

# ECONOMIC RECOVERY BEGINS AT HOME:

Retrofitting US Housing Stock  
for Jobs, Health, Savings, and  
the Climate

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# RESTORING AMERICA'S HOUSING STOCK: SOLVING MANY PROBLEMS WITH ONE UNIFYING PROGRAM

The US's initial failures in responding to the COVID-19 crisis have allowed previously underlying weaknesses in our economy to explode into full view—launching not only a public health emergency but mounting economic insecurity, evictions, utility shutoffs, and long-term dislocation.

As a result, there is now an even greater mandate for the Biden administration and the 117th Congress to deliver on a green recovery package that addresses unemployment, housing affordability, racial justice, public health, and rapid decarbonization. Because fossil fuel combustion in US residential and commercial buildings accounts for nearly 30 percent of all climate pollution (Leung 2018), one of the best ways to begin confronting these challenges is through a commitment to reduce energy usage, and costs, in US homes.

President Joe Biden ran and won on a historic climate plan that recognized the need to reduce energy use and decarbonize the economy, and to that end he committed to retrofit at least 4 million buildings and weatherize at least 2 million residential homes during his first term in office. This goal is well within reach, but the number represents only a down payment on the true potential of mobilizing a national transformation that could ultimately reach most of the 140 million homes across the US within the coming decade. Further, President Biden combined this pledge with a national commitment to reach 100 percent clean and carbon-free electricity by 2035 (Biden and Harris 2020).

A full generational investment in energy efficiency for buildings must be a centerpiece of this larger economic and energy transformation.

This paper offers a concrete plan for federal policy to rebuild housing stock, promote health, lower costs for homeowners, advance toward 100 percent clean and carbon-free energy, and protect the global environment: immediate and unifying action for the new president and Congress. The fruits of this plan would be broadly shared, benefiting red states and blue states, urban and rural communities, and union workers and small businesses; it would also improve housing affordability, enhance family purchasing power, and steward environmental health. The plan would particularly help those hit hardest by the COVID-19 economic downturn.

We can start with a commitment to reconstruct the spaces where US families live (and now often work as well): their homes. Yet there is no “one size fits all” approach for retrofitting the nation’s housing stock. The housing market is large and complex, with very different ownership structures, markets, and policies for low-income affordable housing, when compared to middle- and upper-middle-income homes. This paper therefore offers a broad-based program that blends high standards, bold public investment, and incentives for private investment—all centrally grounded in community, racial, and economic justice.

The policy program we propose in this paper is consistent with the guiding principles for developing climate stimulus laid out in the Roosevelt Institute’s [\*A Green Recovery: The Case for Climate-Forward Stimulus Policies in America’s COVID-19 Recession Response\*](#) (Gunn-Wright et al. 2020). It also aligns with the “ReBuild America” initiative put forward in the [\*Evergreen Action Plan\*](#), which would “put millions of Americans to work cutting pollution and energy bills for households and businesses through energy efficiency and electrification upgrades in millions of existing residential and commercial buildings” (Evergreen Collaborative 2020). Each policy action outlined within this paper was constructed to be fast-acting, while offering sustained recovery investment over time. Likewise, the policies channel aid to states and localities where the dollars do the most good, and offer a ready pathway for deployment through existing policies and well-established networks to ensure effective delivery of services. Critically, this program addresses urgent needs for decarbonization, while also making public health investments in homes as people are sheltering and distancing.

Advancing energy efficiency in buildings across the US will cut climate change pollution, while providing an engine for job growth, new career ladders, and sustained economic opportunity (Rinaldi 2019). Policies aimed at retrofitting the nearly 140 million housing units across the country neatly meet the Roosevelt Institute’s principles for enacting a green recovery, in a manner that is both immediate and cost-effective (E2 and E4TheFuture 2019). They will help reduce carbon emissions from the nation’s residential building stock and save homeowners and renters money on their monthly utility bills, while improving comfort, health, safety, and resilience. Energy efficiency has also proven effective in instigating job creation. In 2017, the sector added jobs at two times the national rate; it had reached 2.38 million jobs by the end of 2019, and it is projected to have grown by another 3 percent in 2020. In this way, such a program of reconstruction

and reinvestment in American homes offers ready, job-creating stimulus, and should be a centerpiece of any economic recovery package focusing on infrastructure (E2 and E4TheFuture 2019).

In Section I of this report, we briefly outline the five policy actions comprising the “Economic Recovery Begins at Home” program. In Section II, we provide important context and argue the many benefits this program is likely to yield. In Section III, we provide detailed descriptions of the policy mechanisms proposed.

## SECTION ONE

# FIVE JOB-CREATING POLICY ACTIONS TO RETROFIT US HOMES FOR PUBLIC HEALTH, AFFORDABILITY, AND CLIMATE

A true mobilization to rebuild homes for health and energy savings will have the potential to touch every city and rural community in every state in the nation. It can also put US construction workers back on the jobsite and manufacturing workers back on domestic assembly lines.

The policies outlined here rely on standards and rulemaking, direct public investment, consumer rebates, and spending through the tax code to support existing programs that have proven effective at reaching residential homeowners and renters. There is a special focus on low-income people and the standing system of state weatherization programs and nonprofit community action agencies that serve them. Learning from recent experiences with the American Recovery and Reinvestment Act, we have placed emphasis on calibrating investment into weatherization in a manner that proactively expands this important network of service providers, while ensuring their sustainability by calling for stable ongoing funding levels and not straining capacity with precipitous growth.

Further, this plan proposes to buttress the ability of wider contractor networks and public programs to expand service delivery beyond historic levels, at the speed, scope, and scale that our current climate, public health, and economic crises demand.

To organize this work, we propose an immediate program of policy change and public investment in five key areas. Together, they offer a comprehensive plan to create millions of jobs, to unlock billions in consumer savings and new investment, and ultimately to build more broadly shared prosperity as we forestall a mounting climate crisis. These policy actions include:



## 1. Ensuring Safe and Healthy Housing during the COVID-19 Pandemic

In the immediate public health and economic crises—which include a threat of rising evictions due to lost wages and family income—addressing “arrearages” (nonpayment) on utility bills must be seen as a centerpiece of ensuring housing affordability and community stability. For this reason, green, healthy home retrofits must take a special place in securing the welfare and security of families, and in stimulating economic recovery for the wider economy. Specifically, any stimulus package in response to the COVID-19 economic crisis should:

- a. Increase funding and expand access for energy assistance and weatherization to ensure that impacted people aren’t forced to lose access to lifesaving utility services—such as access to heating, electricity, and water—during the pandemic.
- b. Establish flexibility in qualification criteria and spending levels for the Weatherization Assistance Program (WAP) and the Low Income Home Energy Assistance Program (LIHEAP) during the pandemic to increase deployment and expand the local economic impact of these programs.
- c. Allow Medicaid resources to support building upgrades that create healthier home environments (with a special focus on indoor air quality, and potentially lead and climate control) in order to reduce health care costs from preventable illness and eliminate environmental stressors that exacerbate comorbidity during—and after—this public health emergency.

## 2. Expanding Housing Affordability through Low-Income Weatherization Assistance

Amid widespread nonpayment of utility bills, direct engagement with utilities to address arrearages offers an immediate opportunity for short-term stimulus, getting those dollars back into circulation and stabilizing local public services in the process. Likewise, expanding the focus to home weatherization will increase purchasing power for working families over the long term. Over time, these investments can also be used to advance housing affordability and reverse structural inequality more systematically by expanding the impact and reach of low-income weatherization and energy assistance programs, revitalizing public and subsidized

housing, and targeting investment toward historically disenfranchised communities to address health, safety, and environmental inequity. Specifically, this plan outlines specific policies to:

- a. Permanently expand and modernize low-income energy assistance (LIHEAP).
- b. Permanently expand and modernize weatherization assistance (WAP).
- c. Fully fund greening of public and multifamily affordable rental housing.

### **3. Upgrading Every Home in the US, at Every Income Level and in Every Region**

Building retrofits to cut energy bills and improve public health must not be limited only to subsidized utility programs or public housing stock. Real market barriers—in the form of barriers to entry for private firms, supply chain constraints, and project implementation logistics—hinder the adoption of these highly beneficial investments, even for moderate-income and middle-class households. Overcoming current barriers to the uptake of building energy retrofits in market rate housing<sup>1</sup> will require a different suite of policies based on consumer incentives. These policies will also serve to broaden the market, lower costs, and improve access to retrofits more broadly across the economy. We propose targeting middle-income households with a mix of rebates, tax credits, and access to subsidized loans; this reflects the sector’s ability to share in the cost of investment and benefit from future energy savings, helps reduce the stigma associated with low-income energy assistance by making weatherization a universal program, and promotes home performance retrofits at all income levels as an opportunity for individuals to contribute positively to home health, consumer savings, and climate solutions. Key incentives for market rate housing include efforts to:

- a. Establish a mixture of consumer-facing, point-of-sale, and performance-based rebates to offset the capital cost of home retrofits.

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<sup>1</sup> For the purpose of this paper, “market rate” refers to retrofits that do not provide direct subsidy or require income qualification. This applies to families making more than 80 percent Area Median Income; they will require different policy solutions to meet their distinct economic needs.

- b. Build on existing tax incentives that have proven effective in influencing consumer behavior.
- c. Expand access to capital through transparent and accountable grant and loan programs.

#### **4. Creating Good Jobs and Training Opportunities for a New Energy Workforce**

To capture the full benefit of building retrofits as a source of job-creating stimulus, it is important to build stable, long-term career ladders, opportunities to attain marketable skill certifications, and clear pathways into the industry for existing contractors and nontraditional workers. This is true in construction trades, as well as in a broader suite of services including energy management, building science, facility management, energy auditing, engineering, project development, and project management. This plan lays out concrete policies that build the energy efficiency labor market and expand the capacity of both small businesses and union contractors to serve this growing market, thereby generating family-supporting wages, benefits, and local economic development. Key areas of policy focus include a national commitment to:

- a. Set strong job quality standards to support fair compensation and uphold labor laws.
- b. Build career ladders through job training and skill certification for workers.
- c. Broaden contractor networks to engage new firms and build industry capacity capable of scaling with rapidly increasing market demand.

#### **5. Modernizing and Decarbonizing the Electricity Grid through Building Innovation**

Finally, as the US seeks to build increasingly affordable, reliable, and clean energy infrastructure, this program of investment will also provide new pathways for technology innovation and deployment—through integration of buildings into wider electricity grid networks—to pave the way for

new business models and the emergence of the utility of the future. To ensure that energy efficiency is a bedrock strategy for realizing the Biden administration's goal of building a 100 percent clean energy economy, investments made "behind the utility meter" in our homes and buildings will need to be integrated into wider strategies to rewire our electricity grid and provide transparent and accessible energy data that can improve building management, promote decarbonizing electrification initiatives, and jumpstart investment in new building technologies. Specifically, we recommend that a national plan for building retrofits:

- a. Establish policies to ensure data quality, access, and interoperability in partnership with utilities.
- b. Establish funding and pilot projects to demonstrate Grid-interactive Efficient Buildings (GEB) and deploy state-of-the-art information and communication technology—as well as energy management protocols for utilities—within the built environment.
- c. Incorporate energy efficiency deeply within wider policies to advance national clean energy standards, electrification, and decarbonization of infrastructure.

Together, these five policy actions can unlock massive new streams of investment that would flow to the base of the economy, creating productive local investment in communities, increasing consumer purchasing power—especially for hard-pressed families—and reducing the prevalence of the drivers of pollution, inefficiency, and environmental harm. In the second half of this paper (Section III), we investigate specific policies that will help to accomplish each of these five overarching objectives.

## SECTION TWO

# REINVESTING IN AMERICA'S RESIDENTIAL BUILDING STOCK CAN HELP SOLVE MANY OF OUR MOST PRESSING ECONOMIC CHALLENGES— ALL AT ONCE

The buildings sector is responsible for about one-third of all US greenhouse gas emissions (EPA 2018). In 2019, the residential sector represented approximately 16 percent of total US end-use energy consumption (EIA 2019). Appliances such as furnaces, air conditioners, and water heaters alone make up about 70 percent of annual home energy use (EIA 2020). Any path to rapid decarbonization must address these emission sources, and the most cost-effective way to do so is through building improvements that prioritize energy efficiency, electrification, and conversion to renewable energy.

Beyond the impact this plan would have on reducing emissions and realizing climate mitigation goals, investing in residential weatherization and home performance retrofits would also:

- create jobs;
- provide economic relief and stimulus by reducing energy costs to homeowners, especially low- and moderate-income homeowners who are disproportionately burdened by utility bills;
- make improvements to air quality and public health;
- alleviate some of the damage of past racist, exclusionary policies that prohibited Black and brown Americans from full participation in housing markets; and
- jumpstart necessary investment into smart home technologies.

In this section, we will elaborate on each of these crucial benefits in order to provide a thorough description of the economic and social impact we can expect from a comprehensive investment in our residential building stock.

## JOB CREATION

With 140 million residential homes and apartments in the US (US Census Bureau 2021), retrofitting even a portion of those homes most in need of upgrades presents an enormous opportunity for job creation. A federal mobilization to reconstruct our building stock will drive new investment into skilled labor and domestically manufactured equipment. And unlike new fossil fuel generation, investing in a sustainable electricity grid and improved energy management in housing would create more broadly distributed local jobs, more job creation overall, and new careers in emerging fields for decades to come (Pollin et al. 2014).

Before the pandemic, energy efficiency jobs were the fastest-growing occupations within the energy sector (7.8 percent alone in 2019) (EFI and NASEO 2019). As a result of the pandemic, unemployment in this sector has significantly increased, leaving millions of trained energy efficiency and related construction workers unemployed (EFI and NASEO 2019). More than half (56 percent) of these jobs are in construction, and more than 70 percent of these jobs are with small businesses (ACEEE 2020a). The construction industry and building trades are in need of immediate stimulus, which this program would provide, and employment in these fields is poised for sustained, rapid growth far after the current recession ends.

Energy efficiency products are also heavily US-made. More than 90 percent of air sealing products, insulation, duct sealing products, windows, and furnaces are produced domestically, as well as 82 percent of air conditioning units and heat pumps, 78 percent of water heaters, and 77 percent of clothes washers (HPRC 2015). A national recovery effort that centers building retrofits can offer a sorely needed boost to a long-declining American manufacturing sector (Bonvillian 2017).

Additionally, apprenticeships through labor unions or industry-led training networks can ensure that the residential home energy retrofit workforce is increasingly a high-skill and high-value-added labor force to drive middle class job growth. For many younger, currently unemployed, and nontraditional workers, however, barriers to construction employment existed well before the current recession; such barriers included transportation, childcare needs, and structural discrimination. Thus, a national program of building retrofits must include robust investment not only to establish stable, predictable, and long-term job opportunities, but to create pre-apprenticeship and job-readiness training to intentionally and proactively reach out to disconnected youth, women, and people of color.

## ECONOMIC RELIEF AND STIMULUS

Residential building upgrades will stimulate the economy not only by creating jobs, but also by cutting utility bills for homeowners. According to the Department of Energy, the average home can save more than \$700 per year by installing basic energy efficiency measures, including weatherstripping, insulation, energy-efficient lighting, etc. This is money that goes straight back into the pockets of consumers and begins to accrue as soon as the measures are installed (Casey 2016).

Instead of paying for energy and water only to have it leak out of poorly insulated doors and windows or inefficient appliances, families can spend that money on pressing needs during the COVID-19 pandemic. By structurally cutting the cost of homeownership and redirecting those funds into local economies, retrofitting homes can produce an ongoing stimulus for US renters and homeowners that will yield benefits year after year, well into the future.

### Unequal Burden of Energy Bills and COVID

Energy efficiency is a matter of economic and racial justice for millions of Americans struggling to pay bills each month. Even before the pandemic, people of color and those living in poverty were disproportionately burdened with high utility costs. These burdens are unequally distributed geographically, causing disproportionate impacts in areas of the country with climates requiring extreme heating or cooling, in older communities with substandard housing, in higher-cost energy markets, and for key vulnerable populations like the elderly, people with disabilities, and veterans.

Furthermore, because basic necessities constitute a much greater percentage of family budgets for low-income Americans, the impacts of energy bills are highly regressive. Households with incomes below 200 percent of the federal poverty level spend about three times more of their income on home energy costs than other households (Office of Energy Efficiency and Renewable Energy 2018).

This high energy burden correlates even more strongly with race. Nationally, Black households spend 43 percent more of their income on energy costs than their white, non-Latinx counterparts; Latinx households spend 20 percent more; and Native American households spend 45 percent more (Drehobl et al. 2020).

Black Americans earning less than 150 percent of the poverty level are also about twice as likely to have their electricity shut off as white households with similar incomes, despite being more likely to give up other needs in favor of paying utility bills (Howat 2018). As a result, home energy use is yet another source of inequity for Americans already in extremely precarious positions. Lack of resources for low-income homeowners to upgrade their buildings and lack of control over energy management or building maintenance decisions for renters also have a disproportionate impact on communities of color.

Notably, the statistics cited above—as bad as they are—represent a typical year in the US economy. The COVID-19 pandemic has only intensified this crisis of disparate impacts; the National Energy Assistance Directors' Association (NEADA) found that one in five households are behind on their utility bills, and many are at risk of shutoff as utility shutoff moratoriums expire. NEADA estimated that by the end of 2020, residential natural gas arrearages reached \$6 billion, and electric arrearages reached \$26 billion.<sup>2</sup> Utility shutoffs also have terrible and long-lasting downstream effects for families, including increased risk of eviction (Hernandez 2016) and physical and mental health harms for children and the elderly—all of which can prove fatal in the winter or for those with life-sustaining medical devices (Franklin et al. 2017).

A federal economic recovery agenda that includes major investments in energy efficiency, utility cost savings, and resilience will directly help millions on the brink of financial devastation.

## BUILDINGS AND PUBLIC HEALTH

Improvements to the state of our residential buildings will also result in both immediate and long-term positive public health outcomes. Fossil fuel pollution increases risk of contracting diseases and exacerbates chronic illnesses such as asthma (Academy of Science of South Africa et al. 2019). As a result, air pollution leads to almost 250,000 annual premature deaths per year in the US (US House Committee on Oversight and Reform 2020). Wide-scale weatherization is one of our best tools to reduce energy usage—and thus, harmful pollution from coal- and

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<sup>2</sup> Based on ongoing data collection by NEADA from state Public Utility Commissions and individual utilities.



gas-fired power plants. Weatherization leads to better-insulated homes, which can improve indoor air quality and humidity balance, and when combined with electrification, can reduce natural gas combustion. It will also expand markets for green building products and reduce exposure to extreme temperatures for vulnerable populations.

A mobilization to retrofit our building stock can immediately reduce death and illness from pollution. The American Council for an Energy-Efficiency Economy (ACEEE) found that wide-scale energy efficiency improvements would result in more than six lives saved per day, up to \$20 billion avoided in health harms, and nearly 30,000 fewer asthma episodes. These improvements are especially crucial for Black, Latinx, and low-income communities (Thind et al. 2019), which are subject to disproportionately high levels of air pollution due to living in close proximity to fossil fuel facilities (Bullard et al. 2007). As a result, Black children are nearly twice as likely to suffer from asthma as white children (Hayes, Kubes, and Gerbode 2020), and children who live in families with incomes below 250 percent of the federal poverty line are even more likely to develop the condition (Zahran et al. 2018). This environmental injustice is a critically important cause of comorbidity during the current pandemic and has contributed to higher rates of death and hospitalization from COVID-19 in these populations (Friedman 2020).

Indoor air pollution, such as carbon monoxide from improper heating sources, has also been linked globally to a wide variety of public health effects, including elevated rates of premature death in infants (Harvey 2020). Low-income housing generally serving populations below 80 percent of the Area Median Income, especially in older structures, has higher instances of excess moisture and poor ventilation that cause mold. Mold exposure has been linked to asthma development, fungal infections, and inflammation of existing respiratory ailments (CDC 2020)—conditions made even more serious by the current pandemic. Poor insulation and the threat of utility shutoffs also put people at risk of injury or death from extreme heat and cold (Plumer and Popovich 2020).

Traditional weatherization alone is insufficient to address the interrelated public safety concerns associated with aging and unhealthy building stock; to exponentially increase public health benefits, we need a broad-based national program for residential retrofits, as proposed in this paper.

# AN OPPORTUNITY TO ADVANCE RACIAL JUSTICE AND REVERSE PAST RACIST HOUSING POLICIES

The US housing market is built on the foundation of a deep history of systemic and predatory racist practices. As a result, all of the issues relating to home energy efficiency have deeply ingrained racial disparities, the roots of which must be properly understood in order to be eliminated. These issues are also set to intensify with the growing climate and economic crises and must be addressed intentionally—and immediately—within the effort to rebuild our nation’s housing stock.

Racial disparities are not simply a byproduct of communities of color having higher rates of poverty. Instead, like those high poverty rates, these disparate outcomes are themselves a result of intentionally discriminatory public and private policies, designed to create and profit from a segregated spatial landscape. During the New Deal, for example, the Federal Housing Administration (FHA) imposed racially restrictive covenants on government-backed housing developments, and the FHA’s Home Owners’ Loan Coalition created racial guidelines for over 200 cities. This redlining kept property values low in communities of color, leading not only to future hazardous zoning decisions regarding toxic and industrial facilities but to a precipitous draining of wealth as Black families were forced to buy their homes on contract or pay extra for comparable housing, while white families were granted access to low-cost loans and allowed to build intergenerational wealth in suburban homes that appreciated in value (Rothstein 2017).

Redlining represents the most durable practice to etch segregation into the geography of our communities, but it was not the only one. Even in the decades immediately following the 1968 Fair Housing Act, Department of Housing and Urban Development (HUD) policies actually encouraged deliberate loans for and sales of poor-quality, dilapidated houses to Black consumers—the same homes that are now likely to have low energy efficiency, a higher energy burden, and persistent health risks (Taylor 2019). While many of these policies don’t exist in the same form today, predatory racist practices continue to evolve with market changes, such as subprime lending and reverse redlining.

This means that while energy efficiency improvements offer partial solutions to many of the racialized issues above, they must still be undertaken with careful consideration to avoid reproducing segregation and injustice in different

forms. While subsidized building upgrades increase property values, lower the cost of homeownership, and thereby generate wealth for low- and moderate-income homeowners, additional policies may be necessary. For example, policies to improve metering and appropriately support landlord-funded health and safety improvements—such as mold and asbestos remediation—can ensure that efficiency improvements actually translate into lower total housing costs for renters rather than rising rents, windfalls for landlords, and increased gentrification (Hernandez and Siegel 2019). With thoughtful policy, this is achievable, but it requires intentionality.

Improvements should come with assurances that Black homeowners and renters, and other historically excluded communities of color, can reap long-term benefits (Lewis, Hernandez, and Geronimus 2020). Communities with a history of redlining and economic exclusion (for example, those located within urban development zones), and especially those with highly concentrated Black and brown populations, should be eligible for additional subsidy per unit to address this structural legacy of unmet health, safety, and energy remediation needs.

Any program of retrofits must partner with community leaders in these disadvantaged communities, include them in the planning process, provide job training initiatives and contracts to perform the work, and ensure additional administrative funds to foster meaningful community engagement, outreach, and home energy/health education. Such a plan would be in keeping with President Biden's commitment to deliver 40 percent of federal clean energy investments toward disadvantaged communities (Biden and Harris 2020). A targeted stimulus effort is especially needed for Black households, which have still not yet recovered from the 2008 recession and have been especially hard-hit by the COVID-19 crisis (Adejumo 2019).

By making homes energy efficient and directing investment toward Black, Latinx, and indigenous communities, this mobilization can be an important step toward restorative justice—ensuring lower costs for energy bills, higher quality of public health and job and workforce opportunities, and better adaptation to rising temperatures and other climate impacts.

# UNTAPPED ENERGY TECHNOLOGY REVOLUTION

Finally, smart home technology represents the next frontier of home performance, linking advanced monitoring and controls as well as increased electrification and distributed renewable energy generation with energy systems for providing improved heating and cooling at lower cost. As such, smart home technology is increasingly recognized as a crucial part of maximizing residential energy efficiency and buildings to grid integration (Rinaldi, Bunnen, and Rogers 2019).

Once a mild inconvenience, the inability to seek remote analysis in traditional construction is rapidly becoming a serious barrier to building and grid integration. Although contractors may not have been clamoring for smart tech training before the pandemic, progressive contractors and manufacturers have recognized that smart tech needs to be part of their future business plans. It is important to support these future leaders through meaningful federal investment and new and innovative policies. If approached democratically, by engaging homeowners and tenants, upgrading our nation's housing stock can help all Americans to be part of the solution to our energy and climate concerns.

# LAUNCHING A NATIONAL MOBILIZATION TO RETROFIT US BUILDINGS

## 1. Ensuring Safe and Healthy Housing during the COVID-19 Pandemic

During the COVID-19 pandemic, energy assistance programs can provide a lifeline for struggling families facing utility shutoffs, while home weatherization offers an important tool for improving not only the energy performance, but the health and safety of US housing stock. Injecting funds into existing energy assistance programs is the best way to ensure struggling households get the help they need quickly.

The Low Income Home Energy Assistance Program (LIHEAP), run by the Department of Health and Human Services, provides direct assistance to low-income families by subsidizing home energy bills to lower housing costs and prevent shutoffs. LIHEAP serves as the primary federal program for supporting low-income ratepayers. It is also a primary source of federal funding for the Department of Energy's Weatherization Assistance Program (WAP), which accounts for about \$400 million of the LIHEAP program's \$3.7 billion appropriation.

The first COVID relief bill passed by Congress included \$900 million in supplemental funding for LIHEAP. The second COVID relief bill did not provide additional funding for LIHEAP, but included \$25 billion in funds to help renters pay their outstanding rent and utility bills and \$638 million for water assistance. Additional funding is expected to be provided as part of the COVID relief package that is being included within the FY21 budget reconciliation legislation. The House bill includes \$4.5 billion for LIHEAP, \$500 million for water assistance, and \$19 billion for rental assistance.

To fully support building upgrades that offer urgently needed near-term relief for household budgets—and improve the quality, efficiency, and health of US building stock—we must go further. As part of 2021 climate investment, economic recovery, and/or infrastructure legislation, Congress and the administration should include the following measures.

- a. Expand Funding for Energy Assistance and Weatherization:** Growing arrearages, as well as high unemployment, require increased funding to avoid unnecessary suffering as economically dislocated workers face shutoff of critical utilities. Further, states should be granted flexibility in deployment of additional federal funds to pay for arrearage forgiveness, expansion of weatherization services, and extension of energy assistance payments to cover water bills and conservation measures.

### Key Policy Recommendations:

- **Provide a minimum of an additional \$10 billion in appropriations for LIHEAP in any relief package:** Families who have lost their jobs due to the pandemic are falling further behind on their utility bills as a result of the slow rate of economic recovery. The state LIHEAP directors have estimated that residential utility debt reached as high as \$32 billion by the end of 2020, with some families owing as much as \$3,000 on their utility bills. Providing these additional funds would allow for an additional 7 million households to pay their home energy bills.<sup>3</sup> This \$10 billion figure represents a low-end estimate of the emergency need to address arrearages in the pandemic-induced economic emergency, and it has gained support on Capitol Hill. At this level of relief, all those most in need will not have to worry about disconnection of vital services or the need to enter into a difficult repayment plan when the current voluntary and mandatory moratoriums end.
- **Target arrearages and increased weatherization spending:** States can use these additional federal funds to provide reconnection of service, arrearage forgiveness, and up to an additional six months of utility service, or until the pandemic ends. States should be allowed to set aside up to 25 percent of their allocation, at their discretion, for weatherization services without Department of Health and Human Services (HHS) approval. States should further require utilities, through public benefit charges, to provide a partial match of 25 percent to pay for arrearage forgiveness programs, supplemental weatherization, and water efficiency services.

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<sup>3</sup> Based on ongoing data collection by NEADA from state public utility commissions and individual utilities.

- **Expand utility assistance from energy to include water bills and conservation:** An additional \$2 billion should be appropriated for water assistance that can be administered through the state LIHEAP agencies. This appropriation would offer a baseline level of assistance scaled to the current emergency and should be taken as a minimum number, recognizing that the program could easily put additional funds to work. These funds would be used to pay for water bills that are also in arrears, as well as up to an additional six months of water service, or until the pandemic ends. States should further be required to set aside (at minimum) 15 to 25 percent of their allocation for water efficiency and repairs that can be spent over three to five years to allow for more robust projects.
  
- b. **Establish Temporary Flexibility for WAP and LIHEAP during the Pandemic:** In addition to the infusion of new funding, increased flexibility in program design and eligibility at the state level would improve uptake of these services, allowing them to better assist economically displaced families and helping to jumpstart state and local economies by directing funds where they can do the most good. Specifically, additional temporary modifications to LIHEAP should be considered to ensure the stimulus funds reach the families most in need.

### Key Policy Recommendations:

- **Expand contractor networks and time horizons:** To encourage deployment of weatherization services, states can be encouraged to explore creative options for expanding contractor networks to reach customers in need. Further, given concerns over pandemic-related closures, the one-year requirement for deployment would be waived for these funds.
  
- **Streamline application processes:** Simplify application procedures for LIHEAP to allow families to apply for assistance by showing proof of job loss.
  
- **Expand program eligibility:** Increase the income eligibility level for pandemic-related bill payment assistance to 250 percent of the federal poverty level or 75 percent of state median income, whichever is greater.<sup>4</sup>

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<sup>4</sup> LIHEAP eligibility is currently set at 150 percent of poverty, or 60 percent of state median income, whichever is greater.



- **Improve data collection on retrofit programs:** Track regional data on retrofit labor and material costs, as well as customer feedback, to improve service delivery and incentives.
- c. **Link Medicaid Funding to Healthy Home Retrofits:** According to ACEEE, directing 1 percent of the annual Medicaid budget to preventative measures (approximately \$590 million—similar to the amount spent by New York’s state Medicaid program to address asthma-related illnesses) can improve public health for low-income Americans, while also reducing climate impacts and household energy bills. Expanding the allowance of Section 1115 waivers for state Medicaid offices can allow increased use of energy efficiency retrofits to help improve the health of those suffering from asthma through improved indoor air quality and mold remediation. This policy will both improve the health of the nation’s most vulnerable during the pandemic and lower housing costs by saving energy (Hayes and Gerbode 2020).

#### Key Policy Recommendations:

- **Expand Medicaid funding of residential retrofits:** Allocate 1 percent of Medicaid funds to undertake energy efficiency upgrades focused on indoor air quality and accident and disease prevention. This can help to ensure that weatherization and energy efficiency retrofit programs can serve the 30 percent of our nation’s affordable housing building stock that currently is in need of urgent health and safety improvements. The Center for Medicaid Services (CMS) should lead in driving policy that allows referrals from doctors directly to low-income tenants for indoor air quality and energy efficiency audits. This should include providing information both on accessing retrofits in their communities and differentiated programs appropriate to heating and cooling intensive climates.
- **Capture data on utilization of Medicaid funding for retrofits:** Ensure that Medicaid funds are used to provide energy efficiency upgrades that truly improve indoor air quality, public health response, and disease prevention through a new and enhanced federal program that measures and tracks use and outcomes.



- **Develop an annual study on quantifiable health and safety benefits from Medicaid expansion:** Use this new data to produce a study about the health outcomes and cost-effectiveness of using health care funds to address residential construction issues, including findings about savings from reduced use of direct health care emergency rooms and the savings from the reductions in the number of school days and workdays missed due to illness.

## 2. Expanding Housing Affordability through Low-Income Weatherization Assistance

Low- and moderate-income families' disproportionate "energy burden" is a significant contributor to the housing affordability crisis. The cost of energy inefficiency is especially acute in frontline communities that have borne the brunt of environmental injustice, the result of long-standing patterns of discrimination in the energy industry, in housing policy, and in access to capital. The policy actions in this section focus on LIHEAP and/or WAP-eligible households (those earning less than 60 percent of median income), as well as the residents of publicly subsidized housing, and, to a lesser degree, moderate-income households making between 60 and 80 percent of median income.

- a. **Expand and Modernize LIHEAP:** The two federal programs that have provided bill payment and retrofit assistance for low-income families are not large enough or flexible enough to meet the needs of more than a fraction of the eligible low-income population. Currently, LIHEAP funding is only sufficient to assist one in six eligible households. As already mentioned, in addition to increasing stimulus payments, Congress should also increase ongoing federal funding for LIHEAP from \$3.7 billion to at least \$7.5 billion (NASCS 2019). This would allow states to double the number of households the program serves from 6 million to 12 million (Administration for Children and Families n.d.). At the \$7.5 billion funding level, Congress should also allow states to increase the share of funds they can set aside for weatherization purposes from 15 percent to 25 percent without a waiver from HHS. (Under current law, states can only increase the share of funds they can set aside for weatherization to 25 percent with a waiver from HHS.)

## Key Policy Recommendations:

- **Require referrals to weatherization services for all single-family homes receiving LIHEAP:** These referrals should be required on a programmatic basis and not only on an exceptional basis, as is the current practice.
  - **Clarify use of program funds in weatherization and LIHEAP legislation:** Program funds should be used to support community solar and rooftop solar for multifamily buildings, as well as allow for greater investment in non-energy improvements necessary for health and safety.
  - **Increase income eligibility of LIHEAP:** Income eligibility for LIHEAP should be increased to 250 percent of the poverty line or approximately 80 percent of median income to bring energy assistance to more families.
- b. Expand and Modernize WAP:** Current funding for WAP was only sufficient to reach 31,174 households in 2019; the most recent data available shows that about 85,244 households were reached when combined with LIHEAP and utility funds (NASCS 2019). Congress should gradually increase funding from \$310 million to at least \$1 billion per year over the next 10 years, in addition to supporting new and increased funding to the “WAP Enhancement and Innovation” program authorized by the Energy Act of 2020<sup>5</sup> in order to increase the number of homes reached and to meet, if not exceed, President Biden’s goal of retrofitting 2 million homes within his first term in office. This is a number that will provide significant benefit for those most in need, and it can be rapidly assimilated within the existing program infrastructure at the state level. Additionally, Congress should expand eligibility to renewable technology by doubling the solar cost cap—allowing weatherization programs to dramatically increase their allocation of funds to invest in permanent energy savings through free solar power for beneficiaries—and expand coverage for health and safety improvements. Further, robust tenant consumer protections should be included within expanded weatherization programs to ensure clear communication and appropriate oversight and enforcement, and to increase utility accountability for effective delivery of energy savings.

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<sup>5</sup> In the December 21, 2020 Omnibus Bill, Division 2, the Energy Act of 2020, Title 1, Sec. 1011, Sec. 414D, this new innovative program allows for deeper engagement in innovation and should be significantly encouraged.

## Key Policy Recommendations:

- **Expand eligibility for clean energy and health and safety improvements:** Congress recently passed the Weatherization Enhancement and Local Energy Efficiency Investment and Accountability Act (S. 983 Coons, Collins, Shaheen, and Reed; and H.R. 2041 Tonko, Kaptur, and Rush) as part of the December 2020 stimulus bill, reauthorizing funding for WAP. However, going forward, further increases in the allowance for investment in renewable energy, grid integration, health benefits, and other program improvements must be considered.
- **Expand the weatherization workforce:** Ensure that any federal technical and training assistance provided can also be utilized by local small businesses to grow as a part of the WAP workforce. Training assistance should be paid to facilitate participation for individuals who have low incomes, and access should further be expanded by providing dedicated support for those re-entering the workforce from the criminal justice system and other vulnerable populations. Training programs should also be clearly linked to accountable job placement to ensure that lasting jobs are created.
- **Increase the WAP Average Cost Per Unit (ACPU) to allow more funding to be provided per house upgraded:**<sup>6</sup> Expanded funding for non-energy measures and increased regional allowances should also be considered for states and communities with high heating and cooling cost burdens, large burdens of aging housing stock with more substantial capital needs, and other considerations.
- **Provide rebates to owners of manufactured housing:** Provide up to a \$7,500 rebate to owners of mobile homes built before 1976 who choose to purchase “Energy Star” homes. Such energy-efficient homes would be estimated to save families \$800 to \$1,000 annually in energy costs, and these rebates would be made available to families whose household income is less than 200 percent of the federal poverty level. Grants to fund the rebates would be distributed to states according to the number of mobile homes used as primary residences.<sup>7</sup>

<sup>6</sup> The current ACPU in statute is \$6,500, which the Department of Energy (DOE) can adjust yearly for inflation (\$7,669 in 2020). FY 2021 House Energy and Water Appropriations proposal (H.R. 7613) would raise this to \$10,000.

<sup>7</sup> This is similar to Sen. Jon Tester’s Energy-Efficient Manufactured Housing Act from the 111th Congress. More details can be found at: [https://www.testersenate.gov/?p=press\\_release&id=1666](https://www.testersenate.gov/?p=press_release&id=1666).

- c. Fully Fund the Greening of Public and Affordable Housing:** Develop programs to weatherize all public housing and HUD-subsidized, privately owned multifamily housing over 10 years. This policy builds on the [Green New Deal for Public Housing](#) (S. 2876 and H.R. 5185). Over 10 years, the program would support investment of up to \$180 billion in sustainable retrofits that include all needed repairs; improvements to vastly increase health, safety, and comfort; and efforts to eliminate carbon emissions in our federal public housing. This would dramatically improve living conditions for the 2.1 million people living in over a million public housing units in all 50 states (CBPP 2017), as well as in 1.4 million privately owned multifamily assisted housing units. Such a massive public investment in greening affordable housing should also extend beyond public and assisted housing to cover a wider range of naturally occurring affordable homes and other rental properties that serve low- and moderate-income renters. In the HOPE for HOMES program that passed the House in 2020 (H.R. 4447), both manufactured housing and multifamily property owners could receive rebates for upgrading the energy efficiency of these buildings, with doubled rebates to support low-income residents.

### Key Policy Recommendations:

- **Establish new federal grant programs for zero-carbon public housing:** Work with Congress to fully fund the trust funds that support federal investment in Public Housing Authority capital projects and expand these capital resources with seven new grant programs that rehabilitate, upgrade, innovate, and transition public housing to zero-carbon energy homes. Administration of these grant programs should be explicit in avoiding displacement of existing public housing residents as a result of energy saving building upgrades.
- **Expand investment in workforce training associated with these investments:** Expand grant programs for apprenticeships, certificates, and associate's degrees, and provide technical assistance and funding for small businesses targeting residents of public housing to meet the demand for skilled labor and local entrepreneurs in undertaking this work. These workforce investments should also specifically engage existing Section 3 training programs that bring job training and placement

to residents of HUD-assisted housing and very low-income populations, and to programs that maintain high standards for job placement, throughout a project's lifecycle.

- **Increase funding and technical support to improve public housing properties:** Electrify, insulate, and decarbonize all public housing properties; install solar panels; and otherwise secure renewable energy sources for all resident energy needs. Funding should also be provided to establish on-site energy management systems, highly efficient district energy, and other improvements that pass savings on to tenants, as well as to building managers and owners.
- **Strengthen retrofit incentives in HUD-assisted and subsidized properties:** Strengthen incentives to retrofit these properties through improved reimbursement structures and bonus incentives.
- **Improve utility allowance formulas:** Utility allowance formulas should permit both publicly owned and mixed-finance housing to retain energy savings at the project level in order to lower operating costs, improve resident services, and create strong incentives for continuously deploying advanced energy saving technologies as they become available.
- **Expand Energy Savings Performance Contracting (ESPC) third-party-financed and self-performed retrofits:** Under the Rental Assistance Demonstration Program (HUD 2021) at HUD and across its directly owned and assisted portfolio, ESPC third-party-financed and self-performed retrofits should be expanded in order to reduce operating costs and generate new operating revenue for affordable properties. Improvements to operating income through lower energy bills should be directly tied to preservation and expansion of total units and to reductions in total housing costs to renters. Further, these investments can be linked to a repeal of the Faircloth Amendment, a 22-year-old provision that limits total public housing units funded to the number provided in 1999, without regard to the actual needs of the housing crisis (HUD 2020).

### 3. Upgrading Every Home in the US, at Every Income and in Every Region

Although the costs of energy efficiency upgrades are often recovered over the lifetime of the upgrade, the high upfront costs of new technology and comprehensive retrofits create a real barrier for homeowners to make these investments. The majority of a home's energy use is in heating, ventilation, and air conditioning (HVAC), but most of the change-outs to those systems are at the time of breakage, when extreme heat or cold create emergency conditions. At the moment of an emergency repair, many market rate homeowners who do not qualify for low-income benefits struggle to fund these improvements.

Reaching moderate-income families is essential to scaling energy efficiency. A 2018 Bankrate report found that the average American household had \$8,863 in savings in a bank or credit union (Garcia 2018). The average replacement cost of a heating or air conditioning unit is approximately \$7,000, which would almost completely wipe out an average household's savings (Home Advisor n.d.). Paying "extra" for high efficiency is simply not an option for far too many Americans. Therefore, to address the nation's inefficient energy consumption and its impact on our climate and health, we will need to provide both consumer-facing incentives and better financing options to spread out payment; such measures would unlock private investment even for middle-income homeowners.

- a. **Establish Simple-to-Administer, Point-of-Sale Consumer Rebates to Widen Markets:** Incentives can take the form of rebates (at the time of sale) or use the tax code for a credit (a subtraction from tax owed) or deduction (a subtraction from the income taxed). The downside of using the tax code as an incentive is that the homeowner must first have a tax burden (thus cutting out lower-income taxpayers) and then must wait until April to feel the incentive; the downside of a rebate incentive, on the other hand, is the need to develop or expand a new program for service delivery. Importantly, in the case of market rate incentives (unlike subsidized weatherization), the homeowner will provide capital in the purchase, such that the public dollars are leveraging private funds to realize pressing national climate and energy objectives. To maximize the investment of private dollars, complementary incentives and bridge financing tools should be offered to promote energy efficiency measures without overlap of the incentives. We propose a mix of prescriptive and

performance-based rebates, as included in the HOPE for HOMES Act of 2020. We also propose expansion of the 25C tax credit for the installation of energy-efficient cooling and heating systems and other energy retrofits.

### Key Policy Recommendations:

- **Provide critical training and performance-based rebates to homeowners through the HOPE for HOMES Act:** The Home Owner Managing Energy Saves (HOMES) Act (Title 2 of the HOPE for HOMES Act of 2020) (BPA 2020) would provide rebates for homeowners who undertake certain energy efficiency home retrofits. It includes prescriptive rebates provided by the federal government for key measures like HVAC and insulation retrofits, to ensure that all Americans and contractors can utilize them. The proposal also offers incentives for deeper retrofits based on the performance savings provided by the energy improvements, to be administered at the state level. The HOMES rebates would offer vital stimulus to contractors, small businesses, and product manufacturers while building asset value for homeowners. States would design deep retrofit programs according to Department of Energy (DOE) guidelines and would provide transparency on energy performance. Well-structured HOMES rebates would also help provide contractor training and education, and could add certainty to construction markets emerging in the wake of social distancing.
- **Modernize and expand the Section 25C tax incentives:** The 25C residential energy tax credit (Sherlock et al. 2020) is an effective tool for subsidizing investment in energy-saving building improvements (such as insulation and hot water heaters), but it currently carries a lifetime cap of \$500 per taxpayer. Program coverage should be increased to at least \$1,500 per taxpayer for the next two years, and the percentage of eligible expenditures increased from 10 percent to 30 percent of the cost of eligible measures. This would align with the tax incentives proposed in S. 2588, the Home Energy Savings Act of 2019, which resets the lifetime single-use cap on the credit while raising the credit amount from the current 10 percent to 15 percent of eligible expenditures.



- b. Improve Access to Financing:** While incentives for individual energy improvements are important to lower the cost of projects, these energy-efficient measures are often most effective when implemented in concert to address whole building energy use. This whole-home approach, however, can carry a prohibitive upfront cost burden in the absence of affordable financing options for homeowners. A coordinated suite of low-interest financing vehicles, made available in every community in the US, would make these types of whole-home upgrades much more accessible. Furthermore, real estate transactions should reflect the true value of energy efficiency in a home by incorporating the cost of a home's energy use in mortgage refinancing. Greater energy cost transparency in financing can also be accomplished through energy use disclosure standards during the title insurance disclosure process (CFPB n.d.) or other consumer protection applications, driving energy use information into real estate market decision-making.

### Key Policy Recommendations:

- **Engage federal financing authorities and state and local energy financing programs:** The Biden administration should establish a climate bank or “accelerator” focused on residential and affordable housing to work with—and through—state and local clean energy investment authorities toward meeting new national investment goals. Existing financing authorities at HUD, the US Department of Agriculture (USDA), the DOE, the Small Business Administration (SBA), and the Department of Transportation (DOT) should also accelerate the movement of new capital investment into residential buildings. They could do this by providing loan-loss reserves; buying down interest rates on financing for low-income homeowners, multifamily affordable housing, and community solar; and offering other forms of public subsidy that leverage increased public and private investment at the local level. Further, these green banking institutions should be structured to allow for greater investment in underserved populations and communities. Addressing gap financing needs, credit underwriting concerns, and other issues to mitigate risk in funding projects can expand access to clean energy—particularly for low-income customers—and help address social inequality in current investment patterns. Green banks should not directly compete with private investment,



crowding out clean energy projects that are otherwise viable for financing. However, real barriers to new technologies and affordable financing access exist in hard-to-serve market segments like low-income affordable housing and underserved communities. In this context, the credit enhancements and low-cost public capital available to green banks and public financial institutions can de-risk projects, “crowd in” new private capital investment, and drive new economic growth.

- **Finance utility-saving building upgrades through EPA state loan funds:** The US Environmental Protection Agency (EPA) has previously approved using Clean Water State Revolving Funds (CWSRF) to pay for energy efficiency upgrades that also provide water savings (Bishopp 2016). However, the procedures for using CWSRF funds for that purpose are not yet clear to states. The Biden administration should direct EPA headquarters and regions to provide guidance to governors and CWSRF administrators on the steps required to finance already-permissible energy efficiency residential retrofits for single-family and multifamily housing, at all income levels and including rental properties, under Section 319 of the Clean Water Act. The EPA should also provide technical assistance and approvals that may be necessary for states to use these funds for building retrofits (Bishopp 2016).
- **Expand creative use of utility-backed and tax- or bond-financed home retrofit programs:** Low-interest financing for residential homeowners can be made possible through on-bill repayment and Pay As You Save (PAYS) inclusive financing programs. On-bill programs like PAYS allow for the repayment of upgrades over time and can provide easily accessible financing to households. These “inclusive investments” should be made in all cost-effective building energy upgrades through utility-tariffed, on-bill programs, prioritizing utilities that already receive federal loans to finance assets—a constituency that currently reaches the homes of more than 40 million Americans (US Department of Energy n.d.). In addition, reinstating effective taxable and tax-exempt bond financing programs like the Clean Renewable Energy Bonds (CREB) and Build America Bond (BAB) programs can expand and accelerate access to capital to provide valuable new capital leverage for public investments. In addition, Fannie

Mae has created a sustainable Green Bond (Fannie Mae n.d.) program for funding multifamily building upgrades through a mortgage-backed security that can drive new capital investment into deeply efficient multifamily housing. Similarly, Residential Property Assessed Clean Energy (R-PACE) financing also offers a useful structure for long-term funding of retrofits in single-family homes, secured by voluntary tax assessments that drive down borrowing costs. However, an equitable and publicly beneficial expansion of R-PACE must include significant standards for consumer protection and disclosure, such as those outlined in DOE best practices (Office of Energy Efficiency and Renewable Energy 2016).

- **Appropriately value energy efficiency in real estate transactions and home appraisals, and support opportunities for disclosure:** Federal policy should encourage the inclusion of energy savings in mortgage underwriting, and real estate appraisals should be expanded. This could include approaches such as the Sensible Accounting to Value Energy (SAVE) Act, which incorporates calculation of energy bills into qualifying borrowing amounts for mortgage financing. By establishing guidelines for recognizing the impact of energy costs on both debt-to-income ratios and loan-to-value ratios, this policy would create greater market value for more energy-efficient homes. Homeowners with access to labeling and disclosure programs could shine a light on their homes' energy improvements through Home Energy Score, Pearl Certification, and other voluntary labeling programs that can assist realtors and appraisers in helping home buyers and sellers understand a home's energy benefits.

- c. **Expand Access to Capital for Rental Housing and Community Economic Development:** Policies that encourage landlords to upgrade the energy efficiency of rental property, increase decarbonization through renewable electrification, and overcome split incentives<sup>8</sup> should also be encouraged. Landlords should not only have access to incentives that reduce the cost of energy efficiency investments, but should be able to couple these improvements with other building upgrades for which

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<sup>8</sup> A split incentive is when the landlord pays to upgrade the home, but the tenant receives the benefit from the utility bill savings. The tenant does not own the systems and thus cannot upgrade the systems, despite paying for wasteful energy consumption. This can be exacerbated with rent control and other policies that aim to support tenants but further disincentivize landlords from providing upgrades.

the landlord will receive the benefit directly. These incentives should likewise be paired with policies to ensure that greening rental housing stock does not reduce the number of affordable units or increase rates of eviction.

### Key Policy Recommendations:

- **Expand incentives for rental housing:** Work with stakeholders, including landlords and tenant associations, to develop common-sense principles and best practices for states to ensure that renters benefit from energy savings. Make incentives for homeowners to upgrade property, reduce energy use, and address critical capital replacement needs (e.g., HOPE for HOMES, 25C tax credits) accessible to landlords as well, on the condition that energy-saving benefits are responsibly passed on to tenants.
- **Strengthen criteria for energy efficiency through HUD, USDA, and the Department of Veteran Affairs (VA) (ACEEE 2020b):** The federal government should set new energy efficiency criteria and provide more specific requirements for new housing finance, particularly loans guaranteed by the Federal Housing Administration (FHA), Department of Veterans Affairs (VA), and USDA. This would increase the pressure for better energy efficiency in the low- and moderate-income housing markets, while reducing risk and lowering costs for lending. As mentioned above, under the SAVE Act, energy costs would have a real bearing on actual property values and borrowers' ability to pay. Linking strong energy efficiency criteria within all federally backed home loan programs can de-risk home ownership and create a powerful new driver for job-creating investment in residential energy efficiency nationwide.
- **Fully fund the Energy Efficiency and Conservation Block Grant (EECBG) program as well as State Energy Programs (SEP) to support expanded financing options for residential buildings:** Congress should fully fund the EECBG program to at least \$3.94 billion<sup>9</sup> to enable states and localities to invest in deep energy upgrades across a wide range of sectors, targeting

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<sup>9</sup> This is ARRA levels of \$3.2 billion (adjusted for inflation of 23.17 percent).

rental properties in particular (Department of Energy 2016; Bishopp and Barrett 2020).<sup>10</sup> The EECBG program—which was an important feature of the American Recovery and Reinvestment Act (ARRA) and highlighted in Evergreen Collaborative’s “Clean Jumpstart for America” stimulus program (Ricketts et al. 2020)—was used for a range of initiatives, including direct funding and financial incentives for energy efficiency, all-electric building retrofits, building code support, renewable energy installations, distributed electric technologies, transportation activities, recycling and waste management efforts, and other activities approved by the DOE. The EECBG statute should be modified to allow for more flexible financing programs. SEP should be funded at \$3.81 billion<sup>11</sup> to support expanding financing options for energy efficiency and renewable energy.

- **Engage state and local green banks and infrastructure banks in realizing at least 40 percent of new investment in environmental justice:** Under the Biden administration’s Environmental Justice and Build Back Better proposals, the federal government would ensure that at least 40 percent of its investment portfolio benefits “disadvantaged communities.” Whether operating directly or working through state and local clean energy investment authorities, any new federal climate bank, “accelerator,” or other green bank mechanism should focus investment on supporting affordable housing, deploying innovative technologies, aggregating hard-to-serve markets, and pursuing other measures to overcome market barriers to private investment in clean energy projects and disadvantaged communities. Likewise, existing financing authorities at HUD, the USDA, DOE, SBA, and DOT can all similarly accelerate the movement of new capital investment into communities of need. Like all spatially based investment incentives, the framework for linking public incentives to intended beneficiaries must be carefully implemented to ensure that new spending flows

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<sup>10</sup> Authorized by ARRA in 2009, EECBG incurred a total cost of \$2.7 billion (\$386 million annually) and saved participants \$1.76 for every dollar invested in the program, according to the DOE; it created more than 62,900 direct, indirect, and induced jobs. Reauthorizing this program, with dedicated carve-outs for energy efficiency and renewable generation of the residential building stock, would achieve even greater gains. The Biden administration would not be starting from scratch, and could tap the guidance set by the Obama administration and expand and improve upon it for today’s building stock and financial concerns.

<sup>11</sup> ARRA levels adjusted for inflation.

to intended beneficiaries, including low-income residents and communities of color, without accelerating gentrification and displacement, and without capture of the benefits by speculative investors.

- **Ensure local participation and energy democracy:** Investments targeting disadvantaged communities should require that retrofit programs partner with community leaders at every step in the process, including in program planning, designing job training initiatives, deciding who gets contracts to perform the work, and setting spending and administrative priorities—supported by additional administrative funds to foster this robust and meaningful community engagement. These programs should include strong decision-making roles for community members and accountability for public benefits from local subsidies, such as claw-back mechanisms or other protections. By guaranteeing frontline communities a seat at the table within the design and administration of financing and investment programs—and through the use of equity screening within capital planning efforts at the federal, state, and local levels—these efforts can address disparities associated with unhealthy housing and high energy bills that hold back economic progress.
- **Reach multifamily housing:** Multifamily homes (homes with four or more units) are included in Title 2 of the HOPE for HOMES Act of 2020 as passed in H.R. 4447 and should be separated into their own section in reintroduction. This provision would allow for building owners of residential property to receive funding for increasing the energy performance of a building at least 20 percent, with both a doubling of the rebate for housing that includes moderate-income families and protections to ensure that the upgrades do not support rent increases.

#### 4. Creating Good Jobs and Training Opportunities for a New Energy Workforce

In the last decade, energy efficiency has been among the fastest-growing employment sectors in the energy economy—yet it has been decimated by the pandemic, with construction crews for energy efficiency and renewables projects sidelined and projects delayed.

We recommend that the Biden administration develop a package of initiatives to support workforce training across the country by utilizing

current training curricula, developing new curricula for innovative technologies, supporting innovative approaches to training (including online courses) and apprenticeships, and using products and materials made in the US.

First, the Weatherization Assistance Program (WAP) should be fully funded, and proactive support should be dedicated to grow the network of local nonprofit Community Action Programs (or CAP agencies) and other networks of retrofit providers. The administration should also work in parallel to expand additional contractor networks by broadening WAP program rules to allow for existing private contractor participation and creating new training opportunities to grow this workforce. As the number of eligible homes increases beyond contractors' capacity and comfort for efficient service delivery, it is important to reduce the cost of hiring and training qualified technicians and include building retrofits, renewable electrification, and weatherization as part of any broader public employment efforts pursued by this administration.

- a. **Set Strong Job Quality Standards:** To support a diverse and prosperous US workforce, all jobs should be high-quality and well-paid. These standards would build on President Biden's commitment to create good jobs in energy efficiency within the Build Back Better plan (2020) and to expand opportunities for training and apprenticeship to increase unemployed workers' access to high-quality jobs. This work begins with setting a floor on wages and benefits and guaranteeing high standards and enforcement of labor laws within the workplace. If these measures are applied at scale, they can ensure that millions of good jobs are created and can boost living standards for all US workers.

### Key Policy Recommendations:

- **Promote union and prevailing wage jobs within large residential construction companies:** This plan calls for larger companies and major commercial construction projects benefiting from public investments to meet labor protections such as those in Sen. Jeff Merkley's Good Jobs for 21st Century Energy Act, which include Davis-Bacon prevailing wage guidelines, Buy America(n) provisions, fair overtime and scheduling, and the choice to join a union and bargain collectively. With the expansion of the large multifamily residential retrofit market, it is increasingly

important that high-road union employers be able to compete on a level playing field—not on the basis of downward pressure on workers' wages and benefits. Job quality should be ensured both in construction and within long-term management and maintenance jobs.

- **Improve job quality for smaller residential contractors:** In the residential sector, which is dominated by smaller employers, a key focus will be on supporting transitioning workers and enhancing job training, skill certification, and enforcement of labor laws to ensure there is a ready, diverse, stable, and well-paid small business workforce. To drive improved information in the marketplace, consumer and employee protections and retrofit quality assurance should also be advanced.

- b. Build Career Ladders through Job Training and Certification for Workers:** Job training is critical to energy efficiency and can ensure that sound building science drives retrofits and that measures truly work to maximize savings. Trained workers will better understand how to size HVAC units, decarbonize through electrification, and appropriately seal and insulate homes for both energy savings and indoor air quality improvements. In addition, they should have an understanding of the interaction between the distributed energy, grid reliability, and local incentive structures. Job training certifications create a portable credential to empower workers and increase earnings. Further, available job training should not be limited to energy management and construction skills alone; to ensure a highly skilled workforce and broaden access to good jobs, job training should include a full range of programs, from basic math to advanced project management.

### Key Policy Recommendations:

- **Provide job training and pathways to employment:** The Blue Collar to Green Collar Jobs Development Act of 2021 (H.R. 156) is dedicated to providing job training and pathways into stable, high-road employment in the clean energy economy, particularly for people of color and other underrepresented groups, in part by developing an Energy Workforce Grant Program. This program would provide grants to eligible businesses—with a priority to small businesses, labor management organizations, and other entities—to pay a portion of the wages of new and existing



employees while they are receiving training to work in the energy efficiency, renewable energy, grid modernization, and advanced fossil sectors. Further, a national mobilization around home retrofits should have clear links to the [Workforce Innovation & Opportunity Act \(WIOA\)](#) to ensure that dedicated programs for energy efficiency and renewable energy job training and placement are included (US Department of Labor n.d.). Together, these programs would prepare more US workers for quality local jobs in energy efficiency through critical on-the-job training, while driving further job growth in this industry.

- **Provide online training opportunities for residential efficiency workers:** The Home On-line Performance-based Energy-efficiency (HOPE) training program proposed in Title 1 of the HOPE for HOMES Act of 2020 supports contractor companies in a pandemic situation and beyond. The proposal minimizes the cost of training workers by allowing them to train socially distanced in areas where COVID-19 requirements have shut down retrofits. Training opportunities would consist of online HOPE Training, followed, if necessary, by HOPE Training Finals, a hands-on component with a certification exam that is completed remotely (or in person once social distancing/self-isolation measures are no longer advised/required). The HOPE Qualification would consist of two HOPE Training Task Credits, one HOPE Training Supplemental Credit, and any required HOPE Training Final.
- **Create a HOPE training program at the Department of Energy:** This would allow contracting businesses to rehire and retrain their workers, as grants pay for the wages of workers engaging in online training programs and prepare them to handle a stream of federally invigorated retrofit projects. The HOPE program could also reach workers, homeowners, and contractors from all 50 states—some of which have not yet invested in energy efficiency. It could also ensure that the jobs and training opportunity of a national building retrofit program can be targeted where new job creation and expanded career ladders would do the most social and economic good. Upon reintroduction in the 117th Congress, the online portion of this legislation remains important to allow for access to training for all contractors.



- **Establish funding for small business access to educational assistance:** Advance Department of Education assistance to offset the costs of training programs for energy efficiency, home performance, and clean energy with guaranteed job placement. Students seeking vocational training and career development outside of university education should have fair access to public funding.

- c. Broaden Contractor Networks to Engage New Firms and Build Industry Capacity:** The energy efficiency industry consists mainly of small businesses (E2 and E4TheFuture 2019) in need of assistance when it comes to training new hires, providing ongoing education to existing employees, and keeping employees up to date on certifications and trained in the latest technologies and health and safety practices. Prior to the pandemic, employers in energy efficiency, and especially in construction trades, were experiencing difficulty hiring new employees due to a shortfall of workers with the necessary experience, training, and technical skills to fill these jobs (EFI and NASEO 2019). Support for job training is even more important now in light of the current economic downturn and the need to support reskilling for unemployed and transitioning workers.

### Key Policy Recommendations:

- **Establish a Department of Labor code for energy efficiency upgrade technicians:** A labor code is essential to elevate the status of residential energy efficiency contractors, increase their access to funds, and provide for a corresponding registered apprenticeship program. This code would help to create structures for new contractors to enter existing networks of service providers.
- **Establish a specialized loan program through the SBA for energy efficiency businesses (utilizing the new DOL code):** Allow the loans to be used to support training and technical assistance, and to support companies transitioning to offer efficiency or renewable energy services. Improved access to capital would greatly assist small, local, and BIPOC-owned business entrants into this rapidly growing industry.

- **Ensure market-rate contractors have access to federal technical training and assistance dollars through an expanded WAP program offering:** This would ensure that all homeowners receive the same energy efficiency and carbon reduction upgrade quality, and would help build capacity nationally.
- **Develop a Buildings Retrofit/Weatherization Job Corps:** Establish both service learning and long-term, career-track jobs installing measures on eligible low- and middle-income residential and commercial properties, in coordination with local agencies. This program would be part of a larger Civilian Climate Corps, as proposed by President Biden, and would supplement, not supplant, existing public- and private-sector jobs. The program would be used to create pathways into registered apprenticeship programs and union jobs and careers (Inslee 2019). Building the pipeline of skilled workers would ensure robust growth of energy efficiency contractor networks for firms both large and small.

## 5. Modernizing and Decarbonizing the Electricity Grid through Building Innovation

Homes are not only large energy consumers; they are also part of our nation's electricity grid infrastructure. The DOE has defined a "Grid-interactive Efficient Building" (GEB) as "an energy efficient building with smart technologies characterized by the active use of Distributed Energy Resources (DERs) to optimize energy use for grid services, occupant needs and preferences, and cost reductions in a continuous and integrated way" (Neukomm et al. 2019).

Smart home technology could lead to more grid connectivity and greater energy and carbon reductions, but policies are needed to ensure contractors and homeowners take advantage of this technology (EFI and NASEO 2019). Focusing on the wider energy infrastructure within a national mobilization for home energy efficiency retrofits could help break down industry "silos" between efficiency, renewables, decarbonization, and distributed energy generation resources such as electric vehicles and battery storage. Advancing efficiency and smart energy management technologies would help homes save energy or use energy more flexibly to minimize their carbon footprint.

Plans for interoperability, incentives, and maximized data use are critical for tapping this innovative technology resource and the powerful potential for decarbonization and deep energy efficiency it can unlock. Policy and program innovations that bring these pieces together to optimize energy usage can reduce the need for new power plants and deliver more reliable energy services at lower cost, all while making homes healthier, more comfortable, and more affordable places to live.

- a. **Ensure Quality and Comparable Data:** Measuring performance, modeling loads, evaluating programs, increasing grid visibility, and supporting a nimble home-to-grid dynamic all rely on quality data and efficient access. It is critical that as we retrofit millions of homes, we make maximum use of their energy savings and strengthen energy networks through electricity grid integration. This can only happen if the data flows are understood; technology in buildings that relies on this data has the ability to interact with the utility via the grid.

### Key Policy Recommendations:

- **Provide broad customer access to home utility data and other information on energy and climate costs and risks:** To monetize energy efficiency; lower the cost of conversion to renewable home electrification; and create better home evaluation for upgrades, innovations, specialized retrofits, and Evaluation, Measurement, and Verification (EM&V), the DOE should provide best practices for utilities to guarantee that customers have access to their own electricity data and to ensure consumer access to energy use data, as in the 116th Congress's E-Access Act (H.R. 5796). This would support state energy conservation plans and the establishment of voluntary guidelines to aid state Public Utility Commissions (PUCs) in requiring that timely access to utility data be guaranteed. Further, the broader principle of guaranteeing homeowners and tenants access to their own energy and climate data should extend to disclosure of disaster risk and resilience in home construction as a matter of financial risk.
- **Develop a DOE task force on interoperability:** Constantly changing devices and lack of industry standardization deter contractors from including smart homes in their business models and frustrate homeowners when they need multiple apps

and devices that do not communicate. The new administration must bring together stakeholders and ensure interoperability standards that feed, rather than stifle, innovation.

- **Promote the utilization of HPXML:** Home Performance eXtensible Markup Language (HPXML) creates a common language for the energy efficiency retrofit industry to share data related to the different measures they include in a home. When software tools record home energy improvements in a comparable fashion, it will make it easier and less expensive to collect and exchange information among contractors, program administrators, implementers, government, utilities, evaluation consultants, and other information-trading partners.
- b. **Promote Deployment of Grid-interactive Efficient Buildings (GEBs):** Residential GEBs can be part of larger strategies to create a more reliable, more affordable, and cleaner power system. Policies and regulatory measures that advance grid-interactive efficient homes can support grid modernization and resiliency.

#### Key Policy Recommendations:

- **Support residential grid integration and grid modernization policies:** The policies outlined in a recent National Association of State Energy Officials (NASEO) report (Rinaldi et al. 2019) offer a pathway for investment in full deployment of smart meters, or advanced metering infrastructure (AMI), across the entire residential sector, and would create and enable grid-interactive energy optimization. Smart meters provide two-way communication (and utilities must be required, if public funding is used) to allow for optimal access of meter data and to create new opportunities for targeted energy efficiency and demand response. This supports the integration of customer-sited resources like rooftop solar and battery storage, enabling a broad range of GEB solutions while empowering energy consumers by providing new savings and income opportunities.
- **Fund residential GEB demonstration and deployment:** To build on research on grid-interactive efficient building solutions, funding should focus on demonstration and deployment to (1) evaluate energy optimization strategies integrating energy

efficiency and smart technology in real homes; (2) assess the potential of different retrofit measures to increase energy efficiency, electricity grid interactivity, and demand flexibility in existing homes; and (3) integrate electrification, solar, storage, and other distributed generation technologies.

- **Appoint a FERC commissioner conversant in smart technology, Demand Response, and Distributed Energy Resources:** A new Federal Energy Regulatory Commission (FERC) commissioner should be able to recognize the benefits in, and robustly evaluate the use of, smart technology in residential buildings as well as reduce historic barriers to creating a more dynamic and responsive grid through better engagement of end-users of electricity in conservation.

- c. **Center Building Retrofits within a National 100 Percent Clean Energy Mobilization:** The Biden administration has committed to achieve 100 percent clean, carbon-free energy in the electricity sector by 2035. Realizing advanced clean energy deployment goals will require a close integration of building efficiency measures to reduce demand where possible, along with building electrification measures and deployment of zero-carbon renewable energy. These 100 percent clean energy goals clearly place building retrofits at the center of plans for a modern, resilient, and sustainable electricity grid as it moves away from historic reliance on carbon-intensive fossil fuels.

### Key Policy Recommendations:

- **Pass a national Energy Efficiency Resource Standard, alongside a 100 Percent Clean Electricity Standard:** A national Clean Electricity Standard (CES) should be accompanied by an Energy Efficiency Resource Standard (EERS), as proposed by the Biden administration, to ensure that utilities plan for efficiency and load reductions in their long-term resource planning. It should also include strong incentives for residential building retrofits, as well as carve-outs for distributed solar energy generation within state and regional energy markets.
- **Expand incentives for electrification within building retrofits:** A move from carbon-intensive fossil fuel sources to a residential building sector that is powered by 100 percent clean and

renewable energy must be facilitated by a major push for electrification of fuel sources, in concert with whole-home energy performance evaluation and upgrades. Efforts to promote electrification should only be pursued where whole-home energy efficiency and thermal performance have been tested and optimized in order to manage energy loads and costs.

- **Ensure strong federal incentives for distributed and community solar:** Federal policymakers should work directly with states, localities, and utility regulators to encourage construction and interconnection of community solar and to ensure that all residential properties can become powered rapidly by 100 percent clean and renewable electricity; these properties should include renters and those homes not suited for solar installation. Federal Production and Investment Tax Credits for renewables should also be made refundable and transformed into a grant program accessible to nonprofits, affordable housing providers, and other community-based partners who do not have tax liability to benefit from such a tax credit. Incentives for community solar should also include focused investments linked to community-based organizations, local beneficiary ownership, and funding for project pre-development. These tools will ensure rapid expansion of community-based distributed energy assets as a tool for energy democracy, community empowerment, local economic development that creates jobs, and wealth creation in low-income communities.

# CONCLUSION: WHAT THE BIDEN ADMINISTRATION AND 117TH CONGRESS CAN DO NOW

The Biden administration and the 117th Congress must address existential challenges facing our economy, our environment, and the public health of our nation's people through key interventions in the built environment.

Residential building energy improvements stand at the nexus of all these issues. To create jobs, restore public health and safety, and advance key climate commitments, we must focus on housing—on building cleaner, smarter, and more efficient places to live, work, and raise families.

Policymakers can do so with the cost-effective and fast-acting policies outlined in this paper— starting with weatherization, which would provide both immediate economic relief and permanent utility savings for low- and moderate-income families.

But benefits from these policies extend well beyond weatherization. These policies will help broaden networks of contractors, ranging from large union employers to local small businesses working in the residential retrofit industry; drive new waves of community-based economic development; and incentivize new capital investments through federally backed loans and thoughtful tax incentives. Further, this program will position the nation's built environment for substantial innovation, as it lays the groundwork for deep integration of buildings within a smart and 100 percent clean energy electricity grid.

There is no “one size fits all” approach for retrofitting the nation's housing stock. The housing market is large and complex; it comprises different ownership structures with very different markets and policies guiding low-income affordable housing and market rate homes for middle-income working families.

But this complex market reality cannot be an excuse for inaction. Rather, a broad-based approach, as we have outlined here, can uniquely unify both green progressives and Main Street centrists around a positive program of investment. By investing in jobs and the skills of workers, and by improving the value and safety of the places we call home, we can build strong, healthy, and thriving communities and tackle the climate crisis together.

To begin confronting the challenges facing our nation's economy and its people, we should start with a commitment to reconstruct the spaces where we live (and now often work as well): our homes.

The federal government should invest heavily in residential building energy improvements, and in so doing create a new wave of job creation, expand housing affordability and community economic justice, and catalyze a new generation of more modern and sustainable local community infrastructure. Together, these investments will meet the president's commitment to put millions to work eliminating pollution, protecting clean water, and building healthier communities. A national mobilization to rebuild the US economy with clean, low-carbon, and state-of-the-art infrastructure will revive our economy, move the nation closer to 100 percent clean energy, and enhance social equity—all while putting our people on far stronger footing to reverse the climate crisis. By following this path, economic recovery truly does begin at home.



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