National Guard Emergency Response Planning for Major Coastal Storms: Employment of FEMA Region II Homeland Response Force

Executive Summary

Findings:

- The New York City (NYC) metropolitan area is at greater risk from coastal storm disasters due to the flooding effects from storm surge
- The reach of storm surge will increase the flood damage and affected area most notably in Brooklyn, Queens, and the Long Island counties, and to a lesser extent in Westchester
- Property damage as a result of coastal storms in New York excluding the outlier year 2012, varies, on average, from $456M to $1.05B per year, and is increasing
- The main gaps in current New York National Guard (NYNG) response to coastal storm events are timeliness of response and inefficiencies in the resource request system
- NYNG units tagged for the Homeland Response Force (HRF) mission set, which entails responding to a chemical, biological, radiological, nuclear, or explosives (CBRN-E) scenario, are currently 'fenced,' meaning that they are last to be mobilized for use during other than CBRN-E missions
- HRF units have both a quicker response time than traditional Guard units, as well as unique capabilities that are useful in a coastal storm disaster-response scenario
- Texas and Florida take an "all hazards" approach to disaster response, which means that all National Guard units, including the HRF, are available to respond if needed
- Language capabilities are essential to addressing challenges in areas predominantly inhabited by non-English speakers to build trust and facilitate effective response

Recommendations:

- NYNG adopts an all-hazards approach to disaster response in order to enable quicker response times and provide increased capability. The approach can be implemented with minimal impact to the HRF's CBRN-E mission
- Integrate HRF-tagged units with Joint Task Force Empire Shield (JTF-ES), a National Guard task force stationed in NYC, to improve timeliness and coherence of response to NYC
- Further develop and retain language capabilities to narrow gaps between the NYNG and populations affected by coastal storms
- Emphasize planning and preparation for NYC, Long Island, and Westchester as these are the areas most likely to be affected by future storms

I. Introduction

Hurricanes Maria, Harvey, Sandy, and Katrina are all examples of coastal storms that caused severe damage to heavily populated American metropolitan areas. The damage from these storms can be quantified in billions of dollars and thousands of lives. The New York National Guard (NYNG) is often tasked by the Governor's Office with responding to affected areas in the aftermath of a storm. In order to better respond and mitigate the damage of these severe weather events, the NYNG must plan and structure its forces optimally. By making the best use of the tools at its disposal, the NYNG can improve its coastal storm response.

To address the NYNG's planning challenges, we must first understand the projected damage from coastal storms in the near future. Second, we need to understand the relevant stakeholders in New York state's coastal storm response process, how the process functions, and its current shortfalls. Finally, we will examine the response of the Texas National Guard's response to Hurricane Harvey, to extract lessons that could improve the NYNG's planning. Ultimately, the improved utilization of the manpower at the NYNG's disposal has the potential to mitigate the damage from coastal storms. Our primary recommendation is that the NYNG utilize its Homeland Response Force (HRF) units, which possess specialized capabilities, in its coastal storm response framework.

II. Increasing Damage from Future Storms

The NYNG's response to coastal storms must match the scale of the threat. As the environment changes, so too does the threat's severity. The damage brought about by coastal storms, in terms of property, injury, and death is likely to increase in the coming decades. In order to better mitigate the damage, and understand what resources are necessary to do so, we must also understand the increasing damages. Storms damage property and harm people via flooding due to storm surge as well as high wind speeds, but there are also second order effects, whereby critical infrastructure and essential services are destroyed or disrupted.

NYC, and its surrounding metropolitan area, are particularly vulnerable to storms due to its position on the coast and its relatively low elevation. Large portions of NYC and Long Island are less than five meters above mean sea level, making them particularly susceptible to flooding.[1] Sea level rise exacerbates the storm damage by increasing the reach of floods. Hurricane Sandy, the most severe storm in memory, had an increased peak water level and a decreased return period as a result of dramatic sea level rise.[2] With sea level rise in the NYC metropolitan region

[1] Colle, Brian A et al. "New York City Storm Surges: Climatology and an Analysis of the Wind and Cyclone Evolution." *Journal of Applied Meteorology and Climatology*, vol. 49, no. 1, Jan 2010, 86.
[2] Orton, Phillip et al. "Coastal Flooding." *New York City Panel on Climate Change 2019 Report* Annals of the New York Academy of Sciences, 2019. 98.

approximately double the global sea level rise trend, the expectation is that storms will cause considerably more damage through flooding.[3] High speed winds can down trees and power lines which can pose hazards for the affected population and responders, as well as impairing the regular function of a community. These effects will be felt most dramatically in NYC and Long Island. The effects of the storms are likely to dissipate by the time they reach the upstate counties, though there exists some danger of rainfall flooding.[4]

The economic cost of these storms is staggering. There were 14 climate disasters in the United States in 2019 that resulted in an economic loss of over one billion dollars. In New York alone, the average cost per year from storms from 1980 to 2019 has been $1B to $2B.[5] This cost is made starker by looking at the more recent trends. From 2000 to 2010, the cost of weather events in New York has averaged between $250M and $500M per year. 2010 to 2019 has shown a dramatic increase in storm damage, averaging $2B to $5B per year during the period.[6] Excluding 2012, the year Hurricane Sandy occurred, the cost per year over the last decade averages between $456M and $1.05B.[7] Storms with the severity of Hurricane Sandy are infrequent, however, the time between storms of matching severity is expected to shrink due to storm surge from rising sea levels.[8] Given the expected increase in storm severity, annual damage from coastal storms affecting the New York metropolitan is similarly likely to increase.

Population in the affected area is also increasing, which in turn increases the population held at risk by coastal storms. The greatest growth is expected in Brooklyn and Queens[9], two boroughs that are likely to see increased flooding due to sea level rise. Hurricane Sandy resulted in over 100 deaths, and with the outlined trends in storm severity, storms matching Sandy's severity will become more frequent.[10] With increased risk and higher population, and absent preventive measures that otherwise mitigate or prevent damage from coastal storms, the response of the NYNG will need to be increased to meet the challenge.

III. Stakeholder Analysis & Current Coastal Storm Response Timeline

[3] Gornitz, Vivien et al. "Sea Level Rise." *New York City Panel on Climate Change 2019 Report* Annals of the New York Academy of Sciences, 2019. 73.
[4] Environmental Protection Bureau of New York State Attorney General Eric T. Schneiderman "Current & Future Trends in Extreme Rainfall across New York State." September 2014, pp. 1-19. https://ag.ny.gov/pdfs/Extreme_Precipitation_Report%209%202%2014.pdf.
[5] All costs are in 2019 dollars.
[6] (NCEI), NOAA National Centers for Environmental Information. "U.S. Billion-Dollar Weather and Climate Disasters " 2020. https://www.ncdc.noaa.gov/billions/.
[7] (NCEI), NOAA National Centers for Environmental Information. "U.S. Billion-Dollar Weather and Climate Disasters " 2020. https://www.ncdc.noaa.gov/billions/.
[8] Interviews with Dr. Benjamin Orlove, International Research Institute for Climate and Society, and Dr. Malgosia Madejewicz, Center for Climate Systems Research
[9] City of New York. "New York City Population Projections by Age/Sex & Borough, 2010-2040." December 2013.
[10] "Mapping Hurricane Sandy's Deadly Toll." *New York Times* 17 November 2012

This section outlines the stakeholders involved and the sequence of events that occur before the NYNG mobilizes to respond to a coastal storm. At a time when quick response is critical, this process is time-intensive and cumbersome. The delay from process initiation to Guard response means that vulnerable areas are under-supported during the critical days immediately following storm impact, as evidenced during Hurricane Sandy.

Townships represent the most local of stakeholders involved in storm response. Their emergency management offices work towards increasing the resilience of their localities in order to limit the damage from coastal storms. They also coordinate volunteer efforts to more efficiently direct limited resources towards damage mitigation. These townships are under the umbrella of the county, and their communication is essential for the county to accurately assess what is needed from state authorities. One exception to this is NYC, which -- due to its size, importance, and coastal position -- acts like a county in a coastal storm response scenario, in that it can request assistance from state authorities. In NYC, borough presidents interact directly with the mayor in order to coordinate disaster response.

Counties arguably play the most important role in coastal storm response. The Offices of Emergency Management (OEMs) of vulnerable counties are responsible for identifying precise resource and personnel needs for adequate response, and for requesting assistance from the state when county resources are insufficient. They have pre-written response plans that stipulate roles and responsibilities to best protect their jurisdictions, as well as pre-scripted Mission Requests (PSMRs) for specific resources and personnel to send to the state in case of emergency. NYC's OEM, for example, has 120 PSMRs ready to send to the state in a coastal storm scenario. The three New York counties most exposed to coastal storm damage are Suffolk, Nassau, and Westchester counties. Their OEMs, along with NYC's, are in constant communication with the NYNG in order to ensure a high degree of efficient integration during a storm response scenario. A county's request for external assistance for storm response goes to the New York Division of Homeland Security and Emergency Services (DHSES), which then decides how to best source the requirement. If NYNG is determined to be the best resource, their activation is at the discretion of the Governor.

The internal NYNG response is coordinated through the Joint Forces Headquarters located in Latham, NY, where the Adjutant General and Staff directs personnel and resources from a central location. This phase occurs relatively quickly, as evidenced during Hurricane Sandy: Governor Cuomo declared a State of Emergency on October 26, 2012, and soon after directed the NYNG to mobilize. By October 28th, there were already more than 400 Guardsmen positioned in NYC for coastal storm response.[11] The National Guard requires a lead time of 24-hours from the

[11] Giles, David. A Cascade of Emergencies: Responding to Superstorm Sandy in NYC. Harvard Kennedy School, 2017, www.massnationalguard.org/HSI/publications/Superstorm_Sandy_A.pdf

Governor's office to respond to taskings, however units are usually prepared to deploy more quickly.

A final stakeholder is Joint Task Force Empire Shield (JTF-ES), made up of approximately 780 soldiers whose primary mission is to deter and prevent attacks against critical NYC infrastructure. However, JTF-ES may also be tasked to respond to coastal storms, as was the case during Hurricane Sandy.[12] The task force's primary strengths are its ability to deploy quickly, familiarity with the local area, inter-agency integration, and manpower. JTF-ES Guardsmen are mostly NYC residents, whose knowledge of the local area is indispensable during disaster-response scenarios. Due to its on-site location, JTF-ES can play an essential role in aiding NYC during the first days of storm response. Additionally, the unit has built relationships with the NYPD, FDNY, and NYC OEM, which allow for a coordinated, inter-agency disaster response. The task force's primary weakness is its lack of specialized skills and its requirement to sustain its primary mission set..

Pros and Cons of Current Disaster Response Framework

The primary benefit of the current coastal storm response framework is that it allows for the efficient allocation of state resources, and gives the Governor's Office a clear idea of what is needed, by whom and when. Furthermore, the high level of integration between at-risk counties and the NYNG allows for the pre-positioning of anticipated resources before storm impact, and ensures the viability of critical communication networks between state and local authorities.

The primary shortfall of the current storm response system is timeliness of response, which is most evident in the days immediately following H-hour (ie hurricane impact). It can take the state more than a week to source time-sensitive county requests: in some cases, by the time assets reach the requester, the situation on the ground has changed and that capability is no longer needed. This leads to the misallocation of state resources, creating either a glut or dearth of goods and personnel to affected counties. The primary issue here is response time internal to the Governor's office.

This issue is mitigated by commanders on the ground taking initiative and leaning forward in anticipation of mission requests. For example, during Hurricane Sandy, JTF-ES deployed to Staten Island, one of NYC's hardest hit boroughs, based upon a verbal order from the Commanding General. The task force established its headquarters in Staten Island's hardest hit area and linked up with agency partners (NYPD, FDNY, FEMA, etc) in order to determine where it would be most effective.

[12]Goldenberg, Richard. "N.Y. Mobilizes More Than 2,300 Guardsmen to Battle Hurricane Sandy Aftermath." Army.mil, U.S. Army, 20 Nov. 2012, www.army.mil/article/90252/n_y_mobilizes_more_than_2300_guardsmen_to_battle_hurricane_sandy_aftermath

While leaders taking initiative and responding to needs on the ground is essential, it does not replace the ticketing system required (and administered through the Governor's Office) to ensure a coordinated, inter-agency response. JTF-ES is stationed in NYC, and as such is already integrated with the city's first responders. Therefore, it can rely more heavily on informal relationships and command structures to accomplish its mission than traditional NYNG units.

A second issue is rigidity within the resource-request system: personnel requested to perform a specific task are not authorized to act outside their directed purview. During Hurricane Sandy, for instance, NYC's local, state, and federal response was coordinated through NYC OEM's Emergency Operations Center (EOC), and narrowly-worded mission requests resulted in certain needs not being met. This exacerbates the problems associated with delayed response to a county's initial request, however, since Sandy requesters have widened the scope of their mission requests in order to address this issue.

Homeland Response Force (HRF): Structure and Utilization

The Homeland Response Force (HRF) is a task force consisting of approximately 574 personnel that responds to chemical, biological, radiological, nuclear, and explosive (CBRN-E) events.[13] The HRF is not a standalone military unit; rather it is a mission set that rotates between existing National Guard units, and that is aligned with FEMA regions (the NYNG is aligned with FEMA Region II). As such, HRF personnel are integrated into traditional Guard units, and are only utilized in this additional capacity when the HRF is activated. HRF core capabilities include search and extraction, decontamination, medical support, fatality search and recovery, and command and control (C2).[14] Additionally, due to its mission set it is prepared to deploy on a rapid timeline: advanced party personnel are required to be able to deploy within three hours, and main body personnel within 6-12 hours.

A full breakdown of the HRF task organization is available in Appendix 1, however, below is an overview of its relevant capabilities:

- Command and Control: 160 personnel
- Search and Extraction:
    - 50 personnel
    - Seven 6-man search and extraction teams
- Decontamination Element:
    - 75 personnel
    - Six 4-15 man decontamination teams

[13] NYNG HRF Structure Realignment Powerpoint.
[14] "National Guard FEMA Region II Homeland Response Force." HRF Fact Sheet, New York National Guard Public Affairs, 23 May 2016, dmna.ny.gov/press/NY_HRF_Fact_Sheet.pdf.

- Medical Element:
    - 47 personnel
    - 1 Emergency Medicine Specialist
    - 4 Physician Assistants
    - 6 Clinical Nurses
- Fatality Search and Recovery Team: 11 personnel

NYNG units tagged for the HRF mission set are currently 'fenced,' meaning that they are last to be called for use outside of CBRN-E missions, including coastal storm responses. However, there are several reasons why they should be included in disaster-response planning and execution. First, there is no administrative or legal reason why the HRF should be off limits: U.S.C. Title 32, Sections 900-908, provide the legal basis for homeland defense actions, and do not require the HRF to be 'fenced.' Second, the ability to quickly deploy the aforementioned capabilities to affected areas is valuable and potentially lifesaving in a storm response scenario. During the initial hours and days following a coastal storm, intra- and inter-agency coordination is critical: the HRF's C2 element could provide this function where it is needed most. Search and extraction teams could work effectively within the complex environment of NYC's urban areas. Medical personnel could augment other agencies, and decontamination teams could respond to incidents involving hazardous materials, such as sewage and industrial chemicals, resulting from damage to industrial plants or other infrastructure (during Hurricane Harvey, the Texas National Guard used its HRF decontamination team in this role). Finally, the NYNG uses a planning factor of 50-60% of authorized forces to respond to major coastal storms. Including the HRF would significantly increase the number of available soldiers.

There are two primary reasons why the NYNG does not currently include the HRF in its disaster-response framework. The first is the specificity of the HRF mission: because it only covers CBRN-E events, commanders often choose not to deploy these highly trained units in other capacities, so that they are still able to respond to a CBRN-E incident if required. The second is one of institutional culture and precedent: although there is no legal or administrative regulation preventing the deployment of HRF personnel in other capacities, the fact that it has never been done before becomes a self-fulfilling prophecy.

Failure to activate HRF units in emergency response scenarios results in the NYNG not utilizing some of its most highly trained personnel who would represent a huge value-added to any relief effort. It should be noted that since the establishment of the FEMA Region II HRF, it has not been called upon to respond to any CBRN-E events. However, should a natural disaster and CBRN-E attack/disaster take place simultaneously, coordination with HRF units from adjacent FEMA regions would mitigate the risk of deploying NYNG HRF units in response to a coastal storm. For example, the HRF in FEMA Region V (stationed in Ohio) could be used to fill the gap. Additionally, it is likely that HRF units could be dynamically re-tasked with minimal delay. Some

emergency management personnel believe the HRF would, in fact, be better postured to respond to a CBRN-E event if already activated during a coastal storm scenario.[15]

Other states, such as Texas and Florida, have broken the stigma surrounding the HRF by adopting an all-hazards approach to National Guard deployments. An all-hazards approach to disaster response is holistic: commanders deploy whichever units are required to accomplish the mission, regardless of their specified mission set. The NYNG should do the same, as the previously mentioned HRF capabilities (search and extraction, medical support, command and control) are most needed in the critical days after H-hour. As evidenced in the next section, the Texas National Guard saw considerable success in activating their HRF during Hurricane Harvey.[16]

IV. Case Study: Texas National Guard Response to Hurricane Harvey

In 2017, Hurricane Harvey hit Texas as a Category 4 storm. Harvey was the strongest hurricane to hit the U.S. in over a decade, with 130 mph winds and intense rain.[17] Hurricane Harvey broke the national record for the largest amount of rainfall in a single storm, accumulating over 27 trillion gallons of rain and flooding one-third of Houston. The flooding displaced 39,000 individuals from their homes and destroyed 203,000 residences.

Hurricane Harvey made landfall on August 25th. By the 26th, about 1,200 members of the Texas Army National Guard had responded, on order of the Governor. They engaged in rescue missions throughout the Gulf Coastal areas of Texas.[18] On August 27th, all 12,000 members of the Texas Army and Air National Guard were activated in response to the flooding that ultimately left one million people homeless.[19] According to an interview with Lieutenant Colonel Wayne Hill of the FEMA Region VI HRF Medical Element, units assigned to the HRF mission set were mobilized and provided the following capabilities:

- C2 Element: The HRF C2 element was used to supplement JTF 136 TXARNG, a Maneuver Enhancement Brigade, with operations in Houston.

[15] Interviews with JB Cuartas, Chief of Operational Planning, FEMA Region II, and MAJ Cake, NYNG
[16] Interview with Lt Col Hill, FEMA Region VI
[17] Inserra, David, et al. "After the Storms: Lessons from Hurricane Response and Recovery in 2017" *Special Report*, no.201, April 16 2018, 3.
[18] Texas Military Department. "Hurricane Harvey makes landfall in Texas; Guard members mobilized to assist" *National Guard*. August 25 2017, https://www.nationalguard.mil/News/Article-View/Article/1290013/hurricane-harvey-makes-landfall-in-texas-guard-members-mobilized-to-assist/Interview with Lt Col Hill, FEMA Region IV
[19] Sisk, Richard. "Texas Activates Entire State National Guard for Harvey Aftermath" *Military.com*, no date, https://www.military.com/daily-news/2017/08/28/texas-activates-entire-state-national-guard-for-harvey-aftermath.html

- Medical Element: HRF medical element was used to relieve pressure on local health infrastructure, specifically at Beaumont Baptist Hospital which had been damaged by the storm.
- Decontamination Element: Houston and the surrounding area is home to a number of chemical plants and heavy industry that were damaged by Harvey. The HRF decontamination element was used to respond to the heightened risk in these areas.
- Search and Extraction Element: Highly trained service members were able to search through damaged and destroyed structures for trapped survivors.

Overall, the Texas National Guard crews rescued over 8,500 people and helped 26,000 residents evacuate by August 30th.[20]

Limitations, Strengths of the Guard Response

Texas leveraged its large and diverse force structure in order to respond efficiently and effectively to Hurricane Harvey. The context of the Texas National Guard's flexible mobilization was a result of its all-hazards disaster-response framework. Because the HRF can be activated within 12 hours, the force can respond to hurricanes more quickly than other units. In the case of Hurricane Harvey, only about 3,000 of the 12,000 activated TXNG members were on the ground in the Houston area within 48 hours. Considering that it takes time for traditional Guard units to be deployed, the quick deployment and highly specialized capabilities of the HRF are vital resources in hurricane response.

The Texas National Guard did encounter language barriers with the local populace during Hurricane Harvey. Some Texas residents do not speak English, with Spanish often being their only communicable language. Many Texas Guardsmen speak Spanish, so this did not pose a problem.[21] However, the Texas National Guard did not retain sufficient language resources to effectively communicate with large East African, Middle Eastern, and North African communities. Effective communication is essential during disaster relief operations, so it is advisable that Guard units are prepared for interactions with residents who do not speak English.

Lessons Learned for NYNG in Future Responses

The lessons from Hurricane Harvey are twofold. First, an all-hazards disaster response framework allows the National Guard to maximize its effectiveness when responding to coastal storms. As global warming makes hurricanes stronger, such responses are likely to take place more often. Second, language barriers could pose a problem. The number of New York State residents

[20] National Guard Association of Texas. "Texas Guard Disaster Relief". No Date, http://www.ngat.org/TXGuardFloodRelief.htm

[21] Washington, Melisa,"Texas Soldiers break language barriers to help Hurricane Harvey's victims", *National Guard*, September 11 2017, https://www.nationalguard.mil/News/Article/1305940/texas-soldiers-break-language-barriers-to-help-hurricane-harveys-victims/

who speak English "less than very well" is 2.5 million, and the number of NYC residents who speak English "less than very well" is 1.8 million (22.8%). As for Suffolk, Nassau, and Westchester counties, the numbers of the residents with limited English abilities are 122 thousand (8.7% of total population), 148 thousand (11.5%), 119 thousand (13.0%).[22] The NYNG must better prepare to communicate with non-native English speakers in order to deal with these communities.

V. Recommendations

We have four key recommendations for the NYNG:

1) Adopt an All-hazards Approach to Disaster Response

Adapting an all-hazards approach to disaster response will enable quicker response times and provide increased capability. HRF training and skills uniquely match the urgent response needed in the event of a coastal storm, especially in the first hours and days following the disaster. These specialized skills and training include: rapid deployment, command and control, and medical capabilities. New York should model their all-hazards framework off of the Texas and Florida National Guards. This can be done with minimal impact to the HRF's CBRN-E mission. Additionally, it is important to note that this will require a break and adjustment from institutional normals with regards to HRF employment. This will require and perhaps begin with senior leadership adjusting and leading the organizational mindset toward HRF employment.

While we recommend moving toward an all-hazards approach, there are a few issues to consider. First, a CBRN-E event occurring simultaneously to HRF activation for a coastal storm response. We understand that a corresponding HRF unit could fill the gap quickly, likely from FEMA Region V (departing from Ohio). We believe that the benefit of the HRF adopting an all-hazard response framework outweighs the risk posed by their activation for a non-CBRN-E event. Second, the HRF is not tied into NYC's disaster-response framework (as JTF-ES is), and must therefore rely upon the state's ticketing system in order to be utilized to its fullest potential. It is important to note that this is an issue of relationships and timeliness as both units require proper authorization to execute their mission.

2) Integrate HRF-tagged Units with JTF-ES

Integrating HRF-tagged units with JTF-ES will improve timeliness and coherence of response within NYC. The primary shortfall of the current storm response system is timeliness of response, which is most evident in the days immediately following H-hour. Building an informal

[22] United States Census Bureau, "2014-2018 ACS 5-Year Data Profile", *American Community Survey*, no date, https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/

relationship between the HRF and JTF-ES will help to mitigate both delayed storm response and the misallocation of state resources. It will also give commanders on the ground, who are already taking initiative and leaning forward in anticipation of mission requests, greater visibility of the units at their disposal. This can also be done by further developing the relationship between the HRF and the JTF-ES's liaison network across NYC. The HRF can better coordinate the deployment of the combined teams that have specific HRF capabilities complementing the JTF-ES's mass. This can be done with integration at the HQ.

However, it is important to recognize that delays in the state ticketing system are not within NYNG control. Because the HRF is not tied into the city's disaster-response framework, it must rely upon the state's formal ticketing system in order to be utilized to its fullest potential. Again, highlighting the importance of relationships and timeliness. Delays in receipt of mission from the Governor's Office could negate the potential benefits of a timely HRF deployment.

3) Further Develop Language Capabilities

Developing language capabilities will narrow gaps between the NYNG and populations affected by coastal storms. The NYNG can draw key takeaways and recommendations from the case study on Hurricane Harvey in Texas and the impacts of the language barrier. New York state has large populations of foreign language speakers, and effective communication with these residents is especially critical in the first few days of storm response.

To tackle this issue we recommend the NYNG account for minorities in their planning. This includes promoting coordination with civil society and existing resources that specialize in this area. It is not realistic to expect the NYNG to be able to have guardsmen speaking numerous languages, but utilizing current community infrastructure will allow civilians to comply with the NYNG and thus improve disaster response.

4) Double Down on Affected Counties in NYNG Planning

Double down on planning and posturing of resources for NY's three most impacted counties: Suffolk, Nassau, and Westchester. Due to climate changes we expect coastal storms to become more frequent and more severe; we know these three countries will experience dramatically increased damage. To respond to the threat of more severe storms there will need to be a holistic prevention approach enacted, however our report focuses solely on response.

Therefore we recommend the NYNG maintain and further develop relationships between NYNG and counties. In NYC, the NYNG should increase relationships between the HRF and JTF-ES. Additionally, the NYNG should conduct an additional annual planning exercise focused solely on coastal storm response, rotating between the three counties and NYC each year (this planning

exercise should be in addition to the exercises conducted each year for general emergency planning). The additional exercise would allow for targeted responses in these specific areas, better coordination and planning between the HRF and JTF-ES, and relationship building.

VI. Conclusion

In the future the NYC metropolitan area (and to a lesser extent, Westchester), is at greater risk from coastal storm disasters due to the flooding effects from storm surge. The NYNG can prepare to mitigate and better respond to these risks today. We suggest the NYNG implement the following recommendations in order to plan and structure its forces optimally to get ahead of future coastal storms: adopting an all-hazards approach to coastal storms, integrating HRF-tagged units with JTF-ES, further developing language capabilities, and doubling down on resourcing of affected counties. These instruments are within the NYNG's capability to implement, and we are confident that implementation will allow the NYNG to optimize and further streamline its coastal storm response.[23]

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[23] *NOTE: This report was written to the best of our ability while also acknowledging a lack of institutional data and baseline; lack of institutional data hinders our ability to create a clear activation threshold for NY Guard. Additionally, because of the National Guards pivotal role in responding to COVID-19 we were unable to secure additional data and input from the New York or Florida National Guards.

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