



## A Case for Sustainable Affordable Housing in the United States

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A well-paying job, a loving family consisting of 2.5 kids, a car, and a spacious suburban home with a postage-stamp backyard and white picket fence: this is the elusive “American Dream” of history books, advertisements, and national myth. For many, this American Dream is unattainable. What people tend to focus on less is the fact that it is also unsustainable. In the coming decade, as a result of pressure factors like population growth and climate change, the United States will be forced to dramatically alter the way in which it currently thinks about and manages critical resources like water, energy, and land. Housing, as the mechanism by which communities are organized and resources are allocated and expended, lies at the nexus of many of these concerns. In order to tackle many of the nation’s sustainability-related problems, U.S. governments, developers, and citizens will soon have to think more creatively about residential development. To adapt to and survive the consequences of global climate change, the country will have to address the urban sprawl that lies at the heart of its national myth, and embrace new imaginative possibilities of what ideal American communities might look like. This chapter describes

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current deficiencies of the United States housing market to locate a promising solution to these challenges in the field of sustainable affordable housing.

The American Dream sprawled over and colonized the country's natural landscape. Beginning around 1945, encouraged by tax incentives, pop culture, and the G.I. Bill, Americans began to move from cities to suburbs.<sup>1</sup> This new generation of government-sponsored, postwar suburbanites laid claim to formerly unattractive corners of the country. They created communities outside of cities, which were now considered dangerous.<sup>2</sup> They engineered ways to remain connected to the rest of the country, relying on national highways, personal automobiles, shopping malls, supermarkets, and the television to survive on the fringe of urban areas. In doing so, this generation that benefitted from the postwar economic boom, the emergence of consumer culture, and the newfound ability to live pop-art lifestyles significantly increased the amount of resources people consumed and the area that these resources needed to travel in order to reach them.<sup>3</sup> The consumption patterns, homes, communities, and lifestyle habits they created have since become defining features of both the American landscape and the American psyche.

## I CHALLENGES IN THE CURRENT HOUSING MARKET

### 1.1 *Urban Sprawl*

Today, the suburbs post-World War II Americans built continue to place a disproportionate burden on national commons and resources like air, land, and water. In 2014, despite the fact that suburban residents accounted for less than half of the U.S. population (37.3% in 2015),<sup>4</sup> suburbs were found to generate half of all household greenhouse gas emissions

<sup>1</sup> Beauregard, Robert A. *When America Became Suburban*. Minneapolis: University of Minnesota Press, 2006.

<sup>2</sup> Chauncey, George. "World War II and the Remaking of American Sexual Culture." Lecture, HIST 127; Lecture, YUAG Auditorium, New Haven, CT, September 29, 2016.

<sup>3</sup> Rhodes, Edwardo Lao. *Environmental Justice in America a New Paradigm*. Bloomington: Indiana University Press, 2005.

<sup>4</sup> @uscensusbureau. "U.S. Cities Home to 62.7% of Population but Comprise 3.5% of Land Area." The United States Census Bureau. 2015. Accessed December 23, 2016. <http://www.census.gov/newsroom/press-releases/2015/cb15-33.html>.

nationwide.<sup>5</sup> As a result, the average carbon footprint of households located in the center of large, population-dense cities was about 50 percent below the national average, while that of households located in distant suburbs was twice the national average.<sup>6</sup> Additionally, the national highways, parking lots, and long, wide suburban roads that this generation began to pave also increased the area of impervious surfaces covering American land, blocking groundwater recharge.<sup>7</sup> In 2005, around 65% of the total impervious cover in the U.S. came from “habitats for cars” alone, which are concentrated in suburban areas and include paved streets, parking lots, and driveways.<sup>8</sup> These impervious surfaces collect pollutants that get deposited into waterways when it rains, leading to ecological problems like contamination and fish kills.<sup>9</sup> Furthermore, sprawled habitats for people and cars were built at the expense of the species that had originally lived there; sprawl has placed 30% of the nation’s plant and animal species at current risk of extinction.<sup>10</sup>

These damages are not limited to plant and animal life. When confronted with the externalities of sprawl, humans assume the high costs of pollution cleanup and daily exposures. Poorly planned development directly harms human health. For example, the construction of contiguous suburban zones contributes to a heat island effect.<sup>11</sup> A given metropolitan area is said to experience the heat island effect when the temperature of that densely populated area is around 20 degrees Fahrenheit hotter

<sup>5</sup> Sanders, Robert. “Suburban sprawl cancels carbon-footprint savings of dense urban cores.” Berkeley News. 2015. Accessed December 23, 2016. <http://news.berkeley.edu/2014/01/06/suburban-sprawl-cancels-carbon-footprint-savings-of-dense-urban-cores/>.

<sup>6</sup> Ibid.

<sup>7</sup> Wilson, Bev, and Arnab Chakraborty. “The Environmental Impacts of Sprawl: Emergent Themes from the Past Decade of Planning Research.” *Sustainability*, August 5, 2013. MDPI.

<sup>8</sup> Frazer, Lance. “Paving Paradise: The Peril of Impervious Surfaces.” *Environmental Health Perspectives*. 2005. Accessed December 23, 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1257665/>.

<sup>9</sup> Ibid.

<sup>10</sup> Ewing, R., J. Kostyack, D. Chen, B. Stein, and M. Ernst. *Endangered by Sprawl: How Runaway Development Threatens America’s Wildlife*. National Wildlife Federation, Smart Growth America, and NatureServe. Washington, DC, January 2005.

<sup>11</sup> Neil Debbage, J. Marshall Shepherd, *The urban heat island effect and city contiguity*, *Computers, Environment and Urban Systems*, Volume 54, 2015, Pages 181–194, ISSN 0198-9715, <https://doi.org/10.1016/j.compenvurbysys.2015.08.002>. (<http://www.sciencedirect.com/science/article/pii/S0198971515300089>)

than the temperature of surrounding, more rural areas.<sup>12</sup> In a metropolitan community experiencing the heat island effect, roof and pavement surface temperatures can climb to be 50–90 degrees Fahrenheit hotter than the air.<sup>13</sup> This works to significantly raise local demand for cooling, creating a surge in electricity usage and leading to an increase in greenhouse gas emissions from nearby power plants used to supply electricity. Heat island effect has been linked to physical discomfort, respiratory difficulties, and heat-related mortality.<sup>14</sup>

As this information has come to light in recent years, it has become clear that the sun has set on the era of sprawl. Such developments can no longer be considered a viable solution to accommodate future population growth and subsequent housing needs.<sup>15</sup>

### 1.2 *Housing Affordability and Accessibility*

Despite this suburban development, America still faces a shortage of affordable homes and a housing and homelessness crisis. This issue is so severe that it has received international attention in popular human rights discourse. A letter submitted to the United Nations Universal Periodic Review by the National Law Center and endorsed by 40 separate U.S. organizations and nonprofits provides compelling evidence to express why the current housing system in the United States is not only problematic, but fundamentally unjust. They cited the facts that,

In no U.S. jurisdiction can a person working full time at the federal minimum wage afford a one-bedroom apartment. Due to lack of funding, only one quarter of renters eligible for federal housing assistance actually receive it, and the federal budget for developing and maintaining public housing and providing for low-income housing subsidies has decreased. No binding requirements exist for jurisdictions to plan for and create incentives for the

<sup>12</sup> Shmaefsky, Brian R. “One Hot Demonstration: The Urban Heat Island Effect.” *Journal of College Science Teaching* 35, no. 7 (2006): 52–54. <http://www.jstor.org/stable/42992461>.

<sup>13</sup> “Heat Island Impacts.” EPA. June 20, 2017. Accessed August 09, 2017. <https://www.epa.gov/heat-islands/heat-island-impacts>.

<sup>14</sup> *Ibid.*

<sup>15</sup> Freilich, Robert H., and Neil M. Popowitz. “The Umbrella of Sustainability: Smart Growth, New Urbanism, Renewable Energy and Green Development in the 21st Century.” *The Urban Lawyer* 42, no. 1 (2010): 1–39. <http://www.jstor.org/stable/27895766>.

production of sufficient adequate, affordable housing for low-income persons.<sup>16</sup> (US Human Rights Network UPR Housing Working Group, 2014, 3)

The letter further pointed out and condemned discrimination in the housing market based on race, disability, gender, national origin, and criminal background.<sup>17</sup> Signatories determined that these issues in the US housing market constitute not only a crisis of affordability but also a human rights violation. Matthew Desmond's research on the prevalence and negative consequences of evictions adds further evidence to support these criticisms of the current housing market.<sup>18</sup> Further, the Urban Land Institute finds that due to an increase in rents, decrease in number of units, and increase in the number of low-income families, only 28% of renter households with incomes at or below 30 percent of the area median income can access viable, affordable housing units.<sup>19</sup> It is clear that the United States' status quo housing market is deeply flawed and socially harmful.

## 2 THE PATH FORWARD

### 2.1 *Sustainable Affordable Housing*

To combat the wide range of problems associated with sprawl and a lack of affordable and equitable access to housing, the nation must navigate a series of obstacles. The country needs to build more homes, but cannot colonize more natural space. Residential developments need to be denser, but not at the expense of providing inhabitants with a decent quality of life. Federal government needs to more equitably allocate resources and ensure that citizens have equal access to valuable goods and services, but

<sup>16</sup> "Housing and Homelessness in the United States of America." National Law Center on Homelessness & Poverty, Chair, US Human Rights Network UPR Housing Working Group to Submission to the United Nations Universal Periodic Review of United States of America. September 15, 2014.

<sup>17</sup> Ibid.

<sup>18</sup> Desmond, Matthew. "Eviction and the Reproduction of Urban Poverty." *American Journal of Sociology* 118, no. 1 (2012): 88–133. doi:10.1086/666082.

<sup>19</sup> Leopold, Josh, Getsinger, Lisa, Blumenthal, Pamela, Abazajian, Katya, Jordan, Reed. Housing Affordability Gap for Extremely Low-Income Renters in 2013. Washington, D.C.: Urban Land Institute, 2015. Accessed December 11, 2016. <http://www.urban.org/sites/default/files/alfresco/publication-pdfs/2000260-The-Housing-Affordability-Gap-for-Extremely-Low-Income-Renters-2013.pdf>.

needs to do so in a fiscally, environmentally, and socially responsible way. The country needs smart, sustainable planning to address current housing deficiencies and accommodate future population growth. The answer to these many constraints lies in a large-scale effort to increase the availability and attractiveness of green affordable housing developments.

Sustainable affordable housing development provides an opportunity to address issues related to sustainability, affordability, and accessibility in the current housing market. Affordable housing in the United States is defined as housing for which an occupant is not required to pay more than 30 percent of her gross income, taking into consideration gross housing costs and utilities.<sup>20</sup> Based on the philosophy that all citizens should be entitled to a basic standard of living, affordable housing should ideally also be conveniently located next to public transportation, situated within a healthy and safe environment, and work to foster and protect the comfort and pride of occupants.<sup>21</sup>

Green housing comes in many different shapes and sizes, but generally seeks to address these same problems through a set of broadly conceived sustainability measures. These buildings are planned to conserve energy, reduce water usage, reduce reliance on personal motor vehicles, and overall minimize the resource use and ecological impact of the home's occupants. Less resource-intensive lifestyles translate into lower utility and overall costs of living, making sustainability and affordable housing a natural partnership.<sup>22,23</sup>

Sustainable affordable housing provides quantifiable and qualitative benefits to families.<sup>24</sup> First, green affordable housing reduces the energy costs of occupant families.<sup>25</sup> Some general energy-saving green building strategies include the use of energy-efficient appliances and lighting units, passive solar design, energy metering, and the ability to harness renewable

<sup>20</sup> "Glossary of HUD Terms." HUD USER. Accessed December 23, 2016. [https://www.huduser.gov/portal/glossary/glossary\\_a.html](https://www.huduser.gov/portal/glossary/glossary_a.html).

<sup>21</sup> Boehland, Jessica. "Greening Affordable Housing." *Race, Poverty & the Environment* 13, no. 1 (2006): 59–61. <http://www.jstor.org/stable/41495691>.

<sup>22</sup> "Top 5 Reasons to be Energy Efficient." Alliance to Save Energy. November 13, 2013. Accessed August 10, 2017. <http://www.ase.org/resources/top-5-reasons-be-energy-efficient>.

<sup>23</sup> Gorman-Murray, Andrew. *Material Geographies of Household Sustainability*. Farnham: Taylor and Francis, 2011. Accessed August 10, 2017. ProQuest Ebook Central.

<sup>24</sup> Burlinghouse, Gerald N., ed. *Green Affordable Housing*. New York: Nova Science Publishers, Inc., 2009. Accessed August 10, 2017. ProQuest Ebook Central.

<sup>25</sup> *Ibid.*

energy.<sup>26,27</sup> The savings that result from these tactics have significant positive implications for families who qualify for affordable housing and earn annual incomes far lower than the area median income. A case study in a book by Greg Kats outlines these benefits. The Oregon Green Community project Clara Vista Town Homes was able to provide occupants with energy savings of 73% as compared to the energy costs in standard, nearby affordable housing complexes.<sup>28</sup> These gains in efficiency are no small feat. For families forced to devote such massive percentages of their income to housing costs, heads-of-households must frequently make extremely painful financial tradeoffs to pay unaffordable energy bills. When families living in poverty were surveyed about the tradeoffs they made to pay their energy bills, 57% of non-senior owners and 36% of non-senior renters reported that they went without dental care, 25% of non-seniors made a partial rent or mortgage payment or missed a payment, and 20% of non-seniors went without food for at least a day.<sup>29</sup> By dramatically lowering energy bills that disproportionately burden the nation's poor, green affordable housing presents an opportunity to reduce these appalling figures and address a clear-cut crisis.

Further, sustainable affordable housing features lead to improvements in occupants' health. Green building projects ensure sufficient ventilation, mitigate the presence of moisture, mold, pests, and radon within the home,<sup>30</sup> and use non-toxic construction materials.<sup>31</sup> Several studies have shown that such improvements provide significant health benefits to occupants. The EPA cites indoor air pollution as a top environmental risk to

<sup>26</sup> "Buildings: Sustainable Strategies." Sustainable Cities Institute. 2013. Accessed August 10, 2017. <http://www.sustainablecitiesinstitute.org/topics/buildings-and-energy/green-building-101/buildings-sustainable-strategies>.

<sup>27</sup> "Checklist: LEED v4 for Building Design and Construction." [Usgbc.org](http://www.usgbc.org). April 5, 2016. Accessed August 10, 2017. <https://www.usgbc.org/resources/leed-v4-building-design-and-construction-checklist>.

<sup>28</sup> Kats, Gregory, Jon Braman, and Michael James. *Greening our Built World: Costs, Benefits, and Strategies*. Washington, DC: Island Press, 2010.

<sup>29</sup> *Ibid.*

<sup>30</sup> Breyse, Jill, David E. Jacobs, William Weber, Sherry Dixon, Carol Kawecki, Susan Aceti, and Jorge Lopez. "Health Outcomes and Green Renovation of Affordable Housing." *Public Health Reports (1974-)* 126 (2011): 64–75. <http://www.jstor.org/stable/41639267>.

<sup>31</sup> Vittori, Gail D.A. "Affordable Housing: Greening Affordable Housing." *Journal of Affordable Housing & Community Development Law* 13, no. 4 (2004): 458–62. <http://www.jstor.org/stable/25782712>.

public health.<sup>32</sup> America's low-income population is particularly vulnerable to this as it experiences the highest rates of asthma nationwide.<sup>33</sup> Asthma is a serious health condition that green housing can effectively combat; when moved from their old homes to breathe-easy homes, asthmatic children's average yearly visits to emergency rooms dropped from 60 to 21.<sup>34</sup> Sustainable affordable housing can therefore benefit both low-income families and the federal government by reducing healthcare costs, limiting the number of school and work absences due to environment-induced illness, and increasing inhabitants' overall productivity and quality of life.

## 2.2 Sustainable Community Development

Thoughtfully planned communities can also provide families with greater access to transportation opportunities. Both sustainable and affordable housing frameworks require that developments be located near abundant, high-density, low-carbon, relatively inexpensive forms of transportation.<sup>35,36,37</sup> The principle of opportunity-based housing argues that equitable housing should provide inhabitants with access to other opportunity structures through deliberate regional connections. These opportunity structures include, "high performing schools, employment, transportation, childcare, and civic and political networks."<sup>38</sup> Mass-transportation structures help low-income residents connect with broader regions that possess these vital services, and enable greater overall mobility and opportunity. Access to

<sup>32</sup> United States. Department of Housing and Urban Development. Federal Healthy Homes Work Group. *Executive Summary Advancing Healthy Housing: A Strategy for Action*. Department of Housing and Urban Development, 2013.

<sup>33</sup> Ibid, Vittori.

<sup>34</sup> Ibid, Kats.

<sup>35</sup> "Checklist: LEED v4 for Building Design and Construction." [Usgbc.org](http://www.usgbc.org). April 5, 2016. Accessed August 10, 2017. <https://www.usgbc.org/resources/leed-v4-building-design-and-construction-checklist>.

<sup>36</sup> Connected Communities: Linking Affordable Housing and Transportation | HUD USER. Accessed August 10, 2017. [https://www.huduser.gov/portal/pdredge/pdr\\_edge\\_research\\_071414.html](https://www.huduser.gov/portal/pdredge/pdr_edge_research_071414.html).

<sup>37</sup> "Location Affordability Index." Location Affordability Portal. Accessed August 10, 2017. <http://www.locationaffordability.info/>.

<sup>38</sup> Weiss, Jonathan D. "Preface: Smart Growth and Affordable Housing." *Journal of Affordable Housing & Community Development Law* 12, no. 2 (2003): 165–72. <http://www.jstor.org/stable/25782595>.



affordable mass-transit structures would provide substantial monetary savings to families with incomes between \$20–50,000, who typically spend 29% of their income on transportation costs.<sup>39</sup> Additionally, encouraging a national shift from personal vehicles to high-density public transportation systems will reduce greenhouse gas emissions, air pollution, traffic, accidents, and national reliance on fossil fuels.<sup>40</sup> Sustainable affordable housing community development, in promoting mass transit, can improve the quality of life of development occupants, other commuters, and community residents.

### 2.3 *Public Policy Initiatives*

Investors, legislations, and non-profit organizations have recognized the many benefits sustainable real estate has the potential to provide their communities. The field of green affordable housing is relatively new, but quite vibrant and continuously evolving. Thus far, the major innovations and successes in sustainable building have largely been the product of strong federal, state, and local policy initiatives. The United States Department of Housing and Urban Development (HUD) has been particularly active in this space, recognizing that the department itself devoted more than 10% of its total budget to pay the energy costs of families living in federally-assisted affordable housing in 2008.<sup>41</sup> The federal government could benefit from lowering these costs, and sees green affordable housing as a method of accomplishing this goal. Further, over the past two decades, the federal government has begun to consider sustainable affordable housing as a method of accomplishing other national objectives such as job growth and community investment. Following this logic, it has coordinated policy interventions aimed to flow funds in the direction of sustainable affordable construction and build a financial infrastructure to encourage the movement.

HUD's green affordable housing track record since 2001 reflects this sort of thinking, and demonstrates how it has evolved over time. The federal government has mostly contributed to this field through its strate-

<sup>39</sup> Ibid, Kats.

<sup>40</sup> Gomez, Sarah. "The Case for Bus Rapid Transit (BRT): Successfully Shifting the Status Quo While Managing Risk." *Innovation and Sustainability* (2016).

<sup>41</sup> Shear, William B. *Green Affordable Housing: HUD Has Made Progress in Promoting Green Building, but Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants*. Washington, D.C.: United States Government Accountability Office, Diane Publishing Co., 2008.

gic allocation of funds and creation of incentive programs. In 2001, HUD established an Energy Taskforce to investigate potential opportunities for federal involvement in green building, and in 2005, the department used its findings to implement the comprehensive Energy Action Plan to promote national energy efficiency.<sup>42</sup> This plan included disseminating educational information, encouraging retrofits, providing stronger rewards and incentives for new green construction and retrofits of existing units, and strengthening energy standards and monitoring processes.<sup>43</sup>

Additionally, the federal government has recently looked to green building as a way to promote job growth. Since 2009, as part of the American Recovery and Reinvestment Act (ARRA), the federal government has issued energy efficiency and conservation block grants that encourage efficient and renewable energy retrofitting.<sup>44</sup> Since 2010, the federal government has also stimulated development in sustainable affordable housing through the Sustainable Communities initiative. Through this program, HUD and The US Department of Transportation (DOT) provide Regional Planning Grants to nonprofits and government entities involved in sustainable planning, and Challenge Grants to states and local municipalities undertaking projects to integrate housing and transportation.<sup>45</sup>

Many nonprofits have investigated the efficacy of these federal grant programs and pointed to some of their shortcomings. Their criticisms typically center around the fact that the federal initiatives encourage voluntary participation in this space, but relying on such measures alone will not have a large enough impact on either affordable housing or sustainable development in the long-term.<sup>46</sup> Regardless, it is clear that the federal

<sup>42</sup> United States. Department of Housing and Urban Development. Office of Policy Development and Research, Office of Community Planning and Development. *HUD'S ENERGY ACTION PLAN*. By Michael Freedberg and Robert Groberg. Washington, D.C.: HUD.

<sup>43</sup> Ibid.

<sup>44</sup> "Energy Efficiency and Conservation Block Grant Program Guidance." [Energy.gov](https://energy.gov/eere/wipo/energy-efficiency-and-conservation-block-grant-program-guidance). Accessed December 23, 2016. <https://energy.gov/eere/wipo/energy-efficiency-and-conservation-block-grant-program-guidance>.

<sup>45</sup> "Office of Sustainable Communities\_SCI." Office of Sustainable Communities\_SCI. Accessed December 23, 2016. <https://portal.hud.gov/hudportal/HUD?src=%2Fhudprograms%2Fsci>.

<sup>46</sup> "Docket No. FR-5396-N-01: Sustainable Communities Planning Grant Program Advance Notice and Request for Comment." Enterprise Community Partners and Adrienne E. Quinn to Office of Sustainable Housing and Communities; US Department of Housing and Urban Development. March 10, 2010.

government has recognized how it stands to benefit from investing in green affordable housing. In spite of its ample room for improvement and expansion, thus far, the federal government's concerted monetary push has served as one of the primary engines driving the sustainable affordable housing movement.

Federal funds have also fueled a large part of the innovation in sustainable affordable housing at the state and local levels through Low-Income Housing Tax Credits (LIHTCs). States have relied on LIHTCs, which are funded by the federal government but administered at a state level, as a financial leverage encouraging investment in affordable housing.<sup>47</sup> LIHTCs accomplish this as they reward private investors who invest in affordable rental housing with tax credits on their federal income tax returns.<sup>48</sup> This financing structure allows for the financing of projects that would not otherwise be undertaken due to limited resources or split-incentives between owners paying for the renovations and renters benefiting from energy savings. Thus, as LIHTCs attract the attention and capital of a certain class of private investors to the affordable housing market, they have become the most valuable tool employed by the federal government to finance the construction and renovation of projects in this space in the status quo. In fact, LIHTCs account for 90% of all affordable housing created today.<sup>49</sup> Harnessing the potential power of this incentive to promote green affordable housing, states can decide to selectively grant LIHTCs only to developers who follow sustainable building models. Many states have done so quite effectively, *and 36 agencies have added green policies to LIHTC regulations since 2005.*<sup>50</sup>

Alternatively, some of the most innovative, high-impact work that states and local governments have accomplished in this field has had nothing to do with project finance. A lot of the barriers obstructing sustainable affordable housing stem from legal challenges, like state construction

<sup>47</sup> Ibid, Shear.

<sup>48</sup> United States. Office of the Comptroller of the Currency, Community Affairs Department. *Low-Income Housing Tax Credits: Affordable Housing Investment Opportunities for Banks*. By David Black and Sherrie L.W. Rhine. Washington, DC: Office of the Comptroller of the Currency, 2014.

<sup>49</sup> "About LIHTC." About the Low Income Housing Tax Credit | National Equity Fund, Inc. Accessed December 23, 2016. <http://www.nefinc.org/whowear/aboutlihtc.html>.

<sup>50</sup> Ibid.

regulations and zoning bylaws. Many cities, like San Francisco,<sup>51</sup> Los Angeles,<sup>52</sup> New York,<sup>53</sup> Portland,<sup>54</sup> and Seattle,<sup>55</sup> are leading the way with policy measures and targeted initiatives aimed at promoting green growth in affordable housing. For example, the City of Oakland offers complementary green building technical assistance and public promotion to private developers,<sup>56</sup> and Gainesville, Florida and Washington D.C. now expedite permitting processes for green building projects assessed and certified by the USGBC.<sup>57</sup> Many cities have followed the example set by cities like Boston, where since 2007 the zoning code has required that all new private development construction projects comply with at least the minimum level of LEED certification,<sup>58</sup> and Vancouver City, which since 2011 has required that projects on rezoned sites in the city be built to achieve a LEED Gold rating standard.<sup>59</sup> States have also helped to encourage these strategies. North Carolina, for example, allows its cities to charge “reduced building permit fees or provide partial rebates of building permit fees” for buildings that comply with “green” ratings systems including LEED, Green Globes, and similarly systems.<sup>60</sup> Focusing on another important aspect of progress in this space, some states have developed their own energy standards that take into account local climate and regional regulations, and require new construction to adhere to these standards.<sup>61</sup> State

<sup>51</sup> Abair, Jesse W. “Green Buildings: What It Means To Be “Green” and the Evolution of Green Building Laws.” *The Urban Lawyer* 40, no. 3 (2008): 623–32. <http://www.jstor.org/stable/23801459>.

<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

<sup>54</sup> “Planning and Sustainability.” The City of Portland Oregon. Accessed December 23, 2016. <https://www.portlandoregon.gov/bps/>.

<sup>55</sup> United States. Office of Housing. *SeaGreen: Greening Seattle’s Affordable Housing*. By Katie Hong and Greg Nickels. Seattle, WA: City of Seattle, 2002.

<sup>56</sup> Ibid.

<sup>57</sup> Ibid, Abair. City of Gainesville, Fla., Code of Ordinances art. 1.5, § 6–12. D.C. Code §6-1451.06(a) (2007).

<sup>58</sup> Ibid, Abair.

<sup>59</sup> Vancouver, City Of. “Sustainable Zoning.” City of Vancouver. May 16, 2012. Accessed August 11, 2017. <http://vancouver.ca/home-property-development/sustainable-zoning-landing.aspx>.

<sup>60</sup> United States. General Assembly of North Carolina. Senate. *An Act to Allow Counties and Cities to Provide Building Permit Fee Reductions or Partial Rebates to Encourage Construction of Buildings Using Sustainable Design Principles to Achieve Energy Efficiency*. Senate Bill 581 ed. Session Law 2007-381. General Assembly of North Carolina, 2007.

<sup>61</sup> Ibid, Shear.

and local governments have also adopted smart growth initiatives, which center on compact developments, transit corridors, and independent mixed-use communities.<sup>62</sup> Through green legislation, zoning reform, and smart growth initiatives, state and local governments have provided increasing amounts of legislative support to the sustainable affordable housing.

#### 2.4 *Non-profit and Public Organization Support*

The green affordable housing movement has also benefitted from the valuable and varied work of committed non-profit and private organizations. Leaders in this realm include Enterprise Community Partners, Energy and Environmental Building Alliance, Green Affordable Housing Coalition, The Home Depot Foundation, and the U.S. Green Building Council (USGBC), among many more.<sup>63</sup> Organizations like these have helped to engage, educate, and assist all participants involved in sustainable affordable housing, from politicians to developers. They lobby on behalf of sustainable affordable housing, help finance projects, offer consulting services to municipalities, and produce research that measures the impact of green housing projects once they are constructed. They have also helped to create various sets of standards for green building that many states have now adopted as the minimum required features for construction projects seeking to receive government bids. Such certification programs include Energy Star, LEED, Green Globes, Living Building Challenge, NZEB, Passive House Institute US, SITES, WELL Building Standard, and Enterprise Green Communities Criteria.<sup>64,65</sup> Non-profit and private organizations have played an important role in providing guidance and support to actors involved in green affordable housing initiatives.

<sup>62</sup> Ibid, Freilich.

<sup>63</sup> Mann, Bonnie, and Tim Davis. *Municipal Action Guide: Creating Green Affordable Housing*. Washington, DC: National League of Cities, 2009.

<sup>64</sup> “Green Building Standards and Certification Systems” Green Building Standards and Certification Systems | WBDG Whole Building Design Guide. Accessed December 23, 2016. <https://www.wbdg.org/resources/green-building-standards-and-certification-systems>.

<sup>65</sup> “2015 Criteria.” Enterprise Community Partners. Accessed December 23, 2016. <http://www.enterprisecommunity.org/solutions-and-innovation/green-communities/criteria>.

### 2.5 *Multi-disciplinary Collaboration and Innovation*

It is obvious that another crucial component of these projects is innovative design and development. Via Verde, a mixed-income development in the South Bronx, is one example of a successful sustainable affordable housing project made possible by such creativity.<sup>66</sup> Located on a former brownfield, but only four blocks away from the subway, Via Verde used to be an empty site that New York City wanted to revitalize. The city arrived at the idea of turning the site into an affordable sustainable housing complex as a means of fulfilling a local need for federally-assisted housing, combating asthma rates, which are among the highest in the country, and a municipal interest in sustainable design. In 2006, the city hosted a design competition for sustainable affordable housing. The Via Verde project, designed by the private developers and designers Phipps Houses Group, Jonathan Rose Companies, Dattner Architects, and Grimshaw Architects, won the competition. As a result, they obtained ownership of the lot for a nominal fee and the opportunity to work alongside city planners to transform 1.5 acres of the Bronx.

This public/private partnership provided unique, mutually beneficial collaboration opportunities for all parties involved. Because of this partnership, developers were able to circumvent zoning regulations that could have otherwise blocked the project, secure funding from a variety of sources (NYC bonds, federal grants, tax credits, bank loans) and receive community input throughout the development process. In turn, the city was able to revitalize a brownfield, provide new affordable housing opportunities to its inhabitants, and beautifully transform the landscape of the Bronx. The final plans for Via Verde included 222 units within stepped townhouse, mid-rise, and high-rise buildings. Via Verde, a LEED Gold complex, featured retail and community space, green roofs that could grow produce for occupants, stepped solar panels, a stormwater reclamation system, and design features to encourage healthy living. “Financially feasible, successful in the market, and critically acclaimed,”<sup>67</sup> Via Verde serves as a model for creative work in sustainable affordable housing by developers, designers, and city planners.

The Via Verde case study also invites an interesting discussion about future trends to watch for in green affordable housing. The Via Verde

<sup>66</sup> “Via Verde.” ULI Case Studies. 2016. Accessed December 23, 2016. <http://casestudies.uli.org/via-verde/>.

<sup>67</sup> Ibid.

model, and the success of its mixed townhouse, high-, and mid-rise units track the transition in affordable housing trends from favoring high-rise to mid-rise housing. At the same time, Via Verde suggests that future sustainable affordable housing projects might try to revive high-rises, integrate them within mixed-level design structures, and price these units at rates catered to middle-income families. Via Verde also points to a growing interest in restoring brownfields, and increasing attention to liminal spaces on the outskirts of cities, or between cities and suburbs. Further, Via Verde implies the future of sustainable affordable housing might face financing obstacles. The numerous federal grants and subsidies that funded Via Verde are expected to decrease in quantity in the coming years. LIHTCs, which helped to fund a large portion of the project, may become less attractive if the president follows through with his intentions to reduce taxes on the wealthy. Similarly, Via Verde hints at the potential role banks might play in financing sustainable affordable housing. This will be something particularly interesting to look out for in the future because banks became involved in this space in the late 2000s, but quickly abandoned the idea around 2010. Other financing schemes that could help sustainable affordable housing developments grow might involve project-specific green bonds, which Governor Cuomo released in New York in November of 2016.<sup>68</sup> Furthermore, Via Verde highlights how valuable private/public collaborations might increasingly be used in this realm to help navigate complex zoning and tax codes that can represent significant barriers for such projects. Another future development that might affect green affordable housing is increased interest in sustainable transportation infrastructure and densifying urban and suburban areas. Finally, every day new technologies emerge and affect the design aspect of sustainable housing. Innovations like manufactured housing, shipping container housing, and more effective resource-saving and usage-monitoring devices constitute impressive advancements in sustainable technology, and promise more will follow. Sustainable affordable housing is currently fertile ground for innovation.

<sup>68</sup> “Governor Cuomo Announces Nearly \$100 Million in New Green Bonds for Affordable Housing.” Governor Andrew M. Cuomo. 2016. Accessed December 23, 2016. <https://www.governor.ny.gov/news/governor-cuomo-announces-nearly-100-million-new-green-bonds-affordable-housing>.

### 3 CONCLUSION

The progress that has been made in the realm of sustainable affordable housing has occurred, more or less, over the past twenty years. It has benefitted families, communities, investors, developers, the environment, and the economy. It has blossomed largely as a result of the federal government's interest in cultivating the field, and it has relied on tax incentives to attract private investors. Green affordable housing has also been made possible by the creativity and legislative ambition of state and local governments, and the talent and support of nonprofits and private organizations. It has benefitted from the expertise and creative and collaborative efforts of developers, urban planners, and designers. Confronted with many obstacles since its birth, the space of sustainable affordable housing has been constantly changing, adapting, and growing.

As history repeatedly reminds us, the world does not follow a single, steady march towards progress.<sup>69</sup> Just because this field has been cleared within the last twenty years does not necessarily ensure this trend will survive the next twenty years, though its incredible projects will almost certainly remain. Environmental issues have never been as politically polarizing nor as high-stakes as they are now. The U.S. Congress is partisan and stagnant while carbon dioxide levels creep ever-upwards from 400 ppm.<sup>70</sup> President Trump is unpredictable, but America's state and municipal governments have grown more powerful, and proven their willingness to both speak out against and separate their policy agendas from that of the President.<sup>71</sup> The country has an affinity for blue-collar jobs, and sustainable affordable housing offers the possibility of new green-collar jobs. It is quite likely that this space will change in the next four years, but it is unclear exactly how. Will the country trade-in its high energy bills for passive solar and renewables, sick buildings for healthy ones, cars for mass-transit, and blue collars for green ones? Perhaps.

<sup>69</sup> Shear, Michael D. "Trump will Withdraw U.S. From Paris Climate Agreement" (New York, NY), June. 1, 2017.

<sup>70</sup> "Graphic: The relentless rise of carbon dioxide." NASA. Accessed December 23, 2016. [http://climate.nasa.gov/climate\\_resources/24/](http://climate.nasa.gov/climate_resources/24/).

<sup>71</sup> Tachuchi, Hiroko and Fountain, Henry. "Bucking Trump, These Cities, States and Companies Commit to Paris Accord." *New York Times* (New York, NY), June. 1, 2017.