingston residence halls.

As more student center student staff were able to travel safely to the centers, they assisted with setting-up cots and making general preparations for extended stays. With the university closed and classes cancelled, the campus centers also had many students with nothing to do, so the staff facilitated programming efforts with Housing and Residence Life staff in order to keep students occupied.

Full power was restored on Busch and Livingston shortly after students moved in. This gave students immediate access to news and the ability to charge cell phones. For many students this was the first time since the storm hit that they were able to call home. When power and water were restored on College Avenue on Wednesday, many students were relocated from the centers that evening. Student center staff provided services to support off-campus students with continuous operation (staying open 24 hours a day) through Sunday, November 4.

In an effort to better understand the needs and circumstances of off-campus students, a short survey was developed and distributed through various methods. Almost 1,000 students completed the survey within 48 hours and they also responded for another 300 students who did not have Internet or computer access. Information from the surveys helped to identify and establish services for off-campus students.

Shuttle buses supplied by Rutgers' DOTS provided access to local grocery stores. This service was coordinated by the EOC on Sunday, November 4, and Monday, November 5, and helped students to buy food and supplies before classes resumed. Many had damaged or perished supplies as a result of the storm and with gas shortages and road closings, getting to the grocery store was nearly impossible. The assistance was well-received and appreciated.

On Sunday, November 4, the Student Involvement Office and Rutgers University Student Assembly (RUSA) hosted a dinner for off-campus students. This event, held at the Rutgers Student Center, was catered by two of the student center vendors. Over 600 students attended and many of them stated that this was the first hot meal they had had since the hurricane. Staff also used this time to collect information from students about what their concerns/issues were related to the storm.

Once the university re-opened, Student Life focused on providing information about community service initiatives regarding hurricane relief. A website was created identifying items to donate; collection sites were established at the Student Activities Center, and a Hurricane Sandy Relief account was created at the Student Activities Business Office so that student organizations could collect money and donate it via one account.

Throughout the storm, Student Life marketing staff and Parent Program staff were constantly working to communicate with students and families through the website, email and via social media. They regularly posted university updates and obtained answers to questions regarding Residence Life and Dining issues.

Data from Facebook demonstrates the increased reliance and importance of social media communications. During the week following the storm, the "total reach" for the Parents Facebook page was typically more than 1,000 and the Student Life page averaged more than 4,500 visitors per day. The Student Life website had more than 16,000 visits during the storm.

The need for communication and dialogue with parents was constant. There were 29 posts/updates by Student Life plus a total of 151 comments (28 of those were Student Life's responses within the comment thread). Parents' comments ranged from concern about the timing of the class cancellation announcements (they wanted to know sooner) to confusion regarding the evacuations to appreciation regarding frequent updates.

Health Services

As the storm approached it was decided to close Health Services on Monday, October 29, and Tuesday, October 30. The Busch-Livingston Health Center was reopened on Wednesday, October 31, when enough staff were able to safely come to campus. As we plan for future emergencies, we need to consider the role of Health Services, including Counseling and Psychological Services, and how we address students' health needs during emergencies and how decisions are made in concert with the expectations of the EOC.

VIII. Academic Affairs

The initial two day cancellation of classes prior to the arrival of the storm, while viewed as one of the most prudent decisions by many, was also considered to have been made too late and for too short a period of time by others (i.e. some felt the decision should have been made even sooner and for the entire week). Sandy, like many weather emergencies, did not follow the course that was predicted by the weather forecasters. For example, Camden, while predicted to be the hardest hit, had the least damage and the campus was able to reopen on Thursday, November 1, while Newark and New Brunswick could not have reopened more quickly, even though the region was predicted to have a lesser impact from the storm. In Newark, even though the campus may have been ready for classes, the faculty and students could not have commuted with the suspended and delayed operation of mass transit. In New Brunswick, the mass transit disruptions were also a problem and combined with street and highway closures due to felled trees, it would not have been possible to provide access to classroom buildings, parking lots, etc. In making decisions to cancel classes and close the university, the impact on the individual campus cannot be evaluated without a review of local and regional conditions.

The post-hurricane university survey provided additional insight into the perceptions of those who were seeking information about cancellations and closures. Based on the results of the surveys, both faculty and students wished they had known sooner about class cancellations for Monday, October 29, and Tuesday, October 30, and for the remainder of that week. However, given the evolving nature of the storm and its devastating impact, the Task Force concluded that the decisions to cancel classes and close the university were reasonable and timely based on the totality of the information that was available.

Once offices reopened and classes resumed it became apparent that the level of storm-related stress and pressure for some students was overwhelming. Some students had damage to their campus homes, others had damage to their family homes and still others had difficulty getting to their classes because of the fuel shortages. Many students considered withdrawal or inquired about the possibility of incomplete grades. Students and their parents called and emailed seeking guidance on how to proceed including the possibility of securing refunds for the fall semester.

The Executive Vice President for Academic Affairs wanted to ensure that the university's response to these concerns was concerted and comprehensive, and, to that end, a meeting was convened to create a one-time Grade Conversion Program that would allow students on all three campuses to convert their grades to Pass/No Credit. This policy was developed and implemented in a timely fashion in order both to aid struggling students and to avoid the possible financial repercussions for students and for the institution.

The expedited decision-making regarding the option for pass/no credit grading was well-received. This collaborative accommodation demonstrated vision and compassion.

Division of Continuing Studies

During the storm it was unclear to students and faculty in online courses whether the suspension of classes applied to them as well. Additionally, the various class resumptions posed problems for students and faculty who did not have power even after the university was fully operational. This population and their curricular needs will require careful consideration when developing business continuity plans.

Libraries

The Libraries have a telephone calling chain, send emails to all staff, post changes in hours on their website, and disseminate changes in service through the weather emergency announcements. Problems did arise during Sandy when staff members were not able to access the Internet; they were not sure how to proceed when municipalities declared emergencies and Rutgers expected them to come to work. Use of text messages helped, but communications were difficult.

IX. Research

As an AAU university, the support and sustainability of Rutgers research enterprise is an institutional imperative. While the humanities and social sciences require the maintenance and access to vibrant and secure databases, those in the STEM fields also need continuous, uninterruptable power supplies to support animal research, ongoing experiments, and the storage of critically important samples. Without the assurances that we can provide continuous power for STEM research projects, Rutgers will jeopardize its ability to garner competitive federal grant support.

During Hurricane Sandy, power was lost to freezers, experiments, and laboratories, and, unfortunately, many research projects were compromised. While plans were in place for back-up generators, the length of the power outage and the difficulty in getting the limited capacity fuel truck to refuel all generators in a timely fashion resulted, in some cases, in catastrophic failures. Fortunately, many dedicated faculty, staff, and graduate students made extraordinary efforts and were reported to have slept in their labs to protect their animals and insure the viability of their experiments. While financial losses can be recouped, the loss of experiments, or animals that we have pledged to protect, cannot be replaced.

There were a number of key issues that arose from the storm that had a deleterious impact on research at Rutgers. While Rutgers staff responded promptly to help ameliorate problems, the areas of most concern include communication with faculty and staff and the provision of back-up power.

In terms of communication, faculty and staff wanted timely access to information about the status of their buildings and laboratories. If a building's power is off, the faculty and staff need to

be notified because they need to determine if their animals and projects are safe. Facilities staff can advise if there is power but they do not check the individual condition of labs and the animals. Ultimately the researcher is responsible for the condition of the research and animals. Especially important, these same individuals need to know, in advance, if their building is closed so they do not come to campus only to be denied access. Some employees who were evacuated from their homes travelled more than 50 miles during a dangerous time with limited fuel available for personal vehicles only to find that their building was closed with no notification on the Rutgers main website. These building closures were never communicated to employees who are, generally, advised to visit the home page to view campus operating status. At the same time, Rutgers Utilities had the buildings that were without power listed on their website. As a result of this information, the EOC is taking action to provide an enhancement to the campus operating status page that will be updated and include information about changing conditions.

The availability of back-up power was another issue that was recognized as a priority by the Task Force. The need for back-up power to protect vital assets requires immediate attention and action. According to the Office of Laboratory Animal Welfare (OLAW) guidelines, disaster plans for animal care facilities "should consider failure of critical systems including HVAC and alarm malfunctions, as well as failures in primary and emergency power sources, mechanisms for maintaining appropriate temperatures and ventilation, and a scheme for relocating or euthanizing animals when power cannot be restored or repairs effected promptly."[14] Under these guidelines, sufficient power is required to preserve key research and critical experiments as well as to insure animal welfare and safety. Preserving and protecting the animals and ensuring that they are safe at appropriate temperatures is absolutely essential. Back-up power is also needed to preserve critical biological samples, hazardous chemicals, and for the continuation of longitudinal research projects. Without back-up power, years of research work can be lost.

When addressing power requirements, the issues are more complex than just purchasing and installing generators. Sufficient fuel supplies are necessary along with staff support to maintain the generators. During Sandy some generators did not have fuel, or ran out of fuel, and some freezers had damage due to power surges when electricity was restored and compressors became overloaded. Appendix I includes many quotes from faculty about the power problems related to the storm, but the following sample quotes provide a good overview of the concerns:

- *Not all of the various animal facilities has backup power. Fortunately no animals were lost during the roughly 24hrs that Busch went without power in the recent storm. Had the outage lasted longer, however, there would have unquestionably been significant losses in terms of both animals and data. This clearly needs to be rectified.*
    - An Emergency Preparedness Plan for Laboratory Animal Service exists at Rutgers. The plan has specific responses that would have come in to play for long

[14] Office of Laboratory Animal Welfare (OLAW) and Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC).

term emergencies. This plan will be reviewed to accommodate any gaps found with Sandy.

- *I didn't lose anything from the storm BUT a prolonged power outage would be devastating to my animal colony, which is in my laboratory in Psychology. These mice are genetically engineered and irreplaceable. PLEASE provide backup support for these facilities.*

- *Biochemical and molecular biology reagents (antibodies, enzymes and fine chemical), radioactive isotopes and lipid reagents were lost. In some cases a commercial yeast mutant collection with 4800 strains was compromised, another dating back 35 years was compromised. Several purified enzyme preparations were lost, some date back to 1983. Loss of reagents, some samples unusable and experiments need to be redone. Loss of stock cultures and parental cultures, thawing of expensive chemicals reagents kits and tissue samples.*

- *In one case a liquid helium mixture evaporated and expanded uncontrollably ,pressure built up and lost some of the mixture, He3 is a very expensive gas, about $700./ ltr. at normal pressure.*

In addition to the negative impact on scientific research and experiments outlined above, the ability to submit grants through the Office of Research and Sponsored Programs and to access information on animals stored in databases or on the web is critical.

While it is important to note that the Office of the Vice President for Research and Economic Development maintains servers in ASB III and tape back-ups are completed on a routine basis so that data are preserved, alternate accommodations need to be made immediately to insure that the vital university research is protected and can continue. While the Research and Economic Development Office temporarily relocated servers to Hill Center, not all of the servers were compatible with the racks at that location. Ultimately, we had to request for a filing extension from NIH as a result of the hurricane and the fact that ASB III was closed without back-up power.

X. Human Resources/Employee Relations

The management of human resources and the effective implementation of personnel policies are vital in addressing any campus emergency. This was especially the case during Hurricane Sandy. Despite the extremely difficult weather conditions, staff members from various areas including Facilities, Housing, Dining, Student Affairs, Administration and Public Safety, Information Technology, University Relations, as well as faculty, laboratory technicians, students, and staff worked at various campus locations throughout the storm. Without the dedication and professionalism of these individuals, the impact of the storm would have been devastating. At the

same time, classes were canceled for the week and most faculty and TAs were not expected to teach or report to work.

As noted from the survey results and anecdotal information, there continues to be bad feelings, indeed acrimony, by some employees regarding what is at least perceived as the apparent goal of providing a safe environment for faculty and students without the seeming regard for the welfare of staff. The campus status of "Weather Alert," providing for the cancellation of classes and activities for safety reasons while expecting staff to come to work is, perhaps, one of the greatest sore points resulting from this storm (and previous weather events as well). Complicating this issue is the fact that many supervisors do not necessarily understand their prerogatives when advising staff about whether or not they will be charged for their absences.

Supervisors who understand the range of options offered within the "Weather Alert Status," often utilize this discretionary authority as it is intended but often with unintended or unavoidable negative results. For example, when a "Weather Alert" Status is imposed, some employees feel they are being treated unfairly when they are required to work while other employees are not. The reality is that line-level supervisors are provided a great deal of discretion during these extraordinary events and are asked to make the staffing decisions that they are clearly in the best position to make. Those who are needed and required to work, when others are deemed not to be needed and then excused from working, often feel they were not treated fairly and some actually believe they have been occupationally victimized.

Another issue that made matters even more confusing for employees during Sandy was a lack of understanding of what a state of emergency means and the fact that Rutgers initially expected staff to come to work at the same time that a state of emergency was declared. The declaration of emergency confused employees because it was not understood that the state of emergency did not prohibit travel or prevent employees from reporting to work. A state of emergency[15] is an official action that provides for state aid to supplement local resources for preventing or alleviating damages, loss, hardship, or suffering.

The travel bans imposed by the City of New Brunswick created additional challenges that were ultimately resolved. But, initially, employees were frustrated when they were advised to show their ID cards when stopped by New Brunswick police as they were attempting to go to work.

[15] See NJ Office of Emergency Management website, FAQ, What is a State of Emergency (http://www.nj.gov/njoem/soe_faq.html), which states "The Governor declares a State of Emergency when he/she believes a disaster has occurred or may be imminent that is severe enough to require State aid to supplement local resources in preventing or alleviating damages, loss, hardship or suffering. This declaration authorizes the Governor to speed State agency assistance to communities in need. It enables him to make resources immediately available to rescue, evacuate, shelter, provide essential commodities (i.e., heating fuel, food, etc.) and quell disturbances in affected localities. It may also position the State to seek federal assistance when the scope of the event exceeds the State's resources."

Even after the New Brunswick police changed this practice, some staff were still not able to proceed to their offices. As a result, some employees who attempted to work but were prevented from doing so were worried that their jobs could be jeopardized for not meeting their obligations.

Following the university's response during Hurricane Sandy, many Rutgers staff members expressed a desire for a revision to Rutgers policy 60.3.16 *Attendance During Adverse Weather Conditions*. Specifically, both supervisors and employees recommended that the policy should be modified to include prefatory language stating that employees should not endanger themselves while attempting to get to work during serious weather conditions and to use care about whether to make the decision to travel to work. Concomitantly, the explanation of which personnel are required to report for work when other employees are not required to report must be further clarified. Regardless, of how personnel are described, Rutgers should be careful not to relinquish its management's rights to determine when and which employees are needed and what employees are required to do.

The historical practice of the automatic mobilization of every person who at any time was deemed to have been "essential" to report to every closure of the university is unnecessary, a bad business practice and cost prohibitive. Unit managers need to decide which employees are required to work. Any department or unit with a need for a certain classification of employee to report for all emergency activations can take action to accommodate that need through the exercising of rights found within the university's adverse weather policy 60.3.16.

SUMMARY OF SURVEY DATA

I. Overview

Introduced by a cover letter from President Barchi, an online survey was distributed to all students, faculty and staff. Two similar surveys were developed, one for employees, the other for students. There were 1,268 faculty/staff responses and 1,149 student responses. While not a statistically significant response rate, the data gleaned from the responses was extremely useful when identifying the major issues highlighted in this report.

II. Major Findings

Rutgers Responds: Faculty/Staff and Student Survey Responses

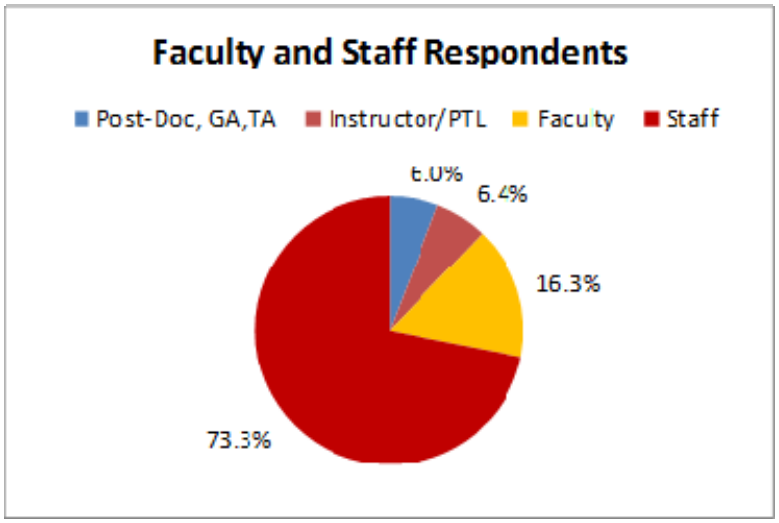
On December 10, 2012, President Barchi sent an email to the Rutgers community asking that they complete a survey as part of the evaluation of the university's response to Hurricane Sandy.

Two separate surveys were deployed, one for faculty and staff, and one for students.

Demographics

Faculty/Staff

The faculty/staff survey was completed by 1,268 respondents, including 922 full-time staff (73%) and 205 tenured or tenure-track faculty (16.3%). The remaining respondents were part-time or temporary staff (3.2%) or instructional positions (12.5%: graduate assistant, teaching assistant, post-docs, part-time lecturers, instructors).[16] Respondents were primarily from the New Brunswick campus (87%), with 9% from Newark and 4% from Camden.



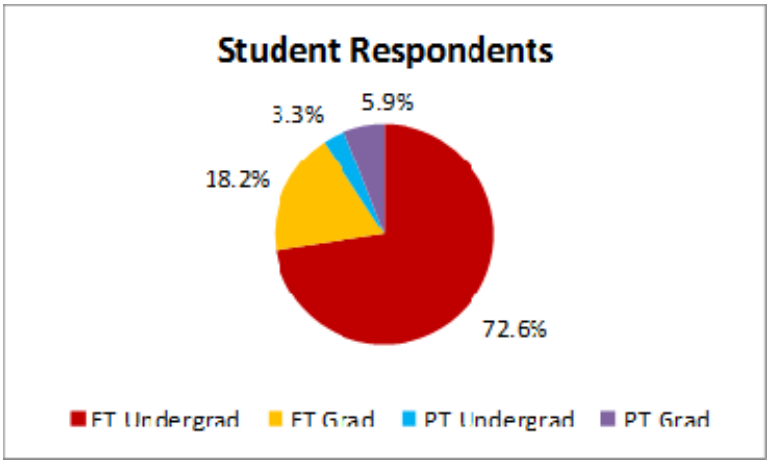
Students

The student survey was completed by 1,149 respondents, 72.6% of whom were full-time undergraduates and 18.2% of whom were full-time graduate students. The rest were part-time undergraduates (3.3%) and part-time graduate students (5.9%).

Most (81.9%) are affiliated with the New Brunswick campus, with 5.2% in Camden and 12.9% in Newark.

Approximately 85% are in-state students, with 45.9% living on-campus and 19.3% living in local off-campus housing. Another 34.8% commute from a permanent off-campus residence, primarily by car.

[16] Responders could self-identify in more than one category, for example, as a staff member and a part-time lecturer.



Communication

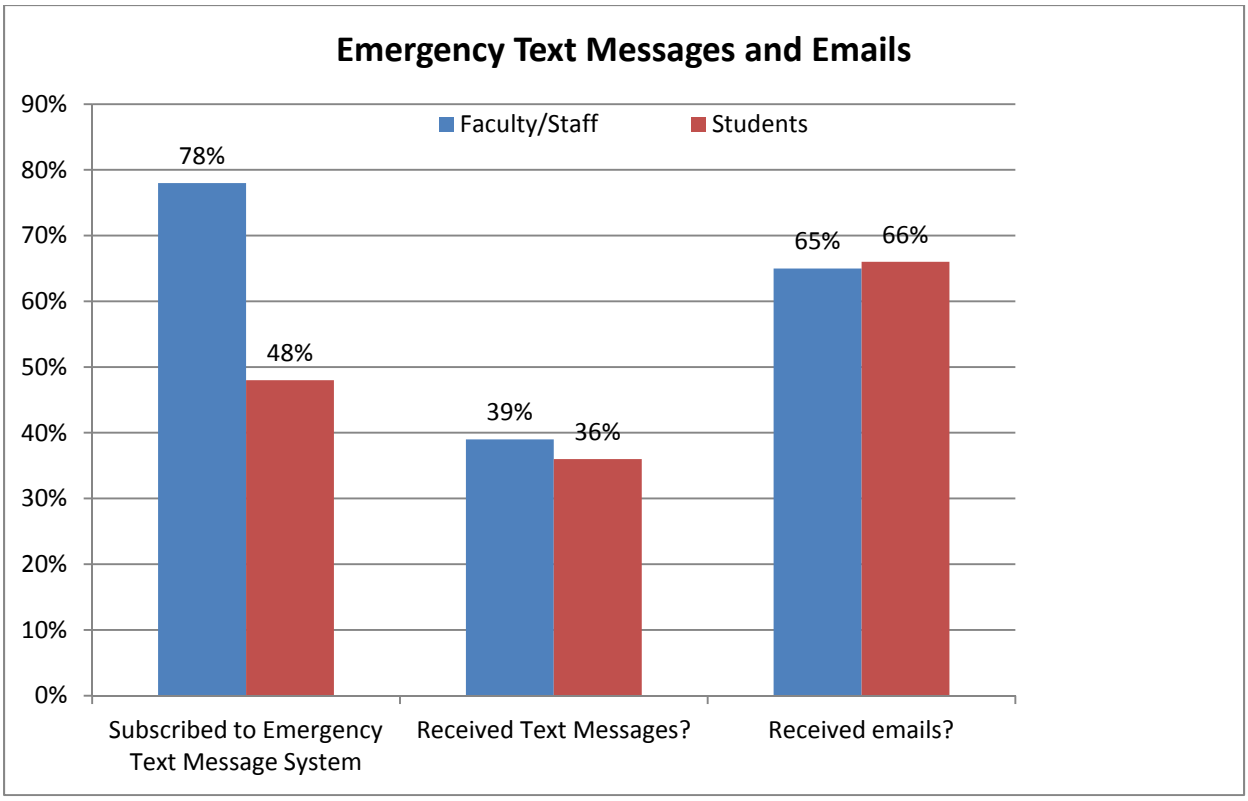
Communication prior to, during, and after the storm was a focus area in the survey. Primary sites for obtaining information about campus closings prior to and after the storm were university-wide emails (47% faculty/staff, 66% students) and the university website (35% faculty/staff, 38% students), which is consistent with the preferences each group reported for receiving information generally. The next most frequent source of information was colleagues (28% faculty/staff) and friends or roommates (33% students). Emergency text messages were more of a source of information for faculty/staff respondents (19%) than they were for students) (6%), while social media was more of a resource for students (18%) than for faculty/staff (8%).

While 65% of faculty/staff said they received university emails, 30% did not because they did not have power. In addition to university-wide emails, 50% received emails from their employing department.

Similarly, 66% of students indicated they received the university-wide emails. Cell phones were used by 75% of student respondents as the primary means of communication with parents, family, and friends during the storm.

Emergency Text Message System

Approximately three-quarters of the faculty/staff respondents (72%) and student respondents (76.4%) have a smart phone/Internet-enabled phone. Of those, 77.9% of faculty/staff and 47.7% of students indicated that they are subscribed to the campus emergency text message system. Only 39% of the faculty/staff and 36% of the students who are subscribed reported receiving text messages from RU during or after the storm.



During the Storm

The survey response indicated that 80% of faculty and staff remained in their primary residence during the storm, but a small number (2%) stayed in a university shelter, office, or research lab. Most of those who stayed on campus did so because they had responsibilities to students or were part of the university's emergency response, and were concerned they would not be able to get to campus after the storm. While offices were closed, 30% returned to campus. Reasons given were communication issues (not sure whether offices were open or closed), to check on facilities and/or research (including research specimens and laboratory equipment), and because power was available on campus before it was restored at their residences.

Student respondents indicated that 26.1% stayed on campus, 22% stayed in off-campus housing, and 35% went to a parent or relatives home. Those who left campus generally did so over the weekend (35%) and most of those planned to be off-campus anyway. Of those who stayed on campus, 37% were subsequently evacuated. Issues noted with the evacuation included:

- Confusion/lack of information (69.8%)
- Lack of access to showers (54.7%)
- Too noisy to sleep (51.9%)

Although 52.7% of evacuated students rated the evacuation as poor or very poor, with another 25% rating it as adequate, student rated the RAs/Housing staff members as excellent or good on:

- Provided accurate and specific directions about relocation facility (42.2%)
- Remained calm and reassured residents (62.5%)
- Assisted students with needs or challenges (52%)

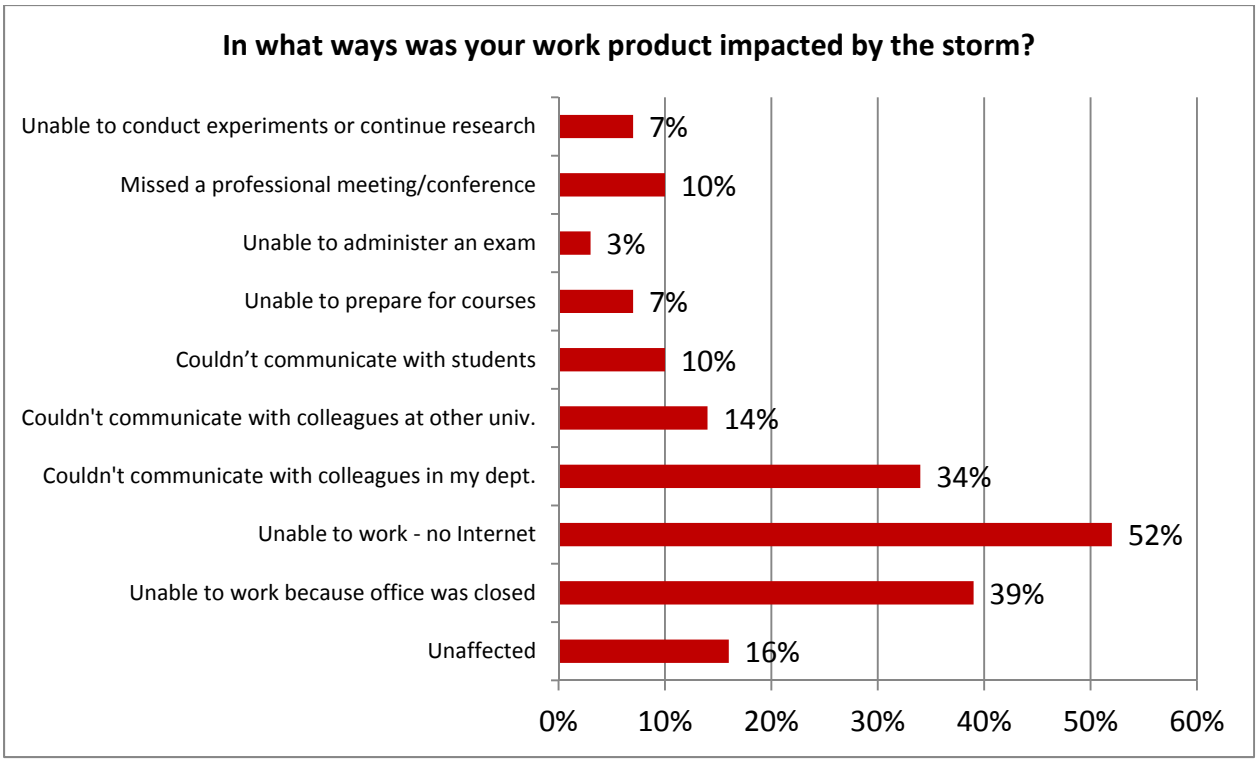
Of those students who normally use the dining facilities, 40% did not attempt to use dining halls and 44.7% were able to use dining halls during the storm. Of those, 79% encountered no issues.

After the storm

For faculty and staff, since 85.6% commute to campus by car, major post-hurricane issues with getting to work were difficulty accessing gasoline, road closures, and traffic delays.

Faculty/staff respondents indicated that their work product was impacted by the storm primarily due to lack of Internet access (52%), closed offices (39%), and an inability to communicate with colleagues (34%). While the majority of respondents (54%) indicated that they did not have any remaining concerns pertaining to their work after the storm, those who did express concern cited not having time to make up material missed in courses (10.8%), delays in university paperwork or expenditure approvals, (7.7%) or lost wages (4.5%). A small number expressed concerns directly related to research: research specimens are no longer viable (2.2%); not being able to meet research deadlines (1.5%); and damaged or destroyed laboratory equipment (less than 1%). Of the 30% who said they have instructional or student support responsibilities, nearly half communicated with students and provided course updates using Sakai, eCollege, or email.

Although 80% of students indicated that they were aware of the academic accommodation policy only 1% said they applied to convert grades. Of those who said they were unaware of the policy, 26% said they would have applied, 34% were not sure, and 40% said they would not have applied.



Overall Evaluation

Students rated the overall response as follows:

- Communicating information to students – 54% excellent or good, 22% adequate
- Providing assistance to students – 50% excellent or good, 20% adequate
- Evacuation procedures – 26% excellent or good (40% did not respond)
- Meeting the needs of affected students after the storm – 52% excellent or good
- Providing support to NJ residents – 52% excellent/good

Faculty and Staff rated the overall response as follows:

- Communicating to students, staff, and faculty – 41% excellent or good, 27% adequate, 30% poor or very poor
- Providing assistance to faculty, staff, and students – 54% excellent or good, 19% adequate, 24% poor or very poor
- Providing support to NJ residents – 47% excellent or good, 37% no opinion
- Protecting the integrity of research – 12% excellent or good, 72% no opinion

What could we do to improve the RU response in the future?

The open-ended responses included praise for the emergency responders and those who worked to keep students safe, as well as comments/suggestions that can be summarized and grouped into five categories:

Improve Communication

- Have defined points of contact in departments for emergency information
- Make sure that messages across the university are consistent
- Don't leave communication to individual departments
- Be concise with information— the RU web page had too much information when people needed quick answers
- Send more messages throughout the emergency event, even if nothing has changed
- Communicate plans for students in-residence to anyone affected, not just those who deal with students directly

Use Alternate Sources of Information

- Recognize that radio was often the best or only resource
- Make better use of text message system
- Increase use of various social media

Campus Closing/Personal Safety

- Make decisions to close in advance of storm and communicate sooner
- Define essential employees
- Respect a declared state of emergency
- Consider faculty, staff and students equally in closing decisions
- Recognize people had to put home, family first/don't force people to take vacation or sick time
- Develop emergency telecommuting policies
- Don't evacuate students in the middle of the storm

Ensure Back-up Power

- Refrigerators and freezers must be supported so research samples are not lost
- Have back-up servers and support for email systems
- Priority for all animal facilities
- Have generators in place before the storm and test them

Advance Preparation

- Upgrade mechanical and electrical systems in aging buildings
- Have individual department emergency plans
- Train staff/students on emergency response
- Check status of buildings after storm and let people know if they can return
- More communication before the storm about what to expect
- Have a core team to assess impending emergencies

TASK FORCE FINDINGS (Strengths)

While New Jersey was hard hit by Hurricane Sandy, we were fortunate to have a dedicated Emergency Management Team, staffed with members from all critical areas of the university, who worked collaboratively to provide leadership in preparing for the storm, implementing emergency action plans, coordinating the use of available personnel and resources during this multi-phase weather emergency, communicating daily updates to executive decision makers, and restoring operations to the campuses. Clearly, prior training and partnership building paid huge dividends during this catastrophic event. As a result of this comprehensive task force post-incident review, many strengths were identified about the operations and the tireless efforts of all employees who took part in this emergency response.

While a more detailed list of noteworthy university strengths identified by each of the sub-committees can be found in Appendix Q, the following represent the more significant actions:

- Nearly 6,000 Rutgers students affected by the power outages on the New Brunswick campuses of Cook, Douglass and College Avenue were successfully transported and sheltered on Busch and Livingston campuses, with no reported injuries, until power could be restored to their residence halls.
- Rutgers provided assistance to surrounding communities, as well as to over 1,200 evacuees, creating one of the largest single state shelters in New Jersey.
- All university data resources were preserved and the IT infrastructure performed as designed. Central network, phone systems, email, and directory services remained operational.
- Student personnel, including but not limited to Student Center Facility Managers, Community Service Officers, Emergency Service Officers and other student staff groups worked throughout the storm and during the time the university was closed despite personal hardships. When professional staff had limited or no ability to reach campus, the student staff managed to perform multiple tasks to assist in keeping the university operational.

- Communications kept Rutgers constituents informed of relevant information prior to, during and after the storm, through the use of many different communications modes despite power outages and other challenges.
- Inter-campus communications were successful and the Rutgers community came together during this most difficult time to share resources and information.
- There was tremendous institutional support and compassion for students experiencing hardships which resulted in the effective and timely coordination of policy and implementation of the grade conversion policy.

These highlighted strengths show the remarkable ability of such a large institution to come together to collectively address the many challenges which we faced. Many worked around-the-clock, spending countless hours at university shelters, sleeping on cots, in offices or labs and contributing to the disaster relief efforts provided by Rutgers.

TASK FORCE FINDINGS (Areas Requiring Improvement)

Together, 12 sub-committees shared the task of thoroughly reviewing the university's response to Hurricane Sandy to further improve the emergency preparedness of Rutgers University for future emergencies. Many strengths were highlighted and, concomitantly, numerous areas for improvement also emerged as a result of this exhaustive review. The purpose of the following section of the report is to establish a foundation for the recommendations, not to assign blame or fault to any specific unit or responders. The information below is a summary of the more consistent comments and/or the most significant issues provided by the subcommittees. The complete list of *Areas Requiring Improvement* is included in Appendix R. All topics addressed in Appendix R will be assigned to the OEM to address in a follow-up report. The OEM will work with members of the Emergency Management Team to complete that report in 90 days and it will then be attached as an appendix to this report.

Below is a summary of the most significant areas that were deemed to require improvement:

- Most operations lack business continuity and contingency plans including paper-based directories with contact information for personnel. According to the Technology sub-committee, few of the departmental emergency plans addressed an extensive grid power outage in the region.
- Information needs to be developed and disseminated to provide a better understanding of the emergency management function and the role of the emergency management team during an emergency.
- The campus status designations are not fully understood by the Rutgers employees. This needs to be further reviewed, clarified and communicated so supervisors understand their authority and what information they need to convey to their staff about attendance during adverse weather conditions and other emergencies.
- The practice of the automatic mobilization of every person who at any time was deemed to have been "essential" to report to every closure of the university is unnecessary, a bad

business practice and cost prohibitive. It is for this reason that operational managers must decide which employees, based on the uniqueness of the event, are required.

- Better coordination is needed across all departments and units charged with communication. This needs to also include back-up strategies so information can be shared in a timely fashion with all constituents (students, staff, faculty, parents, etc.)
- The tone of communications should show concern for the safety of all members of the Rutgers community and acknowledge the difficulties people face in such emergencies.
- The lack of back-up power sources interrupted and, in many cases, completely halted operations including, but not limited to:
    - Access to communications services including email, web access, cell phones, and both landline and VoIP telephones;
    - Normal indoor cooking in dining halls;
    - Swipe card access for building entry;
    - Power supplies for research support;
    - Fire and life safety systems worked as designed, however fire alarm systems have a 24 hour back-up and life safety systems including emergency lights and exit signs, have a 1 hour back-up.

MAJOR TASK FORCE RECOMMENDATIONS

This Task Force review revealed that many of the emergency support functions and the practices followed during emergencies were not clearly understood by the university community and even some members of the emergency management team. The collaborative review process implemented for compiling this report provided a unique opportunity for key stakeholders to become familiar with emergency management operations and to better understand the need to be actively involved in proactive efforts to prepare for all hazards. Equally important, through the creation of this report, colleagues were educated by their peers regarding services that are provided by their respective units during emergencies. The efforts of this Task Force will help to develop a unified approach to dealing with future events by identifying flaws in systems, policies, and information sharing procedures. In many cases, the challenges identified by sub-committees have already been addressed and some of the recommendations have already been implemented. These actions will be detailed in the follow-up OEM report.

The following is a summary of selected major task force recommendations that need to be implemented:

1. **Develop a university policy for Business Continuity Planning**
   The policy should define assets that require a business continuity plan, define the timely completion of the plan, prescribe actions to preserve and protect assets and ensure the continuity of operations during emergencies. The Office of Emergency Management, in collaboration with Risk Management will be responsible for the development, implementation, maintenance and oversight of the program.

This page has been redacted to remove emergency or security information or procedures which, if disclosed, would jeopardize security of the building and the safety of persons, property, electronic data or software.

2. **Identify locations that need emergency generators and re-architect RUNet**
   If it is decided to deploy additional emergency generators, OIT/TD will analyze how RUNet's topology could be revised to leverage the deployed generators to improve the responsiveness and resiliency of the university's systems.

3. **Designate Emergency Work Sites**
   Specific buildings need to be identified, such as the [redacted] to be designated as emergency worksites where units can relocate their staffs during an emergency or major power outage. This would require an emergency generator be installed at [redacted] and that the network connections to Hill Center be hardened so that [redacted] would remain connected to the Internet during a wide-spread long-term loss of grid power.

   Specific plans for emergency operations would need to be developed. Business units would need to identify essential services, establish hardware and software requirements, and deploy essential services so they would remain operational and could be accessed from [redacted] or a remote facility.

   There are two essential features that must be kept in mind when developing this approach: 1) essential services cannot depend on remote desktop protocol (RDP); and 2) the emergency work site approach would not be effective for emergencies resulting from biological causes (e.g., avian flu) during which staff should not be brought into close contact with one another.

4. **Procure a Rutgers Private IT Cloud**
   Identify essential services currently deployed in spaces without backup power and relocate them to resilient spaces with redundant power. This recommendation coupled with the emergency work site recommendation would provide an effective emergency operation environment during a Sandy-like emergency.

5. **Improve IT Infrastructure at Rutgers**
   Some essential resources might need to remain in fixed locations and may require connections for the Internet to be maintained. Once such locations are identified, OIT/TD will evaluate what changes would be needed to RUNet to revise and harden/secure the necessary pathways. RUNet connects to hundreds of buildings, and has routing equipment in most of these. Hardening all RUnet pathways would require extensive funding; however, hardening a few essential pathways (i.e. to the Public Safety Building and other high-priority sites) is an option.

6. **Identify Mission Critical Research Operations**
   Critical services, operations, research areas, and animal facilities must be both identified and prioritized to prevent losses. These areas require a comprehensive business continuity plan and should be the first to be surveyed.

7. **Mandate adequate staffing of EOC and all operational areas**
   A topic discussed in both the *Areas Requiring Improvement* and *Recommendations* sections of this report addresses staffing challenges that arose in the EOC when critical operations were not represented. Specifically, as the storm approached, staff who fulfill key roles in the delivery of emergency management services during activations of the team took independent action to close their offices or chose not to staff a position in the EOC other than by remote telephone access. These decisions were made without approval or consultation with the EOC's leadership. In recent years, the option to participate in EOC deliberations by telephone has been offered and expanded. In light of the significant telephone and Internet service disruptions experienced during this storm, this option should be reconsidered and be used only as a last resort. When convening the EOC, it should be made clear to staff whether they can exercise the telephone conference option or if they should attend the meeting in person. If an in-person presence is required and a primary member of the EOC cannot attend, a trained back-up staff member should attend in his/her place.

   While absences were experienced during other emergencies, they were extremely problematic during this storm when telephone service was compromised. The accuracy of expeditious decision-making could have been compromised by the fact that all the EOC representatives were not on-site. Lack of participation in the EOC by its trained representatives creates unnecessary operational problems, unacceptable risks, and puts an excessive burden on those who are present to fill the void created by those who are not available. Looking forward, we need to ensure critical personnel are where they are needed during emergencies. This was one of the key lessons learned during the storm.

8. **Develop a University policy for Emergency Management**
   The policy should articulate the roles and responsibilities outlined in the Emergency Operations Plan ("Plan") for the Executive Leadership Group, Emergency Management Coordinator, Emergency Management Team and the Emergency Operations Center during times of crisis. Upon completion, the policy should be disseminated to the appropriate members of the community.

9. **Revise Policy 60.3.16 *Attendance During Adverse Weather Conditions***
   Revise University policy 60.3.16 *Attendance During Adverse Weather Conditions* to reaffirm that the safety of all employees is our highest priority while clarifying roles and responsibilities during weather and non-weather related events. This effort will ensure that supervisors have the personnel available who are needed during emergencies. This information is currently communicated annually to all employees. In addition to this communication, employees should be reminded to update their contact information so that directories can be maintained and distributed.

10. Expand the Co-generation Plant

A critical failure during Hurricane Sandy was the inability to black-start the 14 MW Co-generation Plant on the Busch Campus. "Black-start" refers to the process where co-generation turbines need to be restarted in order to produce electricity.

A successful black-start means that the Busch and Livingston Campuses could operate critical operations, including the sheltering and feeding of students from all campuses if necessary. This solution is the answer to addressing long term power failures on the Piscataway campuses. Additionally, complimentary plans should be developed to accommodate critical research operations for the Cook-based laboratories. With appropriate coordination, the Piscataway campuses could provide multiple solutions for business continuity planning.

To adequately prepare for future emergencies, the co-generation system would need to be tested from a "power failure status" and then restarted with careful monitoring of all facilities and systems during the 8-12 hours that such a test would require. This exercise would reveal the number of buildings we can put under load, power down and re-energize under normal conditions.

11. Clarify Communications Procedures

An information center to coordinate incoming and outgoing information, with a particular focus on emerging trends and rumor control, should be established and located in the same facility as the EOC. University Relations should designate a liaison between the EOC and the information center. University Relations should also develop a checklist or template for communications to ensure that all important points are addressed and are consistent. All communications should and include a date/time stamp when issued. Efforts should be made to streamline the communications process so that materials can be developed and distributed as quickly as possible.

This task force made additional recommendations that have been combined in Appendix S for further review.

CONCLUSION

This report, prepared with the assistance of sub-committees representing all divisions of the university, identified the strengths in Rutgers emergency preparedness system and the areas requiring improvement. The Task Force members learned that we are especially vulnerable when conditions compromise the regional power grid. Developing business continuity plans with the details of how those plans will be supported are the most important recommendations from the report and should receive the highest priority. Throughout the entire process of pre-storm planning, responding, and dealing with the aftermath of the storm, including the development of this report, the sub-committees and the university community as a whole were devoted to addressing the issues that emerged from the storm; the university is strengthened by this

commitment and we thank everyone involved for their collegiality and dedication to this effort. The Task Force looks forward to developing and implementing solutions with this same spirit.

ACRONYM TRANSLATIONS

AAALAC	Association for Assessment and Accreditation of Animal Care International
AESOP	Agricultural Experiment Station Operations System
ARC	Allison Road Classroom
ASB	Administrative Services Building
CCE	Construction Code Enforcement Office
DMAT	Disaster Medical Assistance Team
DSL	Digital Subscriber Line
DOTS	Department of Transportation Services
EMT	Emergency Management Team
ENS	Emergency Notification System
EOC	Emergency Operations Center
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
HVAC	Heating, Ventilation and Air Conditioning
IACLEA	International Association of Campus Law Enforcement Administrators
JCPL	Jersey Central Power and Light
MCC	Medical Coordination Center
MDC	Mobile Data Computer
MW	Mega-watts
NJAES	New Jersey Agricultural Experiment Station
OEM	Office of Emergency Management
OHSP	Office of Homeland Security & Preparedness
OIT	Office of Information Technology
OIT	Office of Information Technology's Tele-Communications Department
OLAW	Office of Laboratory Animal Welfare
PBX	Private Branch Exchange
PRI	Primary Rate Interface
PSE&G	Public Service Electric and Gas Company
RDP	Remote Desktop Protocol
REHS	Rutgers Environmental Health and Safety
RUES	Rutgers University Emergency Services
RUPD	Rutgers University Police Department
RUSA	Rutgers University Student Assembly
SIP	Session Initiation Protocol
STEM	Science, Technology, Engineering and Mathematics
UR	University Relations
VoIP	Voice over Internet Protocol
Wifi	Wireless Fidelity

Appendix A: Hurricane Sandy Timeline

- **Campus Precautions – Before Storm**
  - Remove or Secure campus items
  - Construction sites / secure debris
  - Facilities readies equipment
  - Top off generators / fuel
  - Housing readies supplies
  - All ready staffs
- **Saturday – October 27, 2012**
  - Football Game
  - State looking to set up shelter – during game
  - Facilities / Recreation / Housing notified
  - Governor Issues – weather state of Emergency – to allow for storm preparations
    - No Travel Ban issued
- **Sunday – October 28, 2012**
  - Set up and open two State Shelter
  - Site Selection (2 REC Centers)
  - Resources (from Sate)
  - Housing set up cots with Facility assistance
  - Recreation Staff very helpful in establishing shelters
  - State shelter (not Publicly listed, was full with Atlantic County Evacuees)
  - Buses from Atlantic County arrive around 2 pm
  - Food / Water – Material Services - 6pm
  - The State Opened the shelter – ahead of all supplies
  - No Medical – DMAT team – attempted to set up on own at the Busch Campus Center, this was addressed by RUPD.
  - RAC option as a shelter was always on the table – RU addressed the need for resources prior to opening, and a generator in case of power loss
  - Communications with state throughout the entire event in respect to resources, sheltering, assistance and information exchange
- **Campus Status - Sunday**
  - Cancel classes – Monday / Tuesday
  - Weather Alert for employees
  - Other Communications from Campus Info
  - NB Travel Ban Message
  - NB Close roads to travel
  - RT 18 closed but reopened by the state.
  - There were many Medical transports from shelters
- **Monday – October 29, 2012**

    - Federal Declaration
    - Watch progress of storm
    - Buses shut down at 3 pm – shuttle to operate after for stranded students
    - Power – PSEG Power down as precaution to limit damage to sub-stations
- **Campus Status - Monday**
    - Cancel classes – Monday / Tuesday
    - Close the University noon Monday – Wednesday at 5pm (Extended)
    - Other Communications
        - NB Travel Ban Message
- **Tuesday – October 30, 2012**
    - Governor – RAC
    - At press conference mentioned RAC
    - OHSP Director – also mentioned RAC at seperate press conference. This was concern for evacuees showing up on own.
    - Power out C/D - CAC
    - Power restored to B/L later in Day
    - Initial Evacuation to Buildings with generators then Evacuation to B-L due to Water – NB problems
    - Fuel shortage– vehicles / generators
    - Public Transit Down -
    - Time frame for Restoration of Power given in days from PSEG
- **Campus Status - Tuesday**
    - No classes through Friday
    - Weather Alert
    - Communicate information – during technology outage
    - Use of text messaging all campuses to send information.
    - Social media also utilized
    - Radio / TV
- **Wednesday – October 31, 2012**
    - Medical patients – 20 need skilled nursing care
    - Rock off generator –is not running – Building dark
    - Health Centers open on B-L
    - CAPS Open best they can.
    - 360 hot water down
    - Fuel deliveries - arriving
- **Wednesday - Campus Update of conditions including**
    - Water
    - Power
    - Residence halls

    - Dining
    - Camden Updates
    - Newark Updates
- **Thursday – November 1, 2012**
    - OHSP conference call in respect to the RAC – Generator needed to open
    - Power Restored to C/D
    - Dorms checked and reopened
    - Buildings on NB circuits still down - ASB 2 3 and Pub-safe, Helyar, Henderson.
    - Reports from Extension Areas coming in.
- **Friday – November 2, 2012**
    - Demobilize Shelters
    - Question on Saturday classes – no class until Monday
    - Power ASB 2 with a Generator
    - ASB 3 Unable to power with Generator due to electrical configuration
    - Continues assistance to Rock off Hall Students
- **Saturday – November 3, 2012**
    - County inquired about using RU building as a county shelter facility
    - Questions about moving Servers from ASB 3 to Hill Center, Plan devised to relocate for Monday.
- **Sunday – November 4, 2012**
    - Power up other C/D locations
    - ASB 3 Technology move halted in progress
- **Other issues**
    - Power outage on C/D on Tuesday
    - Nor'easter
    - Livingston REC County Shelter
        - Closed Wednesday 21st
    - Community Follow up
    - Academic Outreach
- Continued Housing of Rock off Students – due to no power (utilized Bishop Quad)
- Damage assessment and accounting
- FEMA Submissions to begin

Appendix B: Emergency Preparedness Task Force Members

Steering Committee
Chair, Jay Kohl
Vice Chair, Barbara Bender
Chancellor, Wendell Pritchett
Interim Chancellor, Philip Yeagle
All Sub-Committee Chairs

Administrative Sub-Committee
Steve Keleman
Lauren McLelland
Melissa Marrero

Finance Sub-Committee
Bruce Fehn, Chair
Natalie Horowitz
Heidi Szymanski

Facilities Sub-Committee
Tony Calcado, Chair
John Shulack
Dianne Gravatt
Joe Witkowski
Boyd Moore

Human Resources/Employee Relations Sub-Committee
Vivian Fernandez, Chair
Harry Agnostak
Jeff Maschi

Communications/Media Sub-Committee
Kim Manning, Chair
Pam Blake
Elizabeth O'Connell-Ganges
Beth DeMauro
Jim Stapleton
EJ Miranda
Greg Trevor

Technology Sub-Committee
Don Smith, Chair
Ellen Law
Stan Kocasa

Technology Sub-Committee Continued
Tom Vosseler
Greg DiLalo
Kevin Dowlin

Research Sub-Committee
Ken Breslauer, Chair
Bob Goodman
Joseph Barone

Student Affairs Sub-Committee
Karen Stubaus, Chair
Patrick Love
Carlos Costa
Milind Shah
Greg Jackson
Joan Carbone
Steve Dubiago

Academic Affairs Sub-Committee
Richard Edwards, Chair
Stanley Messer
Richard Novak
Chris Morett
Arlene Hunter
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Jorge Schement
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Emergency Operations Sub-Committee
Steve Keleman, Chair
John Karakoglou
Joseph Howard
Todd Peterson
Alex Ruiz
Nick Taylor
Diane Bonanno
Peter Pelletier
Nick Chiorello
Steve Molinelli
Mark McLane
Leroy Washington
Bill Jackson

Appendix B (continued)

Emergency Operations Sub-Committee
Bill Scott
Jack Molenaar
Les Barta
Sal DiCristina
Doug Kokoskie
Matt Colagiovanni
Ken Cop
Vincent DeNota
James Wojtowicz
Fred Roberts
Mike Rein
Dorothy Kozlowski
Samuel Berman (student rep)
Paul Kania (student rep)

Business Continuity and Risk Management Sub-Committee
Jim Breeding, Chair
Bill Troy

Camden Campus Representatives
Guy Still
Larry Gaines
Mary Beth Daisey

Newark Campus Representatives
Mike Lattimore
Kemel Dawkins

Task Force Volunteers and Other Participants
Alicia Raia
Kate Immordino
Thea Berkhout
Bob Szejner

Appendix C: Emergency Operations Center Members

Member	University Department
Steve Keleman	Office of Emergency Management
Alex Ruiz	Rutgers Environmental Health & Safety
Barbara Bender	Graduate School
Bernice Ginder	Information Technology
Beth DeMauro	University Relations
Chris Morett	Scheduling & Space Management
Dave Haines	Business & Administrative Services
Diane Bonanno	Recreation
Don Smith	Information Technology
Dorothy Kozlowski	Hurtado Health Center
Doug Kokoskie	Athletics
EJ Miranda	Media Relations
Elizabeth O'Connell-Ganges	Student Life
Dianne Gravatt	Facilities
Greg Trevor	Media Relations
Harry M. Agnostak	Labor Relations
Jack Molenaar	Department of Transportation Services
James Breeding	Risk Management
Jay Kohl	Administration & Public Safety
Jeffrey T. Maschi	Labor Relations
Jennifer Stuart	Department of Transportation Services
Jim Stapleton	Campus Information Services
Joan Carbone	Housing & Residence Life
Joanne O'Brien	Risk Management
Joe Charette	Dining
Joe Witkowski	Facilities
John Karakoglou	Department of Transportation Services
Kenneth B. Cop	Rutgers Police
Kim Manning	University Relations
Leslie Barta	Rutgers Emergency Services
Mark D. Mclane	Rutgers Environmental Health & Safety
Matt Weismantel	Campus Information Services
Matthew Colagiovanni	Athletics
Melissa Marrero	Administration & Public Safety
Melodee Lasky	Health Services
Michael J. Rein	Rutgers Police
Michael Tolbert	Housing & Residence Life
Milind Shah	Risk Management
Natalie Horowitz	Procurement
Nicholas Chiorello	Rutgers Police
Patrick G. Love	Student Affairs

Appendix C (continued)

Pamela Blake	University Relations
Peter Bennett	Business & Administrative Services
Peter K. Pelletier	Office of Emergency Management
Sal DiCristina	Construction Code Office
Stephen J Molinelli	Office of Emergency Management
Steve Dubiago	Housing & Residence Life
Tony Calcado	Facilities
Vincent Denota	Rutgers Police
Vivian Fernández	Human Resources
William Jackson	Rutgers Emergency Services
William Scott	Rutgers Emergency Services

Appendix D: Communications Before, During & After Hurricane Sandy

I. Emails sent to RU Community Before, During & After Hurricane Sandy http://halflife.rutgers.edu/sandy (Requires NetID Login)

II. National Weather Service http://www.erh.noaa.gov/phi/storms/10292012.html

WINTER STORM SUMMARY FOR
OCTOBER 29, 2012 TO OCTOBER 30, 2012 EVENT
Synopsis

Preliminary estimates suggest Sandy was the second-costliest Atlantic hurricane on record (behind Hurricane Katrina). More than 120 people perished from the effects of Sandy, approximately 24 in the Mount Holly County Warning Area (CWA) alone. Dollar estimates of damage to homes and infrastructure range into the billions of dollars in New Jersey, with over nine million dollars of damage reported in Delaware. Hurricane Sandy was the eighteenth named storm of the 2012 Hurricane Season, and the tenth hurricane. A surface high pressure blocking pattern over northern New England coupled with a strong mid-level trough moving east from the Midwest were the two primary features which established Sandy►s eventual landfall trajectory into southern New Jersey on the evening of October 29th. The National Hurricane Center (NHC) classified Tropical Depression 18 as a tropical storm on Monday October 22nd at 11 am EDT when it was located in the Caribbean Sea (fig 1). After slow movement for several days, a northward motion began which increased as Sandy reached category one hurricane strength at 11 am on October 24th.

Watches/Warnings/Advisories

A flood watch was issued early Saturday morning and then expanded Saturday afternoon to cover the entire NWS Mount Holly forecast area. This flood watch continued throughout the event. Numerous flood warnings and statements were issued beginning early Monday morning and continuing through Wednesday October 31. A coastal flood watch was issued early Saturday morning for the Atlantic coast and Delaware Bay; this was upgraded to a warning Saturday afternoon. Coastal flood warnings were issued for the tidal Delaware River early Sunday morning and for the eastern shore of the upper Chesapeake Bay late Sunday afternoon.

Precipitation/Temperatures/Winds

A landfall occurred in Jamaica at 3:20 pm that afternoon. Sandy then strengthened overnight to category two strength at 110 mph before making another landfall in Cuba. Sandy continued a northward movement through the Bahamas before making a northwest then west turns due to the blocking pattern and approaching trough, with some weakening followed by fluctuations in strength. Landfall occurred Monday evening just south of Atlantic City at 8 pm. After 500 pm, Sandy►s classification was changed to post-tropical, a status change made necessary because of structural changes within the system as it moved north into a colder environment. Heavy rain started Monday from the southeast to northwest as Sandy grazed Delaware and approached the New Jersey shoreline. The heaviest rains were focused in South Jersey, Eastern Maryland and

Delaware where five to twelve inches of rain were reported. The highest rainfall in the Mount Holly county warning area (CWA) was 12.49 inches in Easton, MD. Several streams experienced crests above flood stage in these regions, in either the minor or moderate flooding category. Areas further north received one to three inches of rain.

Significant Impacts/Aspects

Sandy produced major to record storm surge along the entire New Jersey coast and in Raritan bay. This was partially due to the timing of landfall which occurred near the time of astronomical high tide along the New Jersey coast on Monday evening. The forward speed of Sandy at the time of landfall, approximately 28 mph, also helped push water ashore, especially from Atlantic City north, which was also in the right-front quadrant of the storm. The previous record tide level at Sandy Hook, set by Hurricane Donna in 1960, was shattered by 3.2 feet. As Sandy continued west into Pennsylvania, a strong southeasterly flow on the backside of the storm, directed up Delaware Bay, produced record water levels in the tidal sections of the Delaware River at and near Philadelphia. Moderate flooding occurred on the Chesapeake Bay with no major problems reported.

Notes

Information contained in this summary is preliminary. More complete and/or detailed information may be contained in subsequent monthly NOAA storm data publications.

III. National Climate Center:
http://www.ncdc.noaa.gov/sotc/tropical-cyclones/2012/10
http://www.ncdc.noaa.gov/sotc/national/2012/10/supplemental/page-6/
http://www.ncdc.noaa.gov/sotc/national/2012/10/supplemental/page-7/
http://www.ncdc.noaa.gov/sotc/national/2012/10/supplemental/page-8/

IV. Wikipedia Report on Hurricane Sandy:
https://en.wikipedia.org/wiki/Hurricane_Sandy

V. Home > Newsroom > Press Releases > 2012 > Governor Chris Christie Declares Statewide Weather State of Emergency Ahead of Hurricane Sandy

Governor Chris Christie Declares Statewide Weather State of Emergency Ahead of Hurricane Sandy

- Saturday, October 27, 2012
- Tags: Executive Orders

Trenton, NJ – Anticipating severe weather conditions including high winds, rain, coastal, stream and river flooding, and the storm's potential to threaten the public's health and safety, Governor Chris Christie today declared a state of emergency throughout the state as a result of severe weather conditions anticipated from Hurricane Sandy. In addition to taking this

preemptory step to mobilize government in preparation for the storm, Governor Christie urged New Jerseyans to be vigilant in monitoring conditions of the storm, its effect on their communities, and in making preparations for themselves and their families.

"As we move towards what is an increasingly likelihood of seeing Sandy make landfall in New Jersey, I am urging all New Jerseyans to take every possible and reasonable precaution to ready themselves for the storm's potential impact. That means having an emergency action plan for their families and other loved ones who may require assistance, and avoiding unnecessary risks in the severe weather, including staying off of the roads," said Governor Christie. "At the state level, we are taking immediate steps to prepare for the storm's impact and ensure that state, local and county governments have the tools they need to manage and respond in a coordinated way. With this, government at every level can respond more effectively to conditions on the ground, activate emergency operations plans, and ensure that resources are being marshaled to assist and protect the public through this storm."

The declaration activates elements of the State Emergency Operations Plan, broadening powers of the New Jersey State Police including traffic control, limiting access and egress from impacted areas and issuing evacuation orders if needed.

As provided by the declaration, the New Jersey Office of Emergency Management will be authorized to mobilize and deploy resources beginning immediately to respond to the storm conditions, including resources of the New Jersey State Police, New Jersey Department of Military and Veterans Affairs, New Jersey Department of Environmental Protection and New Jersey Department of Transportation, in coordination with county and municipal emergency management officials in impacted areas throughout the state.

A copy of the declaration, contained in Executive Order 104 [pdf 15kB]

# # #

Pages 63 to 168 (Appendix E through P) constitute the sub-committee reports. These pages have been redacted in their entirety because they are advisory, consultative and deliberative and are exempt from OPRA.

Appendix Q: Task Force Findings (Strengths)

Operations

- The Office of Emergency Management (OEM), pursuant to P.L. 2011, C. 214, provided leadership in preparing for the storm, implementing emergency action plans, coordinating the use of available personnel and resources during this multi-phase weather emergency, and restoring operations immediately following the storm.
- Rutgers Athletics, Facilities, Housing, Public Safety, and Recreation staffs worked successfully and collaboratively to prepare and staff shelter sites.
- Relocating the Facilities "help desk" to the EOC proved to be invaluable and facilitated decision-making and communications.
- Evacuations from (and return to) residence halls were implemented smoothly although feedback received in the follow-up student survey indicated that there were communication challenges throughout the process.
- Decision to cancel classes was timely and clear.
- Broad range of skills and a knowledgeable and experienced workforce allowing for self-contained operations in emergencies.
- University data resources were preserved.
- The IT staff are dedicated professionals who worked with extraordinary dedication throughout the storm to address problems and implement solutions.
- The IT infrastructure performed as expected during the storm.
- The experience of the dedicated staff within Recreation and their planning efforts made the difference when implementing difficult decisions during a difficult time.
- The staff did a great job in providing leadership and support during a very difficult time.
- Residence Life and Housing participation in the EOC was effective and instrumental in the planning and execution phases of the storm.
- Housing staff worked long hours to transport and prepare the cots for the shelters.
- Planning processes, based on past emergencies, were implemented and worked well.
- The staff were dedicated and professional in completing their duties.
- Excellent response by Public Safety, including REHS, in setting up alternate work location for those individuals who were displaced by the closure of ASB III.
- Excellent response by Public Safety, REHS and OIT to help temporarily relocate servers to Hill Center from ASB III.
- Employees who were essential for the implementation of emergency services executed their duties in a professional and tireless fashion.
- The leadership of service operations made informed decisions that helped to enhance safety and preserve university facilities and operations.
- Employees worked in a safe fashion and there were no reported injuries.
- With the addition of several new staff who brought extensive experience in emergency planning, the department was able to devise a more proactive set of plans based on best practice within the industry.
- Student Facility Managers and other student staff groups worked throughout the storm and during the time the University was closed despite several personal hardships. When

professional staff had limited or no ability to reach campus, the student staff managed to open and keep the Centers open. During 24-hour access time blocks, students and staff slept or stayed in the Rutgers Student Center to ensure the facility was covered on all shifts.

Communications

- Although the intended use of the emergency notification system (ENS) is predominantly for notifications of immediate jeopardy to the university community, during Hurricane Sandy, text messages were sent to serve as a redundant notification method. These texts were received when other communications methods failed.
- Weather and advanced warning messages prior to the storm aided in the planning and preparation.
- Communications were distributed university-wide and covered all campuses.
- Initial emails reached the vast majority of the Rutgers community.
- The university's homepage and campus status operating webpages were kept up to date, and faculty, staff, students, and parents understood that these were reliable sources of information.
- Media Relations activated its emergency operations plan, including ensuring adequate staffing and use of the adverse weather notification system to communicate closing information to broadcast outlets.
- Media Relations provided status updates to the Associated Press via email and made phone calls to contacts at major news outlets, including the *Star-Ledger*, *Wall Street Journal*, the *Record*, and Gannett New Jersey.
- Media Relations continued to update social media sites and respond to storm-related posts.
- Campus Information Services continued to operate throughout the week and posted an automated message overnight with the current status.
- RU-tv was able to run on generator power and broadcast a special edition of *Wake Up Rutgers* on Monday featuring storm information. WeatherWatcher forecasts continued throughout the week.
- Board members were alerted to meeting cancellations in a timely manner and were sent storm-related clips on October 29, November 1, and November 5 and university status reports on November 4 and November 5.
- The Camden and Newark campuses were kept informed of campus-specific information.
- Communication across the Student Life leadership team was effective; staff relied on multiple strategies to communicate with each other, students, and family members.
- The Student Life Marketing group and Parent Program staff were extremely responsive to questions and provided timely status updates.
- The daily communication meetings in the centers convened by Housing & Residence Life staff were very well received by the students being sheltered as well as the Student Center staff.

Resources and Procurement

- The University's ability to procure scarce resources (fuel for generators).
- Purchases were made as needed to support the emergency operations.
- Large inventory of equipment and parts.
- Facilities for storing gasoline and fuel.
- Cogeneration plant.
- Utilization of all available resources to contact students.

Partnerships

- Strong insurer relationships.
- While fulfilling their own duties, staff worked in a collegial fashion to help colleagues.
- Successful collaboration among chancellors, academic deans, and appropriate vice presidents.
- Employees worked in a collaborative fashion with a common goal.

Other

- The University's decentralized locations throughout the state allowed for some geographical spread of risk.
- Institutional support and compassion for students experiencing hardships.
- Effective and timely coordination of policy and response to develop and implement the grade conversion policy.
- Services for off-campus students were well-received.

Appendix R: Task Force Findings (Areas Requiring Improvement)

Operations

- Many members of the university workforce did not understand the definition of ―Weather Alert."
- Supervisors did not understand their authority, or what to convey to their staff about attendance.
- Outside agencies made assumptions about where they would locate their bases of operation at Rutgers without appropriate consultation.
- Coordination of loss reporting (roll-up from numerous reporting points).
- Lack of detail and support regarding loss reporting.
- Most operations lack business continuity and contingency plans.
- Black-start (restarting the turbines, a process that takes 6-8 hours) plan was needed for the cogeneration facility.
- Too many essential services are located in buildings that are not reliable during weather emergencies.
- Business plans assumed, in some cases, that staff would have power and web access at home.
- Emergency plans did not provide for an extensive grid power outage.
- Services are designed and deployed based on ―best-case conditions" rather than planning for emergencies.
- Essential personnel should be clearly designated and people should understand who is and who is not included in this category and what their responsibilities entail.
- Moving students during the storm posed serious safety issues. Greater planning is needed regarding when the decision to evacuate must occur and how best to implement that decision.
- Door swipe/electronic door access did not work and back-up plans had not been established.

Communication

- Divisions, departments, and offices did not have paper-based information with contact information.
- Communications plans with parents were inadequate.
- The timing and content of messages directed to staff were confusing.
- Only a portion of the community is registered to receive text messages.

- Communications were not received by some faculty, staff, and students to help them plan appropriately.
- Lack of alternate communications systems
- Decisions must be made in a more timely way with a streamlined vetting/approval process and sent to communicators with sufficient time to shape the message and distribute it.

- There is a need to determine what information must be communicated during an emergency. This will help identify what units, in addition to University Relations, have responsibility for communications.
- There should be greater coordination of messages across units. Non-University Relations staff with communications responsibilities, particularly those involving new technology, should understand the need to vet and coordinate information.
- People responsible for official social media sites need to check frequently for questions and respond in a timely fashion with accurate information.
- The tone of the communications should show concern for the safety of all members of the Rutgers community and acknowledge the difficulties people face in such emergencies.
- It was difficult to reach, mobilize, and convene communications support staff following the storm. Internet and landline and cell telephone systems were compromised and provisions had not been made to either lodge communications personnel on, or near, campus or to provide them emergency transportation to the EOC.
- The need to reference University policies increased the length of communications and required readers to link to other materials for guidance. This was frustrating and difficult for employees, many of whom had limited access to electricity, telephones, and the Internet.
- The telephone server for RU-info is about 10 years old and is currently not supported by Avaya.
- Communications failed when the telephones failed.
- Walkie-talkie range was limited to one campus. Communications between campuses was very difficult.
- Better coordination is needed across all departments / units charged with communication. This needs to also include back-up strategies, so information can be shared in a timely fashion with all constituents (students, staff, faculty, parents, etc.)
- Some students were not aware of the Grade Conversion Program.
- There was lack of clarity regarding the completion of work and class expectations for those enrolled in online and hybrid courses.

Resources and Procurement

- Representatives from University Procurement Services were not consulted during emergency purchases.
- The recreation centers lacked a supply of toys/games for children who were being sheltered.
- More emergency supplies were needed.

Back-up Power

- The lack of back-up power sources interrupted and, in many cases, completely halted operations including, but not limited to:
    - Communications including email, web access, cell phones, and both landline and VOIP telephones;

    - normal indoor cooking in dining halls;
    - swipe card access for building entry;
    - power supplies for research support;
    - fire and safety systems;
- Back-up systems were not in place for voice communications between university leaders.
- Research requiring power needs to be identified more thoroughly.
- Back-up systems were not in place to:
    - provide for catastrophic equipment failure;
    - to support the communications for the EOC;
    - support main university web servers.
- Availability of generators (especially with respect to research assets).
- Building-by-building auxiliary power connection requirements/inconsistencies.
- Lack of backup power is needed for gas and diesel fuel pumps.
- Camden does not have sufficient back-up power for OIT.
- Back-up power supplies were inadequate to support the maintenance of safe residential facilities.
- Lack of emergency power compromised the ability to use some of the Centers as shelters.
- The student affairs email server does not have a power back-up.

Appendix S: All Sub-Committee Recommendations

Operations

- Key members of the EOC, including the Facilities ―help desk", should be housed in center during emergencies to immediately be informed of conditions, facilitate support, assist in decision-making and ensure the prompt delivery of services and information.
    - Provide housing accommodations for members of the EOC to remain safely on campus during these events.
- Coordinate lists of local professional staff available to assist during crisis and circulate among EOC members.
- Redesign the Cogeneration facility, with appropriate new engineering components, to enable a seamless black-start. Manuals, including standard operating procedures, should be created and maintained.
- Prepare and disseminate guidelines for sheltering including the determination of life/safety equipment, backup power and capacity for large event spaces including the number of cots needed.
- Develop plans to address emergency transportation needs and methods.
- Provide faculty with direct guidance on how to handle issues related to mid-terms, examinations, and assignments.
- Create a building access system (central key box/depot at public safety) for all Student Life staff that does not require power (as does the swipe card entry system) to enable local professional staff the ability to assist and open Student Centers and rooms in the event of an emergency.
- Review and consider the role of Health Services (including Counseling and Psychological Services) and the Student Centers during emergencies and plan for implementation of that role.
    - Determine when these areas should remain open when classes are cancelled and the University is closed and what equipment is needed to fulfill defined roles.
- Implement procedures to address needs of the off-campus student population including alternative housing, dining and shower facilities.

Business Continuity

- All departments should review and/or develop business continuity plans to address what is a ―must" for continuity of service (including what is an ―acceptable" level of down time), alternate working locations, procedures for setting up the location, a staffing plan, communications plans, and all relevant procedures for keeping the main functions of the department operational.
    - Review and consider business continuity practices at peer universities.
- Need business continuity planning software specific to higher education.
    - Kuali Ready, an enhanced version of the University of California Berkeley Business Continuity Planning Software currently under review and consideration.

- Critical services/operations/research areas/animal facilities should be identified and prioritized and plans should be developed to prevent losses and maintain services during a power outage or flood.
    - Building assessments should be provided for areas identified as critical to ensure appropriate emergency back-up power is installed (i.e. campus fuel stations, transmission sites and antennas, research stations and grant submission servers and networks located in ASB III, etc).
- Redundancy must be addressed to protect IT infrastructure. Coordinating with OIT and distributed IT, all generator and HVAC resources should be located in one unit with responsibility for normal and emergency operations.
- Back-up systems are needed for securing buildings and offices that rely on swipe card systems.

Communication

- Back-up communications mechanisms, including two-way radios for senior leadership, the use of fax land lines, and text messaging for the broad community, are a high priority.
    - Back up communication systems (and batteries) should be tested regularly.
- Create paper directories for leadership including home phone, cell phone, and two email addresses (including a non-Rutgers account).
- A flow chart for decision-making and communications should be routinely updated and distributed annually, both on paper and electronically, to university leaders. All personnel charged with emergency communications should receive the flow chart, protocols, and other relevant information on a regular basis, preferably at the start of each academic year. The chart should include contact information. This effort should be coordinated by the Office of Emergency Management. A model for this would be the Weather Book that is currently produced at Facilities. When possible, these personnel should be reminded of their responsibilities just prior to an event taking place. Departments should ensure that they have sufficient depth in their own staffing for emergencies (at minimum, one backup for each primary designee).
- All members of the Administrative Council should be briefed on the protocols and flow chart for emergencies at the beginning of each academic year. They should understand their roles in decision-making and communications and be aware of how they should proceed in an emergency.
- Where appropriate, communications should be developed centrally and distributed university-wide. When the event is specific to one campus or is affecting the campuses differently, communications should be developed and distributed by the chancellors' offices. The EOC should be informed of these communications.
- University Relations should develop a checklist or template for communications to ensure all important points are addressed and work to ensure messages provide consistent information with the appropriate tone, including a date/time stamp.
- Create a central website for all Student Affairs departments to share updates and communicate questions and issues. This will allow everyone to have ―real time" information internally before communicating externally to students and parents.

    - A prototype of this has been developed by Student Life and shared across multiple units in Students Affairs.
- Develop a coordinated strategy with University Relations to disseminate information to off-campus constituencies, including students in online and hybrid courses and parents, via listserves, social media, and email.
    - Obtain parent email addresses from the enrollment pathway.
    - Develop a system for off-campus students to regularly provide, and confirm, local mailing address and email address.
- Create a hierarchy and duty schedule to respond to social media and email inquiries that takes into account loss of power and networking capabilities.
- Academic Affairs should review and formalize policy and appoint one administrator to be given responsibility for academic modifications related to emergency issues.

Resources & Procurement

- Develop an emergency procurement communications plan through University Procurement Services that provides for expeditious and appropriate spending for emergency supplies, equipment, and services.
- Student volunteers, perhaps called RU Ready Volunteers, should be identified and trained, in advance to assist with evacuation centers and other emergency related activities.
    - Consider identifying a point person to prepare volunteers in advance of emergencies.
- Every University department should designate two employees to participate in 20 hours of basic training in disaster preparedness and become part of the Community Emergency Response Team (CERT).
    - Departments may choose to have all personnel trained and these requests will be accommodated through Emergency Management.
- Toys and games for children should be purchased and stored in the centers that will act as evacuation sites at the University.
- Purchase new emergency supplies, including cots, for storage in every building.
- Install cages for emergency propane tank storage.

University Policies

- A committee should be formed to review revisions to Rutgers Policy 60.3.16 *Attendance During Adverse Weather Conditions* (see Appendix F) before it is adopted. The policy revisions should:
    - include opportunities for flex-plans to provide staff with safe means to complete their work without jeopardizing their safety
    - clarify campus alert status designations
    - be disseminated widely to all supervisors.
- Additional policies should be implemented to address non-weather related events.
- Essential personnel should be clearly designated and understand their responsibilities. When possible, essential personnel should be put on alert prior to an event taking place.

The ―essential personnel" who are determined to be needed should be informed as soon as possible.

Other

- Develop and codify specific emergency procedures for every Resident Assistant and Hall Director.
- Issue identification credentials designating officials ―in-charge."

Appendix T: EDUniverse Article on RU Communications During Sandy

Rutgers Gets an "A" in Crisis Communications During Hurricane Sandy

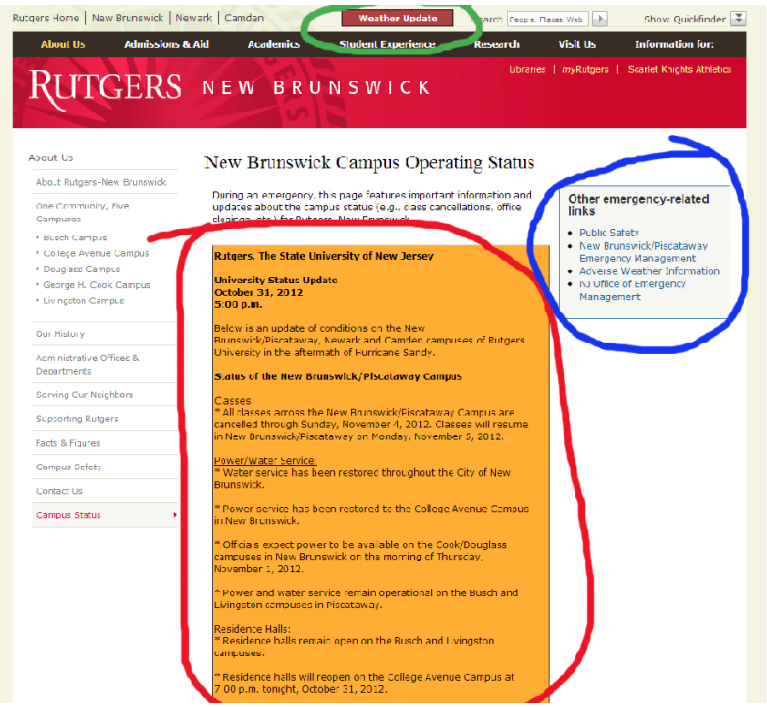
What do you do when an epic storm descends on your region and you have 58,000+ students spread over three campuses that are 88 miles apart? How do you begin to handle the logistics of emergency communications? Just ask Rutgers. During Hurricane Sandy, the Rutgers communications channels efficiently kept all their campuses updated and hooked together with social media and their main website. Let's take a look at how the communication channels were used during the storm and post-storm.

The Main Hub: the website

The Rutgers website homepage sported a yellow banner throughout the emergency directing people to information on each of their three campuses:

One click on a campus site name took the viewer to a page filled with links and information on the weather, classes, campus closings, emergency protocol, and everything in between. There was a live blog with updates in chronological order with information on dining halls, transportation, class schedules, residence halls, power/water advisories, and a quick blurb on the other two campuses. The screenshot below is from the New Brunswick site. The blog is circled in red and other important related links are circled in blue. Also notice the weather update circled in green:

Redactions were made to protect the privacy of individuals commenting through the University's social media pages.



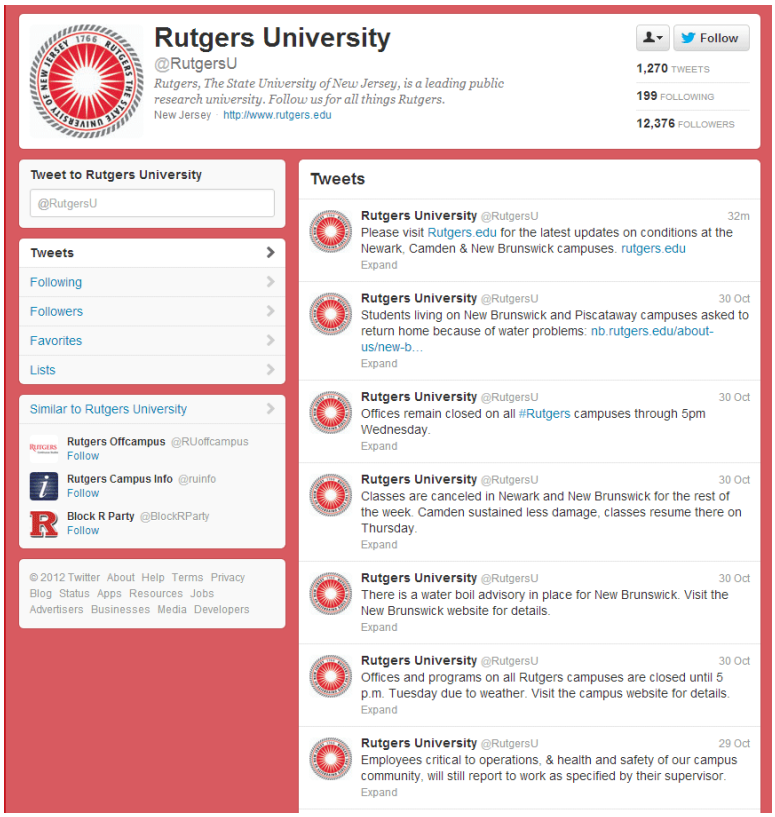
The Secondary Channels: social media

Rutgers used their social media stable to give more real-time and audience-specific information during the crisis. Their Facebook page, which has over 21,000 likes, had timely updates:

Redactions were made to protect the privacy of individuals commenting through the University's social media pages.

Other Rutgers Facebook pages also carried information on the storm to their audiences. Below is a screenshot of the Rutgers Student Life page:

The school hosts several Twitter feeds, many of which were disseminating hurricane information during the storm. The main feed kept people informed on major pieces of information during the crisis. Even though Twitter followers tend to share more than Facebook users, remember their content usually goes out to a much smaller audience. Up until the storm, the main Twitter feed averaged one to two posts a day with a decent sized audience of 12,000 followers. In addition to using Twitter to push information out, it is an effective channel for monitoring an emergency as well. Crisis managers can use it to keep an eye on real-time news in a crisis.



Rutgers also has an informational Twitter feed (@ruinfo) that hosts a variety of sources surrounding the Rutgers community. This feed was actively promoting information from the many campus Twitter channels.

The Chancellor also hosted a live blog during the storm as well:

The Final Analysis: anything missing?

A couple strategic points kept Rutgers from getting an A+. First, there is a lack of links back to the main website in their social media posts. Since the main website is the hub of all information—the only place where all the information resides—there is a need to direct people to that main hub. Employing a URL shortener would have brought their URL to 12 characters. Some Facebook posts had specific links, some did not. It's important to tag every social media post with a URL of some sort in an emergency. The other issue was the lack of social media promotion on the website during the emergency. It might have been wise to list the feeds of the most active channels on the separate emergency pages for each campus, or right on the yellow banner on the home page. The social media icon links are not readily visible on the home page.

Don't forget mobile. When power is interrupted, it's the only access point available. Schools that don't design for mobile need to make sure their social media channels are populated with links and important information.

Also, important contact information should be up front. The campus announced their main information protocol at the bottom of the live blog. It was the only place I could find the information.

When announcements are made, campus status information will also be available through:

· *RU-info Channel on RU-tv 3*
· *RU-info Call Center at 732-445-INFO (4636)*
· *Texting "Rutgers" to 66746*

It's obvious by the way Rutgers handled the emergency that they had a plan. Hats off to the New Jersey university for keeping their community in the know during the emergency. Have you seen any other examples of how schools in the east handled communications during the storm?

Appendix U: Survey Announcements

Faculty/Staff Announcement

From: Robert L. Barchi [president@rutgers.edu]
Sent: Monday, December 10, 2012 10:28 PM
To: PRESIDENT_ALLSTAFF@rams.rutgers.edu
Subject: Seeking Your Feedback on Rutgers' Hurricane Response

Members of the Rutgers Community:

I am very proud of and grateful to the many people at Rutgers who stepped up to respond to Hurricane Sandy, a historic storm that presented enormous challenges for the university. To honor their dedicated and heroic efforts, we must continue to improve our emergency procedures, and we need your help.

I have appointed a presidential task force to thoroughly review the university's emergency preparedness by evaluating the storm-related problems that occurred and the actions that were taken to ameliorate them. The task force's work will complement the report that the Rutgers Office of Emergency Management is preparing, just as it does after all major incidents and emergencies. The Emergency Preparedness Task Force is chaired by Jay Kohl, Vice President of
Administration and Public Safety.

The task force will document the lessons we learned during the storm and comprehensively evaluate our emergency operations, communications, infrastructure, business continuity plans, and other potentially vulnerable areas. As a critical part of that evaluation, I am asking you to complete a brief survey at your earliest convenience prior to the winter break:
https://www.research.net/s/GZTQKQ2.

The survey will ask your perceptions regarding:
* the needs of the Rutgers community during emergencies;
* what services are essential for the continuity of operations on our campuses;
* the lessons learned from your experience with Rutgers' response to Hurricane Sandy;
* the adequacy of the procedures we have in place for Emergency Management;
* methods to improve communication of life safety information; and
* how we can better prepare for, respond to, and recover from emergencies and other potential disruptions of services.

The information you provide will be extremely important to the task force in its mission to improve our ability to address future emergencies, mitigate losses, and more quickly recover from major events.

Thank you in advance for your participation. I also want to thank the members of the task force – a group that represents the rich diversity of the Rutgers community – for committing their time and expertise to this most important effort.

Robert L. Barchi
President
Rutgers, The State University of New Jersey

Appendix U (continued)

Student Announcement

-------- Original Message --------
Subject: Seeking Your Feedback on Rutgers' Hurricane Response
Date: Mon, 10 Dec 2012 22:19:30 -0500
From: Robert L. Barchi <president@rutgers.edu>
Organization: Rutgers University
To: PRESIDENT_ALLSTUDENTS@rams.rutgers.edu

Members of the Rutgers Community:

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The task force will document the lessons we learned during the storm and comprehensively evaluate our emergency operations, communications, infrastructure, business continuity plans, and other potentially vulnerable areas. As a critical part of that evaluation, I am asking you to complete a brief survey at your earliest convenience prior to the winter break: https://www.research.net/s/BVNK62V.

The survey will ask your perceptions regarding:
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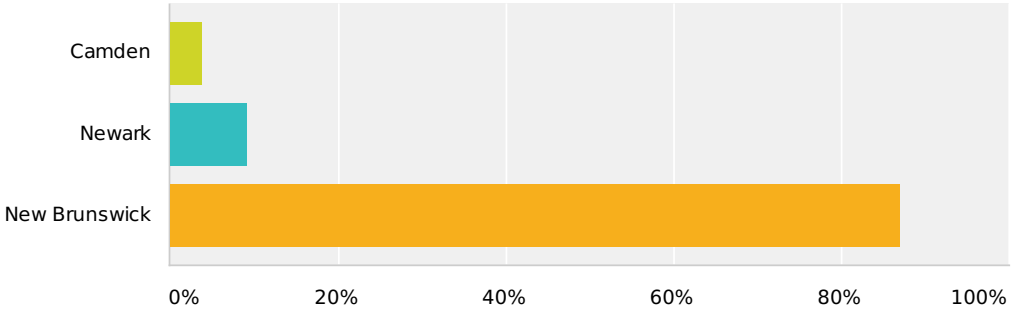
Robert L. Barchi
President
Rutgers, The State University of New Jersey

Q1 Which campus is your primary location of employment?

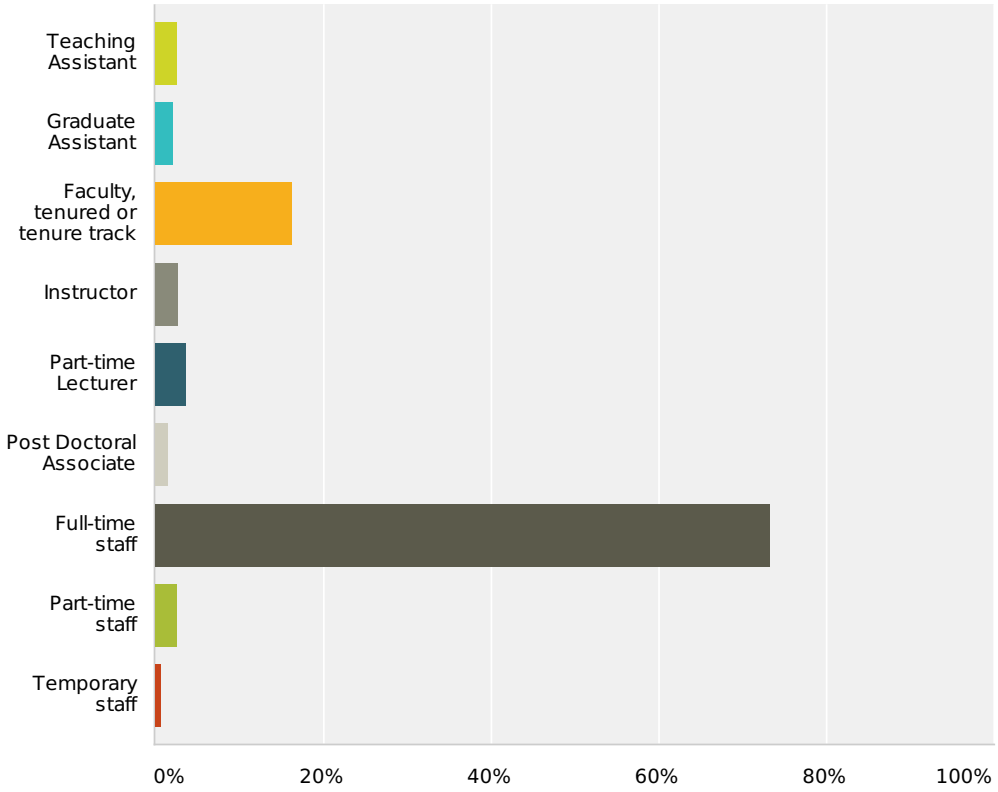
Answered: 1,258 Skipped: 10



Answer Choices	Responses	
Camden	**3.82%**	48
Newark	**9.14%**	115
New Brunswick	**87.04%**	1,095
Total		1,258

Q3 Which of the following describes your role as an employee at Rutgers University? Please select all that apply.

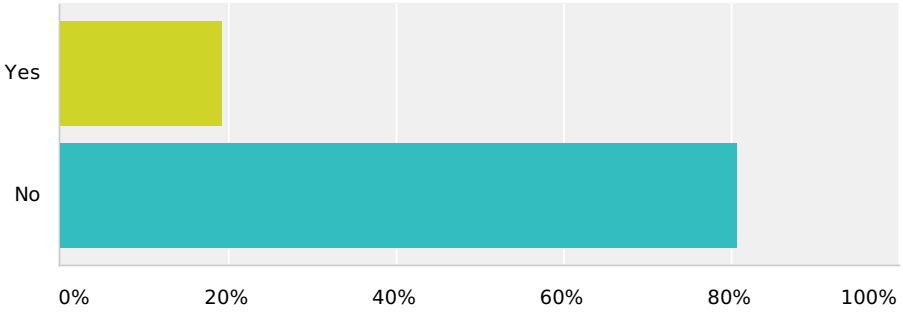
Answered: 1,258 Skipped: 10



Answer Choices	Responses	
Teaching Assistant	**2.54%**	32
Graduate Assistant	**2.07%**	26
Faculty, tenured or tenure track	**16.30%**	205
Instructor	**2.70%**	34
Part-time Lecturer	**3.66%**	46
Post Doctoral Associate	**1.51%**	19
Full-time staff	**73.29%**	922
Part-time staff	**2.62%**	33
Temporary staff	**0.64%**	8
Total Respondents: 1,258		

Q4 Do you live on campus?

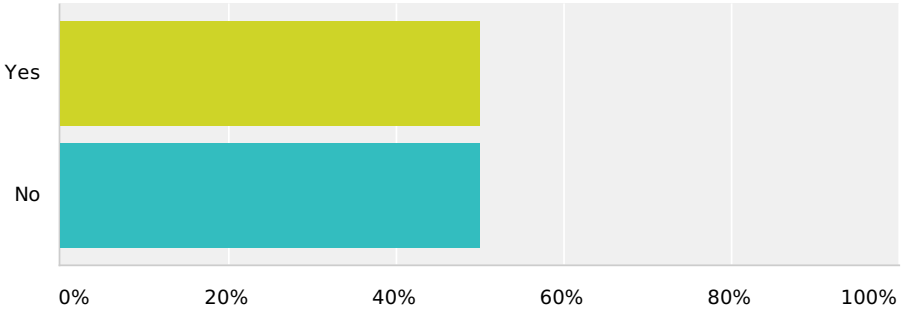
Answered: 57 Skipped: 1,211



Answer Choices	Responses	
Yes	**19.30%**	11
No	**80.70%**	46
Total		57

Q5 If yes, do you have dependents who live with you?

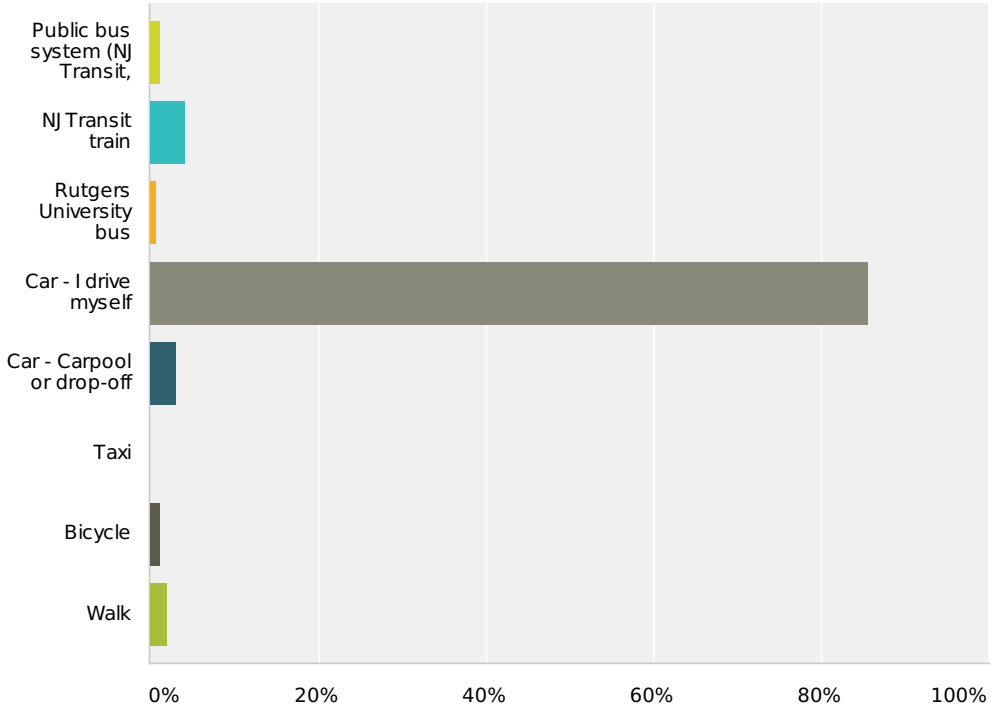
Answered: 12 Skipped: 1,256



Answer Choices	Responses	
Yes	**50%**	6
No	**50%**	6
Total		12

Q6 How do you generally commute from your residence to work?

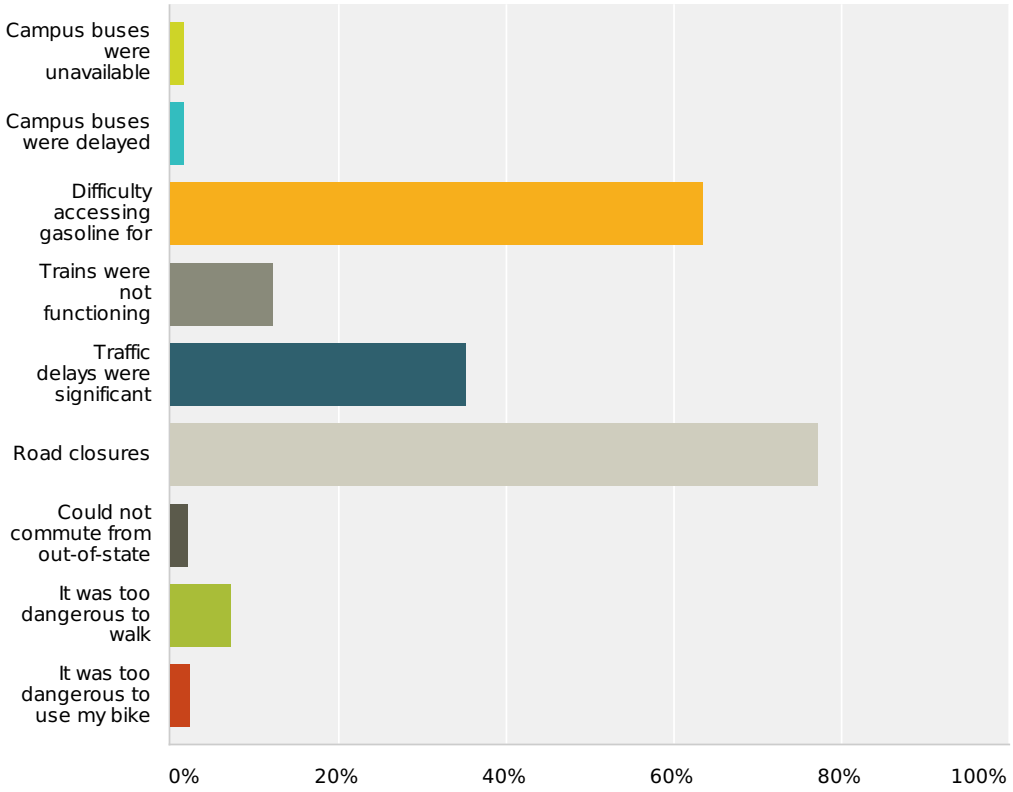
Answered: 1,205 Skipped: 63



Answer Choices	Responses	
Public bus system (NJ Transit, Suburban Transit, etc.)	**1.08%**	13
NJ Transit train	**4.07%**	49
Rutgers University bus	**0.66%**	8
Car - I drive myself	**85.56%**	1,031
Car - Carpool or drop-off	**3.07%**	37
Taxi	**0%**	0
Bicycle	**1.08%**	13
Walk	**1.99%**	24
Other (please specify) **(** 30 **)**		
Total		1,205

Q7 Did you experience any of the following problems commuting to work after the storm? Please check all that apply.

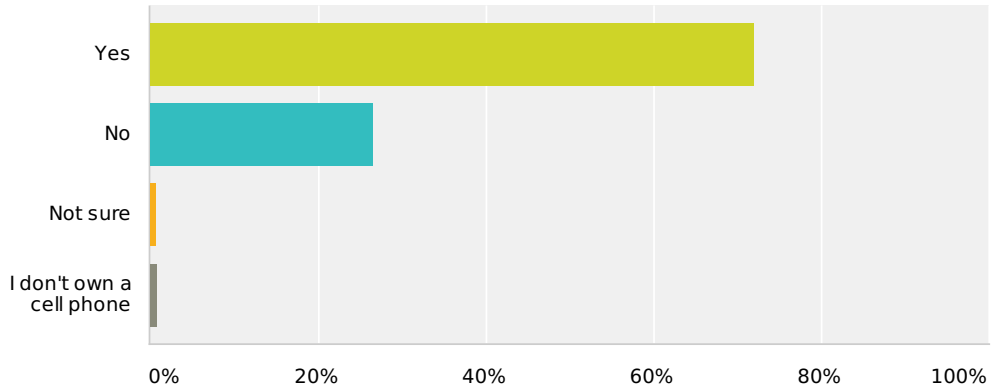
Answered: 1,082 Skipped: 186



Answer Choices	Responses	
Campus buses were unavailable	**1.57%**	17
Campus buses were delayed	**1.66%**	18
Difficulty accessing gasoline for my car	**63.59%**	688
Trains were not functioning	**12.20%**	132
Traffic delays were significant	**35.30%**	382
Road closures	**77.26%**	836
Could not commute from out-of-state	**2.03%**	22
It was too dangerous to walk	**7.21%**	78
It was too dangerous to use my bike	**2.31%**	25
Other (please specify) **(** 217 **)**		
Total Respondents: 1,082		

Q8 Is your cell phone a smart phone/internet-enabled?

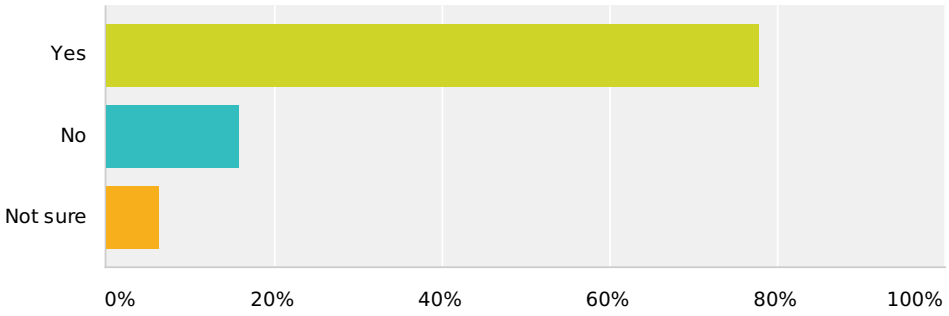
Answered: 1,199 Skipped: 69



Answer Choices	Responses	
Yes	**71.98%**	863
No	**26.61%**	319
Not sure	**0.67%**	8
I don't own a cell phone	**0.75%**	9
Total		1,199

Q9 Are you subscribed to the campus emergency text message system?

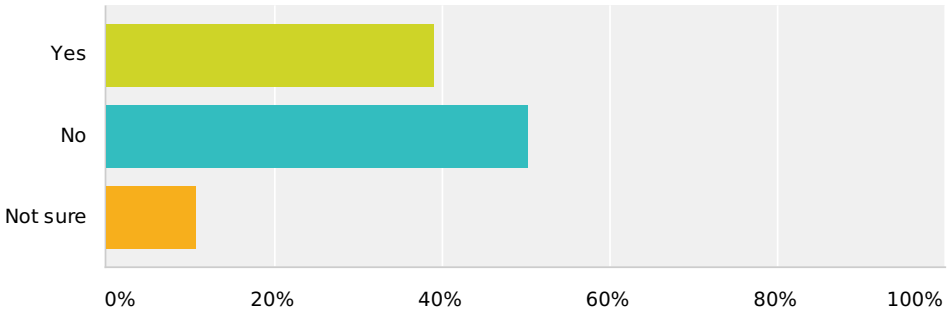
Answered: 1,191 Skipped: 77



Answer Choices	Responses	
Yes	**77.92%**	928
No	**15.87%**	189
Not sure	**6.21%**	74
Total		1,191

Q10 Did you receive campus emergency text messages during or following the storm?

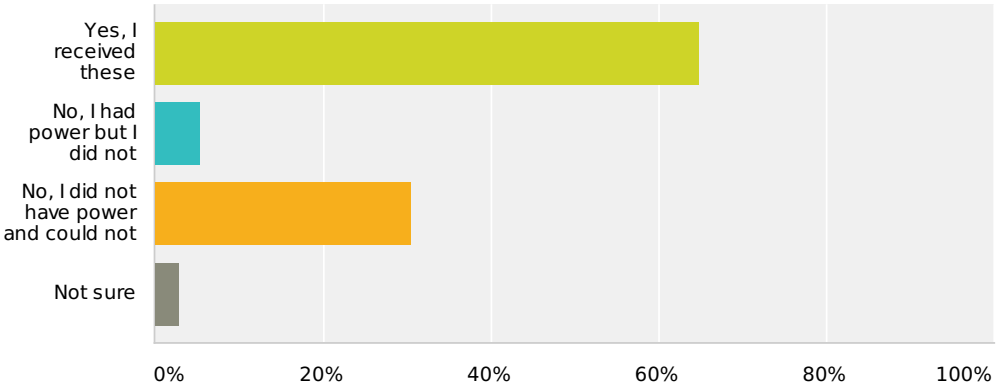
Answered: 1,186 Skipped: 82



Answer Choices	Responses	
Yes	**39.12%**	464
No	**50.25%**	596
Not sure	**10.62%**	126
Total		1,186

Q11 Did you receive University emails regarding storm preparations and campus status prior to and after Hurricane Sandy?

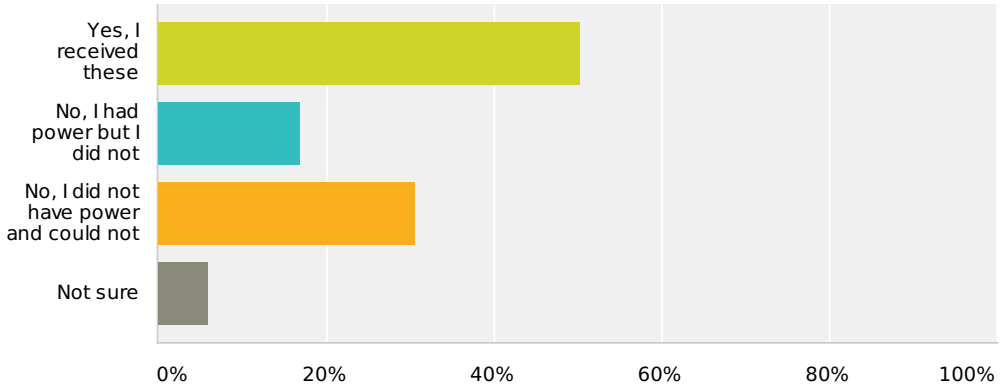
Answered: 1,196 Skipped: 72



Answer Choices	Responses	
Yes, I received these messages	**64.80%**	775
No, I had power but I did not receive these messages	**5.35%**	64
No, I did not have power and could not receive messages	**30.43%**	364
Not sure	**2.76%**	33
Total Respondents: 1,196		

Q12 Did you receive departmental emails (from your employing department) regarding storm preparations prior to, during, and/or after Hurricane Sandy?

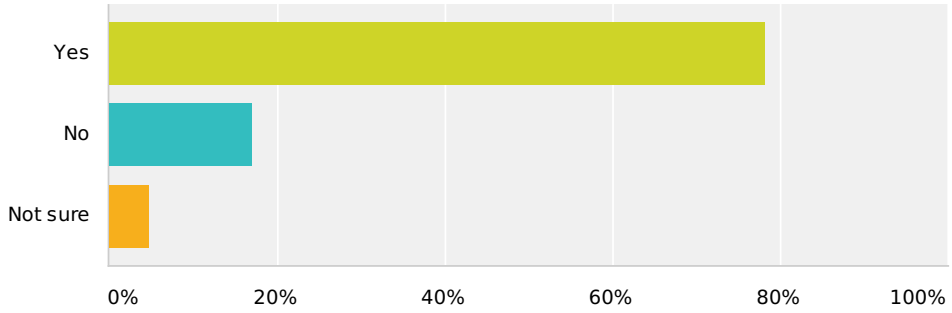
Answered: 1,194 Skipped: 74



Answer Choices	Responses	
Yes, I received these messages	**50.25%**	600
No, I had power but I did not receive these messages	**16.92%**	202
No, I did not have power and could not receive messages	**30.57%**	365
Not sure	**5.86%**	70
Total Respondents: 1,194		

Q13 Did you receive the University's initial notification that offices and programs would be closed effective at noon on Monday, October 29, 2012 until 12:01 a.m., Tuesday, October 30, 2012?

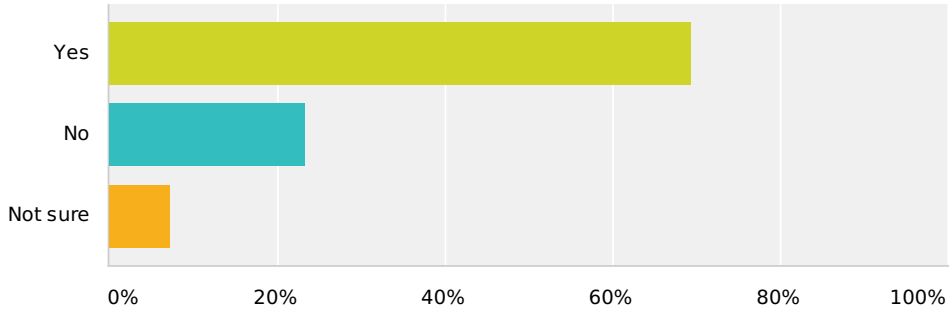
Answered: 1,195 Skipped: 73



Answer Choices	Responses	
Yes	**78.24%**	935
No	**16.99%**	203
Not sure	**4.77%**	57
Total		1,195

Q14 Did you receive the subsequent notification that the closure of offices and cancellation of programs on all campuses was extended until 5:00 p.m.Tuesday, October 30, 2012?

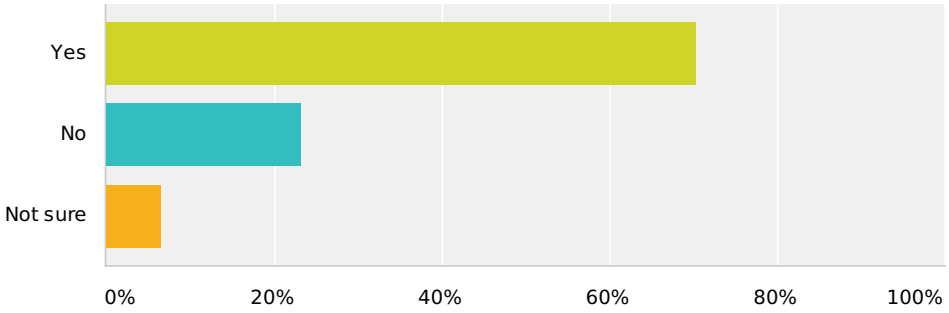
Answered: 1,193 Skipped: 75



Answer Choices	Responses	
Yes	**69.40%**	828
No	**23.39%**	279
Not sure	**7.21%**	86
Total		1,193

Q15 Did you receive the subsequent notification that the closure of offices and cancellation of programs on all campuses was extended until 5:00 p.m.Wednesday, October 31, 2012?

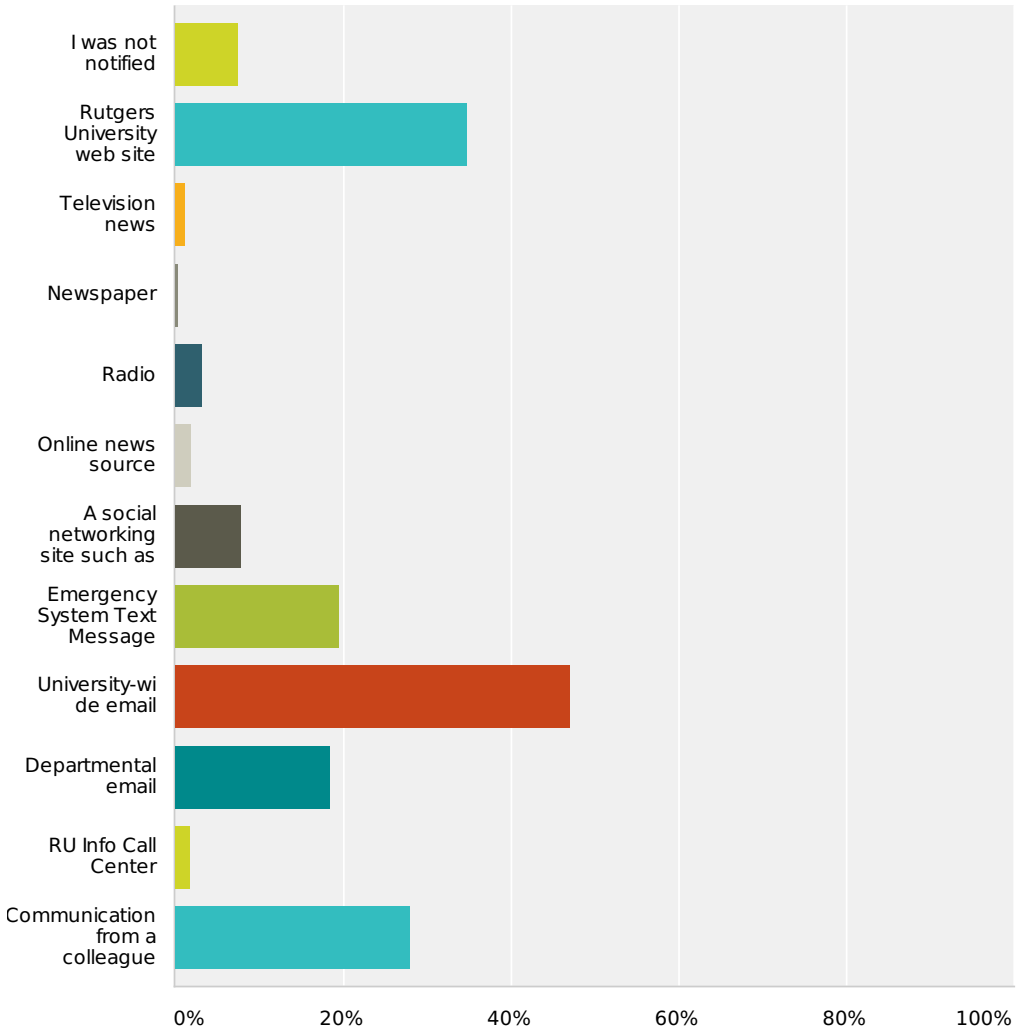
Answered: 1,192 Skipped: 76



Answer Choices	Responses	
Yes	**70.30%**	838
No	**23.15%**	276
Not sure	**6.54%**	78
Total		1,192

Q16 How did you receive these notifications? Please select all that apply.

Answered: 1,182 Skipped: 86

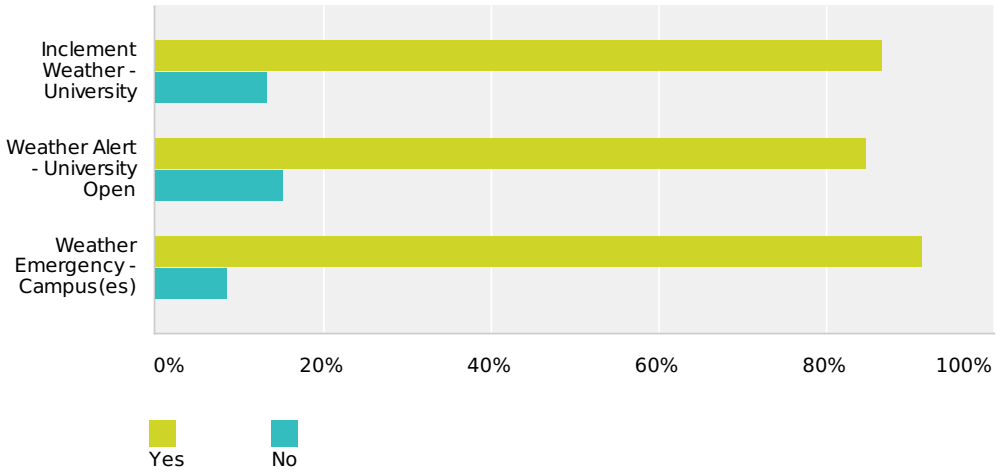


Answer Choices	Responses	
I was not notified	**7.45%**	88
Rutgers University web site	**34.77%**	411
Television news	**1.10%**	13
Newspaper	**0.25%**	3
Radio	**3.21%**	38
Online news source	**1.86%**	22
A social networking site such as Facebook or Twitter	**7.87%**	93
Emergency System Text Message	**19.46%**	230
University-wide email	**47.04%**	556
Departmental email	**18.44%**	218
RU Info Call Center	**1.78%**	21
Communication from a colleague	**28.00%**	331
Other (please specify) **(** 224 **)**		

Total Respondents: 1,182

Q17 Do you understand the meaning of the different Campus Operating Statuses:

Answered: 1,195 Skipped: 73

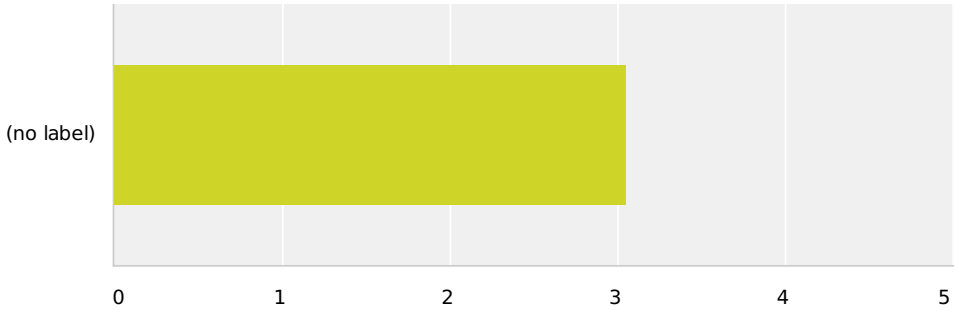


	Yes	No	Total
Inclement Weather - University Open	**86.74%** 1,034	**13.26%** 158	1,192
Weather Alert - University Open	**84.79%** 1,009	**15.21%** 181	1,190
Weather Emergency - Campus(es) Closed	**91.51%** 1,088	**8.49%** 101	1,189

Additional comments: **(** 273 **)**

Q18 Please indicate whether you agree or disagree that the University notified students, staff, and faculty of changes to the University's campus operating status within a reasonable time frame.

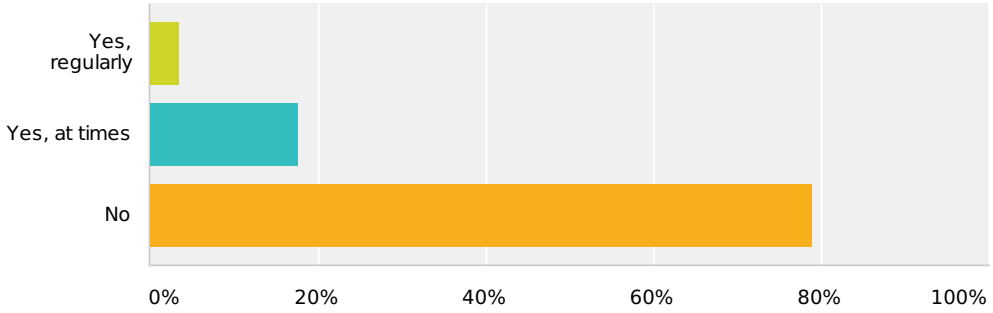
Answered: 1,195 Skipped: 73



	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total	Average Rating
(no label)	**11.55%** 138	**26.95%** 322	**21.76%** 260	**24.44%** 292	**15.31%** 183	1,195	3.05

Q19 Do you use the campus bus system?

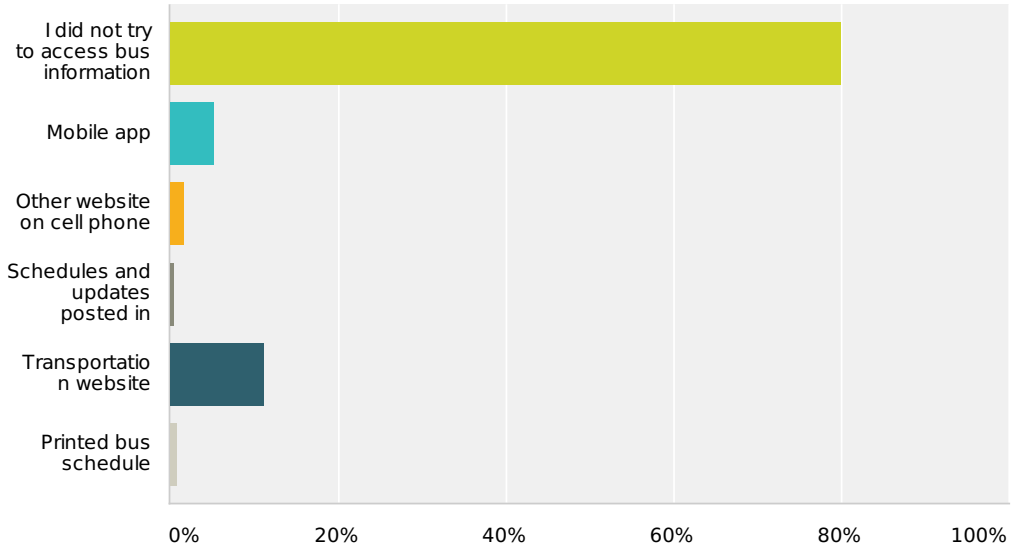
Answered: 1,203 Skipped: 65



Answer Choices	Responses	
Yes, regularly	**3.41%**	41
Yes, at times	**17.62%**	212
No	**78.97%**	950
Total		1,203

Q20 What sources did you use to determine the availability of campus buses immediately following the storm?

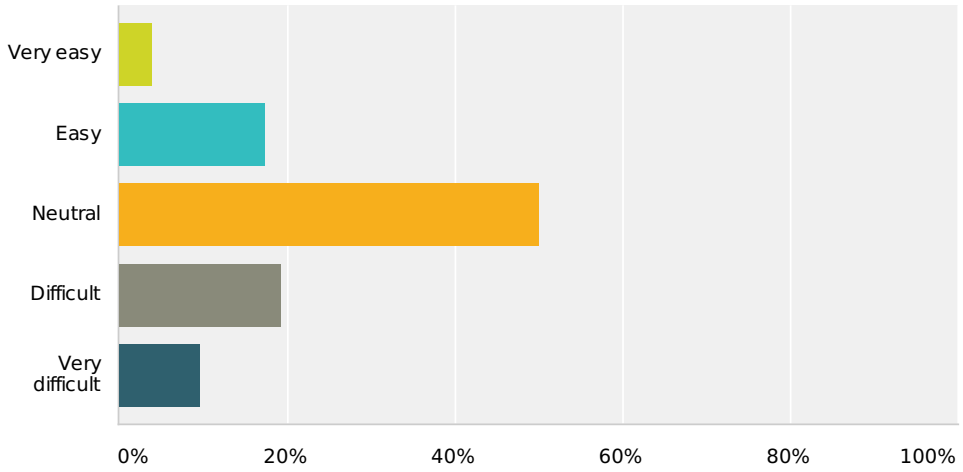
Answered: 250 Skipped: 1,018



Answer Choices	Responses	
I did not try to access bus information immediately following the storm	**80%**	200
Mobile app	**5.20%**	13
Other website on cell phone	**1.60%**	4
Schedules and updates posted in storm shelters	**0.40%**	1
Transportation website	**11.20%**	28
Printed bus schedule	**0.80%**	2
Other (please specify) **(** 18 **)**		
Total Respondents: 250		

Q21 How easy or difficult was it to access campus bus information immediately after the storm?

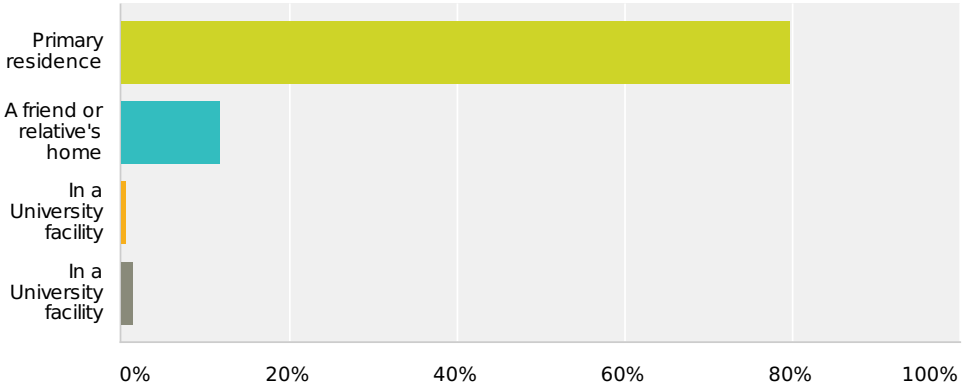
Answered: 52 Skipped: 1,216



Answer Choices	Responses	
Very easy	**3.85%**	2
Easy	**17.31%**	9
Neutral	**50%**	26
Difficult	**19.23%**	10
Very difficult	**9.62%**	5
Total		52

Q22 Where did you stay during the storm?

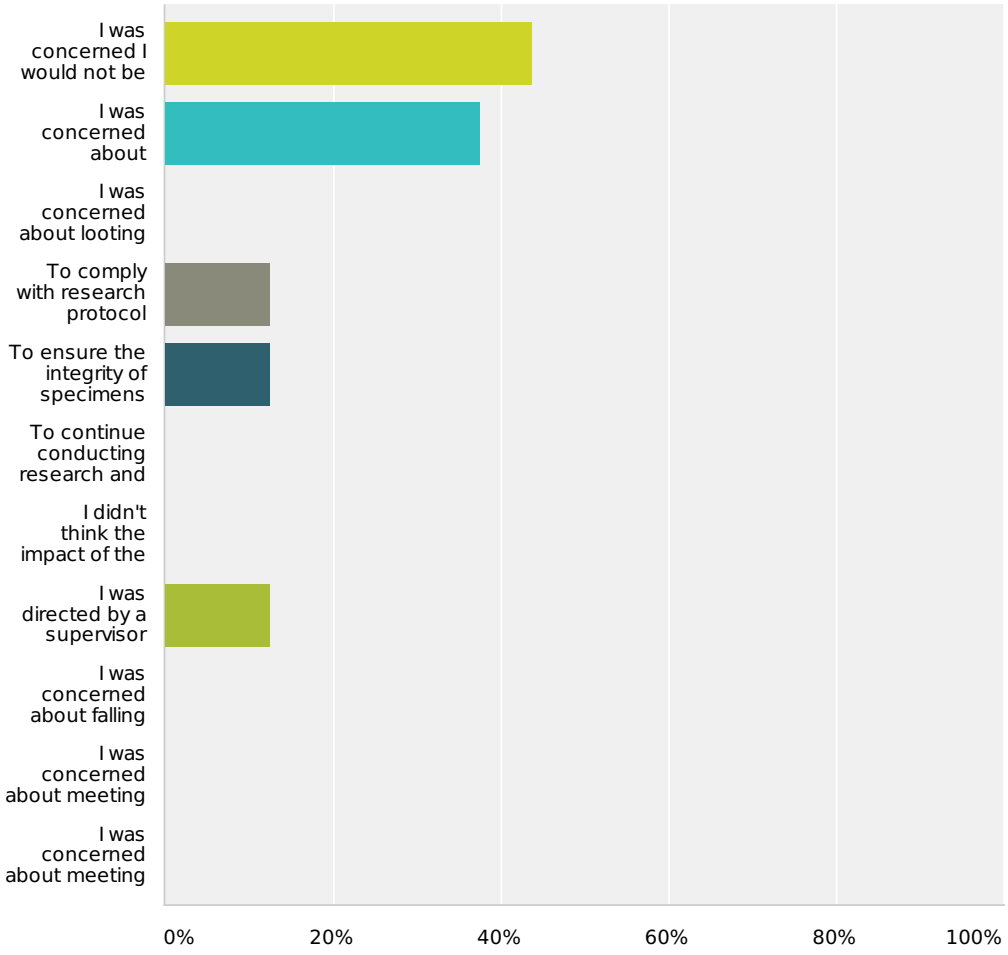
Answered: 1,204 Skipped: 64



Answer Choices	Responses	
Primary residence	**79.73%**	960
A friend or relative's home	**11.79%**	142
In a University facility being used as a designated shelter	**0.58%**	7
In a University facility where my office or research lab is located	**1.41%**	17
Other (please specify) **(** 78 **)**		
Total		1,204

Q23 Why did you decide to stay in your office or research laboratory during the storm? Please check all that apply.

Answered: 16 Skipped: 1,252

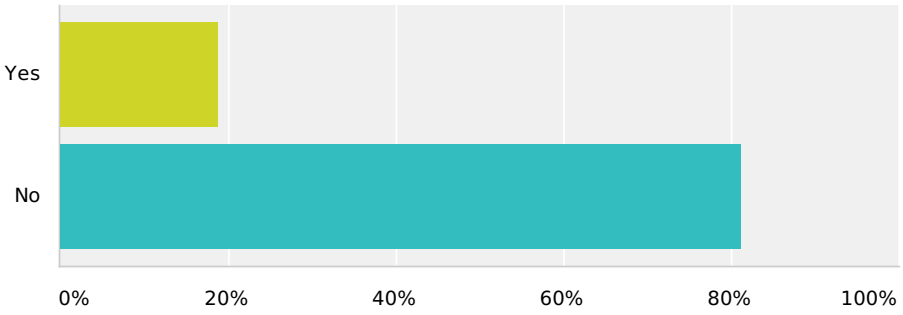


Answer Choices	Responses	
I was concerned I would not be able to travel to the campus following the storm	**43.75%**	7
I was concerned about property damage to equipment and/or laboratories	**37.50%**	6
I was concerned about looting or theft	**0%**	0
To comply with research protocol standards (care for animals, specimens, etc.)	**12.50%**	2
To ensure the integrity of specimens	**12.50%**	2
To continue conducting research and experiments	**0%**	0
I didn't think the impact of the storm would be significant	**0%**	0
I was directed by a supervisor or colleague to do so	**12.50%**	2
I was concerned about falling behind in communications to students	**0%**	0
I was concerned about meeting an immediate deadline for a project	**0%**	0
I was concerned about meeting a future deadline for a project	**0%**	0

Other (please specify) **(** 13 **)**	
Total Respondents: 16	

Q24 While staying in your University facility during and after the storm, did you contact Public Safety for assistance at any point? Public Safety includes the Office of Emergency Management (OEM), Emergency Services (RUES), Rutgers Environmental Health and Safety (REHS), Rutgers Police (RUPD), and Transportation Services (DOTS).

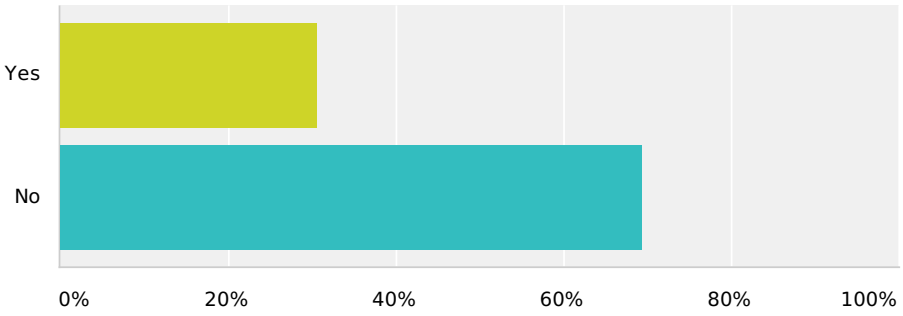
Answered: 16 Skipped: 1,252



Answer Choices	Responses	
Yes	**18.75%**	3
No	**81.25%**	13
Total		16

Q25 Did you return to campus at any time during which your department or office was closed?

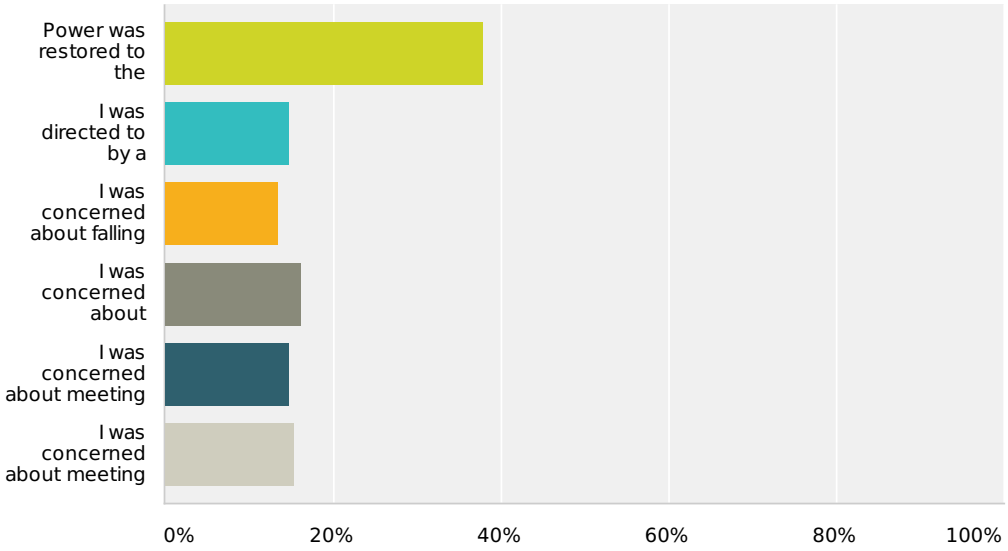
Answered: 1,201 Skipped: 67



Answer Choices	Responses	
Yes	**30.56%**	367
No	**69.44%**	834
Total		1,201

Q26 Why did you decide to return to your department or office while it was officially closed? Please select all that apply.

Answered: 359 Skipped: 909



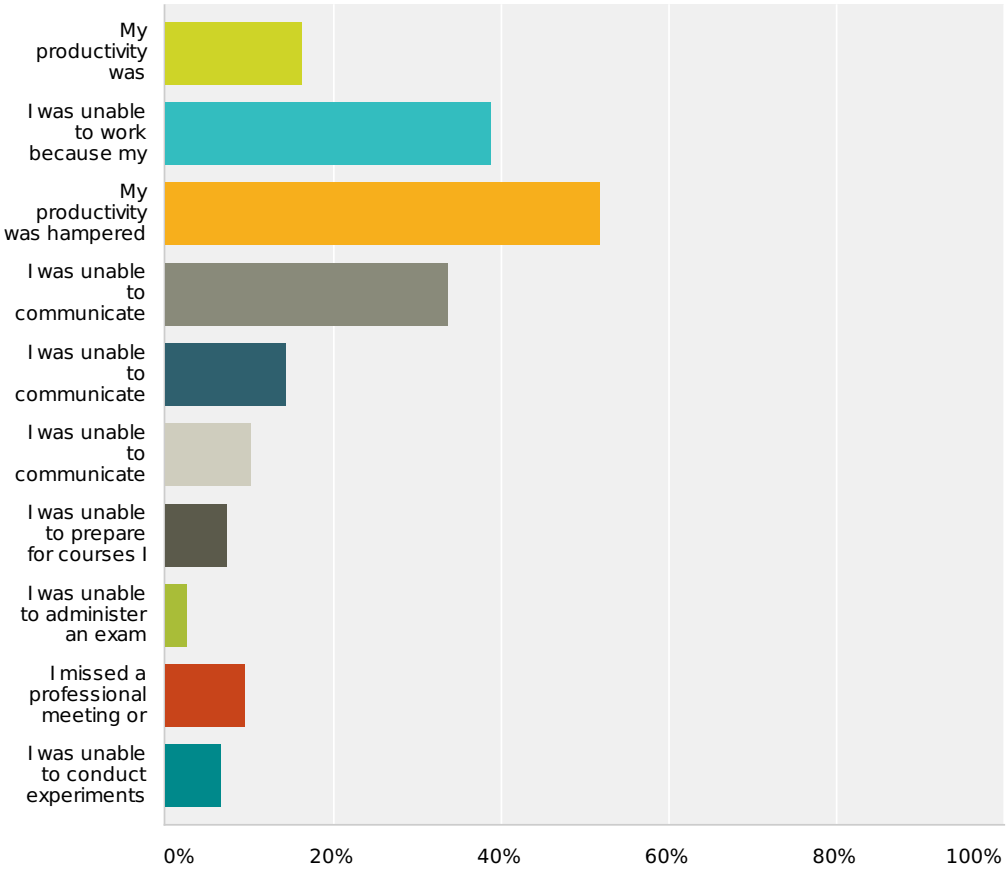
Answer Choices	Responses	
Power was restored to the University before it was restored to my primary residence	**37.88%**	136
I was directed to by a supervisor	**14.76%**	53
I was concerned about falling behind in communications to students	**13.37%**	48
I was concerned about specimens or laboratory equipment	**16.16%**	58
I was concerned about meeting an immediate deadline for a project	**14.76%**	53
I was concerned about meeting a future deadline for a project	**15.32%**	55

Other (please specify) **(** 189 **)**

Total Respondents: 359

Q27 Please indicate the ways in which your work product was impacted by the storm. Please select all that apply.

Answered: 1,152 Skipped: 116



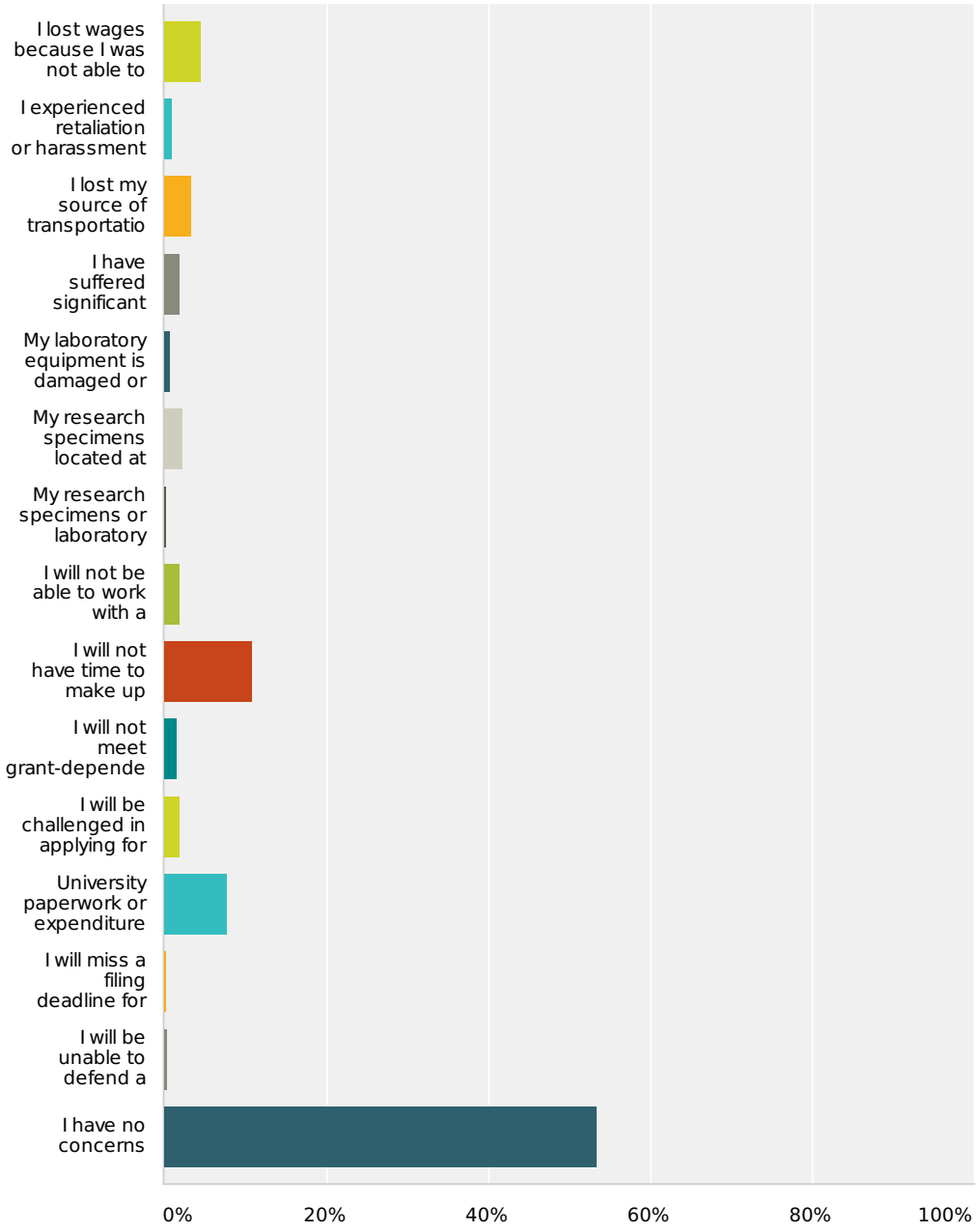
Answer Choices	Responses	
My productivity was unaffected by the storm	**16.32%**	188
I was unable to work because my office remained closed	**38.80%**	447
My productivity was hampered by lack of Internet access	**51.82%**	597
I was unable to communicate with colleagues in my department	**33.68%**	388
I was unable to communicate with colleages at univerisites that were unaffected by the storm	**14.32%**	165
I was unable to communicate with students in the courses I teach	**10.16%**	117
I was unable to prepare for courses I teach	**7.29%**	84
I was unable to administer an exam	**2.52%**	29
I missed a professional meeting or conference	**9.46%**	109
I was unable to conduct experiments or continue research procedures on campus	**6.60%**	76

Other (please specify) **(** 302 **)**

Total Respondents: 1,152

Q28 What concerns remain following the storm pertaining to your position/job? Please select all that apply.

Answered: 1,048 Skipped: 220



Answer Choices	Responses	
I lost wages because I was not able to work	**4.48%**	47
I experienced retaliation or harassment from my supervisor	**0.95%**	10
I lost my source of transportation to Rutgers University	**3.24%**	34
I have suffered significant personal property damage and may need to relocate	**1.81%**	19
My laboratory equipment is damaged or destroyed	**0.67%**	7
My research specimens located at Rutgers University are not	**2.19%**	23

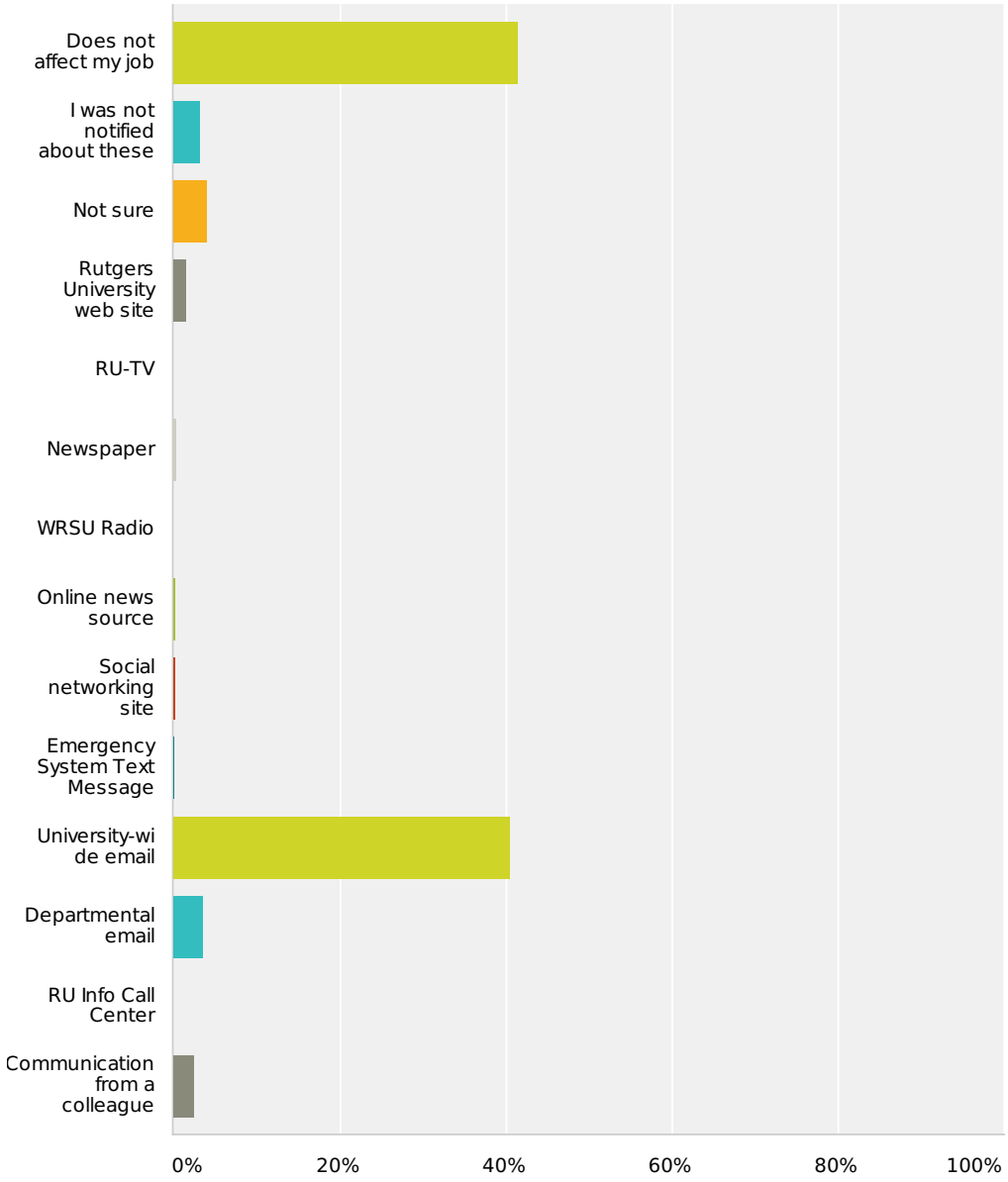
viable as a result of the storm		
My research specimens or laboratory equipment were affected at another site off-campus	**0.19%**	2
I will not be able to work with a collaborator or colleague who was adversely affected by the storm	**1.81%**	19
I will not have time to make up material missed in courses	**10.78%**	113
I will not meet grant-dependent research deadlines	**1.53%**	16
I will be challenged in applying for future grants	**1.91%**	20
University paperwork or expenditure approvals may be delayed due to the storm	**7.73%**	81
I will miss a filing deadline for a degree	**0.19%**	2
I will be unable to defend a thesis or dissertation on schedule	**0.29%**	3
I have no concerns	**53.44%**	560

Other (please specify) **(** 265 **)**

Total Respondents: 1,048

Q29 How were you initially notified about the University's Grade Conversion Policy and other academic accommodations for students affected by the storm?

Answered: 1,164 Skipped: 104

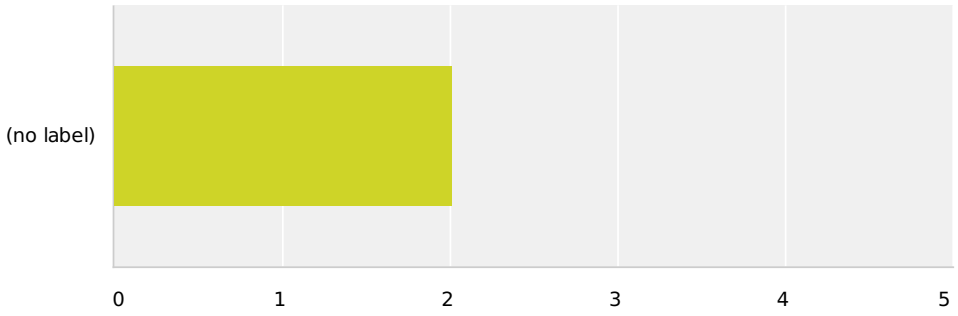


Answer Choices	Responses	
Does not affect my job	**41.49%**	483
I was not notified about these provisions	**3.18%**	37
Not sure	**3.95%**	46
Rutgers University web site	**1.55%**	18
RU-TV	**0%**	0
Newspaper	**0.26%**	3
WRSU Radio	**0%**	0

Online news source	**0.17%**	2
Social networking site (Facebook, Twitter, etc.)	**0.17%**	2
Emergency System Text Message	**0.09%**	1
University-wide email	**40.55%**	472
Departmental email	**3.52%**	41
RU Info Call Center	**0%**	0
Communication from a colleague	**2.49%**	29
Other (please specify) **(** 30 **)**		
Total		1,164

Q30 Is the University's Grade Conversion Policy clear as presented?

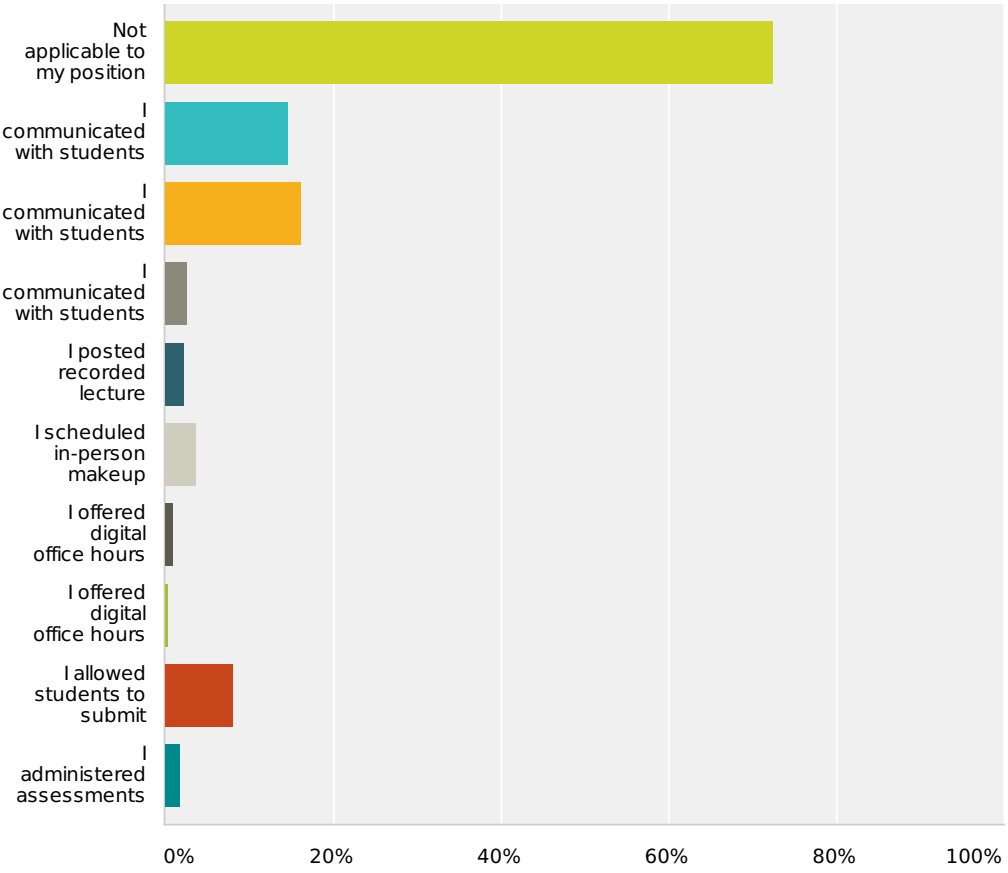
Answered: 616 Skipped: 652



	Very clear	Clear	Not very clear	Not at all clear	Total	Average Rating
(no label)	**21.75%** 134	**57.95%** 357	**17.53%** 108	**2.76%** 17	616	2.01

Q31 If you are in an instructional or student support position, did you take any of the following steps to communicate with students or deliver instruction following the storm? Please check all that apply.

Answered: 1,063 Skipped: 205



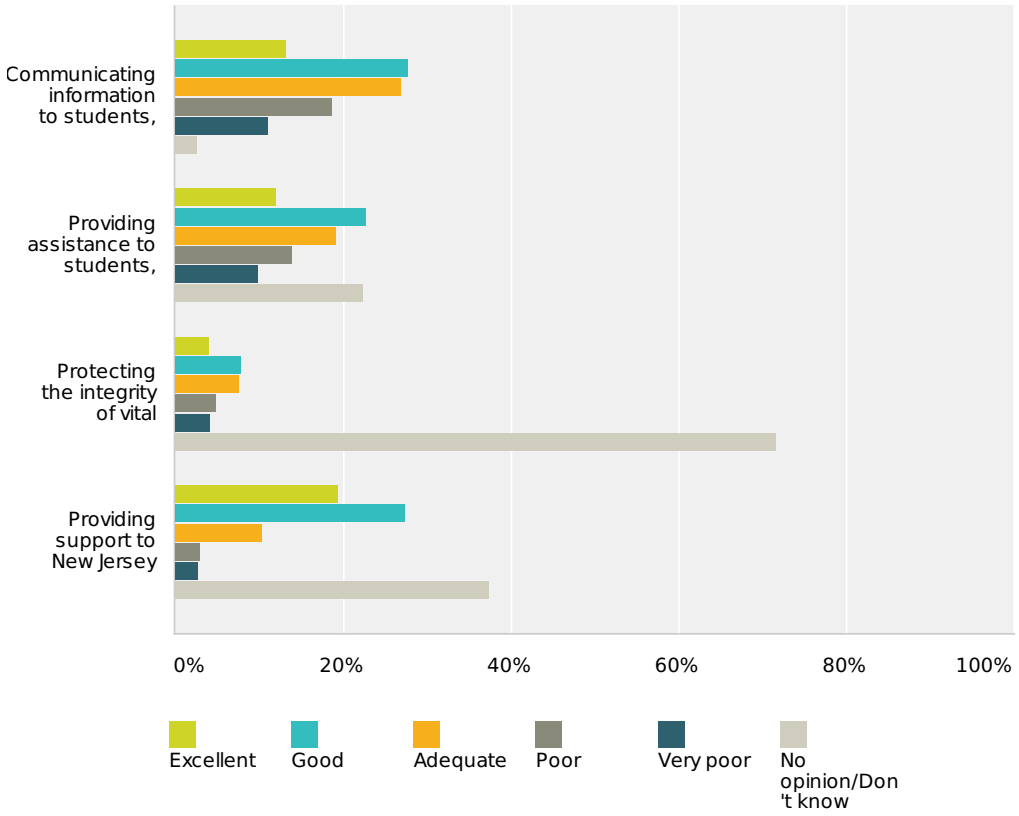
Answer Choices	Responses	
Not applicable to my position	**72.44%**	770
I communicated with students and provided course updates via Sakai or eCollege	**14.68%**	156
I communicated with students and provided course updates via email	**16.18%**	172
I communicated with students and provided course updates using social networking sites (Facebook, Twitter, etc.)	**2.54%**	27
I posted recorded lecture materials on Sakai or eCollege	**2.16%**	23
I scheduled in-person makeup classes to account for lost instructional time	**3.67%**	39
I offered digital office hours in a chat room on Sakai or eCollege	**0.94%**	10
I offered digital office hours (i.e. Skype)	**0.28%**	3
I allowed students to submit assignments electronically	**8.09%**	86
I administered assessments via Sakai or eCollege	**1.79%**	19

Other (please specify) **(** 89 **)**

Total Respondents: 1,063

Q32 Please evaluate the response of Rutgers University to Hurricane Sandy in the following areas:

Answered: 1,159 Skipped: 109

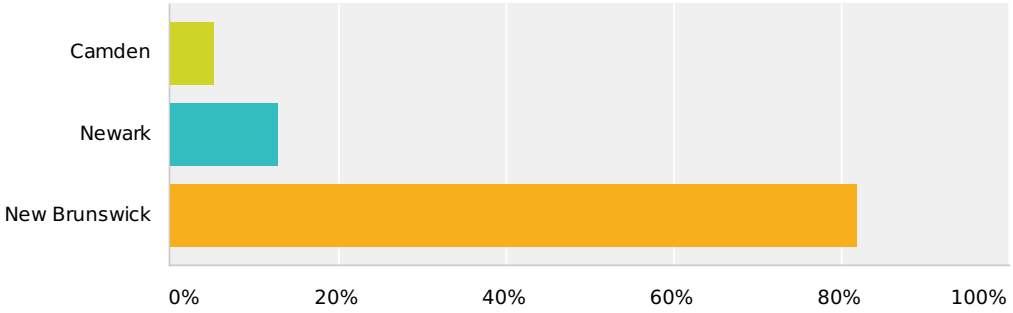


	Excellent	Good	Adequate	Poor	Very poor	No opinion/Don't know	Total
Communicating information to students, staff, and faculty	**13.17%** 152	**27.73%** 320	**26.86%** 310	**18.63%** 215	**11.09%** 128	**2.51%** 29	1,154
Providing assistance to students, staff, and faculty before, during, and after emergencies	**11.96%** 138	**22.70%** 262	**19.15%** 221	**13.95%** 161	**9.88%** 114	**22.36%** 258	1,154
Protecting the integrity of vital research during the storm	**4.03%** 46	**7.80%** 89	**7.54%** 86	**4.82%** 55	**4.12%** 47	**71.69%** 818	1,141
Providing support to New Jersey residents beyond the	**19.39%** 222	**27.34%** 313	**10.31%** 118	**2.88%** 33	**2.71%** 31	**37.38%** 428	1,145

university community

Q1 Which campus are you affiliated with as an enrolled student?

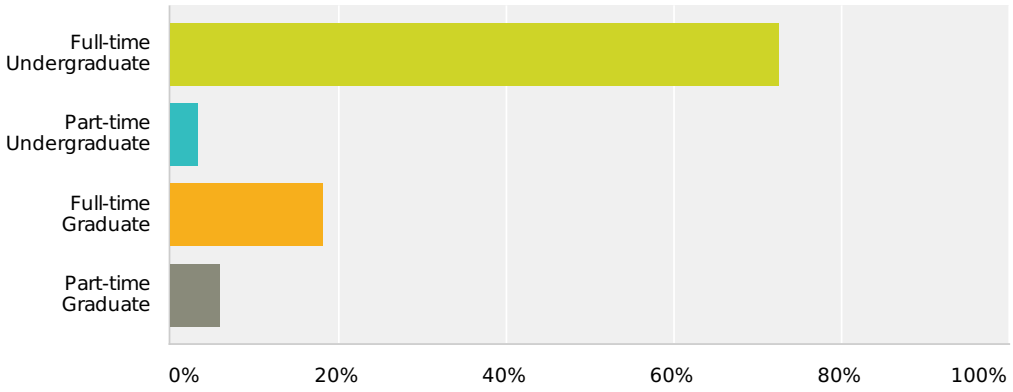
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
Camden	**5.22%**	60
Newark	**12.88%**	148
New Brunswick	**81.90%**	941
Total		1,149

Q2 Which of the following best describes your student role at Rutgers?

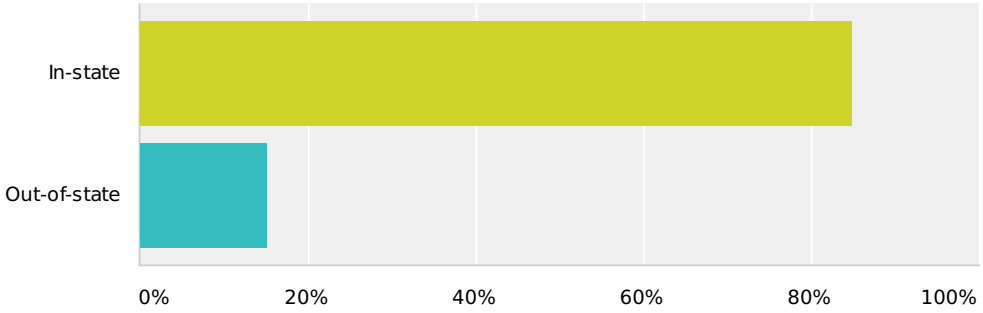
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
Full-time Undergraduate	**72.58%**	834
Part-time Undergraduate	**3.31%**	38
Full-time Graduate	**18.19%**	209
Part-time Graduate	**5.92%**	68
Total		1,149

Q3 Are you an in-state or out-of-state student?

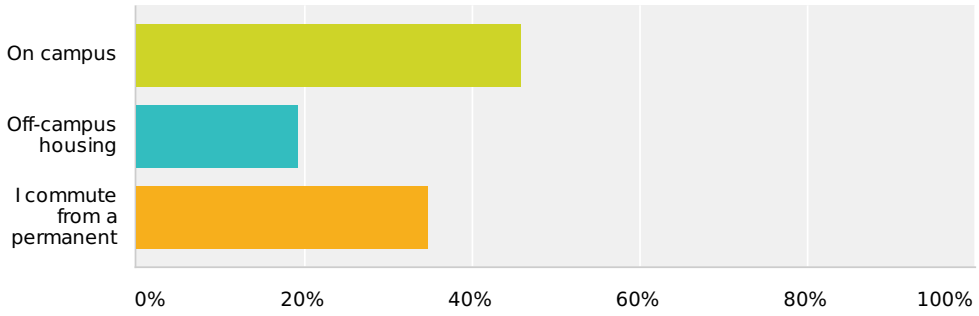
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
In-state	**84.86%**	975
Out-of-state	**15.14%**	174
Total		1,149

Q5 Where did you live for the Fall 2012 semester before Hurricane Sandy?

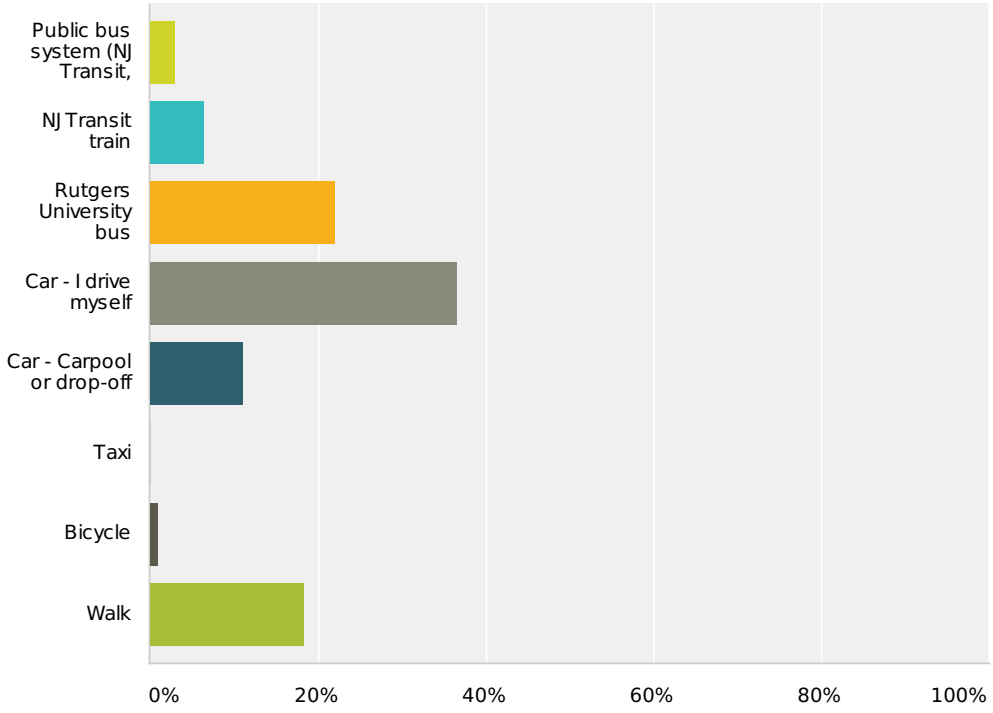
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
On campus	**45.87%**	527
Off-campus housing	**19.32%**	222
I commute from a permanent off-campus residence	**34.81%**	400
Total		1,149

Q6 How do you generally get from your residence to campus?

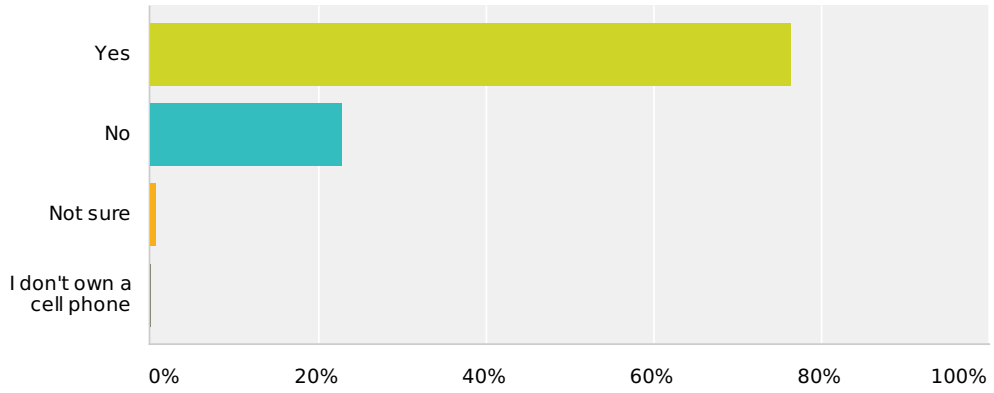
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
Public bus system (NJ Transit, Suburban Transit, etc.)	**2.87%**	33
NJ Transit train	**6.35%**	73
Rutgers University bus	**22.02%**	253
Car - I drive myself	**36.55%**	420
Car - Carpool or drop-off	**11.05%**	127
Taxi	**0.09%**	1
Bicycle	**0.87%**	10
Walk	**18.28%**	210
Other (please specify) **(** 22 **)**		
Total		1,149

Q7 Is your cell phone a smart phone/internet-enabled?

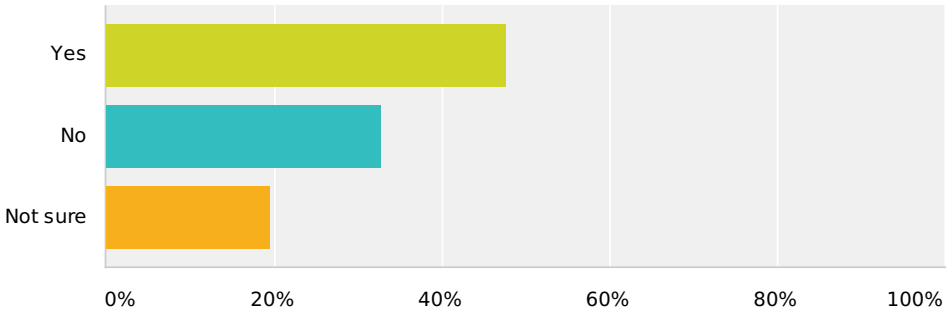
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
Yes	**76.41%**	878
No	**22.89%**	263
Not sure	**0.61%**	7
I don't own a cell phone	**0.09%**	1
Total		1,149

Q8 Are you subscribed to the campus emergency text message system?

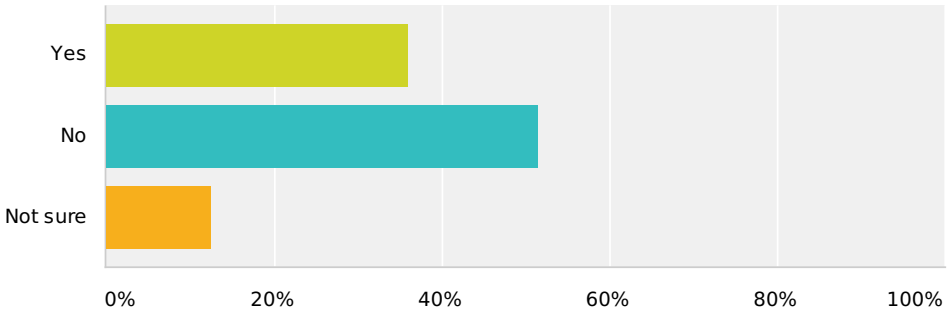
Answered: 1,149 Skipped: 0



Answer Choices	Responses	
Yes	**47.69%**	548
No	**32.81%**	377
Not sure	**19.50%**	224
Total		1,149

Q9 Did you receive campus emergency text messages during or following the storm?

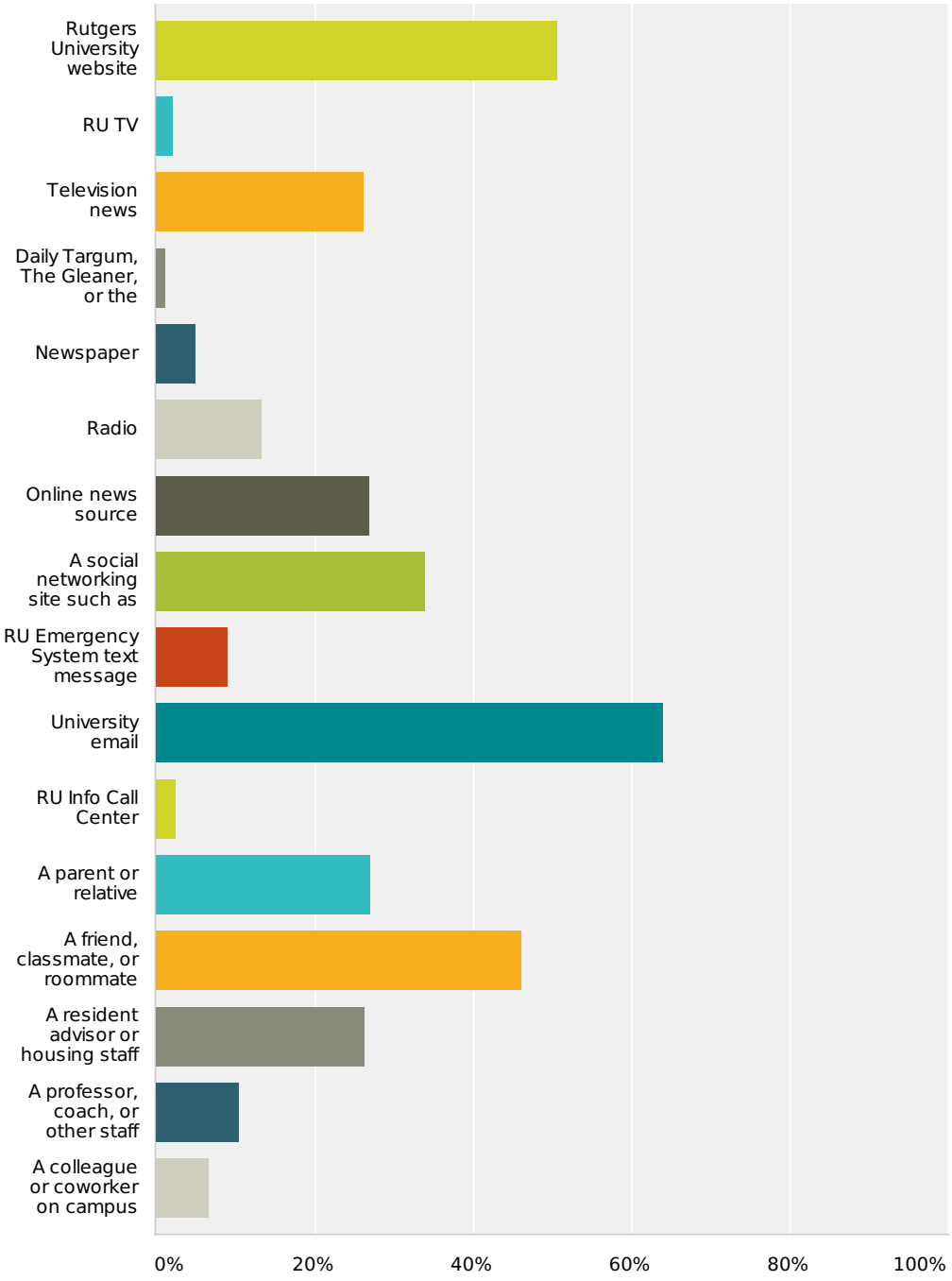
Answered: 544 Skipped: 605



Answer Choices	Responses	
Yes	**36.03%**	196
No	**51.47%**	280
Not sure	**12.50%**	68
Total		544

Q10 Where did you get information about what to do before and during the storm? Please select all that apply.

Answered: 1,131 Skipped: 18

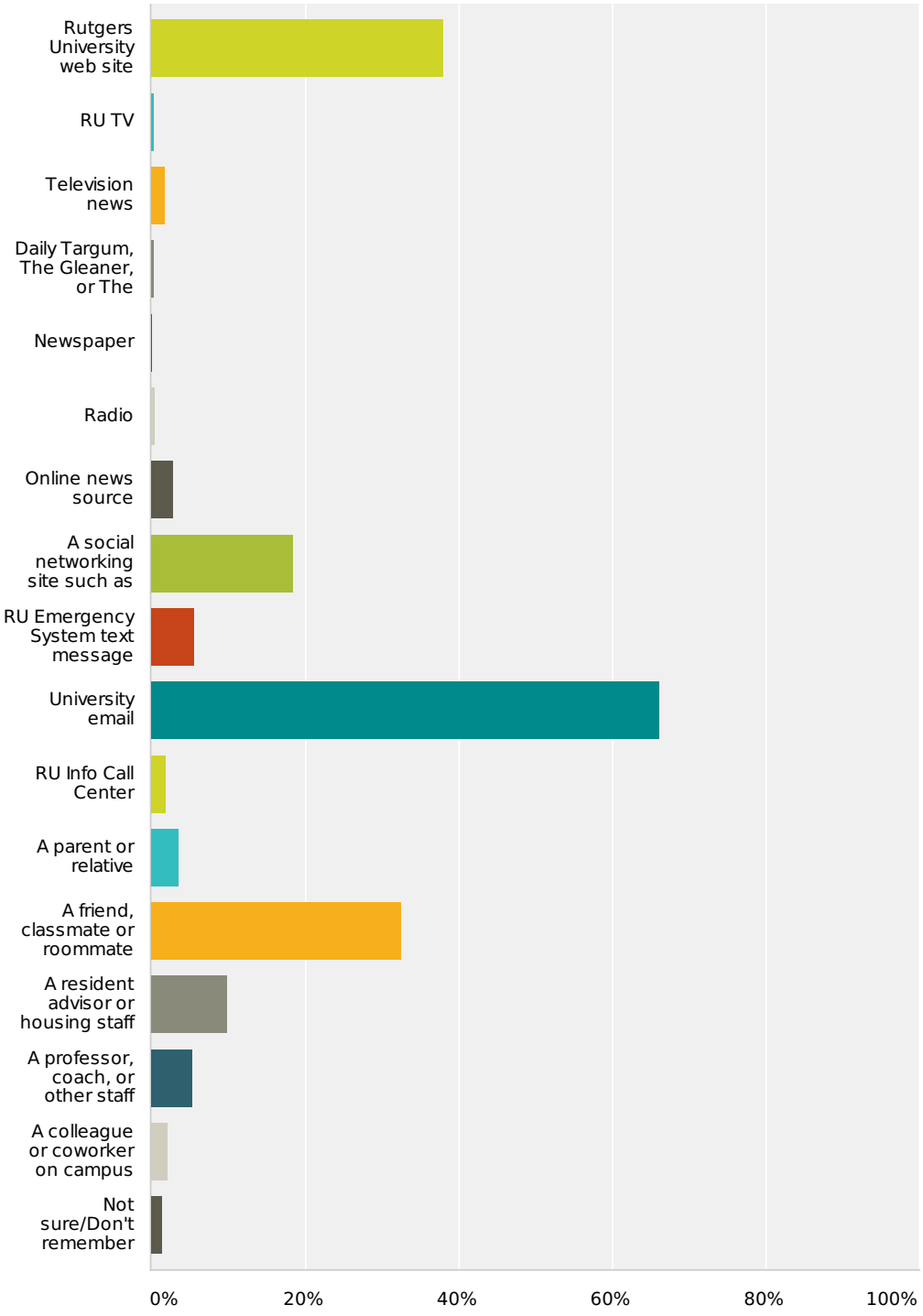


Answer Choices	Responses	
Rutgers University website	**50.66%**	573
RU TV	**2.03%**	23
Television news	**26.17%**	296
Daily Targum, The Gleaner, or the Observer	**1.15%**	13
Newspaper	**4.95%**	56

Radio	**13.35%**	151
Online news source	**26.97%**	305
A social networking site such as Facebook or Twitter	**33.95%**	384
RU Emergency System text message	**9.02%**	102
University email	**64.01%**	724
RU Info Call Center	**2.39%**	27
A parent or relative	**27.06%**	306
A friend, classmate, or roommate	**46.07%**	521
A resident advisor or housing staff member	**26.26%**	297
A professor, coach, or other staff member on campus	**10.43%**	118
A colleague or coworker on campus	**6.63%**	75
Other (please specify) **(** 53 **)**		
Total Respondents: 1,131		

Q11 How did you receive the University's initial notification that classes would be cancelled for 2 days, resuming operation on October 31? Please select all that apply.

Answered: 1,124 Skipped: 25

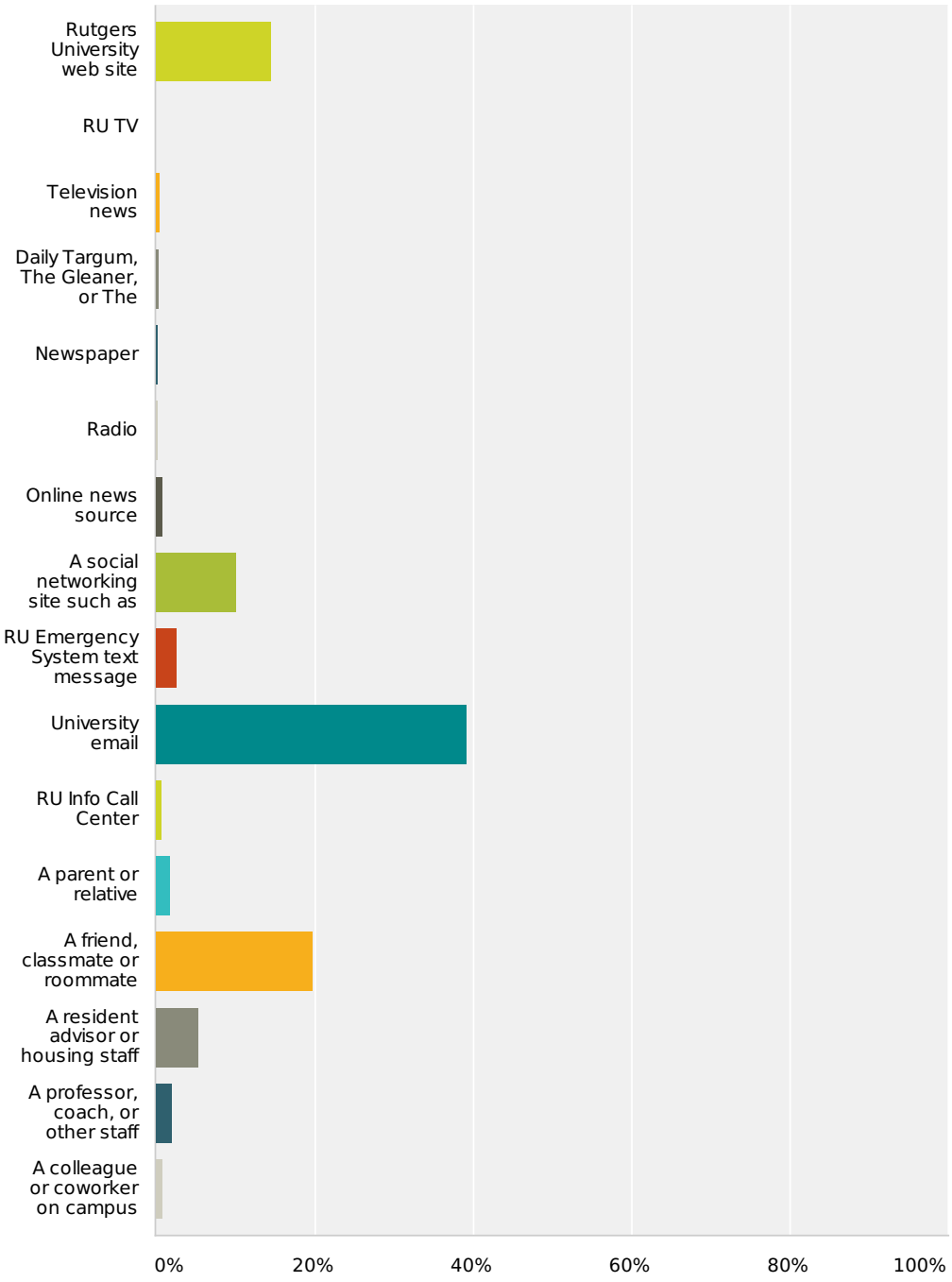


Answer Choices	Responses	
Rutgers University web site	**37.99%**	427

RU TV	**0.27%**	3
Television news	**1.69%**	19
Daily Targum, The Gleaner, or The Observer	**0.27%**	3
Newspaper	**0.09%**	1
Radio	**0.44%**	5
Online news source	**2.76%**	31
A social networking site such as Facebook or Twitter	**18.42%**	207
RU Emergency System text message	**5.52%**	62
University email	**66.19%**	744
RU Info Call Center	**1.87%**	21
A parent or relative	**3.47%**	39
A friend, classmate or roommate	**32.47%**	365
A resident advisor or housing staff member	**9.79%**	110
A professor, coach, or other staff member on campus	**5.34%**	60
A colleague or coworker on campus	**2.14%**	24
Not sure/Don't remember	**1.42%**	16
Other (please specify) **(** 22 **)**		
Total Respondents: 1,124		

Q12 Where did you first learn about the extension of class cancellations until November 5th?

Answered: 1,099 Skipped: 50

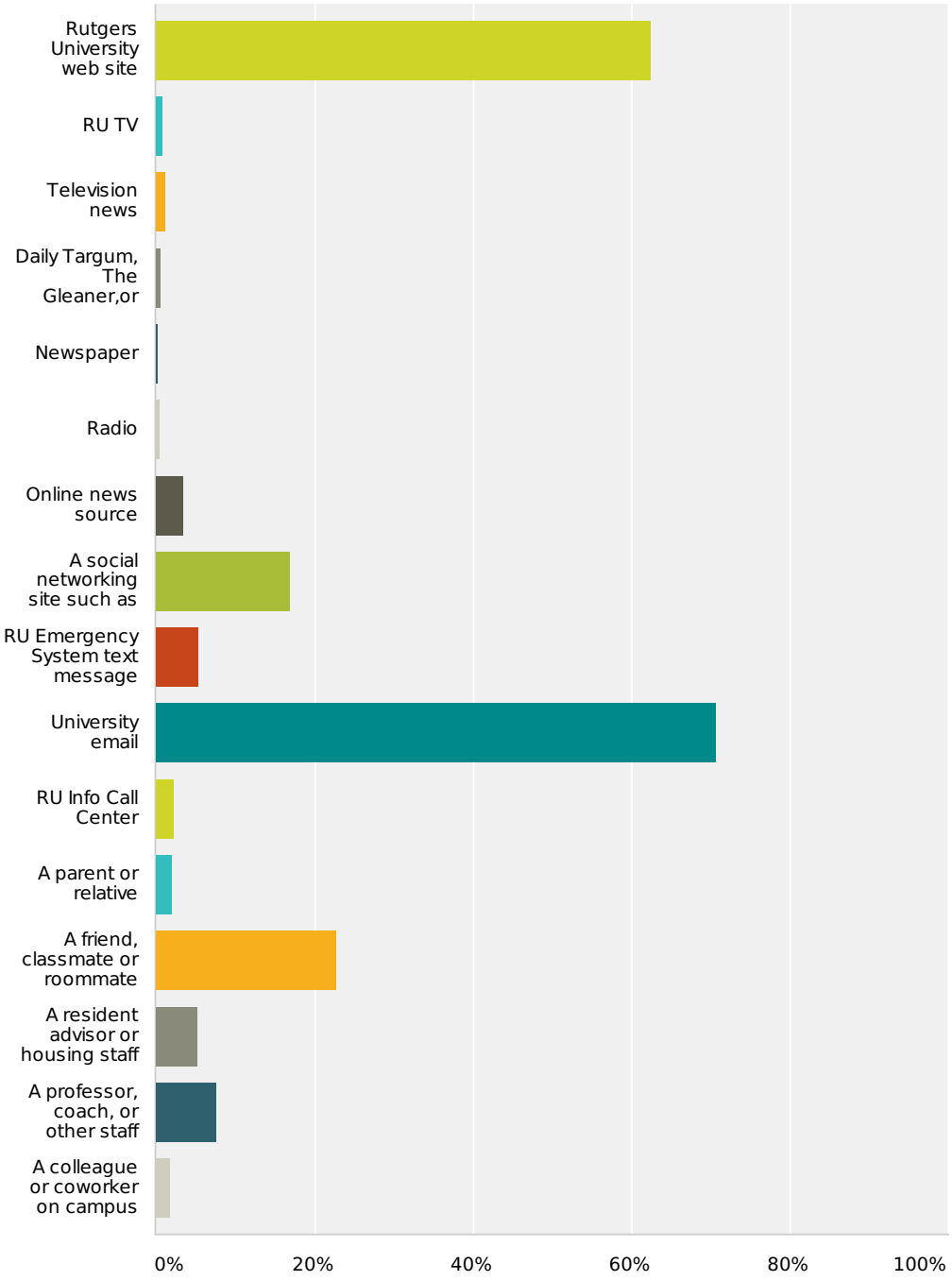


Answer Choices	Responses	
Rutgers University web site	**14.47%**	159
RU TV	**0%**	0
Television news	**0.36%**	4
Daily Targum, The Gleaner, or The Observer	**0.27%**	3
Newspaper	**0.18%**	2
Radio	**0.18%**	2

Online news source	**0.82%**	9
A social networking site such as Facebook or Twitter	**10.10%**	111
RU Emergency System text message	**2.55%**	28
University email	**39.22%**	431
RU Info Call Center	**0.64%**	7
A parent or relative	**1.73%**	19
A friend, classmate or roommate	**19.75%**	217
A resident advisor or housing staff member	**5.28%**	58
A professor, coach, or other staff member on campus	**1.91%**	21
A colleague or coworker on campus	**0.73%**	8
Other (please specify) **(** 20 **)**		
Total		1,099

Q13 Where do you usually access information about Rutgers University class cancellations? Please select all that apply.

Answered: 1,099 Skipped: 50

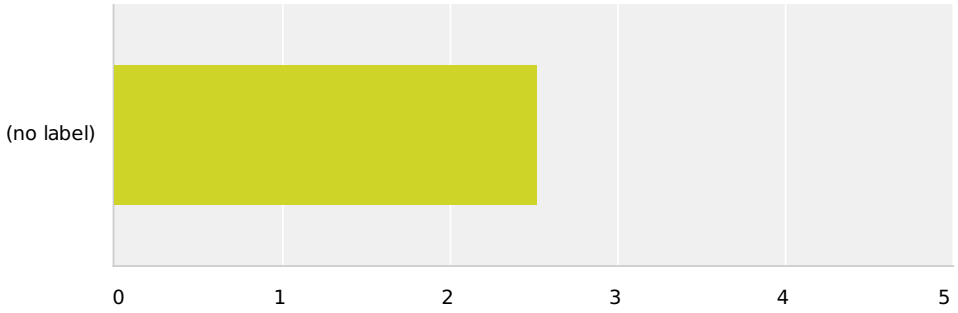


Answer Choices	Responses	
Rutgers University web site	**62.42%**	686
RU TV	**0.73%**	8
Television news	**1.09%**	12
Daily Targum, The Gleaner,or The Observer	**0.55%**	6
Newspaper	**0.18%**	2

Radio	**0.36%**	4
Online news source	**3.46%**	38
A social networking site such as Facebook or Twitter	**16.92%**	186
RU Emergency System text message	**5.28%**	58
University email	**70.70%**	777
RU Info Call Center	**2.18%**	24
A parent or relative	**2.00%**	22
A friend, classmate or roommate	**22.75%**	250
A resident advisor or housing staff member	**5.19%**	57
A professor, coach, or other staff member on campus	**7.55%**	83
A colleague or coworker on campus	**1.73%**	19
Other (please specify) **(** 12 **)**		
Total Respondents: 1,099		

Q14 Please indicate whether you agree or disagree that the University notified students of the week-long class cancellation within a reasonable time frame.

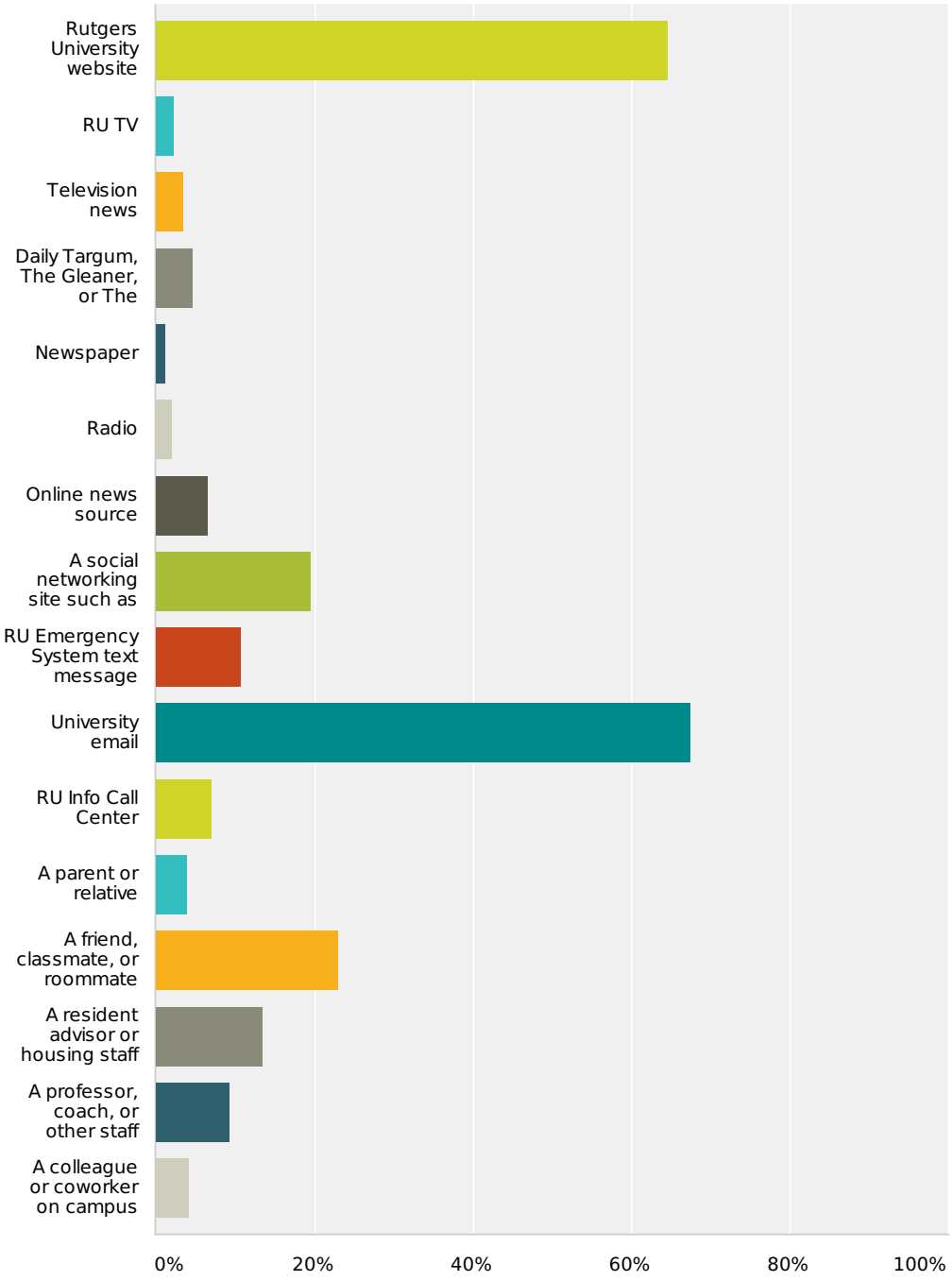
Answered: 1,099 Skipped: 50



	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total	Average Rating
(no label)	**23.48%** 258	**36.03%** 396	**14.65%** 161	**16.65%** 183	**9.19%** 101	1,099	2.52

Q15 When I need to find out important information at Rutgers, I feel I can rely on: (Please select all that apply)

Answered: 1,099 Skipped: 50

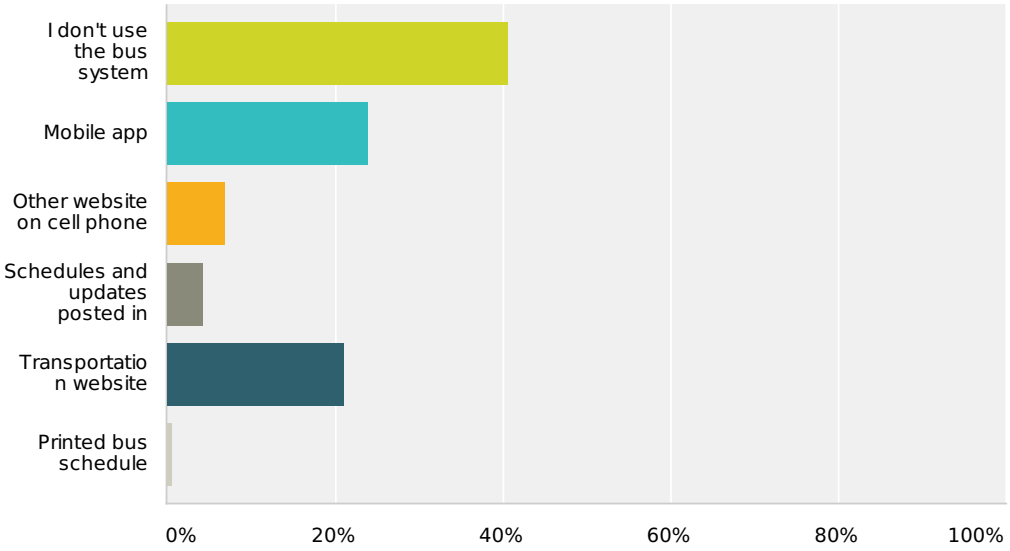


Answer Choices	Responses	
Rutgers University website	**64.60%**	710
RU TV	**2.18%**	24
Television news	**3.46%**	38
Daily Targum, The Gleaner, or The Observer	**4.55%**	50
Newspaper	**1.18%**	13

Radio	**2.00%**	22
Online news source	**6.55%**	72
A social networking site such as Facebook or Twitter	**19.56%**	215
RU Emergency System text message	**10.74%**	118
University email	**67.42%**	741
RU Info Call Center	**7.01%**	77
A parent or relative	**3.91%**	43
A friend, classmate, or roommate	**22.93%**	252
A resident advisor or housing staff member	**13.38%**	147
A professor, coach, or other staff member on campus	**9.28%**	102
A colleague or coworker on campus	**4.09%**	45
Other (please specify) **(** 24 **)**		
Total Respondents: 1,099		

Q16 What sources did you use to determine the availability of campus buses immediately following the storm?

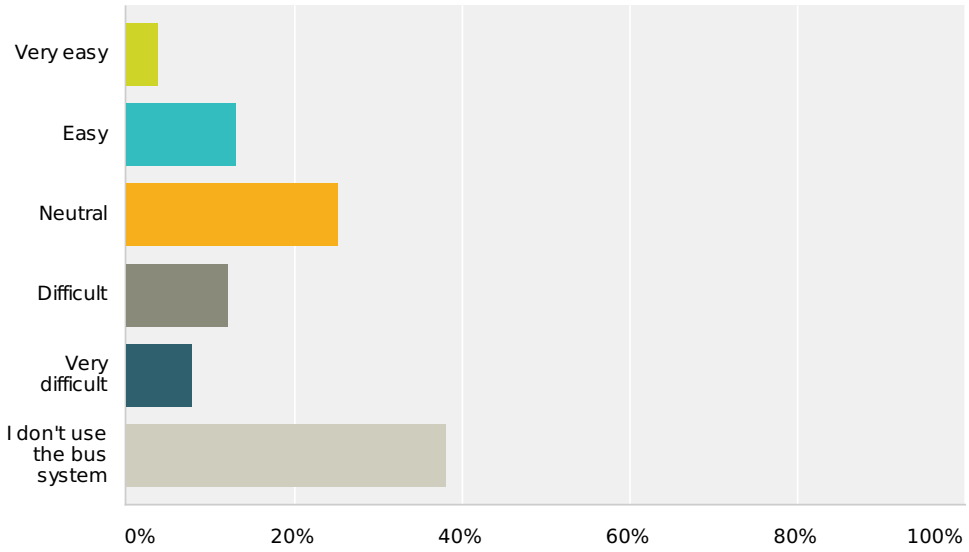
Answered: 1,099 Skipped: 50



Answer Choices	Responses	
I don't use the bus system	**40.58%**	446
Mobile app	**23.93%**	263
Other website on cell phone	**6.82%**	75
Schedules and updates posted in storm shelters	**4.28%**	47
Transportation website	**21.02%**	231
Printed bus schedule	**0.55%**	6
Other (please specify) **(** 155 **)**		
Total Respondents: 1,099		

Q17 How easy or difficult was it to access campus bus information immediately after the storm?

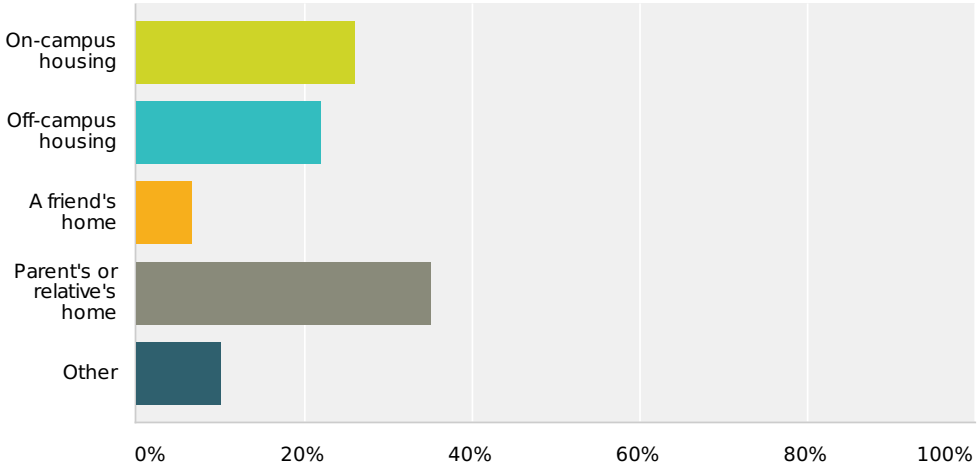
Answered: 1,099 Skipped: 50



Answer Choices	Responses	
Very easy	**3.73%**	41
Easy	**13.01%**	143
Neutral	**25.20%**	277
Difficult	**12.10%**	133
Very difficult	**7.83%**	86
I don't use the bus system	**38.13%**	419
Total		1,099

Q18 Where did you stay during the storm?

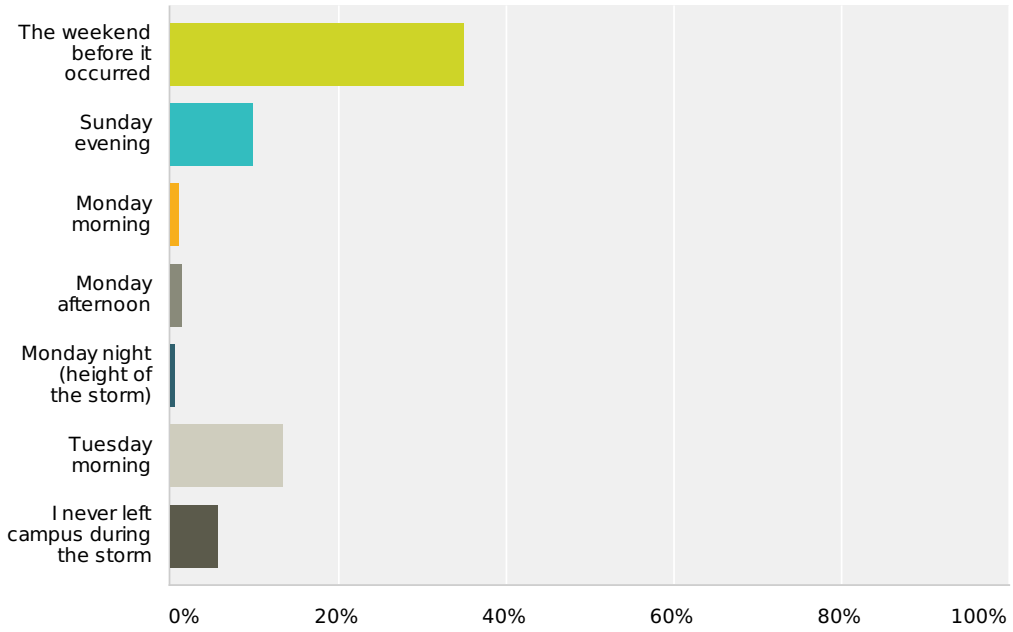
Answered: 1,099 Skipped: 50



Answer Choices	Responses	
On-campus housing	**26.11%**	287
Off-campus housing	**22.02%**	242
A friend's home	**6.64%**	73
Parent's or relative's home	**35.12%**	386
Other	**10.10%**	111
(please specify) **(** 117 **)**		
Total		1,099

Q19 At what point did you decide to leave campus during the storm?

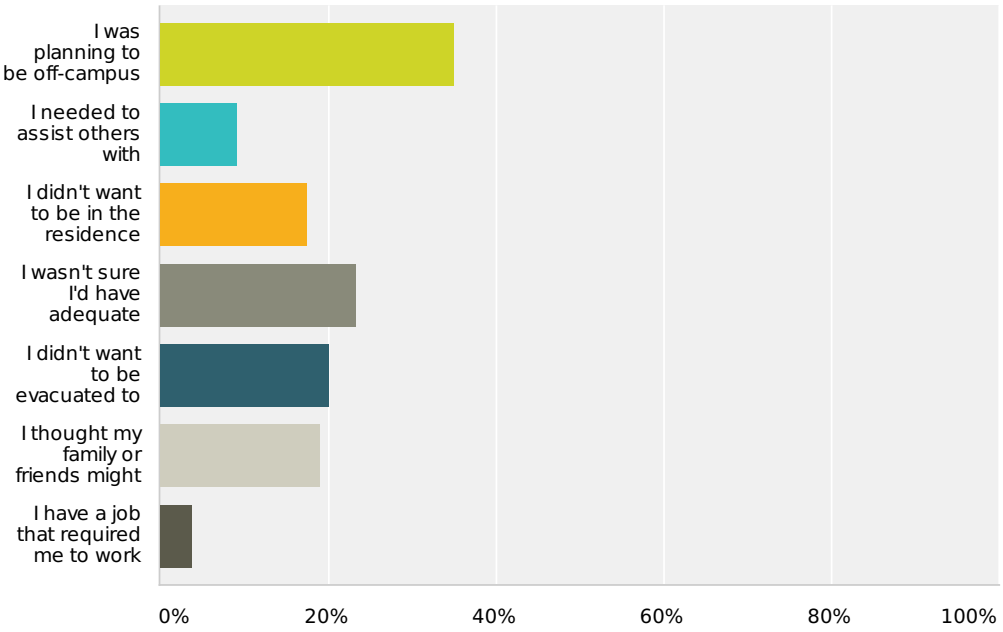
Answered: 566 Skipped: 583



Answer Choices	Responses	
The weekend before it occurred (Friday-Sunday)	**34.98%**	198
Sunday evening	**9.89%**	56
Monday morning	**1.06%**	6
Monday afternoon	**1.41%**	8
Monday night (height of the storm)	**0.53%**	3
Tuesday morning	**13.43%**	76
I never left campus during the storm	**5.65%**	32
Other (please specify) **(** 187 **)**		
Total		566

Q20 Why did you decide to leave campus before or during the storm? Please select all that apply.

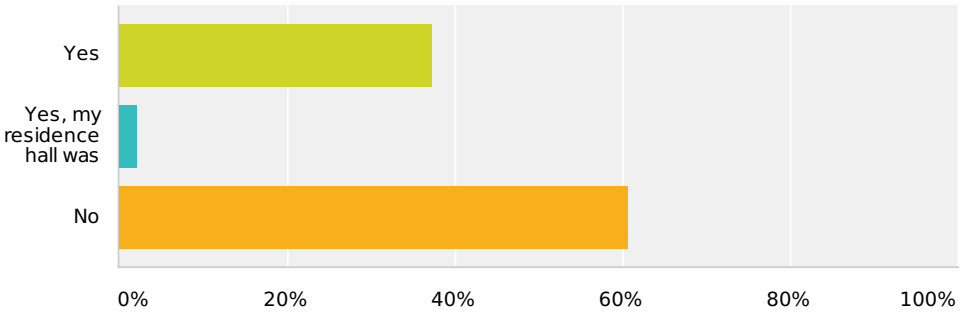
Answered: 566 Skipped: 583



Answer Choices	Responses	
I was planning to be off-campus anyway	**34.98%**	198
I needed to assist others with preparation or recovery	**9.19%**	52
I didn't want to be in the residence halls without electricity	**17.49%**	99
I wasn't sure I'd have adequate access to food or water	**23.32%**	132
I didn't want to be evacuated to a shelter	**20.14%**	114
I thought my family or friends might need me	**19.08%**	108
I have a job that required me to work during the storm	**3.71%**	21
Other (please specify) **(** 213 **)**		
Total Respondents: 566		

Q21 Was the on-campus housing you stayed in during the storm evacuated?

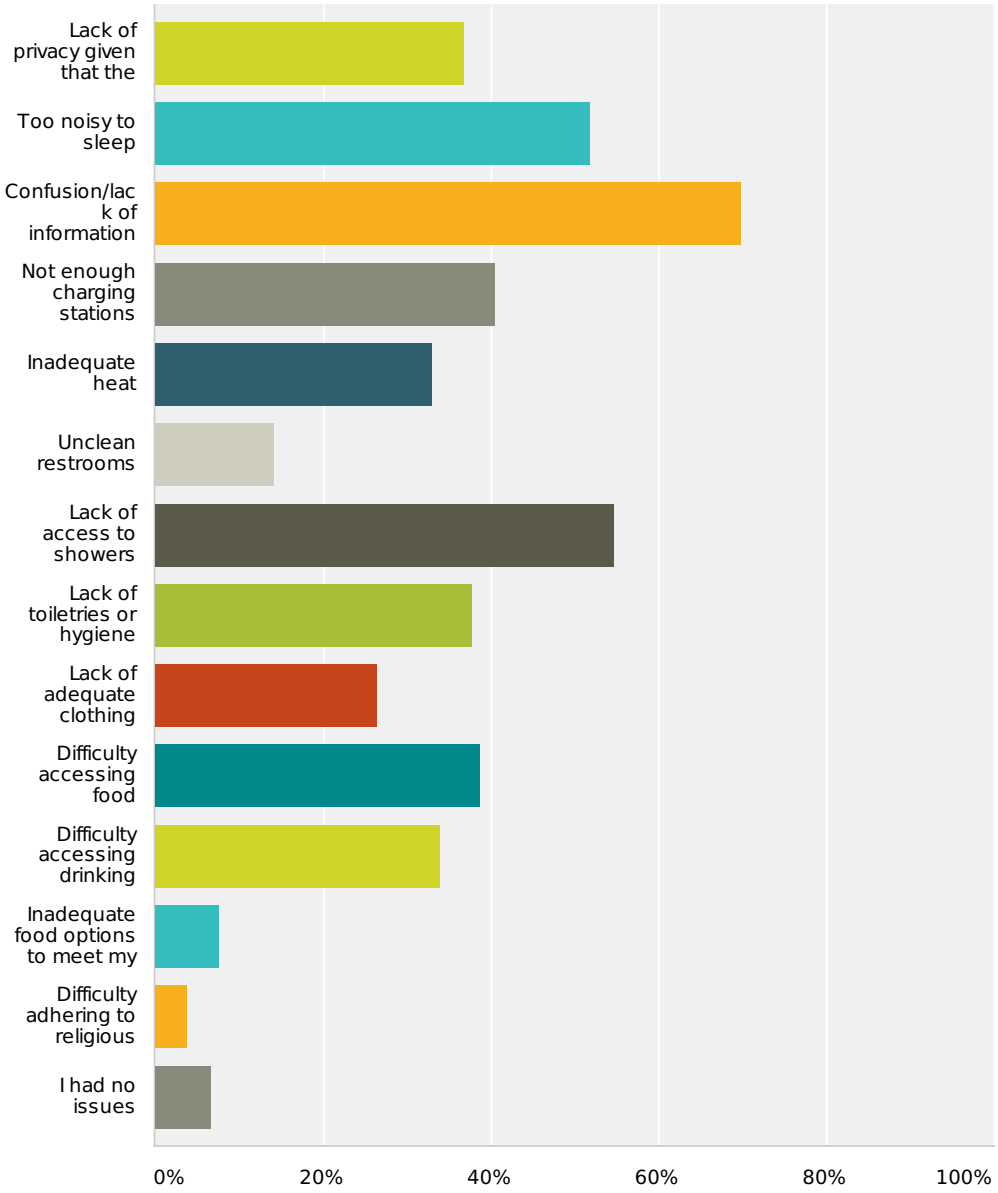
Answered: 287 Skipped: 862



Answer Choices	Responses	
Yes	**37.28%**	107
Yes, my residence hall was evacuated, but I stayed anyway	**2.09%**	6
No	**60.63%**	174
Total		287

Q22 Describe any issues you experienced in the Rutgers facility you were evacuated to during the storm. Please select all that apply.

Answered: 106 Skipped: 1,043



Answer Choices	Responses	
Lack of privacy given that the facilities continued to be open to the public	**36.79%**	39
Too noisy to sleep	**51.89%**	55
Confusion/lack of information	**69.81%**	74
Not enough charging stations	**40.57%**	43
Inadequate heat	**33.02%**	35
Unclean restrooms	**14.15%**	15
Lack of access to showers	**54.72%**	58
Lack of toiletries or hygiene products	**37.74%**	40

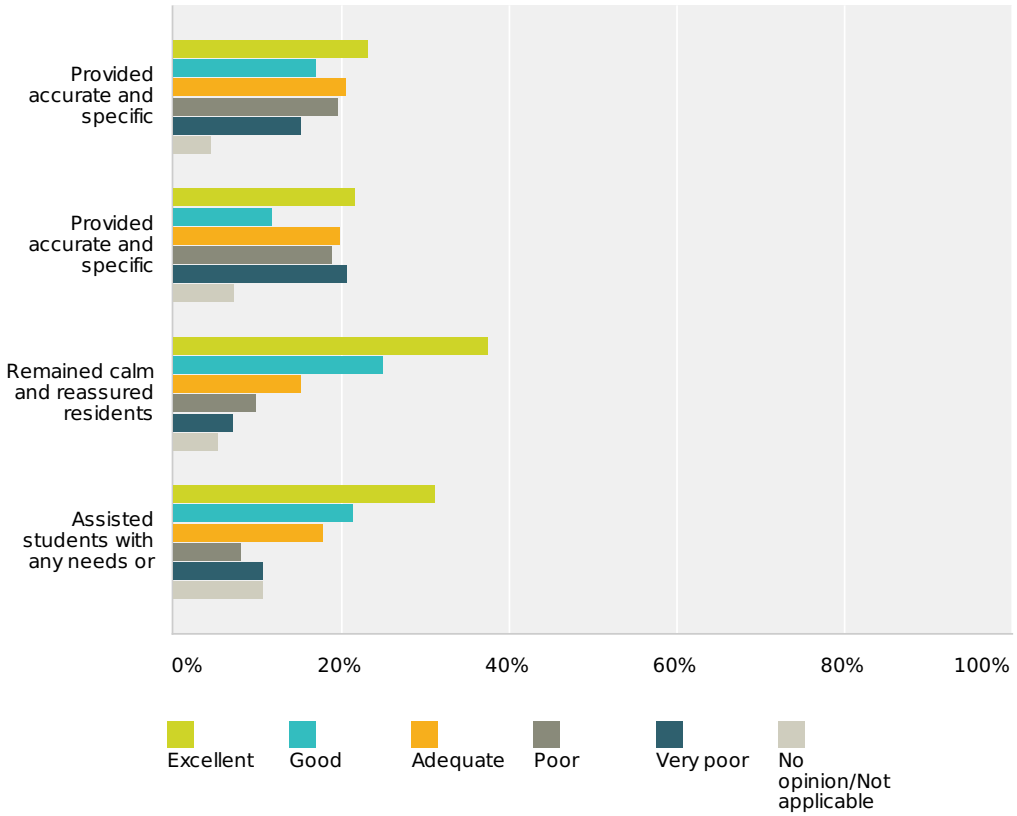
Lack of adequate clothing	**26.42%**	28
Difficulty accessing food	**38.68%**	41
Difficulty accessing drinking water	**33.96%**	36
Inadequate food options to meet my dietary requirements	**7.55%**	8
Difficulty adhering to religious practices or customs	**3.77%**	4
I had no issues	**6.60%**	7

Other (please specify) **(** 27 **)**

Total Respondents: 106

Q23 How did your Resident Advisor or other Residence Life and Housing staff perform the following?

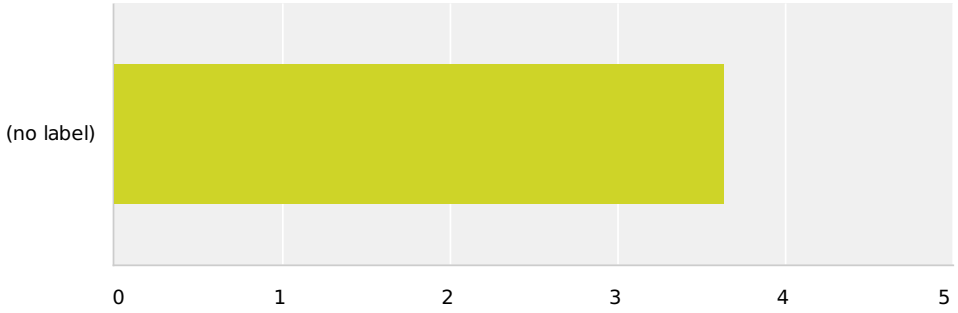
Answered: 112 Skipped: 1,037



	Excellent	Good	Adequate	Poor	Very poor	No opinion/Not applicable	Total
Provided accurate and specific directions about the relocation facility	**23.21%** 26	**16.96%** 19	**20.54%** 23	**19.64%** 22	**15.18%** 17	**4.46%** 5	112
Provided accurate and specific directions about what materials to bring to the shelter	**21.62%** 24	**11.71%** 13	**19.82%** 22	**18.92%** 21	**20.72%** 23	**7.21%** 8	111
Remained calm and reassured residents	**37.50%** 42	**25%** 28	**15.18%** 17	**9.82%** 11	**7.14%** 8	**5.36%** 6	112
Assisted students with any needs or challenges	**31.25%** 35	**21.43%** 24	**17.86%** 20	**8.04%** 9	**10.71%** 12	**10.71%** 12	112

Q24 How would you rate the evacuation procedure?

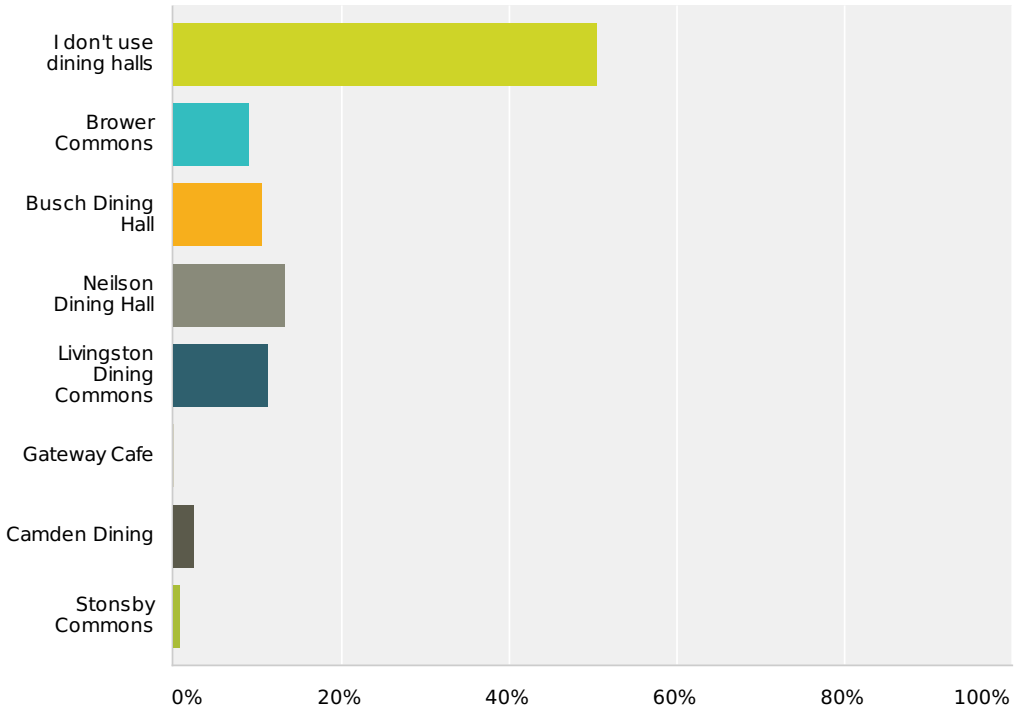
Answered: 112 Skipped: 1,037



	Excellent	Good	Adequate	Poor	Very poor	No Opinion/Not Applicable	Total	Average Rating
(no label)	**5.36%** 6	**15.18%** 17	**25%** 28	**21.43%** 24	**31.25%** 35	**1.79%** 2	112	3.63

Q25 Which dining hall do you use primarily?

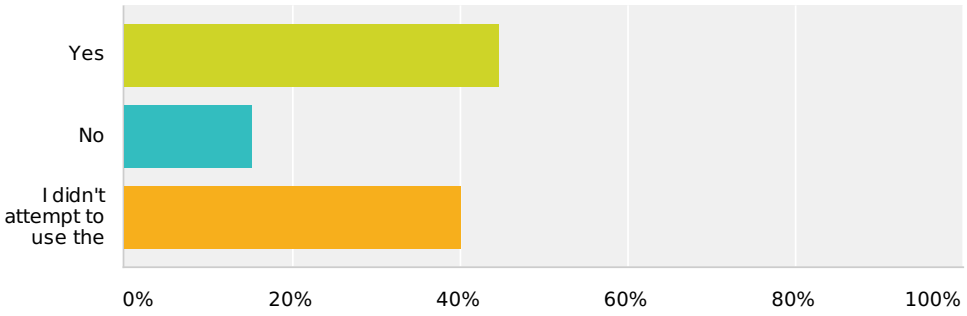
Answered: 1,093 Skipped: 56



Answer Choices	Responses	
I don't use dining halls	**50.50%**	552
Brower Commons	**9.06%**	99
Busch Dining Hall	**10.52%**	115
Neilson Dining Hall	**13.27%**	145
Livingston Dining Commons	**11.25%**	123
Gateway Cafe	**0.09%**	1
Camden Dining	**2.47%**	27
Stonsby Commons	**0.73%**	8
Other (please specify) **(** 23 **)**		
Total		1,093

Q26 Were you able to use the Rutgers Dining Facilities during the storm?

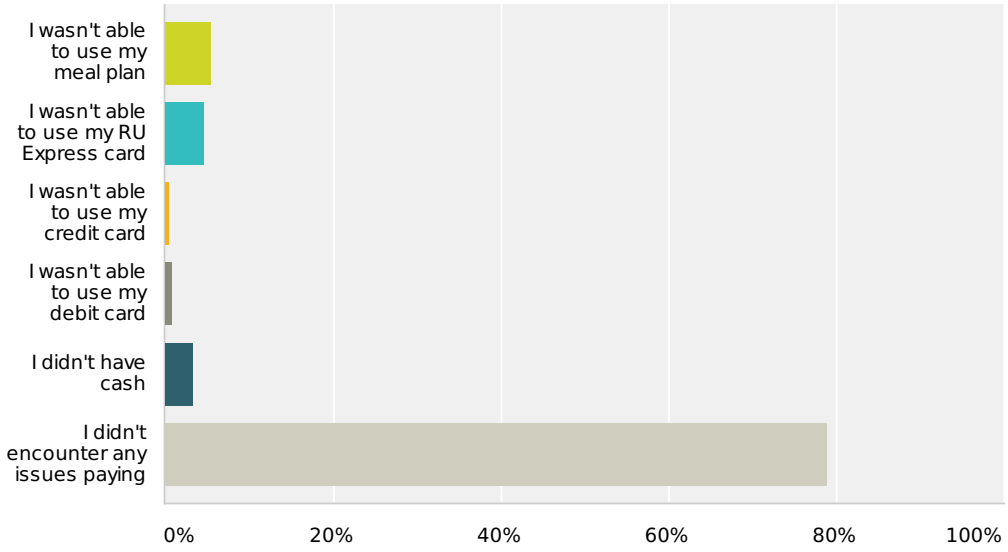
Answered: 541 Skipped: 608



Answer Choices	Responses	
Yes	**44.73%**	242
No	**15.16%**	82
I didn't attempt to use the Rutgers Dining Facilities	**40.11%**	217
Total		541

Q27 Did you encounter any of the issues below when paying for meals at the Dining Facilities during or immediately after the storm: (Please select all that apply)

Answered: 242 Skipped: 907



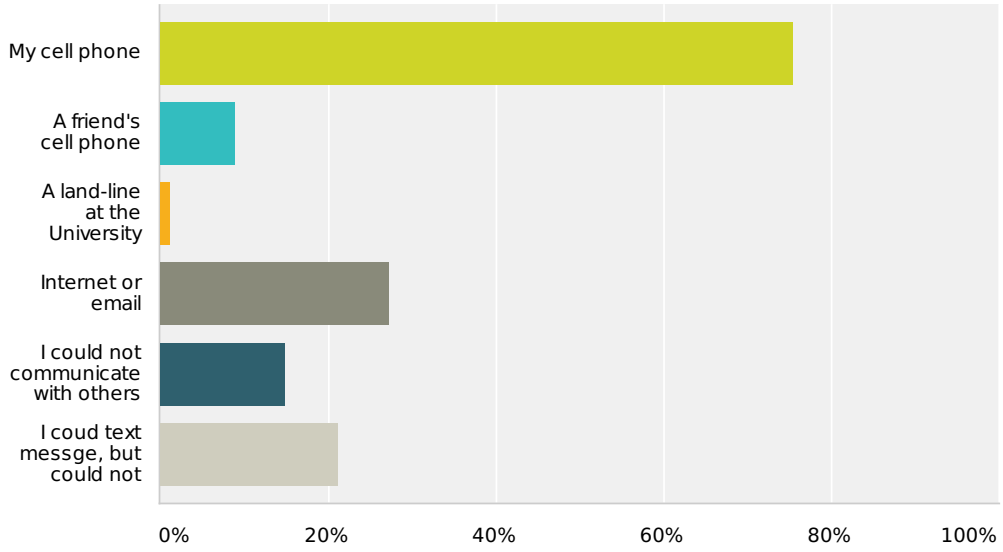
Answer Choices	Responses	
I wasn't able to use my meal plan	**5.37%**	13
I wasn't able to use my RU Express card	**4.55%**	11
I wasn't able to use my credit card	**0.41%**	1
I wasn't able to use my debit card	**0.83%**	2
I didn't have cash	**3.31%**	8
I didn't encounter any issues paying for meals in the dining halls	**78.93%**	191

Other (please specify) **(** 26 **)**

Total Respondents: 242

Q28 How were you able to communicate with parents, family, or friends outside of Rutgers during and following the storm? Please select all that apply.

Answered: 1,091 Skipped: 58

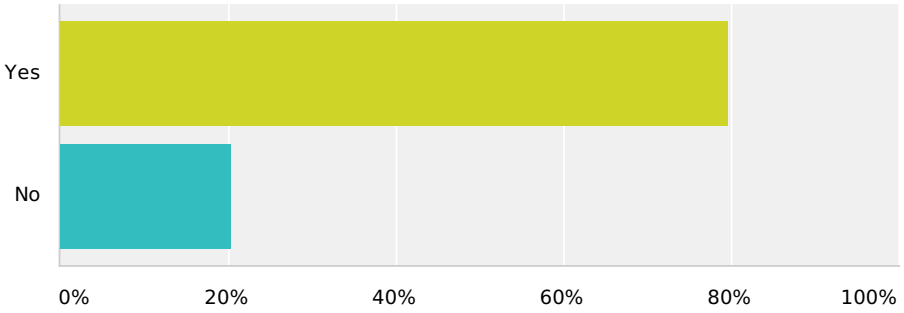


Answer Choices	Responses	
My cell phone	**75.53%**	824
A friend's cell phone	**8.89%**	97
A land-line at the University	**1.10%**	12
Internet or email	**27.31%**	298
I could not communicate with others during and after the storm	**14.85%**	162
I coud text messge, but could not make phone calls	**21.17%**	231

Total Respondents: 1,091

Q29 Are you aware of the academic accommodation policy at Rutgers following Sandy, which includes the possibility to make up work or have Fall 2012 course grades converted to Pass/No Credit?

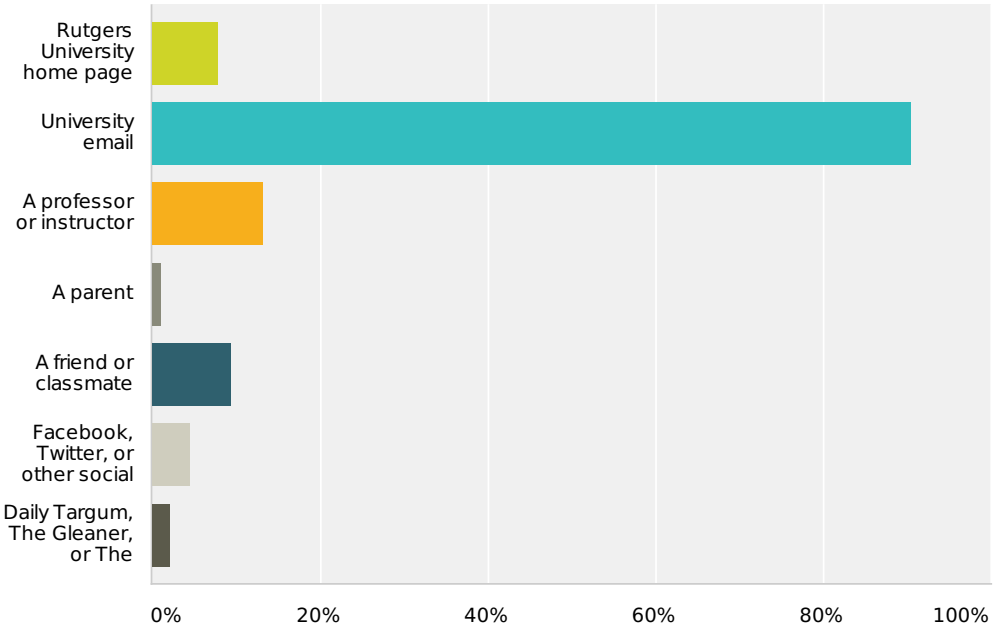
Answered: 1,091 Skipped: 58



Answer Choices	Responses	
Yes	**79.65%**	869
No	**20.35%**	222
Total		1,091

Q30 Where did you learn about the Grade Conversion Policy and other available academic support? Please check all that apply.

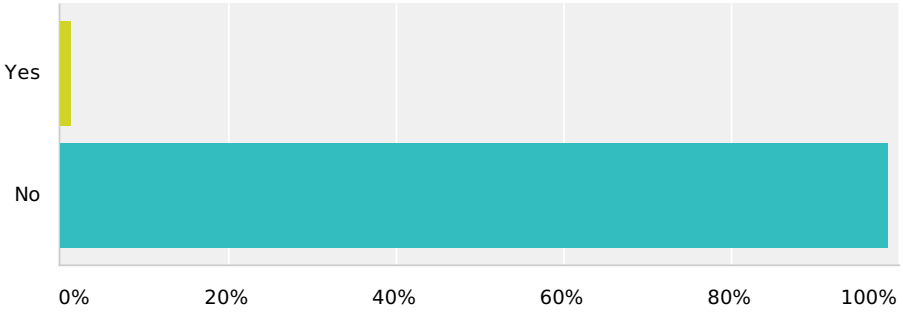
Answered: 870 Skipped: 279



Answer Choices	Responses	
Rutgers University home page	**7.82%**	68
University email	**90.46%**	787
A professor or instructor	**13.22%**	115
A parent	**1.03%**	9
A friend or classmate	**9.31%**	81
Facebook, Twitter, or other social networking site	**4.48%**	39
Daily Targum, The Gleaner, or The Observer	**2.07%**	18
Other (please specify) **(** 13 **)**		
Total Respondents: 870		

Q31 Did you apply to convert any of your grades to Pass/No Credit?

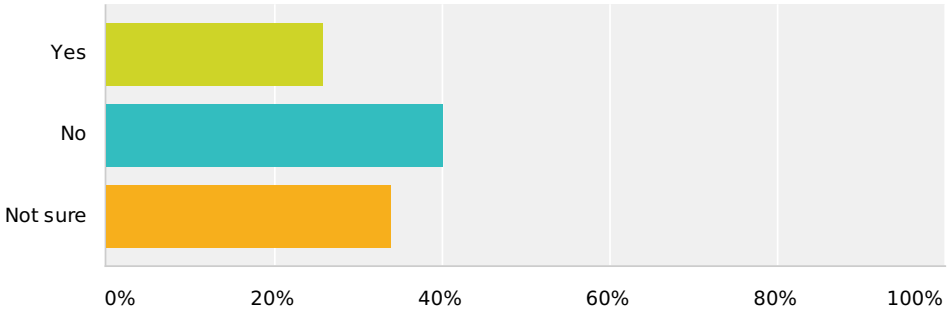
Answered: 870 Skipped: 279



Answer Choices	Responses	
Yes	**1.26%**	11
No	**98.74%**	859
Total		870

Q32 Would you have applied to convert your grades to Pass/No Credit for any course in Fall 2012 if you had been aware of the policy?

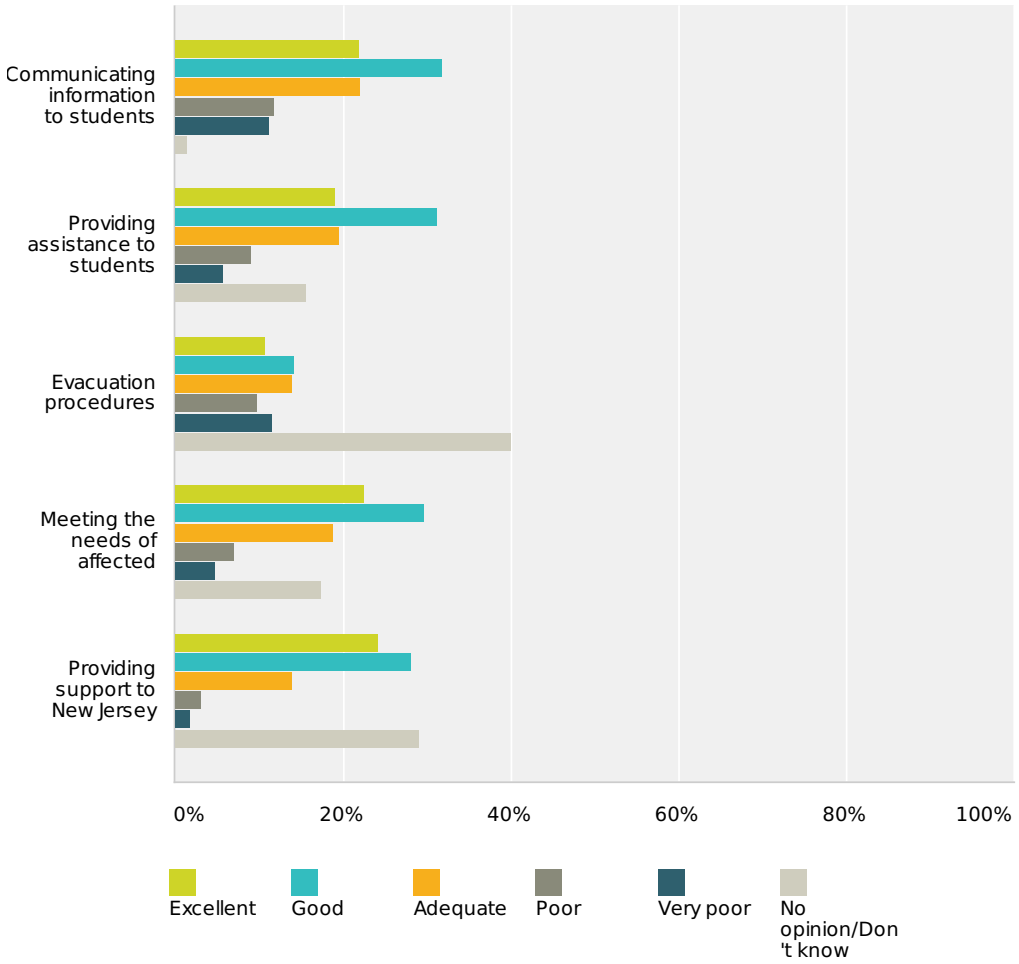
Answered: 224 Skipped: 925



Answer Choices	Responses	
Yes	**25.89%**	58
No	**40.18%**	90
Not sure	**33.93%**	76
Total		224

Q33 Please evaluate the response of Rutgers University to Hurricane Sandy in the following areas:

Answered: 1,076 Skipped: 73



	Excellent	Good	Adequate	Poor	Very poor	No opinion/Don't know	Total
Communicating information to students	**21.93%** 236	**31.78%** 342	**22.03%** 237	**11.71%** 126	**11.15%** 120	**1.39%** 15	1,076
Providing assistance to students before, during, and after emergencies	**18.98%** 204	**31.26%** 336	**19.53%** 210	**9.02%** 97	**5.67%** 61	**15.53%** 167	1,075
Evacuation procedures	**10.64%** 114	**14.19%** 152	**13.91%** 149	**9.71%** 104	**11.48%** 123	**40.06%** 429	1,071
Meeting the needs of affected students after the storm	**22.44%** 241	**29.70%** 319	**18.81%** 202	**6.98%** 75	**4.66%** 50	**17.41%** 187	1,074
Providing support to New Jersey	**24.13%** 258	**28.16%** 301	**13.94%** 149	**2.99%** 32	**1.78%** 19	**29.00%** 310	1,069

residents beyond the university community

Appendix X: Emergency Support Functions

This section provides an overview of the Emergency Support Function (ESF) structure, common elements of each of the ESFs, and the basic content contained in each of the ESF Annexes.

The ESFs provide the structure for coordinating interagency support for a Rutgers University response to an incident. They are mechanisms for grouping functions most frequently used to provide support to the University, states, local and federal support, both for declared disasters and other emergencies.

The Incident Command System provides for the flexibility to assign ESF and other stakeholder resources according to their capabilities, tasking, and requirements to augment and support the other sections of the Emergency Management Plan and the Emergency Operations Center, in order to respond to incidents in a more collaborative and cross-cutting manner.

ESF #1 – Transportation
Coordinates and organizes transportation resources in preparing for, responding to and recovering from incidents which impact Rutgers University
ESF #2 – Communications
Coordinate and organize communications resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #3 – Public Works
Coordinates and organizes public works-infrastructure management resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University
ESF #4 – Firefighting
Coordinates and organizes firefighting and rescue resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #5 – Emergency Management
Coordinates and organizes emergency management resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #6 – Mass Care
Coordinates and organizes mass care, housing and human services resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #7 – Logistics Management and Resource Support
Coordinates and organizes resource support in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #8 – Public Health and Medical Services
Coordinates and organizes public health and medical services resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #9 – Search and Rescue
Coordinates and organizes search and rescue resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.
ESF #10 – Oil and Hazardous Materials Response

Coordinates and organizes hazardous materials resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.

ESF #11 – Agriculture

Coordinates and organizes agriculture resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.

ESF #12 – Energy

Coordinates and organizes energy and utilities/infrastructure management resources in preparing for, responding to and recovering from emergency/disaster incidents which Rutgers University.

ESF #13 – Public Safety and Security

Coordinates and organizes law enforcement and security resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.

ESF #14 – Long-Term Community Recovery

Coordinates and organizes long-term recovery and mitigation resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.

ESF #15 – External Affairs

Coordinates and organizes public information resources in preparing for, responding to and recovering from emergency/disaster incidents which impact Rutgers University.