
7 Affordable Housing and Disaster Recovery

A Case Study of the 2013 Colorado Floods

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7.1 INTRODUCTION: DISASTERS, AFFORDABLE HOUSING, AND RECOVERY

Affordable housing* is an essential part of healthy and sustainable communities, creating health, education, and economic benefits to households (Mueller and Tighe 2007; Housing Colorado 2014). It is also a central issue in disaster recovery. When affordable housing is damaged or destroyed, communities must decide whether to

* Housing is considered affordable when occupant(s) pay 30% or less of their gross income, including utilities (HUD 2015). Households are considered “housing burdened” if they pay more than 30% of their gross income for housing. Subsidized housing is generally restricted to households earning less than the area median income (AMI), though in some high cost regions, eligibility may exceed 120% of the AMI.

rebuild it, and if so, where and when. Such decisions shape the long-term character of the community, as well as the recovery of households who rely upon affordable housing. These households are often more exposed to hazards, and after a disaster, they often are at the mercy of landlords and local governments to repair or rebuild housing they can access and afford. In this chapter, we explore key variables that guide decisions about affordable housing post-disaster, based on the 2013 floods in Colorado. The floods destroyed a significant amount of affordable housing in a region where housing affordability is a major and ongoing challenge.

We seek to answer what drives some communities to rebuild, or attempt to rebuild, affordable housing post-disaster, and not others? First, we discuss research on disaster recovery and affordable housing that forms the theoretical and regulatory context for our case. Next, we describe the 2013 flood in Colorado and its effect on affordable housing in the Front Range region*. We then present brief case studies of three flooded communities that lost a significant amount of affordable housing during the floods: the town of Lyons, in Boulder County, and the city of Evans and town of Milliken in Weld County. We conclude with key findings from Colorado and general lessons for post-disaster affordable housing.

7.2 DISASTER RECOVERY AND AFFORDABLE HOUSING

Q1 In contrast to earlier studies that theorized disaster recovery as “ordered, knowable, and predictable” (see e.g., Haas et al. 1977; Kates and Pijawka 1977), contemporary research shows that disaster recovery is an uneven process with some households and groups recovering more quickly and completely than others (Mileti 1999; Wisner et al. 2004; Daniels et al. 2006; NRC 2006; Olshansky et al. 2012). Others also find that the terrain of recovery is quite varied (Rubin 1985; Olshansky et al. 2006; Ganapati and Ganapati 2009; Rubin 2009; Smith 2012). Smith and Wenger (2007, p. 238) argue that recovery is largely a social, not technical, process, and unequal recovery reflects larger social, economic, and institutional processes that reproduce inequality outside of disasters (see also Benner and Pastor 2012). Housing is a key component of sustainable disaster recovery (Bolin 1985; Berke et al. 1993; Smith and Wenger 2007; Olshansky 2009; Smith 2012). Although affordable housing is just one element of recovery, it is a fundamental and often controversial issue, particularly around issues of equity and sustainability (Bolin and Stanford 1991; Kamel and Loukaitou-Sideris 2004; Green et al. 2007).

Disasters can impact affordable housing directly through damage or destruction of homes (the focus of this chapter) or indirectly through housing price increases due to the sudden drop in supply. Rebuilding affordable housing post-disaster confronts the same constraints faced under normal conditions, including location and land availability, the will and capacity of local actors, and the availability of external resources, among others. Affordable housing tends to be disproportionately located in hazard-prone areas, where land is often cheapest, causing disproportionately

* The Colorado Front Range is an urban corridor east of the Rocky Mountains housing more than 80% of Colorado's population. It stretches from Pueblo to Fort Collins, including the cities of Colorado Springs, Denver, Boulder, and Greeley, and surrounding communities.

higher levels of damage during disasters to lower income households (Peacock et al. 2007, p. 265). After a disaster, rebuilding in hazard-prone areas often triggers new regulatory and insurance burdens, making recovery more costly and difficult (Green et al. 2007) when redevelopment on these sites is restricted by contemporary floodplain development rules and regulations.*

Thus, local actors and institutions are critical to affordable housing recovery. Although research has shown that permanent housing replacement is “primarily a market driven process” (Peacock et al. 2007, p. 264; Zhang and Peacock 2009), housing is highly regulated and dependent upon appropriate zoning and infrastructure, and hazard and mortgage insurance is regulated at the state and federal levels. Public sector actions are especially critical for affordable housing, which is rarely provided without incentives, write-downs, special financing, and other tools (Nelson and Khadduri 1992; Mueller and Schwartz 2008). While household resources and market mechanisms are important, municipal decisions regarding land, allocation of public resources (e.g., fee waivers), communications, recovery plans, pursuance of grants and partnerships, and public involvement are also essential. Local government capacity also dictates recovery since housing reconstruction can be overwhelming, including permitting, inspection, zoning, financing, negotiating with larger governments, and identifying new housing models and more sustainable designs (Comerio 2014).

Like other aspects of recovery, external resources drive the reconstruction of affordable housing. Traditionally, housing reconstruction has relied upon private funds like personal savings, loans, and insurance, with government programs filling the gaps (Zhang and Peacock 2010, p. 6; referencing Comerio 1998). It follows that recovery for households with few resources and reliance upon affordable housing lags behind other groups. But the Department of Housing and Urban Development (HUD) is attempting to address this disparity. Eligible communities can request an advance on their existing HUD funds[†] to repair public housing and construct rental housing (Zhang and Peacock 2009; Comerio 2014) and HUD and Federal Emergency Management Agency (FEMA) have created the CDBG-Disaster Recovery (CDBG-DR) block grant. When used for housing, 50% of the CDBG-DR funds must benefit low and moderate income households.

Despite its importance, the topic of affordable housing recovery remains understudied (Tierney et al. 2001, p. 100; quoted in Peacock et al. 2007, p. 260). There are exceptions, of course, namely the post-Katrina literature (e.g., Green et al. 2007; Quigley 2007), as well as recent national publications that provide guidance for

* In the United States, communities participating in the National Flood Insurance Program (NFIP) are required to regulate development within mapped floodplains. In many communities, development that existed prior to the creation of the NFIP program is not built to contemporary codes and standards. After a disaster, owners of those developments must rebuild them to the most current codes (e.g., by elevating above the base flood elevation), which can be cost prohibitive. In some cases, redevelopment is not allowed at all, because the damaged properties are located in high hazard areas like floodways.

[†] These HUD funds include Community Development Block Grants (CDBG) and the HOME Investment Partnership Program.

housing reconstruction*. Nevertheless, there is a dearth of research on local level post-disaster decision making for affordable housing. This chapter aims to fill those gaps in prior research.

7.3 THE 2013 COLORADO FLOODS

The September 2013 floods were one of the costliest disasters in state history (Colorado Recovery Office 2014), affecting dozens of communities across the Front Range†. Eighteen counties were in the federal disaster declaration, with much of the damage concentrated in Boulder, Larimer, and Weld counties (see Figure 7.1).

Affordable housing was a major challenge for the Front Range before the disaster. Typical of many regions in the western United States, the Front Range is experiencing rapid population growth with an accompanying rise in housing prices and decline in the availability of affordable housing. Regionally, average rents and median home prices have increased 10%–16% each year since the flood, and rental vacancy rates continue to drop (Housing Colorado 2014; S&P Dow Jones Indices LLC 2015).

7.4 METHODS

To understand the decision-making process for affordable housing recovery, we followed the recovery process in three selected communities for 2 years (2013–2015)

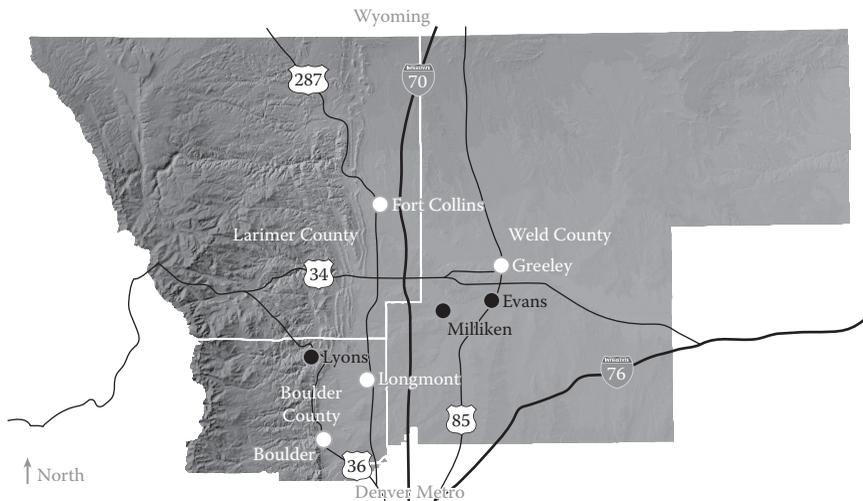


FIGURE 7.1 Location of case study communities.

* See for instance, FEMA's *National Disaster Housing Strategy* (2009), HUD's *Pre-Disaster Housing for Permanent Housing Recovery* (2012), and the American Planning Association's *Planning for Post-Disaster Recovery: Next Generation* (2014).

† The historic flood event destroyed 1500 homes and resulted in nearly \$4 billion in economic loss (CRRO 2015).

using a case study research design. Our data include surveys with 97 households, 45 interviews with local, county, and state officials involved in recovery, and direct observation of over 50 recovery meetings and events. We analyzed the household surveys to compare household recovery trajectories across communities (Rumbach et al. 2016). We summarized notes from the meetings and transcribed the interviews in order to identify themes, processes, stakeholders, and other influences. Throughout the research, we sought clarification and confirmation of our findings from individuals directly involved in the recovery.

7.4.1 LOSS OF AFFORDABLE HOUSING: EVANS, LYONS, AND MILLIKEN

In this section, we present brief case studies of each community, describing the flood's impacts on affordable housing and subsequent actions (or inactions) taken locally during the recovery.

7.4.1.1 Evans, Colorado

Evans is a fast-growing city located along the South Platte River in the plains east of the Rocky Mountains. Over the past decade, Weld County has had strong economic growth from the oil and gas, agriculture, and meatpacking industries. From 1990 to 2013, the population of Evans tripled, from 6150 to an estimated 19,994 (US Census 2014; Weld County 2014), creating significant housing pressures in Evans and nearby communities. At the time of the flood, the city's rental housing vacancy rate was below 2%, a historic low, while rental prices had reached an all-time high (Greeley-Weld Housing Authority, personal communication 2015).

The flooding of the South Platte River (see Figure 7.1) significantly damaged or destroyed over 300 housing units in Evans, including 208 mobile homes and several dozen market-rate affordable rentals. The mobile homes were located in two adjacent communities near the river, outside the regulatory (100-year) floodplain. As a consequence, the vast majority of residents did not have flood insurance. After the flood, Evans quickly condemned the destroyed trailers, citing the potential public health impacts of the flooded homes. In January 2014, Evans revised and updated their floodplain maps, designating large portions of the two mobile housing parks as within the regulatory floodplain. City leadership argued the pre-flood maps were outdated and their primary charge was to protect public safety moving forward. The updated maps made reconstruction of the mobile home parks cost prohibitive. The owner of the largest park sued the city for impeding his business,* but both mobile home parks remain closed.

As of 2015, most of the site-built affordable rental housing had been repaired and reoccupied, but anecdotal conversations with former tenants suggest that some owners are now charging significantly higher (20% or more) rents.

Though the floods permanently destroyed 208 mobile homes, and rental prices have risen, Evans has not pursued federal recovery grants or committed public resources to rebuilding affordable housing. Based on interviews with public officials, the city and elected officials believe the market will supply lower cost units if

* As of 2015, the lawsuit was rejected by the Weld County courts, and is under appeal.

there is a demand, and that the local government's primary responsibility in disaster recovery is to protect public safety and ensure that infrastructure and critical facilities are repaired and protected. Since the flood, more than 800 permanent housing units have been built or planned, but very few (<10%) will be affordable to households earning less than 80% of the area median income (AMI), and none will be government regulated (permanently) affordable (Greeley-Weld Housing Authority, personal communication 2015).

7.4.1.2 Lyons, Colorado

Lyons is an historic small town in Boulder County at the foothills of the Rocky Mountains and the confluence of the St. Vrain and South St. Vrain rivers (see Figure 7.1). Originally a mining and railroad town, Lyons is now known for its arts, culture, and summertime music festivals. Lyons has grown in recent years from 1287 residents in 1990 to 2035 in 2013 (US Census 2014). Growth has been spurred by the population and economic growth in the region, and the increasingly expensive and growth-controlled housing market in the nearby city of Boulder.

Q3 Lyons also faced significant affordable housing shortages prior to the flood. From 2000 to 2010, the median home value rose by 71% to over \$340,000, while the number of available rentals fell by half (Town of Lyons 2015). At the time of the flood, rental vacancy in Lyons and Boulder County was at a 12-year low (APA 2014a,b). Of the renters in Lyons who earned less than 80% of the AMI, more than half (52%) were cost-burdened (Town of Lyons 2015).

The floods significantly damaged or destroyed roughly 20% of the Lyon's housing stock, including 172 site-built homes and 43 mobile homes, approximately 90% of the town's low income housing (Lyons Recovery Action Plan [LRAP] 2014; Town of Lyons 2015). The town recognized that the loss of affordable housing would be a major recovery challenge and a citizens' housing recovery group formed immediately. Three months later, the town undertook an intensive 8-week recovery planning process with hundreds of local participants, resulting in the LRAP. The LRAP has a dedicated chapter on housing recovery, including a goal to increase opportunities for affordable housing. The Board of Trustees (BOT) designated the citizens' group as an official task force on housing recovery and charged them with studying the issue and generating proposals. Their actions were regularly reported in the town's local newspapers and at BOT meetings.

Despite political and popular support, 2 years after the flood the town has been unable to replace but a handful of the affordable units. As a result, the population has shrunk to 1865, with 185 households still displaced (Colorado Public Radio 2015). Of those, 72% (133) were low income (80% of the AMI), and 39% (72) were very low income (30% of the AMI) (Town of Lyons 2015).

Two related factors led to the long-term loss of affordable housing in Lyons. First, many of the damaged or destroyed homes were in the designated 100-year floodplain or floodway, introducing significant regulatory and financial barriers to rebuilding. Both mobile home parks, which included 43 affordable units, were located in the floodway and have permanently closed. A substantial number of homeowners (over 30) in the Confluence neighborhood, a flood-damaged area with many affordable homes, are voluntarily participating in two property buyout programs funded by

FEMA and HUD. Second, Lyons has a severe shortage of developable land within its planning boundaries but outside of the floodplain, due to the steep terrain surrounding the town and Boulder County's Open Space program, which has purchased land near Lyons since the 1970s. The few available parcels are unsuitable for replacement housing for a variety of reasons, particularly conservation easements, unsuitable terrain, and high valuations.

After more than a year of intensive debate and planning, the town proposed a new 66-unit affordable housing development that would give preference to flood-displaced households. The proposed site was an approximately 6-acre parcel within a 30-acre park near downtown and existing infrastructure. Possible funding included disaster recovery grants and affordable housing tax credits totaling \$27 million (Town of Lyons 2015). Colorado state law requires that the sale or disposal of municipal parkland be subject to a popular vote (Colorado Revised Statutes 31-15-713). The election, held in March 2015, rejected the proposal by a count of 614-498. Full analysis of the vote is beyond this chapter's scope, but opposition centered on concerns over lost park space, distrust by some local residents of the county's housing authority and federal recovery programs, and the proximity to nearby schools and neighborhoods, as well as the floodplain.

7.4.1.3 Milliken, Colorado

Milliken is a small historic agricultural town near the confluence of the Big Thompson and Little Thompson rivers, in Weld County. It has grown rapidly in the past two decades, from a population of 1605 in 1990 to 5610 in 2010 (US Census). It is mostly a bedroom community; less than 3% of the population works locally (US Census). Milliken also faced significant housing pressure prior to the flood—the vacancy rate for rent or purchase was less than 2% and the town had very little affordable housing (Town of Milliken 2014). Besides two mobile home parks, Milliken had a 28-unit market-rate apartment complex with affordable rents and a 20-unit permanently affordable senior housing facility. Over 90% of the housing in Milliken is single-family detached homes.

The floodwaters from the Big and Little Thompson destroyed 35 mobile homes and substantially damaged eight more, much of Milliken's affordable housing. Immediately after the flood, the town authorized the reopening of the mobile home parks to prevent displaced residents from becoming homeless (Draper 2013). The residents were required to sign an affidavit, however, that stated the mobile home park might be included in the floodplain of an updated flood map and "...in such instance, I may be required to relocate my mobile home in the future at my own cost...I understand that this relocation might be outside Milliken" (Brown and Crummy 2013).

By 2015, approximately 28 of the 43 mobile homes have been repaired or replaced on a temporary basis, while the owner of one of the two parks continues the process of obtaining floodplain development permits. In March of 2014, the town adopted temporary floodplain maps, which expanded the flood hazard area to include the mobile home parks, beyond what is officially regulated by FEMA. As such, the parks' owners and residents will need to clear a series of costly regulatory hurdles in order to rebuild, and residents will need to carry flood insurance. They have also

been required to rebuild the parks, lots, and homes to current development codes. Milliken officials argue the new regulations are necessary to ensure the health and safety of the parks' residents and anticipate the official floodplain map revisions will likely expand the special flood hazard area to reflect the temporary maps. Residents and owners have publicly questioned whether the town is trying to rid itself of mobile homes (Peif 2014).

The town is also actively attempting to purchase both mobile home parks (along with other nearby properties) for the purpose of flood mitigation using federal hazard mitigation and recovery grants. These funds require the voluntary sale of the parks by the landowners and necessitate that the land be used for open space or passive recreation, and never again be used for residential or commercial development. In the event the purchase occurs, the households would need to be relocated, almost certainly outside of Milliken. Since the flood, there has been no new affordable housing built outside of the repaired mobile home parks. Town officials acknowledge that the free market is not producing new affordable housing, and that it is problematic for recovery since they expect 86% of the future housing demand will come from households earning less than \$35,000 (Town of Milliken 2014, p. 55). However, the town argues it does not have the capacity to develop and manage affordable housing projects.

7.5 AFFORDABLE HOUSING AND RECOVERY IN COLORADO: KEY INSIGHTS

The loss of at least 300 units of low-cost housing in the three cases offers important insights into the dynamics of affordable housing in post-disaster recovery.

7.5.1 AFFORDABLE HOUSING AS PRE-EXISTING PROBLEM

Which households were most affected, and which have recovered, reflect the area's broader social, political, and economic context, similar to other disasters. Despite the region's growth and economic prosperity, neither the market nor the public sector have produced sufficient amounts of affordable housing before, or since, the flood. What relatively little affordable housing existed before the disaster was often affordable, because it was older, in poor condition, in undesirable locations, or was a mobile home, and not because it had been subsidized. Replacement subsidies for these market-affordable units are not available. As a result, some displaced residents have referred to the *disaster gentrification* phenomenon—that the flood has accelerated the replacement of older housing with more costly and less inclusive neighborhoods.

7.5.2 VULNERABILITY OF LOWER INCOME HOUSEHOLDS

Affordable housing was disproportionately affected because of its physical location on flood-prone, less expensive land, and households living in mobile home parks were especially vulnerable. The flood caused 13 mobile home parks to close, displacing

at least 400 households. In addition to their location, mobile home residents were uniquely affected because of their lack of legal protections, the inability to relocate damaged trailers, and community ambivalence toward rebuilding the parks (Lyons Emergency Assistance Fund 2015). This mirrors experiences in other disasters (e.g., Baker et al. 2014).

7.5.3 ROLE OF LOCAL GOVERNMENT AND RESIDENTS

The varying experiences of the three cases show post-disaster affordable housing decisions are made primarily by local actors, despite communities recovering under the same federal and state regime with significant external support for rebuilding subsidized affordable housing. In Evans, the local government closed the mobile home parks immediately, and has left recovery to the private market. In Milliken, the local government recognized the need for affordable housing, but did little to facilitate its replacement, and proactively made the rebuilding of mobile home parks more expensive and difficult in anticipation of updated floodplain maps. In Lyons, the town government and a large share of residents made a strong commitment to rebuild affordable housing and were backed by significant external resources, but a slight majority of residents voted to stop their efforts. In all three cases, the local government's decision framed the issue: was affordable housing a priority, and if so, under what conditions? For example, CDBG-DR grants are a major source of funding but because they have significant "strings attached," only Lyons was willing to pursue the funds. Resident demand also mattered. Evans did not perceive strong demand from residents to replace the affordable housing, in part because of their beliefs about the role of government, but also because the most affected households were displaced and no longer had a voice in local affairs. Although Milliken's mobile home park residents could return, their voices were limited in comparison to voices desiring recovery of local recreation and infrastructure. Without a critical mass of voices, or a strong culture of community engaged planning, a local government is unlikely to prioritize affordable housing during recovery. While the Lyons case perhaps illustrates the limitations of local government power, it confirms that the decision to rebuild affordable housing hinges on local community dynamics.

7.5.4 OTHER ACTORS AND SPECIALIZED AGENCIES

Other agencies and organizations are vital for affordable housing recovery, particularly public housing authorities and local nonprofits. In Lyons, the affordable housing proposal was based on \$250,000 in pre-application studies funded by the Boulder County Housing Authority (BCHA). The BCHA won the proposal to lead the development team, and committed substantial resources to the design and public engagement processes. In Evans and Milliken, the housing authority is much more limited in its budget and mission. It is unclear if either community considered applying for federal funds, but they likely would not have been able to fund the pre-application studies. The strength of local organizations also varied. In Lyons, several nonprofits contacted and organized displaced residents, and advocated for their needs, giving

voice to the displaced. Local officials credited these organizations with helping to justify their actions for the affordable housing proposal. In Evans and Milliken, no such advocacy organizations exist. Outside nonprofits assisted with flood relief, but no local organizations existed or emerged to address housing. We cannot say whether local advocacy would have created more public demand for affordable housing in Evans and Milliken, but it is true that the disaster-affected households in Lyons had a more active role in recovery (Rumbach et al. 2016), and that Lyons is working with the households and organizations to identify other affordable housing options.

7.6 CONCLUSIONS: LESSONS AND IMPLICATIONS

Through this chapter we have begun to understand why some communities rebuild, or attempt to rebuild, affordable housing post-disaster, and others do not. Local conditions, including land availability, the housing market, government priorities and capabilities, resident support of affordable housing, and the resources, reputations, and commitments of local agencies, all play a role. These findings suggest at least two strategies for improving the recovery of affordable housing. Cities and towns, the local housing authority, and nonprofits should work with the community prior to disasters to plan for the potential loss of affordable housing. This would identify the level of risk and the potential for mitigation, engage with those who are most vulnerable, and gauge public support for recovery options. They should also evaluate the major external programs for housing recovery like the CDBG-DR and Hazard Mitigation Grant Program, to determine whether they have the resources, capacity, and political will to pursue such resources in the event of a major disaster.

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Q6

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Q8

TO: CORRESPONDING AUTHOR

AUTHOR QUERIES - TO BE ANSWERED BY THE AUTHOR

The following queries have arisen during the typesetting of your manuscript. Please answer these queries by marking the required corrections at the appropriate point in the text.

Query No.	Query	Response
Q1	Kates and Pijawka (1977), Daniels et al. (2006), Mileti (1999), NRC (2006), Wisner et al. (2004), Zhang and Peacock (2009), Colorado Recovery Office (2014), US Census (2014), Weld County (2014), Lyons Recovery Action Plan (2014) are not under References. Please provide complete publication details.	
Q2	Is it Tierney et al (2001) or Tierney (2006)? Please confirm the correct year.	
Q3	Please confirm the insertion of “a, b” for APA (2014) in text and reference list. Is it APA (2014a) or APA (2014b)	
Q4	Please check URL does not resolve.	
Q5	Colorado Resiliency and Recovery Office (CRRO) (2015), Cutter et al (2003), Federal Emergency Management Agency (FEMA) (2009), Department of Housing and Urban Development (HUD) (2012), Lee and Jung (2014), Lindenstein (2014), May and Williams (1986), Mitchell (2003), Romano (2014), Svaldi (2013), Town of Milliken (2015), Young (1990) are not cited. Please suggest a suitable place for its citation in the text.	
Q6	Please update Rumbach et al. (2016) with volume number and page range.	
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