

Uncovering the Effectiveness of Post-Sandy Housing Recovery Efforts in New York City

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Abstract

This thesis seeks to examine the effectiveness of post-Sandy CDBG-DR-funded housing recovery efforts in New York City. Using historical precedents to understand federal disaster policy and to identify its common limitations, this research then attempts to analyze the progress of NYC's existing housing recovery programs. In order to identify the challenges and limitations of these programs, this thesis utilized information gathered from an inspection of available housing recovery data as well as interviews with representatives of various city, state and federal agencies. By combining the quantified progress of NYC's housing recovery with the varied perspectives of individuals implementing and guiding these efforts, this research attempted to distill the broad successes and failures of different recovery programs. Taking these lessons, several recommendations are provided with the goal of improving the effectiveness of future CDBG-DR-housing recovery efforts.

Introduction

As we know from Hurricane Sandy (October 2012) and other natural disasters in the U.S., the recovery process is frequently expensive, complicated, long, and controversial (Morse, 2008; Hartman & Squires, 2006). Often our most vulnerable populations are hit hardest by these events and in most dire need of governmental assistance. Due to the increasing concentration of people (particularly in coastal cities) and the pressures of a changing climate, our vulnerability to climatic events is

likely to increase in the coming years. Given this reality, it is increasingly important for planners to facilitate efficient recovery processes that protect our most vulnerable populations and make our infrastructure more resilient. Understanding the successes and failures of past response efforts is critical to future improvement.

In an attempt to reflect and improve upon disaster recovery efforts, this thesis explored how Community Development Block Grant – Disaster Recovery (CDBG-DR) funds were utilized in NYC’s post-Sandy recovery process between 2013 and 2017. CDBG-DR funds make up a significant portion of the federal disaster relief budget and, relative to other funding sources, these funds are generally targeted to housing recovery efforts in low-income communities. As a sizable and unique source of disaster recovery funding, it is critical that we understand the successes and failures CDBG-DR-funded recovery efforts. The success of CDBG-DR is instrumental to the health, equitability, and resilience of our communities.

I begin by providing a brief background of the damage inflicted by Hurricane Sandy as well as the subsequent rollout of federal disaster relief funds. This background details the allocation of \$4.2 billion in CDBG-DR funds to NYC and, more specifically, to low-income housing recovery efforts. Using the disaster recovery precedents identified in my literature review, I use a historical lens to identify and analyze the effectiveness of NYC’s CDBG-DR-funded recovery programs. This analysis is complimented by interviews with representatives of several agencies critical to the post-Sandy CDBG-DR recovery process. By utilizing this approach to the collection and synthesis of data, I was able to critique the success of post-Sandy recovery

programs and make recommendations for their implementation in future disaster scenarios.

Background

In the wake of federal disaster declarations, the United States government has developed and employed various tools to help communities recover. Today, these tools involve the Federal Emergency Management Agency (FEMA), the Small Business Administration (SBA), the U.S. Army Corps of Engineers (USACE), and the Community Development Block Grant Disaster Recovery (CDBG-DR) programs. For much of the 19th and 20th centuries, however, many of these programs did not exist and U.S. disaster relief policy was characterized by the passage of ad hoc legislation aimed at appropriating recovery funds for specific disasters after they occurred (FEMA, 2016).

Although the federal government's first involvement in disaster relief dates to a New Hampshire fire in 1803, the creation of the aforementioned programs and the development of a structured response to disasters was not established until the late 1970's (FEMA, 2016). Notable legislation that led to a more organized disaster response strategy include the creation of the National Flood Insurance Program (NFIP) in 1968, the Disaster Relief Act of 1974, and the Reorganization Plan Number 3 (which created FEMA) (HUD, 2016). Although the CDBG program has been in

place since 1974, the first time it was used for long-term disaster recovery was in 1992. Since that time, the CDBG-DR program has been frequently implemented as a supplement to standard disaster recovery efforts (Boyd, 2011; HUD, 2016).

CDBG-DR differs from other disaster recovery programs in funding a more diverse range of recovery activities, providing more discretion to grantees in addressing unmet needs, and prioritizing low- and moderate-income households (HUD, 2016). Additionally, rather than receiving an annual budget of federal dollars, CDBG-DR is the recipient of Congressionally approved appropriations in response to disasters. Like standard CDBG funds, CDBG-DR funds are administered by the Department of Housing and Urban Development (HUD, 2016). This means that after Congress has approved an appropriation, HUD will determine the awards to grantees (states and localities) based on damage assessments. Grantees are then required to conduct a needs assessment and to submit a “CDBG-DR Action Plan” detailing their unmet needs and how the funds will be distributed and utilized. A grantee will either administer the funds itself or engage another entity to do so (HUD, 2016; HUD, 2014).

Why CDBG-DR?

The U.S. has a history of slow, expensive, and widely criticized responses to disasters. In two of the most extreme natural disasters in recent history, Hurricane Andrew (1992) and Hurricane Katrina (2005), recovery efforts were drawn-out and ineffective. Specific criticism has been leveled against the lack of efforts targeting low-income neighborhoods. Scholars have tied the inadequacies of past disaster

recovery efforts to failings at local, state, and federal levels of government, poor pre-disaster planning, a lack of resources within FEMA, and broken communication between parties (Morse, 2008; Waugh, 2006). According to HUD, CDBG-DR funds have played a large role in correcting some of these failures and redirecting the long-term recovery process (Sullivan, 2015). Like the other recovery programs, researchers have also found major flaws in CDBG-DR's role in the post-Katrina recovery process. However literature on this specific topic is scarce (Gotham, 2015).

Hurricane Sandy

On October 29, 2012 Superstorm Sandy made landfall in the New York metropolitan area. Damage to New York, New Jersey and Connecticut made Sandy one of the most catastrophic storms in U.S. history. In New York City alone, the storm caused \$19 billion in damages, killed 43 people, and left millions without power, access to public transit, and other essential services (PlaNYC, 2013). While pictures and stories of coastal single-family homes being swept away were popularized in the media, low-income families in multifamily apartment buildings bore the brunt of the storm. According to a study commissioned by the Furman Center at New York University, only 27.7% of housing units in the inundation area were 1-4 family homes, while 44.4% were subsidized or rent-stabilized multi-family units (Finland, et al., 2014). The same study estimated that nearly 76,000 buildings were inundated by the storm surge, impacting over 302,000 housing units.

The widespread inundation caused by Sandy left hundreds of thousands of people without electricity or HVAC systems, without access to public transportation, displaced from their homes, and living in substandard and dangerous housing conditions (The City of New York; 2013). In response, President Obama signed into law the Disaster Relief Appropriations Act of 2013 which, in part, provided \$16 billion to the Department of Housing and Urban Development's (HUD) Community Development Block Grant Disaster Recovery (CDBG-DR) program (City of New York; 2016). As part of this grant, HUD awarded NYC three separate funding allocations, totaling \$4.21 billion. The document guiding NYC's recovery effort – the CDBG-DR Action Plan – called for these funds to support a wide range of housing recovery, rehabilitation, coastal resiliency, infrastructure, and economic improvement initiatives (City of New York; 2016).

NYC's recovery process was also aided by the expenditures of major recovery programs like FEMA. However, due to CDBG-DR's unique concentration on rebuilding and other major long-term planning objectives - as well as the amplified criticism of the program's expenditures - this study will focus solely on the CDBG-DR program. According to NYC's CDBG-DR Action Plan, the City was prepared to utilize \$3.97 billion in CDBG-DR-eligible recovery efforts (excluding administrative costs). As of 2016, the majority of these funds, approximately \$3 billion, were to be allocated to housing-related programs and the majority of the total CDBG-DR allocation (59%) was intended to benefit low- and moderate-income persons (City of New York, CDBG-DR Action Plan, 2016). Table 1 below shows the allocation of

CDBG-DR funds by category and Table 2 shows the allocation of CDBG-DR funds to specific housing recovery programs.

Table 1. Total CDBG-DR Allocation by Category, March 20, 2017

Category Name	Funds Allocated	City Spending	Federal Funds Received
Business	\$91,000,000	\$56,959,916	\$48,480,148
Citywide Administration and Planning	\$237,820,000	\$92,704,870	\$70,558,331
Coastal Resiliency	\$447,537,000	\$24,513,079	\$21,342,391
Housing / Build it Back	\$3,018,056,000	\$1,183,158,655	\$807,455,661
Infrastructure and Other City Services	\$419,463,000	\$360,447,418	\$359,928,708
Total	\$4,213,876,000	\$1,717,783,938	\$1,307,765,239

Source: Sandy Funding Tracker, 2017

Table 2. CDBG-DR Allocation to Housing Recovery, by Program, March 20, 2017

Program Name	Funds Allocated	City Spending	Unspent Funds	Federal Funds Received
Build it Back Multifamily	\$476,000,000	\$137,134,401	\$338,865,599	\$34,708,906
Build it Back Single-Family	\$2,213,056,000	\$1,000,130,735	\$1,212,925,265	\$728,521,207
Build it Back Temporary Disaster Rental Assistance	\$9,000,000	\$6,765,828	\$2,234,172	\$6,773,012
Build it Back Workforce Development	\$3,000,000	\$1,969,936	\$1,030,064	\$294,781
Public Housing - NYCHA	\$317,000,000	\$37,157,755	\$279,842,245	\$37,157,755
Total	\$3,018,056,000	\$1,183,158,655	\$1,834,897,345	\$807,455,661

Source: Sandy Funding Tracker, 2017

While much about the effectiveness and efficiency of CDBG-DR funded programs remains unknown, it is clear that, moving towards the 5-year anniversary of the storm, families are still displaced and communities are still recovering. Evidencing the slow progress of these recovery programs, the City-managed “Sandy Funding Tracker” website estimated that 39 percent (approximately \$1.2 billion) of CDBG-DR housing recovery funds have been spent to date, leaving \$1.8 billion of the total housing allocation unspent (see Table 2 above).

As shown in Table 3, 40 percent of initial applicants to single-family housing recovery programs have completed construction, while 0 percent of multi-family housing recovery applicants have completed construction (NYC Sandy Recovery Tracker, 2016).

Table 3. NYC’s Housing Recovery Programs Status (as of March 20, 2017)

Building type	Program Milestones	Total	Percent of active applicants
Single Family (1-4 units)	Active applicants	8,369	
	Construction Started	4,445	53
	Construction Completed	3,359	40
	Reimbursement checks sent out	5,908	71
	Total Applicants Served	7,623	91
Multi-Family (5+ units)	Active applicants	732	
	Construction Started	94	13
	Construction Completed	0	0
	Reimbursement checks sent out	224	31

Source: NYC Sandy Funding Tracker, 2017

One particularly embattled and well-known program, Build it Back, is designed to help single-family and multi-family homeowners rebuild, elevate, rehabilitate or receive reimbursements for damage suffered during the storm. Build it Back has been subjected to accusations of increasing and inexplicable costs, high dropout rates, and unanimously slow progress (Gay, 2016; NYC Comptroller, 2016). In response to such criticism, in early 2016 New York City Mayor Bill de Blasio declared an informal year-end deadline to have all homes enlisted in this program rebuilt or their owners reimbursed. However, in early 2017, the deadline has come and gone and many questions remain regarding the City's effectiveness in helping NYC communities to recover and rebuild. To exemplify the type of housing stock that was typically damaged during Sandy and enrolled in Build it Back, refer to the picture below. This picture was take approximately 4 years after the storm, and it shows a vacant storm-damaged home on the left and an on-going Build it Back home elevation project on the right.

Figure 1. Storm Damaged Single-Family Home in Edgemere, Queens



Source: Richard Martoglio, 2016

Recent audits by the NYC Comptroller and HUD have confirmed much of the skepticism expressed in the media in the years following Sandy. These audits generally point to a lack of control and oversight of CDBG-DR expenditures by certain City agencies and the failure(s) of those agencies to adhere to the programmatic guidelines. While much of the focus of these audits is on the

administrative aspects of the Build it Back program (the single-family housing recovery program), other CDBG-DR funded programs like the Rapid Repairs Program were also highlighted. Criticism of the Rapid Repairs program also included the frivolous and uncontrolled spending of CDBG-DR dollars on activities that were not endorsed by HUD or otherwise discussed in the CDBG-DR Action Plan.

Literature Review

The slow and expensive implementation of post-disaster recovery programs in U.S. cities did not begin with Superstorm Sandy. In the recent past, major natural disasters like hurricane's Andrew (1992), Katrina (2005), Rita (2005) and Wilma (2005) had devastating impacts, only to be followed by recovery efforts that were famously hampered by multiple inefficiencies and entrenched unpreparedness. In the immediate and long-term aftermath of these storms, much attention has been given to the shortcomings of short-term relief efforts. Efforts to bring aid, evacuate, and clear debris were slow and reportedly plagued by political inefficiency, corruption, red tape, poor planning/preparedness, and racial biases (Gotham, 2015; Hartman, 2006; Waugh, 2006). While short-term relief is a critical aspect of the disaster recovery process, the focus of this literature review (and this thesis) is on long-term recovery.

For planners, long-term disaster recovery efforts are of particular importance due to their focus on issues like housing, resilience, economic stimulus, population decline,

and infrastructure development. The concept of “long-term recovery” is not defined by specific temporal boundaries, but rather is understood as the process of re-establishing “a healthy, functioning community that will sustain itself over time”. (FEMA, 2005; p. 4). This process can include a wide range of housing recovery and resiliency actions and is generally regarded as the period following immediate or short-term recovery. Long-term recovery efforts can last from two years to several decades (Rubin, 2009; FEMA, 2005).

Similar to short-term relief efforts, long-term recovery from recent disasters has also been subject to considerable challenges and criticism. The recovery process that ensued after Hurricane Katrina provides a perfect example. Hurricane Katrina made landfall in New Orleans on August 29, 2005. The storm caused an unprecedented 1,570 deaths, \$40-50 billion in monetary losses, and damaged 72% of the existing housing stock (Fussell, 2015; Kates, 2006). Katrina’s impact was worsened by the ineffective relief efforts of FEMA and various local and state government entities. Insufficient disaster recovery efforts, combined with an overwhelmed levee system and the added rains of Hurricane Rita, led to a “dewatering” process that left much of New Orleans underwater for up to 6 weeks (Fussell, 2015).

While researchers have alluded to numerous sources for the political and procedural failure of the short-term relief process in New Orleans, the long-term recovery process has seemingly received less attention. Ironically, some researchers

have pointed out that that the major reason why the disaster recovery process has historically been ineffective is because “..most government agencies and relief organizations focus on short term relief, and largely ignore long term recovery” (BCLP, Page 1).

Many of the issues that plagued the short-term recovery process after Katrina were also factors in delaying longer-term recovery. These barriers include political dysfunction, the sheer scope of the storm, a lack of federal agency capacity, and preexisting environmental and socio-economic conditions. Other commonly highlighted impediments to the long-term recovery process include unnecessary bureaucratic red tape, inefficient delegation of power, and generally poor planning and preparedness (The White House, 2005; Waugh, 2006; Moynihan, 2009; Marshall, 2015). Issues of bureaucratic red tape generally refer to the slow Congressional action required to release federal disaster money, the arduous environmental review process required for recovery projects, and the complicated rules associated with federal recovery dollars (Cheatham, 2015; Marshall, 2015; Moynihan, 2009). On the other hand, inefficient federal agencies are seen as delaying the long-term recovery process by not being able to process a high volume of applications and effectively complete their work. Particularly in relation to housing recovery, many researchers felt that the recovery process failed to utilize the expertise of the U.S. Department of Housing and Urban Development (HUD) and the private sector (The White House, 2005).

Now, eleven years after Hurricane Katrina, long-term recovery efforts have had mixed results. Immediately following the storm, New Orleans' population fell from 484,674 to 254,402, losing over half of its population. In the years since, the population has rebounded to 386,617 (Plyer, 2015). However, population increases have not been equal across all demographics, as racial minorities have not returned at the same rate as the white population (Plyer, 2015; Fussell, 2015). Mixed progress has also been found on the economic and resilience front, as the City has seen improvements in bikeways, trails and entrepreneurship but further issues in affordability, poverty rates, and educational attainment (Plyer, 2015). The consensus in much of the existing literature is that while some progress has been made, the post-Katrina recovery process is incomplete and not a hallmark of success. While certain aspects of its progress, or lack thereof, can be attributed to the effectiveness of long-term recovery efforts, New Orleans' post-Katrina growth has also been influenced by preexisting environmental and socioeconomic conditions, broader market fluctuations (i.e. the Great Recession of 2008), and other independent factors (i.e. people who left the City may not have been involuntarily displaced and newcomers to the City may not be returning residents) (Plyer, 2015).

Perhaps due to the size of the storm and the extent of its damage, Hurricane Katrina and its recovery process are most frequently discussed in contemporary U.S. disaster recovery literature. However, two other major hurricanes, Wilma and Rita, also occurred in 2005. While dwarfed in comparison to Katrina in terms of media attention, these Gulf coast hurricanes saw disaster recovery efforts that were

complicated and drawn out by many of the same forces as Hurricane Katrina (Waugh, 2006).

In addition to the common barriers to efficient long-term recovery efforts identified in hurricane's Katrina, Rita, and Wilma, much of existing literature utilizes a similar framework to analyze these recovery efforts. Recovery efforts are split into several stages including emergency response, restoration, and reconstruction. For Hurricane Katrina, the reconstruction period, defined as the rebuilding and/or improvement of the built environment, was expected to last 8 to 11 years (Fussell, 2015; Kates, 2006). Despite these predictions, many researches found Katrina's recovery efforts to be largely devoid of measurable goals and benchmarks, making an analysis of progress impossible (Fussell, 2015).

Research Design:

A critical component of this thesis is determining how the approximately \$3 billion of CDBG-DR housing funds were allocated to and spent by different programs in the years following Hurricane Sandy. This includes an empirical analysis of whether awarded funds have been spent and a more impressionistic analysis of whether funds were expended in an effective manner. For the purposes of this thesis, effectiveness is measured in three distinct ways. The first gauge of effectiveness is based on whether housing funds were spent in accordance with the activities documented in the CDBG-DR action plan. The second measure of effectiveness is whether program funds were able to achieve their projected levels of assistance (in

terms of number of housing units assisted). The third measure of effectiveness is an impressionistic interpretation, which was determined by ascertaining the opinions of various housing recovery professionals.¹

The research process involved three general tasks (a more detailed description of these tasks is provided later in this section). The first task involved the collection and synthesis of secondary data, such as the recovery data maintained by the City of New York and audits conducted by HUD and the NYC Comptroller. Synthesis of this data demonstrates how CDBG-DR funds were allocated to different housing recovery programs and how much of those funds have been spent by each program. (See Appendix D)

The second task involved the collection of primary data on the procedural effectiveness of CDBG-DR housing recovery programs. This data was collected through a series of interviews with representatives from organizations and City agencies that are or were involved in housing recovery programs (see Appendix B for the interview schedule).

Task #1 – Data Analysis

Information concerning the allocation of CDBG-DR funds was collected from secondary data sources. As a first source of information, NYC's CDBG-DR Action Plan provided information on how the total CDBG award is divided amongst different recovery programs. Once the budgeted funds for different programs were

¹This research methodology was approved by Columbia University's Institutional

delineated, the next step was to determine whether these budgeted funds have been spent by their respective programs. The source for this information was a website managed by the NYC Government's Office of Management and Budget (the 'Sandy Funding Tracker', <http://www1.nyc.gov/sandytracker/>, accessed March 20, 2017). This same website was used to analyze the progress of different recovery programs. The Sandy Funding Tracker periodically tracks benchmarks like number of units rebuilt, reimbursements paid, and jobs created by CDBG-DR programs. The City of New York has also published three "progress reports", which have tracked much of the same information displayed in the Sandy Funding Tracker.

Another source of information were audits completed by HUD and the NYC Comptroller. Audits were collected via HUD's Office of Inspector General website² and the NYC Comptroller website³. These audits gave further insight as to how monitoring entities analyzed the progress of certain housing recovery programs and provided some specificity as to where the programs erred. Collecting this data allowed me to compare the number of units or businesses lost by Sandy to those that have been created and to develop a better understanding of the recovery progress to date. Data was analyzed from the time the program was initiated

² https://www.hudoig.gov/reports-publications/audit-reports?field_pub_state_value=NY

³ <http://comptroller.nyc.gov/reports/audit-report-on-the-administration-of-the-new-york-city-build-it-back-single-family-program-by-the-mayors-office-of-housing-recovery-operations/>

(summer 2013) to the date of the most recently available progress report (January 2017).

Task #2 - Interviews

The next task was to collect primary data on the procedural effectiveness of NYC's CDBG-DR funded recovery programs. The goal was to identify flaws and successes in NYC's CDBG-DR funded housing recovery programs as well as impediments to more effective program implementation. Collecting this information necessitated in-person interviews with representatives of City agencies like the Department of Housing Preservation and Development (HPD), the Department of City Planning (DCP) and the Mayor's Office of Housing Recovery Operations (HRO). These agencies (and others) hold different responsibilities in relation to the development, implementation, and oversight of various housing recovery programs. Additionally, specific departments or divisions within each agency are more focused on housing recovery operations, and these departments were targeted for the purpose of my interviews. For example, at HPD, housing recovery programs are managed by the Resiliency Planning division and the New Construction division.

Interviews at these agencies and their Sandy-specific divisions was geared towards understanding each agency's perception of the general Sandy recovery process in NYC as well as the effectiveness of specific programs. I conducted a total of nine (9) interviews with individuals involved with post-Sandy housing recovery efforts at different city, state and federal agencies. These agencies included HPD, HRO, DCP, the New Jersey Housing and Mortgage Finance Agency (NJHMFA), the New Jersey

Department of Community Affairs (DCA), HUD, and the Governor’s Office of Storm Recovery (GOSR). These agencies all experienced the implementation of CDBG-DR housing recovery programs from different perspectives and played critical roles in the roll out of these programs in New York and New Jersey. The table below summarizes the roles and jurisdictions for each of the agencies I interviewed.

Table 7. Housing Recovery Agency’s Interviewed

Agency	Acronym	Jurisdiction	Role
Department of Housing and Urban Development	HUD	Federal	Federal CDBG-DR administering agency
Department of Housing Preservation and Development	HPD	NYC	Housing recovery program administrator
Mayor's Office of Housing and Recovery Operations	HRO	NYC	Housing recovery program administrator
Department of City Planning	DCP	NYC	Planning program administrator and partner agency
Governor's Office of Storm Recovery	GOSR	NY State	Administering entity for all NY State CDBG-DR funds
New Jersey Housing and Mortgage Finance Agency	NJHMFA	NJ	Multi-family program administrator
New Jersey Department of Community Affairs	DCA	NJ	Administering entity for distribution of all NJ CDBG-DR funds

Seven of the interviews were conducted in person, and two were conducted over the phone. The length of the interviews spanned from 45 minutes to 2 hours, with an average time of 1 hour. The content and direction of these interviews was guided by an interview schedule, which can be found in Appendix A. The information gathered

during these interviews was also supplemented by the HUD and NYC Comptroller audits discussed for 'Research Task #1'.

Findings & Analysis

Data Analysis

According to post-storm damage assessments completed by FEMA and the City of New York, the number of damaged residential units in NYC ranged from 62,900 to more than 150,000; the vast majority of which were one- and two-family homes (Furman Center, 2013; City of New York Action Plan, 2016). Of those damaged households, 21,177 initially applied for assistance from the CDBG-DR-funded Build it Back single-family program; 4,700 applicants did not complete the initial eligibility review (see Table 4). As of February 20, 2017, 8,369 applicants have either received or are still pursuing program benefits. The City reports that 7,623 or 91% of program participants have received a reimbursement check or a construction start. Furthermore, 40% of active applicants have seen completed construction and 71% of active applicants have received reimbursement checks.

Table 4. Single Family Program Applicants (As of March 20, 2017)

Building type	Program Milestones	Total	Percent of Active Applicants
Single Family (1-4 units)	Initial applicants	20,177	
	Active applicants	8,369	
	Construction Started	4,445	53
	Construction Completed	3,359	40
	Reimbursement checks sent out	5,908	71
	Total Applicants Served	7,623	91

Source: NYC Sandy Funding Tracker, 2017

For single-family construction applicants, 83% have seen construction starts and just 63% have seen construction completion. This means that 1,984 applicants are waiting for construction completion.

On the multifamily side, the Build it Back program received 732 initial applicants. As of February 20, 2017, 13% of initial applicants have seen construction starts, 0% have seen construction completion, and 31% have received reimbursement checks. (See Table 6.)

Table 6. Multi-Family Program Applicants (As of March 20, 2017)

Building type	Program Milestones	Total	Percent of Initial Applicants
Multi-Family (5+ units)	Initial applicants	732	
	Construction Started	94	13
	Construction Completed	0	0
	Reimbursement checks sent out	224	31

Source: NYC Sandy Funding Tracker, 2017

As of the beginning of 2014, the Build it Back program had zero construction starts and had sent out zero reimbursement checks. Despite the progress that has come since then, the data indicates that the program still has considerable work to do.

Although the program never anticipated serving the total storm-damaged population (it was expected that a portion of this population would either withdraw, be deemed ineligible, or be served by other City, State, and Federal programs), the program has clearly fallen short of Mayor de Blasio’s stated completion goal of 2016 as well of its original projection of serving 12,000 households (City of New York Action Plan, 2013). Furthermore, audited oversight conducted by HUD and the NYC Comptroller’s office have found that Build it Back and other CDBG-DR-funded housing recovery programs have been hampered by inadequate monitoring, inefficient spending, and improper disbursement of funds.

Interviews

As discussed throughout this paper, disaster recovery efforts are often fraught with challenges, delays, and controversy. Evidenced in the previously discussed data analysis section and in the information collected during the interview process, Hurricane Sandy's housing recovery programs are not any different. Individuals at each agency were able to identify unforeseen challenges, as well as demonstrable successes and failures that could help to shape future recovery efforts. Because these agencies each experienced housing recovery through a different lens (through their geographical jurisdiction and their specific responsibility), their perceptions and criticisms of the program were sometime competing and contradictory. The remainder of this section discusses programmatic critiques where there was agency-wide consensus as well as those which were more divergent or contradictory.

City-Managed Contractors

In the NYC Build it Back program, homeowners that chose the 'rebuild' pathway (i.e. homeowners who wanted to and were eligible for rebuilding) were given the option to either chose their own contractor or go with a "city selected developer". The latter option was offered as a means of speeding up the rebuilding process, as the City selected developers come with pre-approved plans, designs, and contractors. The majority of rebuilds to date (approximately 70%) have chosen the City selected developer option.

Despite its intentions, the City selected developer option has not proved to be successful. Difficulties in getting homeowners to sign off on plans, controlling contractor costs, exercising proper vetting, and approving homeowner changes to plans were all expressed as major constraints by city agencies. Amongst city, state, and federal agencies, there is a clear consensus that having homeowners manage and choose their own contractor would be a more efficient and less controversial rebuilding strategy. In New Jersey and New York State, where single family housing recovery programs with homeowner-managed contractors were the predominant rebuilding method, agency representatives were adamant that this policy was preferable and more successful in terms of expediency, use of resources, and homeowner satisfaction. Although NJ, NY State, and NYC all offered both homeowner-managed and city-managed contractor pathways to their applicants, many City representatives felt that unwritten NYC rules and priorities pushed homeowners to choosing the city-managed contractor option.

Limiting Funding Per Project

In New Jersey, the Build it Back equivalent single-family housing recovery program is known as RREM (Reconstruction, Rehabilitation, Elevation and Mitigation Program). During conversations with contacts at HUD and the RREM program administrator, a commonly expressed success of the program is its per-project funding cap of \$150,000. According to interviewees, this cap enabled CDBG-DR funds to be used judiciously, to assist a maximum number of applicants, and to be

disbursed relatively quickly. This cap was also reportedly sufficient in covering the vast majority of eligible rebuild/repair expenses.

In NYC, there is not a per-project Build it Back funding cap for the single-family program. According to conversations with NYC single-family program administrators, concerns were often expressed regarding the exorbitant funds paid to rebuild, repair or elevate many homes. Over the life of Build it Back, numerous articles have surfaced reporting rebuilds that received in excess of \$700,000 in funding. Although excessive per-project funds were cited as a significant policy concern, many NYC agency representatives also pointed out that the extent of damage, the nature of NYC single-family housing stock, and environmental site constraints often require higher funding expenditures. For example, many NYC rebuilds reportedly consisted of attached or semi-attached bungalows on narrow lots and streets, poor soil conditions (sometimes requiring piles driven 100 feet into the ground), expensive elevation of existing structures, and rising construction costs. An example of a newly built Build it Back home can be seen below.

Figure 2. A Single-Family 'Build it Back' Home



Source: HPD, 2015

Saying “No” to Certain Rebuilds

In line with the aforementioned concerns expressed regarding the excessive cost of some NYC rebuilds, there was vast interagency consensus that Build it Back (and future housing recovery programs) need to exercise more restraint in funding certain rebuilds. As previously discussed, expensive rebuilds and elevations often occurred in instances where homes were particularly challenged by environmental constraints like poor soil conditions, extreme inundation and hazard vulnerability, and complex neighborhood factors (i.e. narrow lots and streets). As expressed by interviewees, funding projects with such constraints is not only expensive,

challenging, and time consuming, but it also raises policy questions as to whether the City should pay for homeowners to continue living in such vulnerable areas.

The City began to address these concerns through the creation of an “acquisition” pathway, where homeowners who wish to relocate outside of the floodplain can be “bought-out”. Many agency representatives believed that this pathway should have been available from the onset of the program and that the City should have been more assertive in pushing applicants in the most vulnerable areas to pursue this. Agencies like HPD and DCP have proposed tackling this problem on a more holistic level, by using zoning to limit the future development of particularly hazardous areas. The consensus on exercising more restraint in rebuilding homes in extremely vulnerable areas is that doing so would expedite the recovery process, limit excessive spending, and protect the long-term vitality of communities and the homeowners that inhabit them.

Better Oversight

By design, CDBG-DR funds are designed to give grantees and administering agencies considerable flexibility and autonomy in how they choose to spend funds on recovery efforts. While many agency representatives approved of the existing level of HUD oversight, HUD and administering agencies agreed that administrators could have done a better job in monitoring the procurement and fund disbursement processes. Concerns of funds being spent excessively and/or on ineligible activities have been cited in HUD audits and frequently reported in the news media (HUD OIG,

2016; Cheng, 2017; Honan, 2016). Although some City agency representatives have pointed to the de Blasio administration's goal to accelerate programs and cut red tape as reasons for lax City oversight, there was general agreement that oversight could and should be improved. Agency representatives (from NYC and NJ) highlighted the need to review each applicant individually and carefully. Doing so would enhance the program's ability to properly assess each applicant, limit costs to eligible activities, exercise restraint in approving extremely vulnerable rebuilds, and ultimately contribute to greater overall programmatic effectiveness.

To exemplify the tradeoffs that may ensue by increasing or decreasing oversight, more than one agency representative pointed to housing recovery programs implemented by NY State. According to these representatives, State programs exercised relatively lax oversight and as a result, were relatively expedient in disbursing funds to homeowners. However, these representatives also claimed that this approach resulted in the funding of ineligible activities/expenses and may result in the recouping of program funds. These claims are substantiated by a 2016 HUD audit, which details GOSR's inability to disburse funds in accordance with all federal and state regulations. Despite these issues encountered during fund disbursements, NY state officials were adamant that such occurrences were relatively infrequent and that the program's strategy for rapid fund disbursement should be viewed as an overall success.

Consolidating Administering Agencies

Another common topic that surfaced was the difficulty and frustration that City agency representatives had with interagency coordination. Although HRO technically oversees the intake and processing of all housing applicants, responsibilities are then delegated to at least five other city agencies. These agencies include HPD, the Housing Development Corporation (HDC), the Department of Design and Construction (DDC), the Economic Development Corporation (EDC), the Department of Environmental Protection (DEP), and the New York City Housing Authority (NYCHA).

Individuals from HPD and HRO felt adamantly that interagency coordination was burdensome, difficult, and a major barrier to more efficient program implementation. The multi-agency approach to housing recovery in NYC can be contrasted to New Jersey's housing recovery programs, which are more centrally governed by a single entity (DCA). Both NYC and NJ agency representatives felt that consolidating program responsibilities reduces the inefficiencies associated with interagency coordination.

However, despite the sentiments expressed by NYC and NJ agency officials, representatives from HUD and Build it Back felt that the consolidation of responsibilities was not necessarily a more efficient or achievable approach to program implementation. These representatives echoed the message stated in the CDBG-DR Action Plan, which calls for housing programs to leverage the existing

expertise and capabilities of other city agencies. To illustrate this point, one Build it Back representative pointed to the program's failed approach of using new Build it Back case managers (rather than experienced City agencies with established relationships) in coordinating with local homeowners and community groups.

HUD: Bureaucracy, Guidance, and Facilitation

In addition to the challenges of interagency coordination, many NYC, NY state, and NJ program representatives said that navigating HUD's bureaucracy impeded housing recovery progress. The bureaucratic challenges these representatives mentioned included difficulty in getting answers to programmatic questions, the challenging comprehension of program rules, and the complicated and lengthy CDBG-DR fund expenditure and reimbursement process. Although these concerns of federal bureaucratic challenges were voiced by representatives from multiple jurisdictions, this sentiment was most strongly expressed by NYC and NY state representatives.

On the topic of HUD interference in housing recovery programs, agency representatives from NYC, NY, and NJ all shared seemingly contradictory perceptions. Although HUD's 'hands-off' approach to program implementation was generally regarded as positive, many interviewees felt that more guidance from HUD might have helped to limit program failures and improve effectiveness. Amongst the suggestions for altering HUD's role in the recovery process, many representatives felt that HUD should adopt a general disaster recovery template

that would help grantees to create and initiate recovery programs as well as navigate complex applicant processing and funding disbursement regulations. Also included in this guidance, agency representatives identified two major tasks that would help HUD to improve recovery programs: 1) HUD should facilitate the sharing of information between grantees and 2) HUD should counsel grantees not to model recovery efforts based on previous disasters.

To expand on these suggestions, representatives from NYC and NJ identified various successes and failures in the implementation of their respective programs. All interviewees felt that improved communication between agencies on their different experiences would limit programmatic failures and inefficiencies. Despite interviewees adamantly advocating for the better sharing of information between grantees, representatives from both NYC and NJ pointed out that their programs erred in modeling aspects of their programs after previous disasters. More specifically, NYC, NY and NJ programs all at some point used strategies and/or consultants that were employed during Hurricane Katrina recovery programs. According to each of the interviewees, this methodology is flawed in that disaster recovery experience in one area can never translate to knowledge of program implementation in a new area. Disasters in different spatial or temporal geographies come with new and unexpected vulnerabilities. These vulnerabilities or challenges are shaped by ever-shifting environmental, political, social, and economic factors.

Environmental Review

Another concern that was frequently expressed regarding federal oversight was the HUD environmental review guidelines. Because CDBG-DR is a federal funding source, all CDBG-DR-funded projects require compliance with National Environmental Policy Act (NEPA) and other federal environmental standards. According to NYC and NJ program administrators, the environmental requirements for CDBG-DR funds are burdensome, complicated, costly and excessive. Many interviewees pointed to these environmental requirements as a major contributor to prolonged recovery efforts, cost overruns, and high applicant drop out rates.

While representatives from HUD generally agreed that existing environmental review protocol may be excessive and unnecessary, the same representatives pointed to the difficulty in altering such regulations and seemed to indicate that they were out of HUD's control and thus here to stay.

Political Challenges

One of the most commonly cited factors in influencing the speed and implementation of recovery efforts was the role of politics. Whether the source of political influence was coming from incumbent governors, mayors, state senators, or councilpersons, all interviewees shared experiences where political agendas shaped recovery efforts. In NYC, agency representatives identified how Mayor de Blasio's commitment to speeding up recovery and cutting red tape allowed for a simultaneous increased rate of rebuilding and an increased rate oversight failures.

At the state level, Senator Schumer's efforts to waive the 'duplication of benefits' requirement for certain homeowners purportedly helped to increase the speed of benefits being disbursed but also led to the funding of ineligible activities. Senator Schumer also famously lobbied to change regulations that prioritized recovery efforts for low-and moderate-income households; his efforts were viewed as controversial in the eyes of interviewees.

In New York and New Jersey, political agendas are motivated by the drive to serve certain constituent bases (and sometimes to directly position themselves for reelection). According to agency representatives, the strong political personalities in NY and NJ served to influence recovery efforts in both positive and negative directions.

Long-Term Resiliency Plans

According to interviewees at federal, state and city agencies, one way to improve future recovery efforts is to begin thinking about community vulnerability prior to disaster. Although it is impossible to fully prepare for a disaster, communities who have long term resiliency plans already in place are seemingly better equipped to respond and begin implementing recovery efforts.

Conclusion

As we approach the fifth anniversary of Hurricane Sandy, hundreds of active Build it Back applicants await program benefits. Thousands more of storm damaged

households have been left out of the CDBG-DR recovery process, due to various personal and programmatic limitations. These metrics validate the major sentiments explored throughout this thesis, that post-disaster housing recovery has been and continues to be inherently complicated, challenging, and slow. As to the question of whether NYC's CDBG-DR-funded housing recovery programs were effective, the answer is neither binary nor straightforward. My analysis of recovery progress and my interviews with housing recovery agencies indicated that although there is evidence both supporting and denying the effectiveness of recovery programs -- there is clearly much room for improvement.

This study found that some of the most agreed upon areas for improvement in housing recovery programs included moving away from a City-managed contractor rebuild option, reducing federal environmental review requirements, introducing an acquisition option and saying "no" to certain rebuilds, thinking about long-term resiliency prior to disaster, and conducting better oversight in the intake and processing of applicants. Some areas where there was less consensus (and sometimes contradictory feedback) included HUD's role in the recovery process, implementing a limitation on the amount of funding per project, and the consolidation of housing recovery responsibilities. A final point of consideration that came out of this study was the role of politics in shaping recovery efforts. While interviewees acknowledged that political agendas played a big role in influencing their respective recovery programs, there was no clear consensus as to whether the role of politics in disaster recovery is something that can or should be addressed.

Through an analysis of quantitative data and extensive conversations with housing recovery professionals at city, state, and federal agencies, this study was able to provide an understanding of NYC’s CDBG-DR-funded housing recovery programs as well as their progress and shortcomings to date. The analysis presented in this paper provides a road map of “lessons learned” for the implementation of future post-disaster housing recovery programs.

Recommendations

As the bulk of this study was concentrated on single-family housing recovery in New York City, my recommendations are most relevant to future disasters either here in New York or in other coastal urban environments with high concentrations of low-income single-family housing stock. These recommendations are specific to the structuring of federally funded disaster recovery programs and the various city, state, and federal actors who implement such programs. As seen below, the recommendations are organized by the applicable city, state, or federal entity that is the target of the proposed policy changes.

City & State Program Administrators

My first recommendation is that single-family rebuilding/repair programs should require homeowner to select and manage their own contractor. Doing so builds off the relative success of such programs in New Jersey as well as the specific

recommendations of program administrators in NYC and NJ. Implementing a homeowner-managed contractor process eliminates the challenging coordination and prolonged decision-making process that often ensues between City-selected contractors, approving agencies and the homeowners. Furthermore, putting the homeowner in charge of selecting a contractor will give homeowners more responsibility and authority in dictating the pace of the rebuilding process.

My second recommendation is two pronged. First, I recommend capping the amount of funding granted to individual projects and secondly, I recommend rejecting rebuilds in excessively vulnerable environments. As was documented earlier in this paper, the rebuilding process in NYC was often extremely expensive and challenging due to the nature of the existing housing stock, our dense neighborhoods and precarious natural environments. Housing recovery programs should strictly monitor where funding is disbursed and the maximum amount given to each applicant. Although NYC programs eventually began to approach this issue by implementing an acquisition program, having a geographic and monetary rebuild threshold prior to a disaster could save huge amounts of time and money as well as the future integrity of a neighborhood.

Although capping funds and denying rebuilds in especially vulnerable areas might increase the speed and effectiveness of recovery programs, such an approach engenders significant equity and urban planning policy concerns. Even if urban planners and policy makers are able to agree that rebuilding homes in areas that are

sure to be underwater by the end of the century is a bad idea, denying people the opportunity to rebuild in their neighborhood raises legal and equity concerns and it forces homeowners to attempt relocation in a City that is increasingly expensive and starved of available land.

My third recommendation is to consolidate housing recovery responsibilities within a single agency. Knowledge of past disasters and our understanding of Sandy recovery experiences indicate that interagency coordination is always difficult and serves as a barrier to more effective program implementation. While still recognizing the value of leveraging the expertise and resources of other agencies, I recommend locating all intake, oversight, and management responsibilities within a single agency. Doing so reduces the bureaucratic hurdles involved with coordinating with other agencies, gives applicants more consistent and informed points of contact, and ensures processing and oversight standards will not vary between agencies. In NYC, such a consolidation of responsibility might have involved dedicating HPD as the primary housing recovery agency and allowing the agency to expand its staff with experienced personnel from other relevant city agencies.

HUD

My fourth recommendation is that HUD should substantially lessen existing environmental review requirements. Given the frustration and challenges that administering agencies expressed in adhering to HUD's environmental review requirements, it is important that HUD lessen and eliminate certain requirements to

make them less cumbersome for a community recovering from a disaster. By facilitating conversations with past grantees, HUD can gather an understanding of where existing environmental review requirements are excessive, burdensome and not required. Lessening environmental review requirements would help to decrease the cost of recovery programs, increase the speed of funding disbursement, and limit the number of homeowners dropping out of recovery programs. Although any change to existing environmental regulations would necessitate congressional action, it is not inconceivable to think that the same body that appropriates tens of billions of dollars following a disaster can also summon the courage to change dated and cumbersome legislation.

Furthermore, HUD can also improve future housing recovery efforts by facilitating conversations with grantees where information is shared across various agencies. To accomplish this, I recommend that HUD organize meetings and establish information sharing channels for top agency representatives within different grantees. Ideally, grantees and their representatives would share experiences of successes and failures in the implementation of their programs as well as suggestions for where HUD could provide more guidance to grantees. Doing so would allow HUD to improve its existing disaster recovery approach and also push localities to begin thinking about their disaster recovery preparedness in advance of the next disaster scenario. As expressed by various interviewees, the grantees that tend to fare the best in disaster recovery have been thinking about their existing

vulnerabilities and/or have long-term resiliency plans already in place prior to a disaster.

HUD & City/State Program Administrators

Along the lines of the previous recommendation, I also recommend that future housing recovery efforts do not deliberately attempt to bring in consultants or programs from prior disasters; Alternatively, HUD can encourage program administrators to bring in groups with local knowledge, such as community organizations and philanthropic foundations. As we understand from the Hurricane Sandy programs that borrowed from Hurricane Katrina's experiences, disaster experience in one place does not translate to a new disaster. HUD can play a role here by using its decades of varied disaster experiences to help guide grantees in the structuring and implementation of their programs. From their involvement with successful and failed programs in various geographies, HUD is in the unique position to provide grantees with valuable information on consultants with strong track records, recommendations on how to navigate program or regulation intricacies, and advice on how to maintain compliance with federal regulations. While it is recommended that all guidance from HUD is offered as optional rather than mandatory - it is critical to maintain the flexibility and grantee-autonomy associated with CDBG-DR funds – grantees would benefit greatly from having this information at their disposal.

As I have attempted to demonstrate in this thesis, post-disaster housing recovery is inherently complicated and its success is often subject to a wide range of interpretations. While I sincerely hope that the recommendations I have proposed are considered in the implementation of future housing recovery efforts, I embrace the fact that every disaster is different and leads to a series of events and conditions that we can never fully anticipate. By examining the large scale housing recovery programs in a city as diverse, populated and socially/politically/environmentally complicated as New York City, it is my hope that the issues I have raised will initiate planning, policy, and disaster preparedness conversations for other urban geographies around the U.S.

APPENDIX A

Interview Schedule

A major component of this thesis was determining how effectively CDBG-DR-funded programs operated in the years following Hurricane Sandy. A collection of secondary data helped to answer questions regarding the disbursement and utilization of CDBG funds, but questions on the procedural successes and failures of the recovery programs came from another source. In order to identify flaws and determine how CDBG-DR funded programs can be implemented/structured more effectively in the future, I conducted interviews with the agency's and individuals responsible for carrying out these programs. In addition to understanding how specific recovery programs could be improved, these interviews sought to understand how the relationship between the federal funding source (CDBG-DR) and recipient agencies could be improved.

Interviews focused on individuals within agencies like the Department of Housing Preservation and Development (HPD), the Department of Housing and Urban Development (HUD) and the Mayor's Office of Housing Recovery Operations (HRO). These interviews were guided by the following questions and key subjects:

1. In your opinion, do you think that these programs (insert applicable program or programs) were effective in achieving their intention(s)/goals? What worked and what didn't work?

2. Do you think that the efforts of these programs have done enough in rebuilding communities and making them more resilient to future storm events?
 - a. Where do you think recovery efforts were strongest? Weakest?
 - b. Why do you think that recovery programs were more effective in certain areas and not in others?
 - c. In retrospect, do you think (insert applicable recovery program) could have been structured more effectively?
 - d. Do you envision a way to improve programs that are still underway?
3. How do you think the funding/disbursement process could be improved?
 - a. For example, did you find that the reporting requirements, regulations, or auditing procedures implemented by HUD were a strain on the effectiveness of these programs?
4. If you do envision improvements to the overall CDBG-DR funding process or to specific CDBG-DR funded programs, what agencies or entities do you think hold the power to implement change?
 - a. What is the best way to organize disaster recovery?

Works Cited

- Blake, Eric S., and Todd B. Kimberlain. Rep. National Hurricane Center, 12 Feb. 2013. Web. 02 Oct. 2016. <<http://data.globalchange.gov/report/nhc-a1182012.html>>.
- Boyd, Eugene. Congressional Research Service. "Community Development Block Grant in Disaster Relief and Recovery". Sept. 21, 2011. www.crs.gov
- BCLP. "What a Successful Disaster Recovery Looks Like". Business Civic Leadership Council. Web. Accessed October 20, 2016.
- Cheng, Pei-Sze. "4 Arrested in Alleged 'Build It Back' Fraud." *NBC New York*. NBC New York, 31 Mar. 2017. Web. 31 Mar. 2017.< <http://www.nbcnewyork.com/news/local/4-Arrested-in-Alleged-Build-It-Back-Fraud-413903443.html>>
- City of New York. "PlaNYC: A Stronger, More Resilient New York" 11 July. 2013. <http://s-media.nyc.gov/agencies/sirr/SIRR_singles_Lo_res.pdf>
- City of New York. "NYC Recovery: Community Development Block Grant Disaster Recovery" <<http://www.nyc.gov/html/cdbg/html/home/home.shtml>>
- City of New York. "The City of New York: Action Plan Incorporating Amendments 1-11" For CDBG-DR Funds. Disaster Relief Appropriations Act of 2013 (Public Law 113-2, January 29, 2013). February 1, 2016
- Cheatham, Ben, et al. "Improving Disaster Recovery: Lessons Learned in the United States". McKinsey & Company. 2015.
- FEMA. Academic Emergency Management and Related Courses for the Higher Education Program. Emergency and Risk Management Case Studies Textbook. Website. Accessed Oct 9, 2016. <https://training.fema.gov/hiedu/aemrc/booksdownload/emoutline/>
- FEMA. "Long-Term Community Recovery Planning Process: A Self Help Guide". December 2005.

Findland, Kevin, and Vrunda Vaghela. "The Price of Resilience: Can Multifamily Housing Afford to Adapt?" *Advancing Research and Debate on Housing, Neighborhoods, and Urban Policy* (2014): n. pag. NYU Furman Center, July 2014. Web. 2 Oct. 2016. <http://furmancenter.org/files/NYUFurmanCenter_ThePriceofResilience_July2014.pdf>.

Furman Center. "Sandy's Effect on Housing in New York City". NYU Furman Center, March 2013. Web. 3 Oct. 2016. <<http://furmancenter.org/files/publications/SandysEffectsOnHousingInNYC.pdf>>

Fussell, Elizabeth. "The Long-Term Recovery of New Orleans' Population After Hurricane Katrina". *The American Behavioral Scientist*. U.S. National Library of Medicine, 1 Sept. 2015. Web. 21 Mar. 2017

Gotham, Kevin F. "Limitations, Legacies, and Lessons: Post-Katrina Rebuilding in Retrospect and Prospect". 2015. *American Behavioral Scientist*, I-13.

Gay, Mara. *Fewer Homes, Higher Cost*. The Wall Street Journal. April 22, 2016. Web. <<http://www.wsj.com/articles/fewer-homes-higher-cost-1461287722>>

Hartman, Chester. Squires, Gregory D. "There is No Such Thing as a Natural Disaster: Race, Class, and Hurricane Katrina". *Journal of The American Planning Association*, Volume 72, 2008 Issue 2. 2006.

Honan, Katie. "'Build It Back' Helping Fewer Homeowners, but Needs \$500M More, City Says." *DNAINfo New York*. N.p., 23 Sept. 2016. Web. 31 Mar. 2017. <<https://www.dnainfo.com/new-york/20160923/broad-channel/build-it-back-hurricane-sandy-rebuilding-problems-funding>>

Huang, Albert. "Hurricane Sandy's Disproportionate Impact on NYC's Most Vulnerable Communities." *NRDC*. Natural Resources Defense Council, 15 Nov. 2012. Web. 04 Oct. 2016.

- HUD. U.S. Department of Housing and Urban Development. CDBG Disaster Recovery Overview. Website. Accessed Oct. 9, 2016.
<https://www.hudexchange.info/resources/documents/CDBG-Disaster-Recovery-Overview.pdf>
- HUD. U.S. Department of Housing and Urban Development. “Basically CDBG”. May 2014. Website. < <https://www.hudexchange.info/resources/documents/Basically-CDBG-Chapter-21-CDBG-DR.pdf>>
- HUD. U.S. Department of Housing and Urban Development. Office of Inspector General. The City of New York, NY, Mayor’s Office of Housing Recovery Operations. “Community Development Block Grant Disaster Recovery-Funded Build it Back Single Family Program”. 2017-NY-1001. November 2, 2016.
- Kates, R.W. et al. “Reconstruction of New Orleans after Hurricane Katrina: A research perspective”. Proceedings of the National Academy of Sciences. Web. 2006. < <http://www.pnas.org/content/103/40/14653.full>>
- Lindell, Michael K. “Recovery and Reconstruction After Disaster”. Texas A&M University. 2013.
- Marshall, John Travis. “Weathering NEPA Review: Superstorms and Super Slow Urban Recovery”. Ecology Law Quarterly. Vol. 41, I 1, Article 3. 2014.
- Morse, Reilly. “Environmental Justice Through the Eye of Hurricane Katrina”. 2008. Joint Center for Political and Economic Studies, Health Policy Institute.
http://inequality.stanford.edu/_media/pdf/key_issues/Environment_policy.pdf
- Moynihan, Donald P. “Response to Hurricane Katrina”. International Risk Governance Council: Risk Governance Deficits. 2009.
- "NYC Sandy Funding Tracker." *NYC Sandy Funding Tracker*. N.p., n.d. Web. Nov. 2016. <<http://www1.nyc.gov/sandytracker/#1986138320>>.

NYC Comptroller. “Audit Report on the Administration of the New York City Build it Back Single Family Program by the Mayor’s Office of Housing Recovery Operations”. March 31, 2015. FM14-115A.

Plyer, Allison. *Facts for Features: Katrina Recovery*. The Data Center. Web. August 28, 2015. <<http://www.datacenterresearch.org/data-resources/katrina/facts-for-features-katrina-recovery/>>

Rubin, Claire B. “Long Term Recovery from Disasters – The Neglected Component of Emergency Management”. *Journal of Homeland Security and Emergency Management*. Vol. 6, Issue 1, Article 46. 2009

Sullivan, Brian. “Hurricane Katrina: Ten Years of Recovery in the Gulf”. HUD. August 18, 2015. HUD No. 15-108. <https://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2015/HUDNo_15-108>

The White House. *Katrina – Lessons Learned*. Chapter 5. Web. 2005. <<https://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned/chapter5.html>>

Waugh, William L. “The Political Costs of Failure in the Katrina and Rita Disasters”. *The Annals of the American Academy of Political and Social Science*, Vol. 604. March 2006. <<http://www.jstor.org/stable/25097779>>