

PUBLIC HOUSING AFTER HURRICANE, URBAN RENEWAL OR REMOVAL?
THE CASE STUDIES OF BEAUMONT AND GALVESTON, TEXAS.

A Thesis

by

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ABSTRACT

Decent housing is a goal for many people not only in the United States but elsewhere in the world. A house becomes the symbol of family spirit whether it is a single-family or multiple-family home. Public housing in the United States is housing of “last resort,” for families whose incomes do not allow them to find housing in the private market. Yet, many studies focusing on public housing find a host of social issues plaguing these units. The US Government has initiated various programs to improve the quality of public housing as well as the living condition of local resident through agenda of Department of Housing and Urban Development (HUD). HOPE VI is one of the major programs that focuses on distressed public housing. This program funds local government and housing authority in order to revitalized or rebuild public housing. This program has been very successful in providing high-quality housing for public housing residents.

However, as any type of construction, housing usually received great damage when natural disaster happening. It can be partly damaged or completely destroyed due to the direct and indirect effects of disaster. Public housing, like most affordable housing, is often built in highly vulnerable areas, such as floodplains or other low-lying areas. When disasters such as hurricanes strike, housing located in these areas is likely to receive the greatest damage and recovery may be slower.

This study looks at the case study of public housing in Galveston and Beaumont after Hurricane Ike (2008) and Rita (2005). After Hurricane Rita in 2005, Beaumont has rebuilt some public housing development with a HOPE VI grant awarded in 2007. These areas have successfully rebuilt through the cooperation of housing authority, local government, local residents, and developers. In contrast, Galveston could not reach agreement about the destiny of public housing after Hurricane Ike in 2008. This story becomes more serious when HUD announced that if Galveston cannot rebuild public housing in disaster area, they must refund the money to the federal Government. These two cities provide a comparative case study of the rebuilding of public housing after disaster, where one successfully rebuilt while other did not.

By looking at the secondary data sources, this research analyzes the situation of these places in different period: before the Hurricane, when the Hurricane happened, and after the Hurricane. The paper will address the similarities as well as differences between two case studies in term of historical profile, demography, public housing program characteristics, damage, and recovery. Besides, economic change after hurricane approached is addressed. The housing situation will be further analyzed in Galveston to clearly show the obstacles in which this city coped with. Finally, the study will conclude by suggesting some implications for theory, housing policy, management, and further research.

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1 INTRODUCTION

1.1 Housing in the U.S.

1.1.1 Brief History of Housing Act Legislation

As any other place in the world, housing plays fundamental role in social life of individual as well as public concern. Housing is one of the top priorities in US Government's annual agenda. In addition to other aspects of social development, housing and market have a mutual relationship which affects different issues such as: housing type, home ownership rate, or affordability.

Until World War II, the majority of housing in the United States is rental. The condition of rental housing was a major concern of society (Colton, 1994). The Housing Act of 1937 (also called the Wagner-Steagall Act) provided for subsidies for low-income family by the U.S. government. This funding was spent through the local public housing agencies in order to improve the living conditions of residents.

The Housing Act of 1949 played important role in setting up goals to achieve decent housing for people in the post war period. This national legislation also contributed to the slum clearance and urban renewal programs. According to the Title III of Housing Act 1949, the federal money was extended to build more than 800,000 public housing units. One of the main elements of this Housing Act include funding for research about housing and technique as well as allowing the Federal Housing Administration provide financing for rural homeowners.

The Housing and Urban Development Act of 1965 created the Department of Housing and Urban Development (HUD). For the first time, a rent subsidy mechanism was introduced, making a major improvement in the housing market in the US. This new inventory encouraged the private sector widely participate in constructing low income housing. The Federal Housing Authority would insure mortgages for non-profit developers who directly build homes for low income families. Further, vouchers were

introduced. The voucher program helped the federal government satisfying the large demand for housing from households by helping them pay partly for the market rent. The Housing Act 1968 showed the efforts of the federal government in order to find appropriate forms for housing development, such as Garden Cities model of Ebenezer Howard. The Act focused on preventing the development of high rise building after recognizing its negative effects on families with children. Besides, this model is proved with the connection to poverty's concentration as well as unsuitable for families (Baumanand and Biles, 2000). The demolition of the Pruitt-Igor development in St. Louis, Missouri was one of the most dramatical events which were happen with public housing this time. The thirty three high rise buildings development was constructed in 1955 and 1956 with 2,870 units. At the end of 1960s, the vacant rate reached about 65%, among other social and physical problems. These things led to the demolition of the project in 1972.

The Housing and Community Development Act of 1974 created the Section 8 Housing Program in order to engage more involvement of private sector in constructing affordable housing. This financial support worked by assisting poor tenants through giving a monthly subsidy to their landlords. This program was able to be project-based or tenant-based mechanism. The latter is now the primary mechanism of financial support for low income families. In addition, the Community Development Block Grant (CDBG) was created in this time. Generally, this funding was transferred to state and local government for housing and community development projects.

Under the Reagan administration, household contribution through Section 8 program was increased to 30% of household income and fair market rents were lowered. In addition, emergency shelters for the homeless were expanded and home ownership by low-income families was increased to a greater degree (Hays, 1995), President George H. W. Bush signed the Cranston-Gonzales National Affordable Housing Act (NAHA). This supported the use of HOME funds for the rental financial supports. The HOPE VI program was launched in 1992 with the main concern of demolishing poor-quality public housing project and move residents into mixed-income areas. Although the

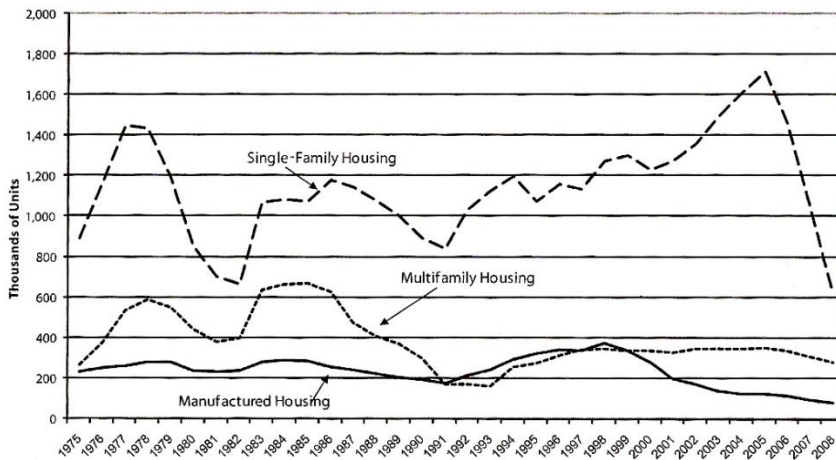
program suffered funding cuts in 2004, it is now one of the major tools used by the federal government for dealing with the construction of new federally subsidized units.

1.1.2 Housing Construction Trends

From 1975 to 2008, an average of 1.7 million new residential housing units was produced annually. The changing of the larger economy is one of the fundamental factors that directly affected the trends in housing construction. From the mid-1980 until 2008, residential construction was dominated by this particular type of housing, single-family homes. With the failure of secondary mortgage market in housing finance, the housing market started plummeting in 2007 and 2008. Single-family homes experienced the greatest drop.

According to Figure 1_ Annual housing starts by building type, 1975-2006, the single-family house accounted for the largest part of housing development. It gradually increased from 1991 with minor reduces in 1994-1995 and 1997-1998. Single family homes reaches highest proportion in 2005 with about 1.7 million units built annually. Multi-family housing maintained steady development from 1993 and started decrease in 2006 after reaching about 380,000 housing unit annually.

Figure 1. Annual Housing Starts by Building Type, 1975-2006



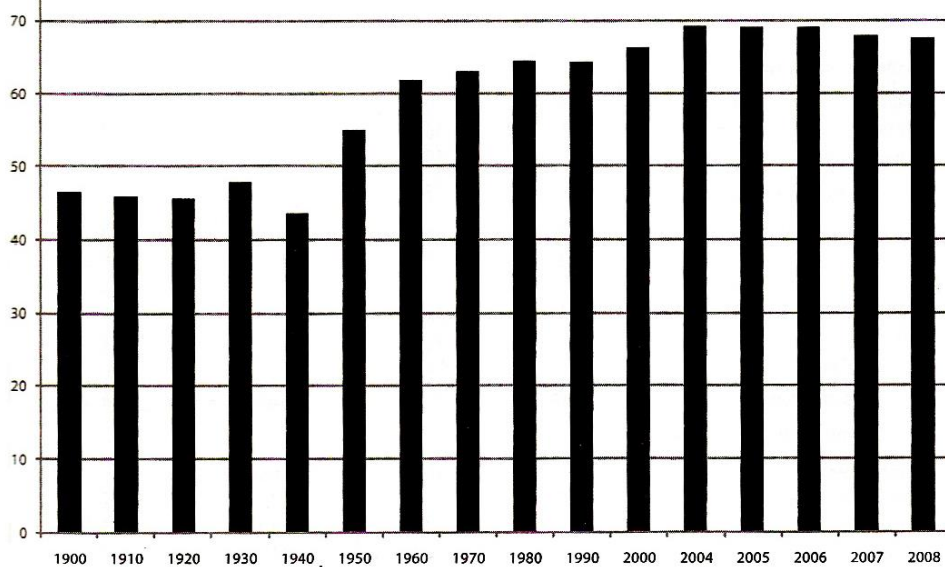
Source: Schwartz, A. 2010. *Housing Policy in the United States*.

1.1.3 Tenure Trends

The tenure trend witnessed a dramatic change from renting to owning. This change took place in only two decades from the later part of World War II (1940) to 1960.

According to Figure 2, the homeownership rate jumped from 44 percent in 1940 to 62% in 1960. This is the first time in history that the majority of the U.S. population switched to home owners. From that, this number increased in two following decades then declined slightly in 1980 to 64%. Until 2004, the homeownership rate had increased when it achieved a peak of about 70% ownership. The surge in foreclosure after the housing bubble burst in 2007 also contributed to this decline in homeownership rate.

Figure 2. Homeownership Rate, U.S., 1900 to 2008



Source: Schwartz, A. 2010. *Housing Policy in the United States*.

1.1.4 Housing Affordability

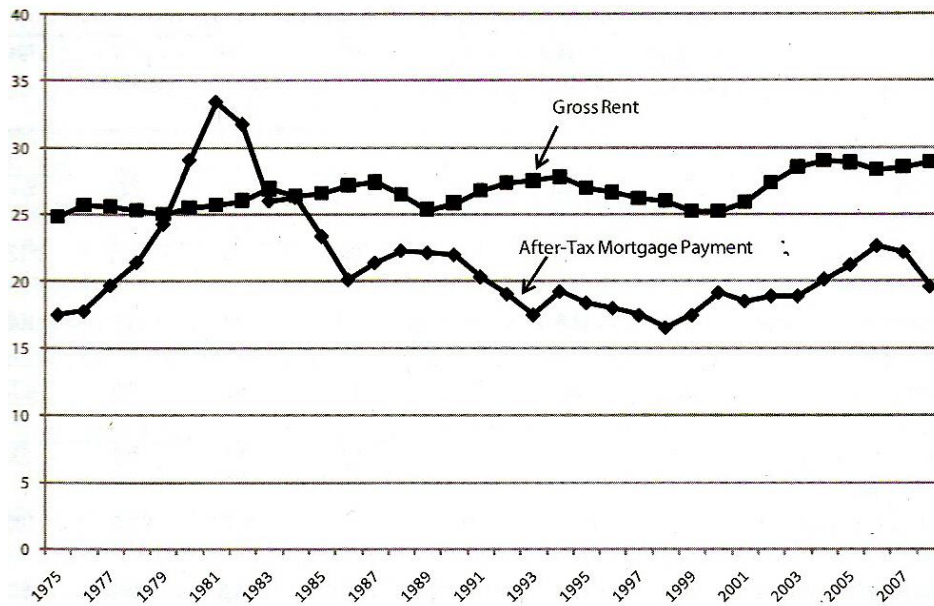
Owning a decent house is a goal of everybody. People started contributing time and health to work for their family's future. However, one of the biggest issues preventing

people owning a house is affordability. This characteristic of housing is unique and totally different from other physical conditions. The affordability is an intangible aspect that closely related to housing price and household income. These issues depend on the larger economy as well as housing policy in different periods of time.

In the United States, the common standard of housing affordability is 30% of family's income. Any household who spend more than 30% of their pre-tax income for housing is considered as having a housing cost burden. And, the situation becomes severe if family has to spend more than 50% of their income on housing. The affordability of housing is varied between owner-occupied housing and rental housing. With the rental housing, the affordability can be seen as the ratio between the rent (which includes utilities cost) to income. For homeowner, one must also factor in the tax benefit from mortgage interest and real estate taxes and the potential for capital appreciation (Schwartz, 2010).

There are several ways to measure housing affordability. The most widely used method is looking at the percentage of income spent on housing. For instance, the housing cost burden of a family can be shown as the median percentage of income spent on housing or as the percentage of households facing a moderate or severe cost burden (Schwartz, 2010). Figure 3 shows the median percentage of income spent by renters and owners from 1973 to 2008. According to this figure, the ratio of median renter income to median gross rent remained quite stable from 1975 to 1987. The highest percentage of median housing cost burdens fell in period between 2003 and 2005 with of about 29% renter's population. In other hand, nearly 34% of home owners, the highest percentage of home owner, having housing cost burden in the period of 1981-1982. After that, this percentage declined rapidly to 20% in the period of 4-5 years. This ratio between owner's median income and median after-tax mortgage payment was changed according to the economy as well as the interest rate at that time. The share achieved lowest value in 1998 with only about 16% of home owners have housing cost burden. After reached about 23% in 2007, it started decrease.

Figure 3. Median Housing Cost Hardens for Renter and Home Owners, 1975-2008



Source: Joint Center for Housing Studies, 2008; Table A1.

1.1.5 Housing Bubble

The U.S. housing market experienced its largest crisis since the Great Depression during the late 2000s. The housing price run-up started in the mid-1990s, increased after 2000 and reached its peak in early 2006. Varying by geographic areas, housing prices rose sharply in the East and West coasts as well as selected metropolitan areas inland. The boom of housing prices took into account changes in mortgage lending, both for home prices and the refinancing of existing mortgage. The easier standard in lending money contributed to the increasing of number of people purchasing new houses speculatively. This easy credit fueled the housing bubble, especially in “hot housing markets” such as Florida or California. The second part of 2006 witnessed the slower increase of housing prices before it dropped in 2007. By early 2008, housing prices had lost more than 10%. As a result, the increasing rate in 2006-2007 among U.S. homeowners led to a crisis in August 2008 for the subprime, mortgage, credit, hedge fund, foreign bank market,

among others. In October 2007, the U.S. Secretary of the Treasury called the bursting housing bubble “the most significant risk to our economy” (AFP, 2007).

1.2 Natural Disaster in the U.S.

Housing is one of the major elements forming built environment in the United States. The alterations of housing stock largely affect built environment status. Besides, built environment and natural disaster share relationship of cause-effect. Whatever would happen when disaster is appeared, built environment is one of the major aspects receiving effect of this event. Consequently, housing also has been affected by hazard in different ways since it occupies large share in built environment. Hence, the relationship between housing and natural disaster in the U.S. has been placed as priority concern for development.

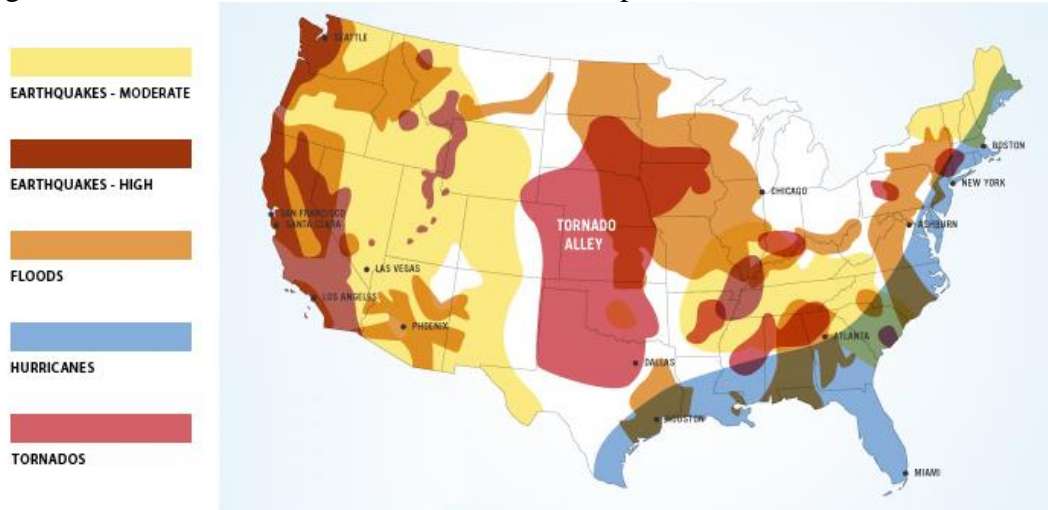
Located in North America continent, United States has long coastal line since surrounded by oceans. Besides, unequal features in topography as well as weather condition place the U.S. facing with different type of natural disasters. This part of paper will indicated some major ones and focusing on hurricane, key threat for coastal community.

1.2.1 General Information

Every year in the United States, natural hazard threatens lives and livelihoods, causing fatalities as well as billions of dollars damage. According to Federal Emergency Management Agency (FEMA) and United States Environment Protection Agency (EPA), there are many types of natural disaster that may negatively affect human lives such as: drought, earthquakes, extreme heat, floods, hurricanes, landslides and debris flow, severe weather, space weather, thunderstorm and lighting, tornadoes, tsunamis, volcanoes, wildfires, and winter storm and extreme cold. Each type of natural hazards has their own characteristics as well as effects. Thus, getting knowledge about natural disaster events as well as keeping in touch with local public information will allow people effectively response to incoming events.

Figure 4 shows location of major natural disasters according to the U.S. territory. The Western area is appeared as high frequency of earthquake with various strengths. In these areas, California and the West coast experienced some devastated earth quakes in history. Besides, Midwest is considered as “Tornado Alley” in the country. Tornado also appears in separate areas such as South of West coast or East South Central. In addition, flood is another natural disaster happened when the water is overflow and expanse submerging the ground. In the U.S., flooding appears in some concave areas around North Central, North of West coast, and North East. Finally, hurricane is one of the costliest natural disasters that affected living condition as well as environment nationally. Hurricane highly activates along the line from Gulf Coast to coastal areas of North East. Due to particular situation, hurricane could cause tornado as well as flooding for the surrounding areas where it approached.

Figure 4. United States Natural Disaster Risks Map



Source: <http://www.crisishq.com/why-prepare/us-natural-disaster-map>

1.2.2 Hurricane

Hurricane is a type of tropical cyclone that formed in the Southern Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and in the Eastern Pacific Ocean. A typical cyclone is operated with thunder storm. In the Northern Hemisphere, the wind in hurricane has counter clockwise circulation near the earth's ground. Not only approach coastal areas but also negatively affect several hundred miles inland. In some cases, hurricanes can produce winds exceeding 155 miles per hours as well as spawn tornados and microbursts. Further, it also can create storm surge and heavy rainfall for coastal communities and well inland. In addition, floods and flying debris caused by hurricane are often deadly and cause destructive results for human lives and buildings. In the United States, coastal area from the South toward North East always stand in the highly risk area with the activity of hurricanes.

1.2.3 Hurricane Damage and Effects

Besides the most dangerous impact of hurricane, storm surge, its winds and heavy rain can be considered as other destructive element of this disaster. In addition, tornadoes that are formed inland later also threat local community where they pass.

- Winds

The winds of hurricane range from 74 mph (the lowest hurricane level) to approximately 155 mph in a catastrophic one. Wind is the major reason that damages structure when hurricane approached. In some case, it easily up root tree, tear down power line, and break roof or window of buildings. Wind speed combines with the speed of the storm creates a devastated movement affect large area in coastal community or inland neighborhood.

- Storm Surge

Storm surge is a rapid rise of water's level that moves into the land when the eye of hurricane creates landfall. The stronger hurricane form, the stronger storm surge will be created. When hurricane approaches coastal line, its winds move the water toward the

shore. This movement rapidly raises the water level since the eye of the storm approaches. Continuous wave hits the coast line with tons of moving water that swipe out most of the structure on the way in the shore area.

- Rainfall-Induced Flooding

The heavy rain that associates with a tropical weather system causes flooding in the area where the hurricane initially hits. More seriously, flooding also affects inland area hundreds of miles from the original place of landfall. And, rainfall becomes more excessive when the storm is large and moving slowly. As the storm move toward inland, it reduces the intensive to become a tropical depression. However, the continued circulation, tropical moisture, and topography can contribute to copious amount of rainfall which is able to cause serious flooding inland.

1.3 Field of Research

1.3.1 History of Public Housing in the U.S.

The federal public housing program was created to support the poorest families in the United States with adequate housing. Back in the early days, this program was designated mainly for the working class. However, the purpose of public housing, financial mechanism, and building morphology changed over time according to the alterations of market. Since the Housing Act 1937 took place, public housing mostly built with small scale as two or three story or garden apartments. These types of development were mainly financed by bond initiatives and operated by setting rents over to cover costs (Stoloff, 2004).

Starting in 1950s, high rise building style gradually replaced old ones in public housing areas. With the development of construction technology, public housing was able to reach the height of 16 stories like in Chicago with the Robert Taylor Homes development. In addition, there were several significant public housing projects in this time such as: Cabrini Green, Chicago, IL; Jordan Downs, Watts, CA; Queensbridge

House, Queens, NY; or Pruitt-Igoe development, St.Louis, MO. According to Stoloff (2004), high rises failed for families, in most case, but served the elderly well.

In general, public housing was run by cooperation between the federal government and local authorities. The rents of low-income households were subsidized by the federal government's financing of the development. In addition to that support, local authorities took charge of maintaining the buildings and facilities by the revenue from the rents. This financial mechanism worked well until the 1960s when the pool of tenants became too poor to sustain it (Von Hoffman, 2012). Therefore, the rents which tied to households' income became the most burdensome issue for low-income families. The gap between low income and high rent cost was enlarged, which led to the deterioration of many public housing units in this period. Today, instead of directly financing public housing development, the federal government uses other financial mechanisms such as the low income housing tax credit program (LIHTC) to achieve similar goals of providing homes for low income families.

1.3.2 General Issues of Public Housing

From the view point of business and political leaders, local housing conditions were fundamental issues that affect resident and community. Clearing and replacing slums was one of the major goals of public housing which was considered as new hope for residential as well as local authority. However, the public housing showed the draw back in its system because of serious bureaucracy that would plague it in later decades (Von Hoffman, 2012). The United States Housing Authority (USHA) sent local housing authority a myriad of regulations related to running public housing program such as construction cost ceilings, limits on tenant incomes, and even architectural style requirement. In response to such tight criteria, local housing authorities created a standardized version of modernist architecture executed with particular type of material. This particular standardized form made public housing easily to be recognized, and in doing so, stigmatized poor people's housing.

In addition, public housing experienced different types of issues related to segregation, crime, or poverty. According to Griffiths and Tita (2009), the high rate of violence in public housing results by the combination of a built environment that inhibited social control (Newman, 1972; Newman and Frank, 1980) and a social environment that limited social interactions between residents and the outside society (Massey and Denton, 1993; Wilson, 1987). These indicated the situation that public housing had to deal with in terms of harmonized local residents with broader environment. Clearly, the disadvantage of economic and social status make public housing's residents become isolated relative to other communities. The level of social isolation was higher in public housing area in compared to other housing developments. Therefore, people living in public housing area tended to narrow down their social interactions. The awareness of space became unique characteristic of public housing area where residents spent their routine activities close to their home, public housing. However, this introverted trend was an opportunity for distressed problems such as criminals, drug dealers, or gang activities. In turn, these issues affect the overall feeling of community within public housing.

1.3.3 Housing after Disaster

As disaster happen, every aspect of human life has been affected. Housing is one of the most important elements because of its crucial role toward people living condition. For example, many families become homeless after a stormy night since their house has been destroyed by devastated hurricane. This part of the paper will address the issues of housing recovery after natural disaster.

Natural hazards are often thought to be unexpected events. After a strike, recovery is a critical progress that brings households back to normalcy. Recovery may include different experiences including psychological or perceptual measures related to stress, and sense of loss, and recovery including regaining income, employment, household amenities, and household assets (Bolin, 1976, 1982, 1993a and 1993b; Bolin and Trainer, 1978; Bates, 1982; Bolin and Bolton, 1983; Peacock et al., 1987, 2005,2007) More importantly, the overall assessment of household recovery closely related to

reestablishing permanent housing since home is an inevitable for anybody carry out normal activities and establish daily routine (Bates and Peacock, 1987; Bolin and Trainer, 1978; Quarantelli, 1982; Bates and Peacock, 1993; Peacock et al., 2005, 2007).

1.4 Two Case Studies for Research

Catching attention from the public housing debate in Galveston in 2011, author is curious about the story behind that. Housing recovery after hurricane is an inevitable part of revitalization process after disaster events. However, what happen in each place is different due to particular characteristics. Moreover, some processes happen with reverse direction with others. Those are the case of public housing after hurricane in Beaumont and Galveston, Texas. They share the same situation of being damage by devastated hurricanes. Housing stock in both cities has received negatively affected by storm while the shortage of affordable housing was their temporary problem. And, they both work in recovery process in order to rebuild public housing for low income people. However, the results of their efforts are totally different. While Beaumont has a successful revitalization program with public housing after hurricane Rita, Galveston stuck in a debate about public housing's redevelopment plan. Housing authority in Galveston tried to create the most appropriate redevelopment plan for public housing while local community and some conservative city councilmen opposed bringing public housing back to the island.

The author is inspired by the issues of public housing in two case studies and hopes to look up the evident behind these stories. There are some questions have been raised through the study of both cities. Firstly, the overall change of demography in entire two cities is expected to find by looking at the data before and after hurricane. Secondly, the process of rebuilding public housing in each city might suggest the reason leading to redevelopment plan. In addition, by looking at closely at public housing area through various topics and data set, the author hopes to find quantitative evidences that support to what happen in both cities. The latter part of this paper will indicate two case studies with population data set in order to find the responses for above concerns.

1.4.1 Beaumont and Hurricane Rita (2005).

Hurricane Rita was the fourth most intense Atlantic hurricane ever recorded as well as the most intense tropical cyclone ever observed in the Gulf of Mexico. Rita was formed near the Bahamas as a tropical wave on September 18 2005. It moved westward, passing through the Florida Straits, reaching wind speed of 180 mph on September 20. It gradually weakened and made landfall at Sabine Pass, Texas with wind speed of 120 mph. On September 26, it degenerated into a large low-pressure area over the lower Mississippi Valley.

Rita had an impact on large area within multiple states including Florida, Louisiana, Mississippi, and Texas. Among those, Texas received the most damage as well as the highest number of reported deaths related to the hurricane. Communities of the “Golden Triangle” formed by Beaumont, Port Arthur, and Orange received enormous wind damage. The situation became so serious that Texas Governor Rick Perry declared a nine-county disaster area. According to the report, 25% of the trees in the city of Beaumont were uprooted by the hurricane. In Bridge City, about 95% of the town was flooded with the water from 2 to 4 feet. Together with that damage, an enormous number of houses and business had suffered damage by heavy wind as well as falling trees and debris in the air. Some areas did not have power for more than a month due to serious damage to city infrastructure (Hurricane Rita).

In 2006, the Beaumont Housing Authority (BHA) was awarded a \$20 million dollars HOPE VI Revitalization Grant from U.S. Department of Housing and Urban Development (HUD). In addition, they also received a \$13.7 million dollar Hurricane Rita Recovery Grant from the Texas Department of Housing and Community Development. Magnolia Gardens, a public housing development, was demolished and replaced with three new mixed-income developments including Regent I, Pointe North, and Regent II. The revitalization of Magnolia Gardens is a critical effort of Beaumont Housing Authority as well as Beaumont’s city council. BHA has done a terrific job by coordinating with the local community in planning process in order to create a valuable new plan for Magnolia Gardens. In response to their enthusiastic effort and contribution,

the new mixed-income development has received unprecedented support from residents, business owners, city government, and other participants.

As a result, the final report evaluating the Magnolia Gardens development highly evaluated the successful of this project due to its positive impact to resident as well as broader communities. The report was executed by Center of Housing and Urban Development (CHUD), Texas A&M University, leading by Dr. Shannon Van Zandt. According to the report, research team had positive conclusions related to the impacts or new development on residents, partnership, neighborhood revitalization, and economic performance (Van Zandt et al., 2012).

1.4.2 Galveston and Hurricane Ike (2008).

In 2008, one of the costliest hurricanes in the U.S approached the Gulf Coast area along the same path of the 1900 storm that hit the city of Galveston. Hurricane Ike was the costliest hurricane in Texas history, with the total damage reaching about \$29.5 billion dollars. Early day on September 4th, Ike was a Category 4 hurricane with a wind speed of 135 mph. It passed over Cuba, leaving the area with huge damage and then reduced into Category 1 by September 7th. It approached Galveston, with final landfall on September 13th have strengthened to Category 2. The hurricane zone extended 120 miles from the cyclone center and the wind force reached even broader area beyond that distance.

The impacts of Ike spread out according to its movement, from Haiti to Cuba then the coastal areas of United States. Ike was blamed for about 135 people were killed and missing in the US only. Ike caused devastation for the large area from Louisiana coastline, to the region near Corpus Christi, Texas.

Hurricane Ike hit Galveston Island and damaged about 88% of the residential units. While the majority had minor damage, approximately 1,000 were substantially damaged. At that time, Galveston Housing Authority (GHA) was managing 990 units of public housing, including 356 units in two high rises for the elderly, 34 scattered sites, 20 new duplexes for the elderly, and 569 family units. According to the GHA's report, more

than half of public housing stock was damaged beyond repair by the hurricane. The City of Galveston declared the 569 housing units at Magnolia Homes, Oleander Homes, Palm Terrace and Cedar Terrace unfit for residential occupancy. Therefore, Galveston Housing Authority planned to demolish the units in 2009. However, Lone Star Legal Aid (LSLA), representing the residents who are displaced tenants of GHA public housing, filed an Administrative Complaint on March 2, 2009 opposing plans to demolish Oleander Homes and Palm Terrace areas. As a result, GHA and LSLA reached a Settlement Agreement on March 13, 2009. The Settlement Agreement specifically required one-for-one replacement of the 569 multifamily public housing units to be demolished by GHA (Galveston Housing Authority, 2011).

Because of the damage that Ike brought, the demand for housing assistance continued to outstrip the supply that the City could provide. Even before the hurricane, Galveston had about 3,000 households on the waiting list for subsidized rental housing. In their plan for rebuilding the 569 public housing units, GHA proposed 390 units to be built on the same footprint of the original housing, and 179 units will be built on scatter-site. However, the opposition toward these recovery plans of public housing was raised among certain constituencies on the Island. Their argument against rebuilding public housing included several reasons. They believe that the City plan to rebuild public housing is not necessary since they already have the lion's share of public housing in the county. In addition, they were concerned that rebuilding public housing would result in an excess number of low-income housing units as well as the low income population on the Island. Opponents also expressed the opinion that their property value will be negatively affected because of the low-income housing stock. Lastly, they argued that the rebuilding process would impact the tourism industry, one of the city's main economic activities.

The debate becomes more serious when the City rejected the plan that GHA had proposed for rebuilding the public housing. Even with the support of Mayor Joe Jaworski to rebuild public housing as a mixed-income community following the HOPE

VI model, Galveston City Council voted 4-3 to reject the plan. Some floated a resolution calling on the state to deny federal tax credits for low-income housing in Galveston.

State officials threatened to force the City to repay \$56 million in disaster funds if it failed to come up with a plan to rebuild public housing damaged by Hurricane Ike. This announcement from HUD through the Texas General Land Office also mentioned halting the payment of \$586 million in disaster funds and \$5.56 million in other grants if the deadline was not met.

1.5 Research Questions

Given the two case studies in Beaumont and Galveston, this research is concerned with several research questions:

- What are the issues of public housing and specifically of public housing in post-disaster period?
- What are the differences between the two cities in term of demography and housing stock before and after disaster events?
- How can a city successfully / not successfully rebuild public housing in post disaster?
- What is the role of local politics in affecting the recovery of public housing?
- How can planners contribute more for the housing opportunity for low income people in post disaster period?

2 LITERATURE REVIEW

2.1 Public Housing

Starting in 1937, public housing was a program introduced by federal government. This program was provided public financing for multi-family units that serve low-income people. This part of the paper focus on four major elements that directly related to public housing development: target population, site selection, and financing (Hays, 1995; Stoloff, 2004)

2.1.1 Target Population

Public housing was originally built to house the segments of the working class, not “the poorest of the poor” (United States, 1937; Bauman, 1987; Atlas and Dreier, 1992; Marcuse, 1995; Stoloff, 2004). During the Depression, the submerged middle class could not join the labor market because of economic decline. Public housing was designated to support the demand of living for these people since they were unable to afford the market rate cost for housing.

The population of public housing gradually changed after World War II when many working class people were able to purchase their own home through the supporting of low-interest mortgages program. However, Massey and Denton (1993) documented that this policy possessed discrimination which mainly support white-working class people. Many of them had a change to move out of public housing inner city and settled in suburban areas. Through this time, the majority of public housing residents were African-Americans living in cities and inner suburbs.

Public housing was considered as a remedy for inner city poverty and isolation, and as a basic human necessity for less well-off people (Riis, 1890; Marcuse, 1986b; Stegman, 1990; Stoloff, 2004). Public authorities and residential see public housing as a way of ensuring the decent, affordable housing should be available for all households in the U.S. The terrible condition of tenements where immigrant lived was one of the reasons that Housing Act 1937 focused on slum clearance. This legislation provided replacement

of tenements by “low-rent-housing” and the target population is determined as families of low income. The only one requirement for qualified tenant is related to their income. The screening mechanism required tenant’s incomes to be no higher than five times the rental cost of the unit and six times with family having more than two children. In the early time of public housing development, people supported this requirement since they believe that having employed resident would ensure the success of the housing development (Bauer, 1957; Spain, 1996; Stoloff, 2004). More policies were applied to public housing residents in years later to maintain the quality as well as reduce the overload of public housing structure.

In the late 1960s, incentives were introduced more to support the private sector’s involvement in the development of low-cost housing. These incentives included low-cost mortgages, tax breaks, and rent subsidies for house the poor (Atlas and Dreier, 1992; Stoloff, 2004). Orlebeke (2000) stated that this direction of housing policy was changing away from supply-based mechanism to subsidizing private development and demand-based systems such as housing vouchers.

In 1981, rent ceilings were eliminated in public housing. This change made it less attractive to higher income residents. In addition, congress established standard deductions for public housing residents who are minor, elderly heads of households, and for other allowable expenses (Feins, Merrill et al., 1994; Stoloff, 2004). The trend of reducing control by the public housing authorities was applied. Instead, public housing population gradually shifted toward group of people who are a more disadvantaged segment of society.

In the decades that followed, public housing residents depended more on local housing authorities since they were able to apply additional criteria or preference for their housing policies. For example, many of local housing authorities have flexibility in payment schedules for residents since most of them still pay about 30% of their adjusted income for rent.

2.1.2 Site Selection

Initially, the location of public housing development was totally under local control. Until 1960s, the federal government had to interfere with many of the issues related to discrimination in site selection which was conducted at the local level. Stoloff (2004) wrote that racial segregation in public housing, perpetuated by site selection systems, was the norm and reflected the larger pattern of residential segregation in the U.S. at that time. For example, many of public housing projects were located at specific area where a particular racial community was already living (Bratt, 1986; Marcuse, 1986a; Massey and Denton, 1993; Stoloff, 2004). This phenomenon happened in almost every big urban area like Chicago or New York City.

Urban renewal is a major period that directly affected the location of public housing in the U.S. Starting with the Housing Act of 1937, slum clearance became more concentrated with the Housing Act of 1949. Together with the declining involvement of the public sector in private housing development, the replacement of demolished slums mainly served the business interests of private developers. According to Teaford (2000) urban renewal was initiated with Title I of the Housing Act 1949 and it made large-scale slum clearance possible without any requirement related to replacement of those units. The primary reason is that Title I did not mandate the rebuilding of public housing after the clearance of slums. The 1949 Housing Act required 810,000 units of public housing be built. However, only 10% of that number was under construction by December of 1951 (Stoloff, 2004). In 1954, the federal Housing Act called for public housing to be built only in the slum clearance area and urban renewal area. This explained why new public housing could not meet demand since they could not increase the housing supply for low income people. More importantly, this progress troubled low income people who were former slum dwellers. Many of them waited for the promise of rebuild new housing to replace slum areas.

2.1.3 Financing

Public housing development and financial issues always go together across different period, from construction to maintenance processes. Since the first Housing Act, the federal government gradually reduced the funding for public housing development. In 1937, the public sector only funded the capital cost and the cooperation, with renters responsible for paying operational and maintenance costs during the development period (Schill, 1991; Stoloff 2004). The cost of public housing development was raising due to the management issues. In 1950s and 1960s, the maintenance cost increased due to the improving inflation rate, increasing expenses, and aging public housing stock. Hays (1995) indicates that by compounding rising inflation, tenant incomes declined from 47.1% to 36.9% of the U.S. median income between 1961 and 1970.

Although experiencing financial problems, a small construction boom in public housing still took place in the time of 1969-1970. This event placed public housing under criticism of Nixon administration. As a result, public housing had to take the choice of increasing rental cost as well as reducing services, management, and maintenance costs. In addition, the requirement for renter became tighter in order to be admitted. For instance, their income had to be below 80% of the area median income. Together with those requirements for renters, a very strict interpretation of the legislation was applied (Stoloff, 2004). HUD managed to spend only \$33 million in the total of \$75 million of 1970 funding for operating subsidies to exert control (Hays, 1995; Bauman, 2000; Stoloff, 2004).

In early 1973, the Nixon administration imposed a freeze on almost all federal housing programs to reorganize at a larger-scale. Housing programs were consolidated by the concentration on Section 8 subsidies which are considered as the appropriate replacement for public housing and other housing programs in the U.S. However, the public housing program was reactivated in 1977 and operated until the Carter's administration before ending in 1981 (Stoloff, 2004). Since then, there has been no large scale funding for new public housing program from the federal budget. On the other

hand, local governments have built public housing with the model of scattered site housing since public housing can still be used as a tool for selectively replacing housing. The Housing Choice Voucher program, formerly called Section 8, has received federal housing dollars since 2003. This change ensures the direction of the U.S. government in developing the tenant-based financial mechanism. According to its operation, the recipient pays 30% of their income for rental cost while the voucher covers the difference between that amount of money and the rental price of housing unit. In addition, several programs were introduced by HUD in the late 1990s such as HOPE VI and Moving to Work. These programs are moving toward dealing with the issues of affordability of housing in the US for low income population.

2.2 HOPE VI Program and Impact on Public Housing Development

Begun in 1992, HOPE VI plays fundamental role in the alteration of public housing policy as well as the contribution to the urban development process in the US. The \$5 billion program executes the goal of replacing distressed public housing project by redesigning mixed-income housing and providing housing voucher to support original residents with rental cost. Since 1992, HUD has awarded 446 HOPE VI grants in 166 cities. Up until 2003, there were 63,100 severely distressed public housing units that have been replaced together with another 20,300 units are slated for redevelopment (Holin et al., 2003; Popkin, 2004).

2.2.1 New Decent Development

Distressed public housing properties were characterized by poor design and construction; looming high-rises with barracks-style townhouses. More seriously, housing units were equipped with few amenities and with low quality materials (Popkin, 2004). Therefore, by creating the HOPE VI program, HUD wanted to transform these distressed public housing areas into low-density with mixed-income residents with good design and attractive buildings. Research conducted by ABT Associates, Inc. focused on the characteristics of 13 completed HOPE VI sites across the country. Among these sites, 4 developments had existing buildings were rehabilitated. In the rest of the sites,

some of the original units were demolished and new housing was constructed. All of these developments tried to reduce the density of previous development as well as increase the interaction between public housing and surrounding neighborhood by creating new open space (Holin et al., 2003; Popkin et al., 2004). In Washington DC, successful example of HOPE VI development is apartment buildings of Ellen Wilson Homes. These drab two-story developments were replaced by a new attractive mix of townhouses and detached units. The remarkable achievement of these new projects came from great architectural design that made new buildings blend to the historical Capitol Hill neighborhood. This improvement came from the flexible policy of HOPE VI development that allowed higher per unit development costs than had been spent for public housing before. (Popkin et al., 2004)

2.2.2 Mixed-Income Developments

HOPE VI, with its clear and strong goal of creating mixed income communities based on old public housing has had a fundamental impact on urban development across the country. Suchman (1996) wrote that “HOPE VI could reverse decades of public housing policy that concentrated the poor and gave rise to the full range of physical, economic, and social problems associated with poverty”. A wide range of incomes living in the same community will contribute to the better managed and maintenance as well as good service to all. For example, HOPE VI developments in Atlanta, Charlotte, and Washington D.C. among others incorporate market-rate rental with homeowner housing alongside public housing to create a much wider range of incomes in a single housing development. These mixed income sites offer more amenities in larger units with more innovative design features compared with old ones. Holin et al. (2003) believed that all public housing sites were able to incorporate many appealing design features and therefore could provide more units suitable for large family size. In addition, HOPE VI mixed income housing developments possess advantage that could diversify a project’s cash flow, decreasing its reliance on federal subsidies as a source of revenue for operations and debt service (Popkin et al., 2004)

2.2.3 Leveraging New Resources

Behind the success of mixed income communities that HOPE VI developed, leveraging new resources for funding public housing sites can be considered as a fundamental movement of housing and urban development in the US. By changing in the way public housing had been financed, HOPE VI projects were no longer receiving federal dollars for construction and management. However, this financial mechanism shift allowed housing authorities to be more creative as well as flexible to leverage outside funds for HOPE VI development. According to the rule released in 1996, housing authorities were able to use public housing funds for the purpose of capital improvements. Besides, the rule also allowed local housing authorities to provide public housing capital funding for third party sectors such as private developers.

In addition to HOPE VI funds, public housing authorities and developers could utilize finance from other sources such as Community Development Block Grants (CDBG), HOME funds, city capital funds, Low Income Housing Tax Credit (LIHTC) funds, and private activity bonds (Popkin et al., 2004). The common thing between successful HOPE VI developments was the innovative ways of using these financial sources. This cooperation created a new type of partnership, a financial agreement as well as collaborative mechanism for new development. An example from Chicago represents this trend. The Cabrini-Green development was in a Tax Increment Financing (TIF) district, opening up an additional source of funding (Salama, 1990; Popkin et al., 2004).

2.2.4 Innovative in Housing Management

Together with the movement of new alterations taking place in public housing, management has been positively improved according to new requirement of mixed income communities. Receiving active support from HUD, HOPE VI housing developments executed management arrangements which were focusing on site-based assessment through contracting with the professional management service industry. Starting with the mixed income innovation, HOPE VI diversified communities that not only required housing quality but also service from management as well.

The Interim Assessment of HOPE VI found that a number of the developments in the study were using private management firms. In addition, successful projects always showed considerable management improvements. For example, the St. Louis housing authority brought in private developers built and managed Murphy Park development. More importantly, the housing authority also had an ownership stake in the property (Turbov and Piper, 2004). In Chicago, Lake Park Place site improved its management with better rule enforcement, screening mechanism, and maintain quality of housing project through the collaboration with management companies.

2.3 Recovery After Disaster

HOPE VI is one of the most effective programs that cooperate with local community in dealing with the housing problem after disaster. The criteria of the program focus on supporting mixed income development in order to build a strong revitalization for community. This part of paper will review some major studies related to recovery after disaster in the United States.

Mitigation, preparedness, response and recovery are four major periods related to natural disaster event. Recovery plays crucial role in relationship with response and mitigation phases. It continues the efforts taken in response process and prepares important foundation in order to support mitigation phase of community. Therefore, recovery needs the outside support to effectively deal with the issues in post disaster. According to analysis mentioned above, HOPE VI programs are appropriate resources strengthen the recovery period. These programs possess different characteristics that contribute to the recovery phase. For example, HOPE VI goals include building new decent development with the model of mixed income community. Besides, it also requires the public-private partnership as well as improvement in management of new development. These features of HOPE VI program closely related to what recovery process after hurricane needs to achieve. This part of the paper will focus on different phase of recovery after natural hazard, the role power in this situation and the model of successful recovery program.

2.3.1 Phases of Recovery in Post Disaster

The post-disaster period is significant to reestablish normal life for residents. The recovery period offers an opportunity to strengthen local organizational capacity to facilitate economic, social, and physical development long after the disaster (Berke et al., 1993). In addition, future hazard vulnerability might be reduced if local authorities and people could adjust the physical development as well as policies and regulations. Rubin et al. (1995) stated that the support for hazard mitigation is typically strongest immediately following a disaster. More importantly, long-term community problems can be resolved according to the reconstruction. Clearly, disaster recovery could bring golden opportunities for the local community in increasing affordable housing stock, creating more public facilities, improving transportation quality, as well as expanding the park and recreational system.

There are four phases accordance with a disaster _ mitigation, preparedness, response, and recovery (Rubin et al., 1995). Recovery plays important role in term of continuing the post disaster response and supporting local community's mitigation efforts. Some research conducted by Hass et al. (1997), Mader (1980), Rubin et al. (1985, 1989) among others begins to explore the disaster recovery at the community level during the past two decades. These studies indicate the major impediments that local communities faced in post disaster reconstruction. These issues may appear as different aspect such as local authority were not ready to deal with aid recipients or the funding money did not satisfy the requirements for recovery. In addition, some studies also mention the issues of the exclusion of local involvement from outside donor programs or the conflicts between local authorities and federal or state agencies after the disaster (Berke et al. 1993).

According to the research of Hass et al. (1977) about the redevelopment process in four case studies in the U.S. and Latin America, the period of disaster recovery is “ordered knowable, and predictable.” The four must-take stages that local communities need to accomplish in post disaster include:

- Take emergency responses involving debris removal, provision of temporary housing, and search and rescue;
- Restore public services such as electricity, water, and telephone;
- Replace or reconstruct capital stock to pre-disaster levels;
- Initiate betterment and developmental reconstruction involving economic growth and development of the locale.

2.3.2 The Role of Power in Related to Recovery Activities

The structure of power plays important role in community recovery efforts. Other research in the Caribbean conducted by Berke et al. (1992) and in Midwest of the US conducted by Francaviglia (1978) discovered the relationship between recovery frame work and time with the political power in recovery after disaster. According to these findings, powerful interest groups, especially from business, were able partly control the recovery process in the local community. They could take advantage of recovery aid by pressuring authorities to rebuild first in areas where they have greatest interest. The priority of local authorities' agenda in post disaster may be altered through this group of people. In addition, poorer communities tend to have less effect toward public authority so that they receive more drawbacks in term of receiving recovery aid.

2.3.3 Model of Successful Recovery Program

Korten (1980) developed an experience-based model for accomplishing successful development aid strategies. According to the diagram in Figure 5 (Berke et al. 1993), the strategy comprises three major elements: households, organizations, and programs. These elements are connected together through the relationships and its own characteristics: needs of aid recipients, aid in program design, and organizational capacity of both donor and recipient institutions and groups. The author of the model asserted that efforts would be successful when the recovery program in place was responsive to household demand as well as be built on strong organizations that were able to achieve their goals. The highly compatible among program design, household

demand and the capacities of supporting organizations improve the success of the recovery agenda.

Figure 5. Fit Requirements for Disaster Recovery Planning



Source: Berke, Kartez, and Wenger. 2008. *Recovery after Disaster: Achieving Sustainable Development, Mitigation and Equity* (figure adapted from Korten, 1980).

An excellent example which is able to prove this model was introduced through the research of Mader (1980). The study indicated that reconstruction efforts in response to the 1968 earthquake in Santa Rosa (California) were successful because of the pre-disaster actions allowing local authority to specifically define what type of support they need. Local authority persuaded federal agencies accepting their using of funding for reconstruction to implement a pre-existing downtown revitalization plan. Before the disaster happen, they anticipated that the plan would take about 10 to 15 years for implementation process. However, in some way, the disaster was considered as a unique opportunity for rapidly implementing the plan. The local staff was able to use the plan as the most effective way that recovery aid could bring to the recovery of the city. They not only defined their own goals but also exerted control over the use of incoming resources as well as altered the recovery program to fit the local demand and capacity. In addition, this process achieved national economic development objective as well.

2.4 Housing Recovery Processes after Natural Disaster

As a major element of built environment, housing stock recovery contributes to the revitalization process of local community after natural disaster. This part of paper will review some studies related to housing recovery after natural hazard in the United States.

2.4.1 The Nature of Housing Markets in the U.S.

In the United States, housing is a special good that is provided through a process of trickle-down process. According to Foley (1980), while new housing is provided for people who can afford it, older housing is passed from people who seek better housing satisfying their new requirement. As a common sense, housing market systematically fail when it comes to providing quality housing to low income households. In addition, this failure also negatively affects racial and ethnic minorities (Lake, 1980; Bratt et al., 1986; Horton, 1992; Alba and Logan, 1992; Peacock et al., 2005). Clearly, low-income families, racial and ethnic minorities most likely stay in low quality housing. In addition, these housing developments are often segregated into distressed neighborhood with low-value in property (Stinchcombe, 1965; Logan and Molotch, 1987; South and Crowder, 1997, Peacock et al., 2005). For example, Blacks household meets obstacles from landlord, real estate broker, or customer due to racial discrimination whey buying, renting, or selling a house (Guy et al., 1982; Sagalyn, 1983; Horton, 1992; Feagin and Sikers, 1994; Oliver and Shapiro, 1995, Peacock et al., 2005).

2.4.2 Permanent Housing Recovery after Disaster

In the literature, there is almost no study which focuses on permanent housing in recovery itself. Instead, research pays attention to homeowners and hence partially on owner occupied housing (Peacock et al. 2005). Most of literature put single family housing as a research objective. Besides, the multi-family housing recovery after disaster nearly draws no attention from scholars. Peacock et al. (2005) indicated that “permanent rental housing recovery is even less well researched and is generally limited to households occupying rental-housing units of unknown form”. In addition, the homeless

population is also under-research in term of recovery process after disaster (Phillips, 1996; Wisner, 1998).

2.4.3 Financial Issues in Recovery Period

In the United States, permanent housing recovery mainly depends on the movement of market (Bolin, 1985; Peacock and Ragsdale, 1997; Comerio, 1998; Bolin, 1993b; Peacock et al., 2005). The only one exception that federal government directly involved in management and reconstruction of residential housing was the 1964 Alaskan Earthquake (Kate, 1970; NAS, 1987; Quarantelli and Dynes, 1989; Peacock et al., 2005). Scholars agreed that allowing the market to cooperate with housing recovery in the United States is the efficient way to deal with various problems in post disaster. Haas et al. (1977) wrote that “market is a suitable mechanism in disaster recovery if one wishes to maintain or increase pre-disaster social inequities”.

Permanent housing recovery requires financial resources for repairing and rebuilding construction. In many case, household and family member also play important role in recovery labor, especially in repairing home. Mostly, the financial resource will used to pay for labor as well as expertise for recovery works. There are two primary sources: private and public funding (Comerio et al., 1994; Comerio, 1998; Bolin and Stanford, 1991; Wu and Lindell, 2004; Quarantelli, 1982, Peacock et al., 2005). Private funding comprises insurance, family savings, commercial loans, and funds from relatives or friends. On other hand, public funding includes different types of sources such as low interest loans from the Small Business Administration (SBA), grants from Federal Emergency Management Agency (FEMA), funding from the Department of Housing and Urban Development (HUD) delivering as the Community Development Block Grant (CDBG) or HOME program money. Besides the federal program, many states have public funding for recovery agenda as well. In addition, there are also available programs for supporting residents after disaster such as FEMA’s temporary rental housing program, SBA’s rental housing loans, and Section 8 voucher of HUD that support people with rental subsidies or payments in housing market.

2.4.4 Rental Housing Recovery

In post disaster period, rental properties have unique issues in term of recovery from hazard events. After the natural disaster happen, renters are more likely to be displaced since they have no control to the property ownership. In term of financial support, renters are limited in receiving insurance to cover their assets (Kunreuther and Roth, 1998, Peacock et al., 2005) or approaching federal programs as mentioned above. In addition, low income households and minority families usually have difficulty to find another living place since the shortage of affordable housing stock, especially the prior to the disaster (Quarantelli, 1982, 1995, Peacock et al., 2005). Therefore, many of them have stayed in temporary housing options instead. More importantly, even when they have chance to move to permanent housing, their settlement will depend on various factor such as transportation, economic resources such as savings, job and family locations, and most fundamental, rental vacancies (Peacock et al., 2005). In addition, because of the bias toward single family housing in United States housing policy, multi-family housing such as public housing received more problems in dealing with the nature of recovery in post disaster period.

3 SUMMARY AND DISCUSSION

Through four different analyses, the results have shown the correlation between developed trend of city and public housing areas. Besides, the data sets also reveal quantitative correlation between social and economic alteration in both cities. These changes somehow can reflect the situation of public housing recovery in case studies.

3.1 Similarities

3.1.1 General Trend in City Scale

In term of general trend in city scale, both Beaumont and Galveston experienced the increase in Hispanic or Latino population from 2000 to 2010. While this group of ethnicity only increased from 8% to 13% in total population of Beaumont, the same group in Galveston, on the other hand, substantially increased from 26% to 31% from 2000 to 2010.

With housing unit characteristics, both cities saw a trend of reducing owner-occupied housing units and increase vacant units. While the change of owner-occupied units in both case studies shared the same pace (about 4-5%), the vacant units in two cities increased at different speeds. This factor will be indicated in the differences between two cities below.

3.1.2 General Trend in Public Housing Areas

As the same trend of city scale, public housing areas in Beaumont and Galveston have increased, especially with regards to the Hispanic or Latino population. While Beaumont's Hispanic or Latino group increased from 6% to 10%, Galveston's increased 25% to 28%.

In term of housing unit characteristics, public housing areas in both cities suffered from a reduction in owner-occupied units and vacancy. In Beaumont, the number of owner-occupied units reduced from 44% to 39% in public housing areas. Similarly, public housing areas in Galveston had a slight decrease in owner-occupied housing units by

1%, down to 21%. These similarities in public housing areas of both cities helped illustrate the normal trend in low income area.

3.1.3 Economic Factors Before and After Hurricane

Job distribution is the first and the foremost factor of the economic status that is analyzed in order to see how it changed after hurricane happened. Beaumont and Galveston shared the improvements of high wage jobs (more than \$3,333 a month) proportion after hurricane happened. While Beaumont created 17% more of high wage jobs, increasing the total number to 2,141 jobs, Galveston slightly increased by only 1.5% with 115 jobs.

In term of work commuting, the number of people living inside the city and working outside in both cities had increased. While this group in Beaumont increased by 9.2% equally 1,732 jobs, Galveston's increased 3.3% with 357 jobs.

Job distance is another important factor which is directly related to social and economic status of both cities. The number of jobs that required people to travel more than 50 miles to work kept increasing in both cities. This number in Beaumont equals 14.1% or 1,523 jobs while in Galveston is 16.7% or 845 jobs, respectively.

3.2 Differences

3.2.1 General Trend in City Scale

In term of general trend in city scale, race proportion in Beaumont and Galveston experienced reverse movements. In Beaumont, the population of Not Hispanic or Latino (N.H.P.) White reduced from 43% to 35% in the period of 2000-2010 while the group of N.H.P. Black slightly increased by two percent in the total population. On other hand, Galveston had reverse trends when being compared with Beaumont. While the N.H.P. White marginally increased, the population of N.H.P. Black reduced from 25% to 19% in the period of 2000-2010. These alterations show the difference in race and ethnic trends in two case studies.

With housing unit characteristics, although Beaumont and Galveston shared the same trend on increasing the number vacant units, their paces are completely different. While it only increased by 1% from 9% to 10% in Beaumont, the number of vacancy in Galveston almost doubled from 20% to 38% in the period of 2000-2010. More importantly, the difference in renter-occupied housing unit also contributed to the trend of both cities. While Beaumont had the increasing of 2% from 37% to 39%, Galveston experiences great reducing in this group with the change from 45% to 32% in the period of 2000-2010. These differences in two case studies can be considered as the evidences contributing to the change in public housing development.

3.2.2 General Trend in Public Housing Areas

Race and ethnicity in public housing areas in Beaumont and Galveston experienced different trends. While Not Hispanic or Latino (N.H.L.) White in Beaumont reduced from 21% to 14%, Galveston increased this group of population from 21% to 31%. Besides, Beaumont also experienced an increase in the population of N.H.L. Black from 70% to 74% while this group in Galveston greatly reduced from 53% to 38% in total population of public housing areas.

In terms of housing unit characteristics, public housing areas in Beaumont and Galveston experienced different changes. The renter-occupied units in Beaumont had a minimal increase from 47% to 48% of total housing units in public housing areas. On the other hand, public housing areas in Galveston greatly reduced renter occupied units, from 62% to 45%. Besides, while vacancy in public housing area in Beaumont only increased by 4%, this number in Galveston doubled from 16% in 2000 to 34% in 2010. These evidences directly reflected the situation of public housing development in two cities. While Beaumont successfully rebuilt public housing after hurricane, Galveston could not agree for the final redevelopment plan.

3.2.3 Economic Factors Before and After Hurricane

In terms of Job distribution, Beaumont and Galveston experienced different changes after the hurricanes. In Beaumont, low wage (less than \$1,250 monthly) and moderate

wage jobs (\$1,251 to \$3,333 monthly) increased about 5-6% with about 950 jobs. In contrast, Galveston greatly reduced in low wage job with the number of 1,620 jobs equal to 25.7%. The moderate wage jobs here also reduced by about 15.3%. These differences show the reverse economic status in two case studies.

In terms of work commuting, the most important factor is the number of people who live and work inside the city. While this number in Beaumont had increased by 8.4% equivalently to 2,351 jobs, Galveston has reduced this one with more than 26% or 3,321 jobs.

The number of jobs related to distance from employee's home in both cities also show different changes after the hurricanes. While the number of jobs that required people travel less than 50 miles has increased in Beaumont, this one in Galveston has reversely reduced. From these, Beaumont had great improvement of jobs with which employees only travel less than 10 miles (2,421 jobs or 8.3%). However, this number in Galveston has reduced by 3,333 jobs (26.8%). These differences suggest the close relationship between economic performance and redevelopment process after the hurricanes in both cities.

3.3 Discussion

Natural disaster is unexpected event happening out of human control. However, with nowadays technology, we are able to predict as well as proactive with preparations in order to minimize the damage caused by natural disasters. However, after they happen, the process of recovery plays a critical role in bringing people back to normal life. What happened in Beaumont and Galveston are regarded as two interesting stories. Both cities suffered from severe damages caused by some of the most devastated hurricanes in Texas history. Beaumont was not hit directly by Hurricane Katrina or Hurricane Rita as Galveston was, in the situation of Hurricane Ike. The impacts levels that hurricanes affected both cities varied according to their own features and their reactions to the events.

Beaumont was really an opportunity-catcher when wisely dealing with the situation of the city especially housing stock after Hurricane Rita dissipated. Although the public housing areas in Beaumont did not experience as huge damages as Galveston did, Beaumont still planned to rebuild the old public housing areas based on the nature of recovery processes after the disaster. The changes that Beaumont brought to ground for public housing areas as well as surrounding communities are considered as one of the most successful urban renewal achievements. They did not only achieve the goal of recovery after disaster but also turned this opportunity into a great catalyst for housing development. The success of Beaumont Public Housing redevelopment came from different elements. They had a clear plan with careful preparation, strongly support from the city as well as residents and most importantly, a great housing authority that understood the situation and knew how to realize the goal with flexible strategies as well as passionate willingness. This strong factor turned the hurricane into an opportunity for urban renewal that supported mixed-income developments.

Conversely, Galveston experienced a more depressing situation after Hurricane Ike. What happened in Galveston distressed every element of the whole redevelopment efforts. First and foremost, the public housing residents were the most distressed subjects since they lost everything because of the natural disaster. Many of them became the victims of hurricane damages which negatively affected their life, work, and properties. More seriously, they were unable to come back to their places because of others' opinions. This clearly was not fair with the most vulnerable group in population. In addition, what happened in Galveston after Hurricane Ike also affected local resident who were not public housing dweller. They had to spend their time and efforts in order to protect their opinions toward redevelopment of public housing. The author believes that many of them had to work extra hours as well as spend additional money for their debating. Besides the public housing resident group, the public authority was affected by the hurricane as well. These effects stand out-side the normal curriculum of recovery process. They are in the middle of two sides who shared reverse opinions towards public housing redevelopment after hurricane. These conflicts factored to the public authority's

delay in recovery work. It not only affected the victims of hurricane but also the city in general since public works had been postponed due to deferred decisions. Last but not least, federal programs are another element that has been negatively affected by Hurricane Ike. They are forced to become involved in the debated of public housing in Galveston. In order to pursue the general goals of affordable housing and social equity, public programs needed to intervene with this debate. Clearly, if the problem had not been existed, the redevelopment processes would increase economic development as well as bring improvement for the island. One strong example is the case study of Beaumont, Texas. Therefore, Hurricane Ike was not only costly with regards to its damage on physical properties but also socially distressed for every side of the recovery processes.

3.4 Policy Implication

Beaumont and Galveston are two strong examples of the policy implication process. In Beaumont, the key of successfully redeveloping public housing after hurricane is the cooperation between each participant of recovery processes. Beaumont Housing Authority plays a crucial role in this collaboration. They reacted to the situation with adequate preparation as well as creative responses within their power. The damage of Beaumont did not get enough attention of federal agencies as it should because of the overwhelming attention drawn to New Orleans after Katrina. BHA was proactive in their responsibility in order to recall the support from federal agencies through many necessary actions by different groups. In addition, they took a wise move when collaborating with academic scholars and students from Department of Landscape Architecture and Urban Planning, Texas A&M University. This cooperation helped BHA effectively develop a comprehensive neighborhood revitalization plan to spur investment and redevelopment in public housing neighborhood. In addition, besides the innovation in financial solutions, BHA also developed an effective management mechanism that supported housing development. The public – private partnership also

prove the successful result in supporting residents by abundant service from daily needs to professional skills as well as necessary consultancies.

In contrast, Galveston faced many issues related to policy implementation. After suffering from devastated damage from Hurricane Ike, Galveston could have accomplished this opportunity to redevelop housing stock and improve the spill-over effects of these developments as part of the urban renewal process. However, the cooperation between Galveston Housing Authority and City government proved an unsuccessful relationship when GHA could not get the support from residents as well as public authority despite of their great efforts. GHA is an example of housing authority who acts as a bridge that connects residents, public authority, and developers. In this case, the delay of redevelopment public housing negatively affected every party of this triangle. Therefore, Galveston could well be considered an example of ineffective policy implementation in relationship with housing recovery in post-disaster.

3.5 Practical Recommendations

Recommendation #1: Housing Authority should be more proactive with substantial preparations and innovative solutions.

Recommendation #2: Housing for low income population needs to be developed in mixed-income community in order to support the individual as well as family improvement.

Recommendation #3: Public-private partnership should be executed in any steps of the development as long as it shares the same goal of supporting community.

Recommendation #4: Collaboration between housing authority and academic experts or professional firms should be accessed as an effective way to conduct successful development for new project.

3.6 Research Limitations

This research focuses on the issues of public housing after hurricane with the small amount of previous studies found in the same topic in literature. Therefore, limitations are the inevitable part of the study. All of the data used come from the secondary data such as Decennial census, American Community Survey, news from newspaper or television, city council meetings, and previous reports about the situation. On top of that, methods used might also reveal limitations of the study. There was no American Community Survey in 2005 when the Hurricane Rita swept through Beaumont. Therefore, the author could not conduct a similar ACS-based analysis for Beaumont as for Galveston. Since the hurricanes happen in 2005 and 2008, decennial census data 2000 and 2010 also show limitations in relating events to the change within communities. In a decade, too many events have happened in political, economic, social, or environmental aspects that may affect housing stock in both cities. In addition, the studies could not cover all of the aspects that may affect the issues of public housing after hurricanes. Therefore the conclusions might not comprehensively reflect the nature of events.

3.7 Additional Research Needed

From the limitation of this research, the author believes that future research should focus on several topics related to the political processes in these situations. In Galveston, the changing of city council reflects the complexity of political power that is voted by residents. To gather the voter's support, the new mayor promised to back away from rebuilding public housing and he made it. One of the first things he did in the role of a new mayor was to replace five in total of six councilmen by people who also agree not to rebuild public housing. The nature of voting district and its mechanism in each city could potentially become a necessary future research subject, in order to address the issue of housing in post-disaster.

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APPENDIX A

Table A1. Key legislation shaping public housing in the United States since 1937

Legislation and year	Action initiated
Housing Act of 1949	Declared that every American deserves a “decent home and suitable living environment” through urban redevelopment. The act included: - financing for slum clearance (Title I); - increasing FHA mortgage insurance for home buyers (Title II); and - committing federal funds to develop 810,000 new public housing units, primarily on land where slum clearance had taken place, to replace lost units (Title III)
Housing Act of 1954	Introduced urban renewal, which focused on conservation rather than clearance through a “workable program” of rehabilitating and upgrading urban “slum and blight” areas. The act aimed to increase private sector contributions, responsibility of local government, and citizen participation and to use fewer federal dollars to produce more results.
Housing and Community Development Act of 1974	Sought to develop viable urban communities by providing decent housing, suitable living environment, and expanding economic opportunities principally for low- and moderate-income families. Replaced categorical grants with Community Development Block Grant (CDBG) and introduced Section 8 rent supplement for new, existing, and rehabbed rental housing plus funding for development of affordable housing by private sector.
Tax Reform Act of 1986	Eliminate some tax provisions that favored low-income rental housing production and instituted a tax credit system authorizing states to give “tax credit” to property owners to offset taxes on income. Tax credits are generally sold to outside investors, usually syndicated, to raise initial development funds for a project. Projects must have at least 20 percent of units for households at or below 50 percent of median or 40 percent of units for households at or below 60 percent of area median income. Rents are not to exceed 30 percent of income at these thresholds.
Cranston-Gonzales National Affordable Housing Act of 1990	Focused attention on the availability of affordable housing for low- and moderate-income families, and created the HOME program, which provided new resources for nonprofit and public agencies to develop affordable rental and for-sale housing.

Source: Larry Bennett, Janet L. Smith, and Patricia A. Wright. 2006. Where Are Poor People Live? Transforming Public Housing Communities.

Table A2. Basic statistical data for Beaumont and Galveston, Texas

People QuickFacts	Beaumont	Galveston
Population, 2011 estimate	118,548	48,444
Population, 2010 (April 1) estimates base	118,296	47,743
Population, percent change, April 1, 2010 to July 1, 2011	0.2%	1.5%
Population, 2010	118,296	47,743
Persons under 5 years, percent, 2010	7.3%	5.9%
Persons under 18 years, percent, 2010	24.7%	19.3%
Persons 65 years and over, percent, 2010	12.2%	13.6%
Female persons, percent, 2010	51.3%	48.9%
Not Hispanic or Latino White	34.7%	45%
Not Hispanic or Latino Black	46.9%	18.6%
Not Hispanic or Latino Other	5%	5.1%
Hispanic or Latino	13.4%	31.3%
Housing units, 2010	50,689	32,368
Homeownership rate, 2007-2011	57.6%	48.6%
Housing units in multi-unit structures, percent, 2007-2011	26.4%	40.5%
Median value of owner-occupied housing units, 2007-2011	\$97,300	\$128,300
Households, 2007-2011	45,073	21,111
Persons per household, 2007-2011	2.5	2.2
Per capita money income in the past 12 months (2011 dollars), 2007-2011	\$23,674	\$25,526
Median household income, 2007-2011	\$40,283	\$37,368
Persons below poverty level, percent, 2007-2011	21.6%	22.6%
Business QuickFacts		
Total number of firms, 2007	9,943	4,071
Black-owned firms, percent, 2007	23.8%	S
American Indian- and Alaska Native-owned firms, percent, 2007	0.4%	F
Asian-owned firms, percent, 2007	6.0%	S
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	S	F
Hispanic-owned firms, percent, 2007	5.3%	S
Women-owned firms, percent, 2007	26.8%	31.2%
(a) Includes persons reporting only one race / S: Suppressed; does not meet publication standards		
(b) Hispanics may be of any race, so also are included in applicable race categories		
F: Fewer than 100 firms / Z: Value greater than zero but less than half unit of measure shown		

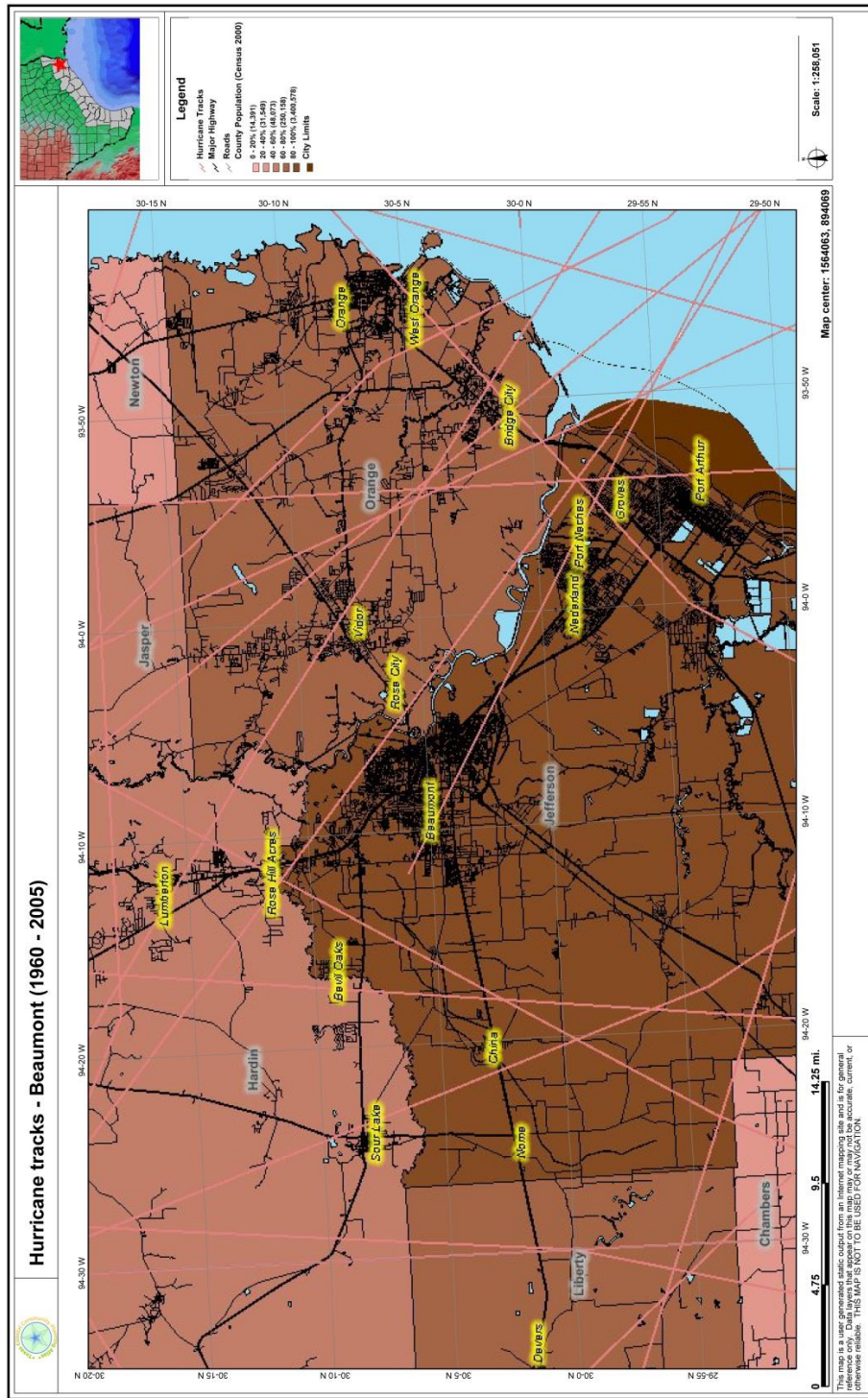
Source: US Census Bureau State & County QuickFacts

Table A3. Public Housing Development in Beaumont, TX

No	Name	Address	Amenity	Client Services	Resident Activities	Number of Units	Total
1	Tracewood I	4075 Arthur, Beaumont, TX 77706	✓	✓	✓	0 0 24 0 0	24
2	Tracewood II	4935 Concord, Beaumont, TX 77708	✓	✓	✓	0 5 41 5 2	53
3	The Crossing	3705 E. Lucas, Beaumont, TX 77708	✓	✓	✓		N/A
4	Northridge Manor	4155 Maida, Beaumont, TX 77708	✓	✓	✓	0 10 70 60 10	150
5	Regent I Apartment	1715 Regent St., Beaumont, Texas 77703	✓	✓	✓	0 22 94 44 0	160
6	Point North	3710 Magnolia St., Beaumont, Texas 77703	✓		✓	0 24 84 60 0	168
7	Grand Pine Court	2935 Texas Ave., Beaumont, Texas 77703	✓	✓		30 58 6 0 0	94
8	Concord Homes	2020 Cottonwood, Beaumont, Texas 77703	✓	✓	✓	0 6 42 40 12	100
			Air conditioning	Childcare	Girl Scouts	0 bedroom	
			Laundry facilities	Security service	Power Castle	1 bedroom	
			Community room	Transportation	Spinning Into Action	2 bedrooms	
				GED Training	Core Homeownership Classes	3 bedrooms	
				Resume Writing	Basic Computer Instruction Class	4 bedrooms	
				Job Training	BBQ and Picnic Table		
				Nutrition classes	Recreational center		
				Health fairs			
				Senior and Disabled Supportive			

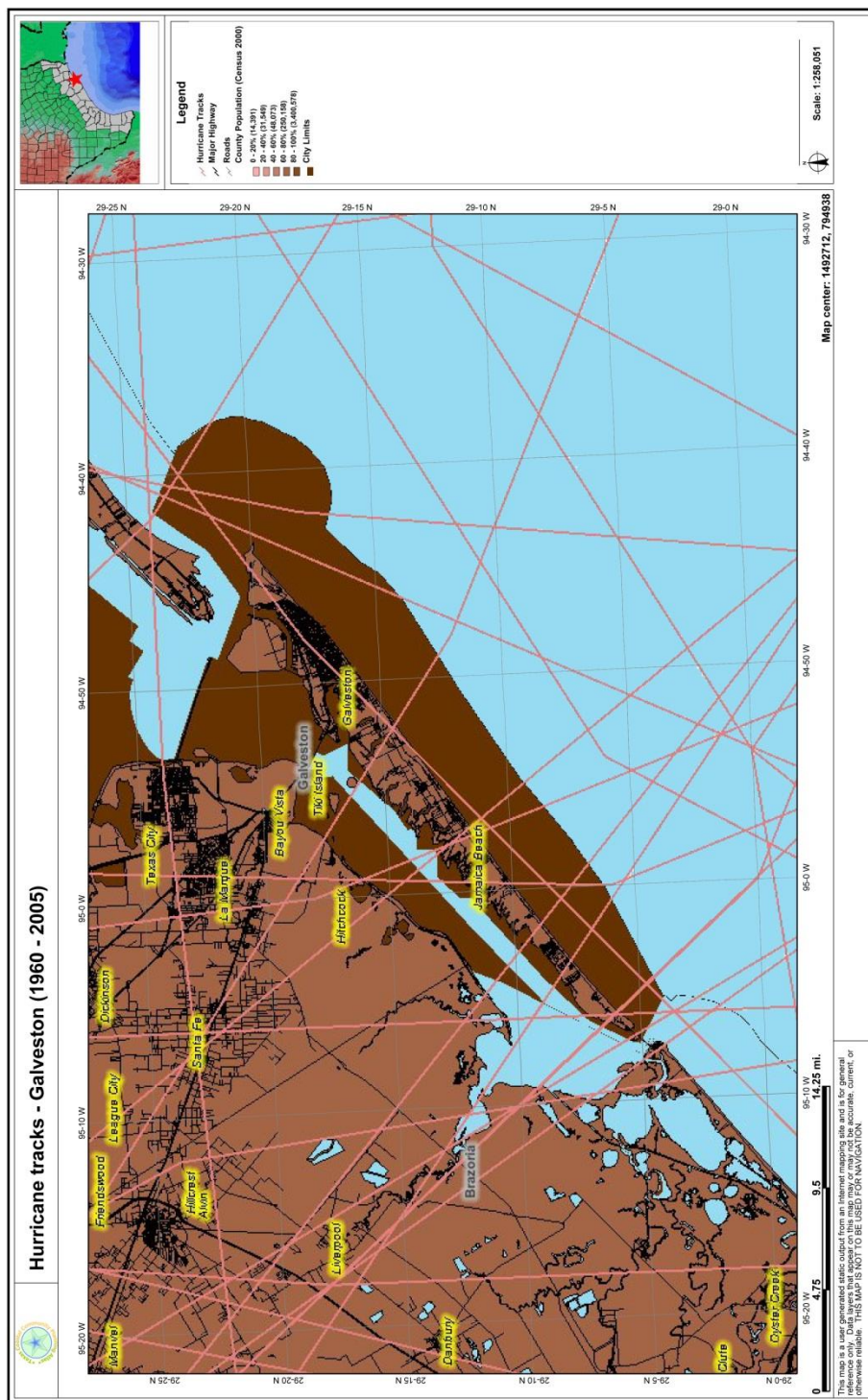
Source: Beaumont Housing Authority (BHA)

Exhibit A1. Hurricane tracks, Beaumont (1960-2005)



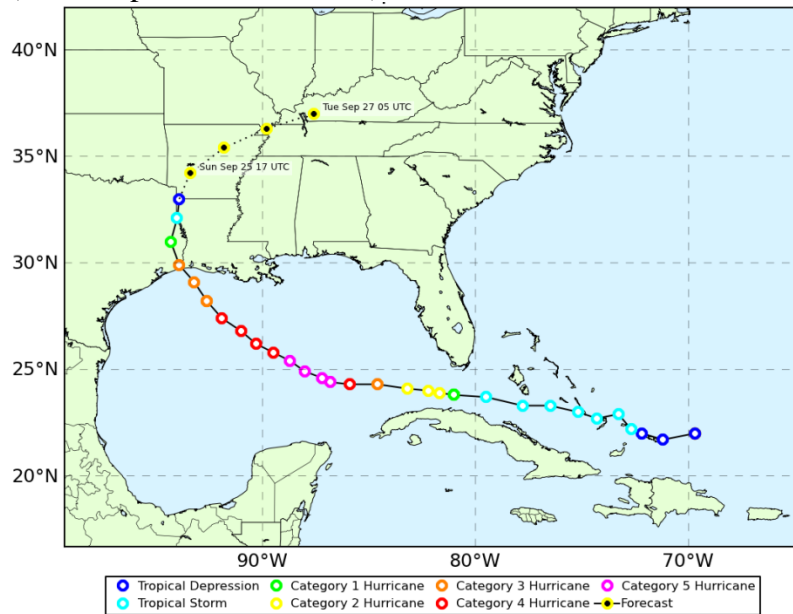
Source: Texas Sustainable Coastal Initiative (<http://coastalatlantis.tamug.edu>)

Exhibit A2. Hurricane tracks, Galveston (1960-2005)



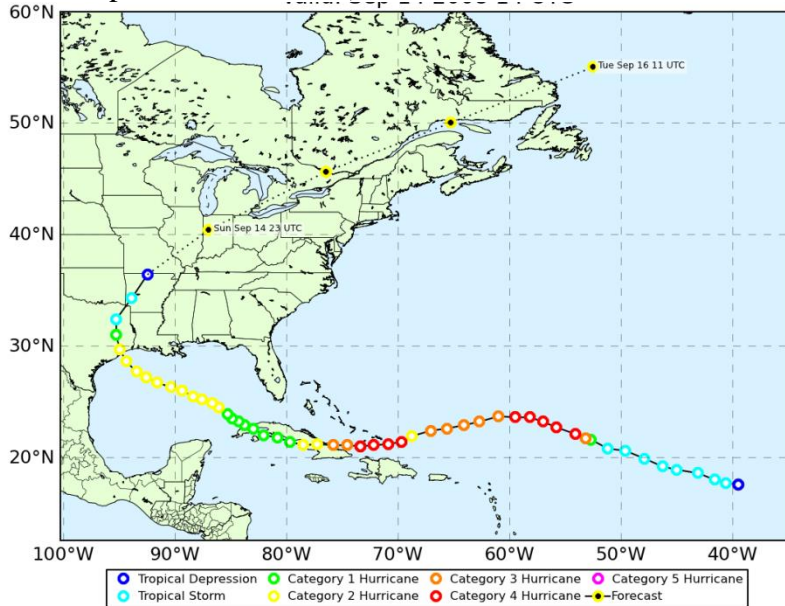
Source: Texas Sustainable Coastal Initiative (<http://coastalatlantis.tamug.edu>)

Exhibit A3. Hurricane Rita: Forecast track for NHC Advisory 30 – (Valid Sep 25 2005 08 UTC)



Source: National Hurricane Center (NHC)

Exhibit A4. Hurricane Ike: Forecast track for NHC Advisory 30 (Valid Sep 14 2008 14 UTC)



Source: National Hurricane Center (NHC)

Exhibit A5. Public Housing Developments in Beaumont, Texas.

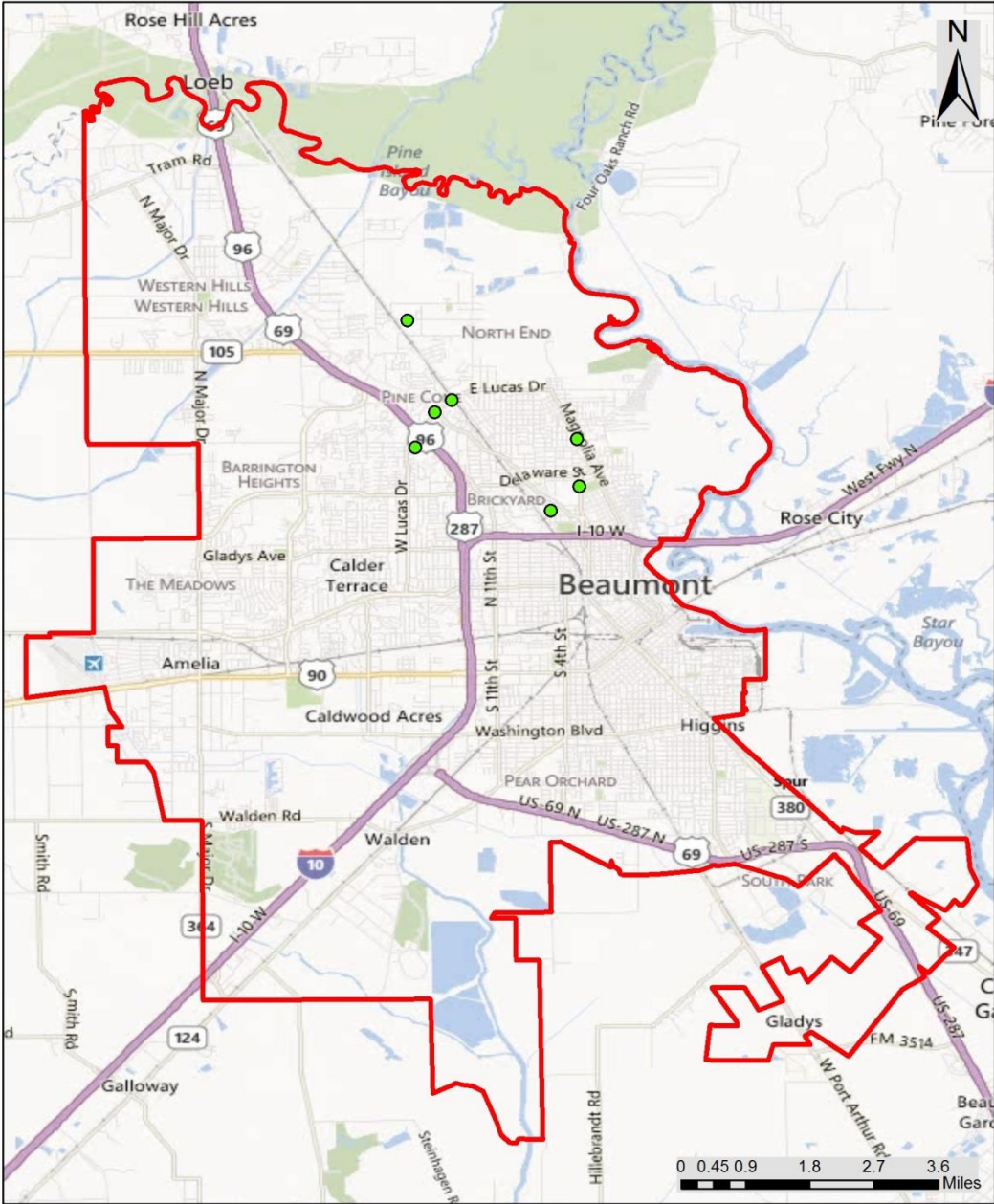


Exhibit A6. Public Housing Developments in Galveston, Texas.

