

Integrating Efficiency in Disaster Recovery

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About the Southeast Energy Efficiency Alliance (SEEA)

The Southeast Energy Efficiency Alliance (SEEA) is a 501(c)(3) nonprofit organization headquartered in Atlanta, Georgia. Established in 2007, SEEA is a Regional Energy Efficiency Organization (REEO) serving eleven states across the Southeast, including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

For additional information, visit www.seealliance.org

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Abstract

Following any disaster event that impacts the built environment, such as the 2017 hurricanes that damaged or destroyed many buildings in the Southeast, there is an opportunity to integrate energy efficiency into rebuilt structures. Currently, a variety of barriers exist to better integrating energy efficiency in disaster recovery, including informational, regulatory/legal, timing/logistical and others. This paper will report on the findings of efforts to determine how we can increase the realization of energy efficiency improvements to both residential and commercial buildings by intervening at key points in the process. They will include working with utilities to target their energy efficiency programs to customers whose homes have been affected by such disasters and who will be rebuilding as well as working with businesses and agencies who administer disaster recovery funding (e.g. FEMA funding) to better integrate energy efficiency into these processes.

Introduction

The 2017 Atlantic hurricane season was one of the most devastating seasons on record. Hurricanes Harvey, Irma, and Maria caused an estimated \$265 billion in damage and over 250 deaths.¹ The Southeastern U.S. and the Caribbean are particularly vulnerable not only to hurricanes, but also other climate-related impacts such as extreme heat events, severe storms, sea level rise, and drought.² Because of the severe social and economic impacts from these disasters, many cities and states have begun to increase efforts to improve their disaster resilience, or their ability “not only to bounce back [after a disaster], but also to ‘bounce forward’—to recover and at the same time to enhance the capacities of the community...to better withstand future stresses.”³

Energy efficiency improvements offer many benefits that also make buildings, energy systems, and communities more resilient to natural disasters. For example, structurally-insulated walls and multi-pane windows both reduce a home’s energy consumption and improve its resistance to damage from high winds or flying debris.⁴ Energy efficiency technologies like combined heat and power (CHP) allow buildings to operate during power outages; following Hurricane Sandy in 2012, a number of CHP-equipped facilities, including a hospital, were able to maintain power.⁵ And in the event of a power outage, energy efficient buildings perform significantly better than typical building stock, allowing residents to shelter in place for longer and potentially reducing the number of people who must be relocated during an extreme event.⁶

¹ NCEIS (NOAA National Centers for Environmental Information). 2018. “U.S. Billion Dollar-Weather and Climate Disasters.” www.ncdc.noaa.gov/billions/summary-stats

² Carter, L., J. Jones, L. Berry, V. Burkett, J. Murley, J. Obeysekera, P. Schramm, and D. Wear. 2014. “Southeast and the Caribbean.” In *Climate Change Impacts in the United States: The Third National Climate Assessment*. Washington, DC: U.S. Global Change Research Program.

³ Urban Land Institute, 2014. *After Sandy*, p. 7.

⁴ Philips, C. 2017. *Combining Energy Efficiency and Disaster Mitigation Efforts in Residential Properties*. Washington, DC: U.S. Department of Housing and Urban Development.

⁵ ACEEE (American Council for an Energy Efficient Economy). 2012. *How CHP Stepped Up When the Power Went Out During Hurricane Sandy*.

⁶ This is particularly true during the winter as compared to summer. In winter, models showed that residential and multifamily buildings built to the NYC 2010-2013 energy code would maintain temperatures approximately 10 degrees higher than those of typical building stock. During the summer, buildings built to energy code have only modest benefits over typical building stock, because improved insulation reduces a building’s ability to get rid of the heat from solar gain; high-performance buildings that incorporated external shading and improved window coatings offered a more substantial benefit (R. Leigh, J. Kleinberg, C.

Ideally, energy efficiency and other disaster-resilient technologies should be well-integrated into a community before a disaster strikes.⁷ However, even where this is not the case, the disaster recovery period poses a unique opportunity to ensure that the affected community is better prepared for the next disaster. Following the initial emergency response to the disaster, cities begin the long process of rebuilding the structures where they live and work. By incentivizing, mandating, or streamlining the inclusion of energy efficiency in rebuilding efforts, a community can improve its overall disaster resilience, ensure that public resources are not wasted on buildings that cannot withstand future disasters, and secure for its citizens the myriad other benefits of energy efficiency: comfortable homes and workplaces, affordable utility bills, and a stronger local economy.⁸ Numerous government, business, and private stakeholders are involved in a community's preparation for and response to a disaster. Many of these stakeholders may be unfamiliar with how energy efficiency could fit into this process, and conversely, energy efficiency stakeholders may not understand the process or challenges associated with disaster recovery efforts. The purpose of this paper is to begin to understand how energy efficiency and disaster recovery policies interrelate and to identify barriers, potential opportunities, and questions that need to be answered.

1. Federal Funding and Assistance for Rebuilding After a Disaster

a. General Information on Federal Disaster Relief

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) is the primary statute governing the federal response to major disasters.⁹ If a natural disaster causes too much damage for a state or local government to adequately respond on its own, the Stafford Act authorizes the President to declare a "major disaster," which triggers financial and physical assistance from the federal government.¹⁰ The Federal Emergency Management Agency (FEMA) has primary responsibility over federal disaster response efforts, including facilitating coordination between federal, state, and local government agencies.¹¹ FEMA administers the Disaster Relief Fund (DRF), the largest single funding source for federal disaster recovery efforts.¹² The DRF is used to support six different recovery functions, including funding to repair public infrastructure, assistance to individual

Scheib, R. Unger, N. Kienzl, M. Esposito, E. Hagen, and M. Tillou. *Leaks and Lives: Better Envelopes Make Blackouts Less Dangerous*. ACEEE Summer Study on Energy Efficiency in Buildings. 2014.

⁷ Disaster response efforts typically happen in two phases: the immediate emergency response, and the long-term rebuilding phase. In addition, there is disaster planning, which is relevant before, during, and after a disaster strikes. Because it seems that energy efficiency can best be incorporated as part of disaster response planning and long-term rebuilding, this paper does not focus on the immediate emergency response period.

⁸ Ribeiro, D. and T. Bailey. 2017. *Indicators for Local Resilience*. Washington, DC: ACEEE.

⁹ Other statutes also include provisions related to disaster assistance. For instance, the Housing and Community Development Act established the Community Development Block Grant-Disaster Relief (CDBG-DR) program (HCD Act, sec. 5306(c)(4)).

¹⁰ A "major disaster" is defined as any natural or man-made catastrophe in any part of the United States, which, in the determination of the President, "causes damage of sufficient severity and magnitude to warrant major disaster assistance to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby." (Stafford Act, sec. 5122).

¹¹ FEMA appoints a Federal Coordinating Officer that facilitates the recovery effort across federal agencies and with the state or local government (FEMA 2017).

¹² From 2005 to 2014, approximately \$104.5 billion were appropriated to the Disaster Relief Fund, compared to \$173.1 billion in appropriations to disaster assistance programs and activities across seventeen different federal departments and agencies (GAO 2016).

homeowners and renters, and hazard mitigation activities.¹³ In addition, Congress may also pass disaster-specific supplemental appropriations bills to provide additional funding for FEMA and other federal agencies that administer a variety of disaster relief programs.^{14 15} Seventeen federal departments and agencies administer some form of disaster assistance or disaster-applicable program or activity.¹⁶

b. Federal Disaster Funds that Could Be Leveraged for Energy Efficiency

Each federal program and funding source comes with its own set of requirements and conditions, including what entities are eligible to receive the funds (state, local, or tribal governments, non-profit organizations, businesses, or individuals) and the purposes for which the funds may be used. We identified which federal funding sources could potentially be leveraged for energy efficiency improvements using three “filters”:

1. As discussed above, the best opportunities to incorporate energy efficiency seem to be in the planning or long-term rebuilding phases of disaster response. Accordingly, this analysis focuses on funds that can be used for permanent rebuilding efforts or for long-term disaster planning or mitigation and does not include funds intended for immediate emergency response efforts such as debris removal, temporary shelters, or emergency evacuations.¹⁷
2. Energy efficiency improvements require the flexibility to rebuild in a new way; as such, we eliminated funding sources which can only be used to restore facilities to their pre-disaster conditions, and included only funding sources which allow, or could arguably allow, state or local governments to incorporate resiliency measures into their rebuilding efforts.
3. Finally, we included only funding sources where energy efficiency could arguably fall within the scope of eligible resilience activities for which the funds can be used.

Using these metrics, three federal funding sources seem to be of particular interest as it relates to incorporating energy efficiency into disaster response efforts: the Public Assistance (PA) program and the Hazard Mitigation Grant Program (HMGP), both administered by FEMA, and the Community Development Block Grant-Disaster Relief (CDBG-DR) program, administered by the Department of Housing and Urban Development (HUD). These programs are each discussed in more detail below. It is important to note that with each of these funding sources, additional philanthropic or incentive funding could be used to incorporate additional resiliency measures—including energy efficiency

¹³ FEMA 2018a. [Recovery Support Functions](#).

¹⁴ A comprehensive list of disaster recovery funding sources can be found on FEMA’s website (FEMA 2016).

¹⁵ Smith, N and J. Grannis. 2013. [Understanding the Adaptation Provisions of the Sandy Disaster Relief Appropriations Act \(H.R. 152\)](#). Washington, DC: Georgetown Climate Center.

¹⁶ GAO (Government Accountability Office). 2016. [Federal Disaster Assistance: Federal Departments and Agencies Obligated at Least \\$277.6 Billion during Fiscal Years 2005 through 2014](#). Washington, DC: GAO.

¹⁷ For this initial research, we also focused on large, permanent sources of federal disaster funding. There may be many small or temporary funding sources, such as pilot programs, that could be used for these efforts. Those funding sources can be explored further at a later date.

improvements—into rebuilding, so long as those additional funds are only used for improvements not covered by the federal funding programs.^{18 19}

FEMA Public Assistance Program.²⁰ The PA program, which is funded by the DRF, provides assistance to states, local and tribal governments, and certain types of private nonprofit organizations to repair, restore, or replace publicly-owned facilities that have been damaged by a Presidentially-declared major disaster.²¹ Under the PA program, the federal government provides 75% of the costs to complete eligible activities and projects, and state and local governments must come up with a 25% match.²² Historically, PA funding could only be used to restore a facility to its pre-disaster design, or to bring the facility into conformity with state or local codes that were in place when the disaster occurred.²³ This requirement limited the ability of state or local governments to rebuild facilities to be more resilient to future disasters. The Bipartisan Budget Act of 2018, signed into law on February 9, 2018, made two amendments to the PA program that could allow more flexibility in how the funds can be used. First, it authorized FEMA to provide assistance to replace or restore the function of public facilities to industry standards, without regard to the pre-disaster condition of the facility or system. Second, it increases the minimum federal cost share to 85 percent for state investments in “measures that increase readiness for, and resilience from, a major disaster,” including adopting hazard mitigation plans or “encouraging the adoption and enforcement of the latest published editions of relevant consensus-based codes, specifications, or standards that incorporate the latest hazard-resistant designs.”²⁴

There may be some opportunity to use the PA program to help state and local governments better integrate efficiency into their disaster recovery efforts. Where industry standards include energy efficiency, PA funds could arguably be used to build to those standards, even if the building’s pre-disaster condition did not meet those standards and the state or local code does not require it. Additionally, PA funds could be used to help states and localities develop disaster response and mitigation plans that specify what building standards will be used, and that help coordinate rebuilding efforts to identify other resources, such as utility incentive programs, that could be leveraged to include additional energy efficiency measures in a rebuilding process.

FEMA Hazard Mitigation Grant Program. Another FEMA funding source authorized under the Stafford Act is the Hazard Mitigation Grant Program, which provides federal assistance

¹⁸ FEMA. 2007. [Public Assistance Program Guide](#). Washington, DC: FEMA at 110-111 (2007).

¹⁹ Federal funds cannot duplicate the benefits from funds provided by other sources.

²⁰ FEMA also administers the Individual Assistance program, which provides assistance to homeowners for temporary housing or repair. However, these funds are intended only to bring a home to a safe and sanitary condition, and not to bring it to its former condition or to improve it (FEMA 2018b). Homeowners may apply for a loan from the U.S. Small Business Administration (SBA) to bring their home to its former condition, or to bring it up to code if a code was in place at the time of the disaster (U.S. SBA 2018).

²¹ “Public facilities” include state or locally owned buildings or structures used for the provision of utility service, navigation, or educational, recreational, or cultural purposes. Smith, N and J. Grannis. 2013. [Understanding the Adaptation Provisions of the Sandy Disaster Relief Appropriations Act \(H.R. 152\)](#). Washington, DC: Georgetown Climate Center.

²² Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act). 1974. 42 U.S.C. § 5121 et seq.

²³ Smith, N and J. Grannis. 2013. [Understanding the Adaptation Provisions of the Sandy Disaster Relief Appropriations Act \(H.R. 152\)](#). Washington, DC: Georgetown Climate Center.

²⁴ [Bipartisan Budget Act of 2018](#). Public Law 115-123 (passed February 9, 2018).

for hazard mitigation measures that reduce the risk of future damage, hardship, loss, or suffering in any area affected by a major disaster.²⁵ Like the PA program, under the HMGP the federal government contributes up to 75% of the cost of eligible activities, and state and local governments provide a 25% match.²⁶ Eligible activities include both structural and non-structural mitigation. State and local governments may apply for HMGP if they have adopted and FEMA has approved a Hazard Mitigation Plan that includes a risk assessment of natural hazards. For most projects, applicants must show that the activity addresses a repetitive problem and is a “cost-effective” long-term solution to the problem.²⁷

To use HMGP funding for energy efficiency improvements, they would have to fall under FEMA’s definition of hazard mitigation measures. Typically, FEMA has used this term to refer to more traditional flood prevention or storm hardening measures, such as elevating buildings. Further, HMGP funds may only be used for measures that meet FEMA’s cost-effectiveness standards, which require that the benefits or avoided losses from a project exceed the project’s cost.²⁸ While FEMA has developed pre-calculated benefits for certain types of activities, it has not done so for green infrastructure projects.²⁹ There has been little quantitative evaluation to date on how to determine losses that would be avoided by installing energy efficiency measures (the benefits of which are often discussed in terms of kilowatt hour savings).³⁰ Without additional data on how energy efficiency fits into more traditional disaster mitigation metrics, it may be difficult to show that energy efficiency improvements are cost-effective.

Community Development Block Grant-Disaster Recovery Program. The Housing and Community Development Act of 1974 authorizes HUD to administer the Community Development Block Grant program, which provides block grants to state and local governments to serve three priorities: to benefit low and moderate income families, to aid in the prevention of slums or blight, or to meet urgent community development needs where existing conditions pose a serious and immediate threat to the health or welfare of the community.³¹ Congress often finances state and local disaster recovery efforts by appropriating funds to the CDBG-Disaster Relief (CDBG-DR) program, a subset of the larger HUD program.³² At least 50% of CDBG-DR funds must be used to support activities benefitting persons of low or moderate income;³³ the funds are otherwise very flexible, and are intended to help state and local governments with projects that could not be funded from other federal sources. The state or local government completes an assessment of its

²⁵ Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act). 1974. 42 U.S.C. § 5121 et seq.

²⁶ Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act). 1974. 42 U.S.C. § 5121 et seq.

²⁷ Thomas, J. and J. DeWeese. 2015. [Reimagining New Orleans Post-Katrina: A Case Study in Using Disaster Recovery Funds to Rebuild More Resiliently](#). Washington, DC: Georgetown Climate Center.

²⁸ Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act). 1974. 42 U.S.C. § 5121 et seq.

²⁹ Thomas, J. and J. DeWeese. 2015. [Reimagining New Orleans Post-Katrina: A Case Study in Using Disaster Recovery Funds to Rebuild More Resiliently](#). Washington, DC: Georgetown Climate Center.

³⁰ Philips, C. 2017. [Combining Energy Efficiency and Disaster Mitigation Efforts in Residential Properties](#). Washington, DC: U.S. Department of Housing and Urban Development.

³¹ HUD (U.S. Department of Housing and Urban Development). 2016a. Code of Federal Regulations, Title 24. Community Development Block Grants.

³² HCD Act (Housing and Community Development Act of 1973). 42 U.S.C. §5301 et seq.

³³ HUD (U.S. Department of Housing and Urban Development). 2014. [Basically CDBG Chapter 21: Disaster Recovery](#). Washington, DC: HUD.

unmet needs and submit an action plan for HUD approval that states how the CDBG-DR funds will be used to meet those needs.^{34 35}

CDBG-DR funds are particularly promising as it relates to energy efficiency for several reasons. First, since 2013 HUD has required CDBG-DR grantees to use green building standards for all new construction or replacement of substantially damaged residential buildings.³⁶ In their Action Plan, state and local grantees must identify what standard they will use, and depending on the type of construction at issue, may choose from the following standards: ENERGY STAR, Enterprise Green Communities, LEED, ICC-700 National Green Building Standard, EPA Indoor AirPlus, or any equivalent standard, subject to approval by HUD.³⁷ Up to 20% of CDBG-DR funds may also be used to support comprehensive disaster and resiliency planning at the state or local levels.³⁸

- **Case Study on Houston’s CDBG-DR Implementation Efforts**

On August 25, 2017, Hurricane Harvey made landfall near Port Aransas, Texas as a Category 4 hurricane. Due to two high-pressure systems that developed to the east and west of the storm, the hurricane hovered over the Texas coast for an additional four days, dropping almost a year’s worth of rain over the area in just a few days—up to 60 inches in some areas. Harvey caused severe wind damage, catastrophic flooding, and was particularly devastating to the City of Houston. Ultimately, the storm caused an estimated \$160 billion in damage, the costliest storm in human history, and 82 human fatalities.³⁹

In September 2017, Congress appropriated \$7.4 billion to the CDBG-DR program to assist with recovery efforts for the historical 2017 hurricane season. Of this, approximately \$5 billion went to the State of Texas to assist with disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in the areas most impacted and distressed areas by Hurricane Harvey.⁴⁰ Texas Governor Greg Abbott designated the state’s General Land Office (GLO) to administer the state’s CDBG-DR funds. In January 2018, GLO prepared an unmet needs analysis and submitted an Action Plan for how it would spend CDBG-DR funds allocated by HUD. GLO selected ENERGY STAR as the standard for reconstruction or new construction of buildings and stated that they would

³⁴ HUD (U.S. Department of Housing and Urban Development). 2016. [Moving to the Next Level: Increasing Energy Efficiency in Affordable Housing](#). Washington, DC: HUD.

³⁵ For an example, see the Action Plan completed by the Texas General Land Office in response to Hurricane Harvey (GLO 2018).

³⁶ HUD (U.S. Department of Housing and Urban Development). 2016. [Moving to the Next Level: Increasing Energy Efficiency in Affordable Housing](#). Washington, DC: HUD.

³⁷ HUD (U.S. Department of Housing and Urban Development). 2018. [Allocations, Common Application, Waivers, and Alternative Requirements for 2017 Disaster Community Development Block Grant Disaster Recovery Grantees](#). 83 Fed. Reg. 5844-5869.

³⁸ HUD (U.S. Department of Housing and Urban Development). 2014. [Basically CDBG Chapter 21: Disaster Recovery](#). Washington, DC: HUD.

³⁹ GLO (Texas General Land Office). 2018. [State of Texas Plan for Disaster Recovery: Hurricane Harvey](#).

⁴⁰ HUD (U.S. Department of Housing and Urban Development). 2018. [Allocations, Common Application, Waivers, and Alternative Requirements for 2017 Disaster Community Development Block Grant Disaster Recovery Grantees](#). 83 Fed. Reg. 5844-5869.

encourage green building practices to the extent practicable for infrastructure projects.⁴¹

The City of Houston is currently in the process of determining how it will spend its CDBG-DR funds. The city has contracted with APTIM, a firm that specializes in disaster recovery program management, to lead the Houston rebuilding effort.⁴² While the process is still ongoing, APTIM estimates that CDBG-DR dollars in Houston could ultimately serve over twenty thousand homes and take anywhere from two and a half to five years. As a first step, APTIM is currently reviewing Houston's minimum building standards and making recommendations for what will need to be changed to meet HUD's green building standards. The firm also plans to work with utilities and other key stakeholders in Houston to identify available funding sources, rebates, or other incentives for energy efficiency and resiliency. The City of Houston may then incorporate these incentives into the CDBG-DR program design documents and requirements for contractors.⁴³

c. State and Local Policies Relevant to Disaster Recovery and Efficiency

State and local recipients of federal funds retain a significant amount of authority when determining how federal disaster relief funds will be spent. Existing state and local laws, policies, and practices are relevant to many aspects of disaster recovery, including how effectively that state and local authorities coordinate, what recovery needs are prioritized, and the quantity and type of resources that are available to be deployed. As it relates to the integration of energy efficiency and disaster recovery, state and local policy matters for two main reasons. First, states and localities that have undertaken comprehensive disaster response or resilience planning may be better equipped to maximize and optimize available resources, including those related to energy efficiency. Second, the extent to which a state or locality already has energy efficiency policies and incentives in place can affect the amount of efficiency that is deployed after a disaster.

Disaster Response Planning. Disaster response, recovery and resilience planning is a critical component of disaster recovery efforts. Even in the best of circumstances, the post-disaster period is a time of crisis. Communities should not wait until after a disaster occurs to decide how critical decisions will be made. Comprehensive planning efforts can help to ensure that communities have time to ensure that stakeholders—including community members who might be affected by a disaster—know what to do, what resources are available to them, and where to go for guidance on how those resources should be used.

From an energy efficiency perspective, planning efforts can help to ensure that all available resources—federal disaster relief funds, utility or other incentives, and philanthropic dollars—can be identified and combined as appropriate to ensure that energy efficiency is incorporated in the most impactful way. Additionally, because some energy efficiency policies such as energy codes are sometimes seen as an impediment to rebuilding efforts, a

⁴¹ GLO (Texas General Land Office). 2018. [State of Texas Plan for Disaster Recovery: Hurricane Harvey](#).

⁴² P. Dugger and A. Lawson, project directors, APTIM, personal communications, March 13, 2018.

⁴³ P. Dugger, project director, APTIM, personal communications, March 19, 2018.

transparent and inclusive planning process can help to increase trust and make the implementation process smoother. Some federal funds, such as CDBG-DR funds, can be used for disaster planning efforts; however, additional research is needed on other funds that can be used to support planning before a disaster hits.

- **Case Study: Using Federal Funds to Support Disaster Planning in New York City**
New York City has undertaken extensive long-term disaster and resiliency planning efforts in response to the impacts from Hurricane Sandy in 2012. In its CDBG-DR Action Plan, New York City dedicated 20% of its allocation, the maximum amount allowed, to long-term planning activities. In June 2013, the City released its first natural disaster mitigation plan, *A Stronger, More Resilient New York* which identified risks posed by climate change across its five boroughs.⁴⁴ New York City was also awarded \$176 million as part of HUD's National Disaster Resilience Competition. A full description of the city's planning efforts can be found in its updated CDBG-DR Action Plan.⁴⁵

d. Energy Efficiency Policies and Programs

Energy Codes. States or localities with strong building and energy codes in place may not only experience less damage during a disaster, but also be better able to ensure that efficiency is incorporated into post-disaster rebuilding efforts. For even the most restrictive federal funding sources, buildings that are destroyed or substantially damaged must typically be rebuilt to comply with existing state or local standards. In addition, having a strong energy code in place before a disaster strikes also ensures that non-publicly funded rebuilding efforts, such as those covered by private insurance policies, is also done in a more efficient manner. It is worth noting that requiring compliance with stronger building and energy codes can sometimes slow reconstruction efforts and make it more difficult for those who lost their home or business after a disaster. How to appropriately balance short-term needs with longer-term sustainability and resilience goals remains a central question in many disaster recovery efforts. As discussed above, transparent disaster planning efforts paired with citizen outreach and education efforts can help to expediate the recovery process and ensure that victims are well-informed of what to expect.

Utility Energy Efficiency Programs. In the immediate wake of a disaster, utilities' main priority is getting power back online as quickly as possible by repairing damage to poles, removing trees and downed power lines, and mitigating damage to power plants and other electrical infrastructure. However, the utility role in disaster recovery should extend beyond the immediate recovery phase. Utility energy efficiency policies like energy efficiency resource standards, decoupling, lost revenue recovery, and performance incentivizes encourage or require utilities to offer energy efficiency programs to their residential, commercial, and industrial customers. In addition to the general benefits of energy efficiency, these programs help to ensure that buildings and the electric system in general are better prepared if a disaster occurs; utility energy efficiency programs can also be leveraged after a disaster to increase the resources available for rebuilding and maximize energy efficiency savings and benefits.

⁴⁴ NYC (New York City). 2013. [A Stronger, More Resilient New York](#).

⁴⁵ NYC (New York City) 2017. [NYC Community Development Block Grant Disaster Recovery Action Plan](#).

Utilities should incorporate energy efficiency programs into their own disaster recovery plans and ensure that they are involved in any ongoing state and local planning efforts. Utility regulators should also look at policies, regulations, or deadlines and evaluate which may need to be adjusted to accommodate post-disaster recovery period for utilities and their customers.

Other Programs and Incentives. Other energy efficiency programs, such as financing programs, consumer education efforts, state or local lead-by-example policies, or rebates and incentives can also play a role in disaster preparedness and response efforts.

- **Case Study: New York City Home Resiliency Audit Program**

The New York City Mayor’s Office of Recovery and Resiliency partners with the Center for New York City Neighborhoods, a local non-profit organization, to offer a Home Resiliency Audit Program that informs New York homeowners about their risks and how they can protect themselves from flooding or other damage from storms.⁴⁶ The audit also acts as a vehicle to connect homeowners with available programs and resources to help them make needed improvements to their home. The program is currently exploring how to incorporate energy efficiency and other resiliency measures into the audit process.⁴⁷

2. Opportunities and Additional Questions

a. Opportunities

Advance Local and State Energy Efficiency Programs and Policies to the Extent Possible. As discussed earlier, the best way to incorporate energy efficiency into the recovery after a disaster is to ensure that it is a priority beforehand. Energy codes, utility efficiency programs, and other state and local efficiency policies help to bolster the resiliency of a community’s existing building stock and to ensure that energy efficiency is incorporated in both private and publicly funded rebuilding efforts post-disaster.

Identify Opportunities to Integrate Efficiency into Federal Disaster Rebuilding Efforts. As discussed earlier, CDBG-DR, PA, and HMGP funds all have the potential to be used to incorporate energy efficiency into post-disaster rebuilding efforts. In addition, there is significant opportunity to use other resources, such as utility incentives or philanthropic dollars, to make additional efficiency improvements. For example, utilities offering new construction programs can typically only claim savings from those programs for energy efficiency improvements that are above code. CDBG-DR funds could be used for improvements up to the required green building standard, and utilities could provide resources for additional measures and claim those savings for the purposes of meeting an energy savings target.

⁴⁶ Center for NYC Neighborhoods. 2018. [Home Resiliency Audit Program](#).

⁴⁷ A. Levine, program manager, and D. Kochnow, senior policy advisor, NYC Mayor’s Office of Sustainability, personal communications, March 9, 2018

Support Disaster Response, Recovery, and Resilience Planning. The best way to capitalize on any of the other opportunities discussed above is through comprehensive disaster recovery and resilience planning. Without these plans in place, communities are often unable to optimize funding and benefits in the wake of a disaster, resulting in a longer and less successful recovery period.

b. Key Additional Questions and Issues

While this paper is an initial step at better understanding how energy efficiency fits into the larger disaster recovery process, there are still many more questions that need to be answered moving forward. In our research and outreach to stakeholders that work in this space, several key questions and issues arose:

- What are the resilience co-benefits of energy efficiency, and how do you quantify them in a way that satisfies the cost-effectiveness requirements of federal disaster relief programs?
- What changes may need to be made to existing laws to better align state and local energy efficiency policies with the requirements for federal disaster recovery?
- How can public disaster recovery stakeholders coordinate most effectively with stakeholders such as philanthropic groups and private insurance companies to support efficiency measures?
- What funding and technical assistance resources are available to encourage communities to undertake comprehensive disaster recovery and resilience planning before a disaster strikes?

Energy efficiency is just one strategy of many that communities can leverage to improve their resiliency to natural disasters, and how to integrate efficiency into any given disaster recovery effort will be different for every community and for every disaster. As such, the list of questions above is by no means comprehensive, but merely a first step at identifying some priority issues that should be explored as this issue continues to develop.