



October 25, 2022

Office of General Counsel, Rules Docket Clerk (Room 5218)  
U.S. Department of Housing and Urban Development  
451 7th St. SW  
Washington, D.C., 20410-0500

**Attention:**

Marcia L. Fudge  
Secretary of Housing and Urban Development

Damon Smith  
Housing and Urban Development General Counsel

Victoria Brown  
Housing and Urban Development Chief of Staff

Dominique Blom  
General Deputy Assistant Secretary for Public and Indian Housing

Alexis Pelosi  
Senior Advisor for the Office of Community Planning and Development

Sarah Brundage  
Senior Advisor for Housing Supply and Infrastructure

**Re: Petition for Rulemaking to Electrify and Weatherize Public Housing and Housing under HTF,  
HOME, and CDBG**

Dear Secretary Fudge and Department Staff:

The undersigned coalition of public health, environmental justice, and housing advocacy organizations have united to submit this citizen petition for rulemaking to improve the health and wellbeing of public housing residents. As discussed in detail throughout this Petition, climate change is altering our landscapes and weather patterns, forcing people indoors during increasingly frequent and severe storms, heat waves, and droughts. The marginalized and low-income communities that HUD assists are on the front lines of these climate impacts, placing them at risk of injury and illness. Programmatic changes are urgently needed to right these inequities and make public housing and other HUD-assisted housing safe for our changing environment.

Home should be a refuge, not a health hazard. Yet, existing public housing regulations allow many unsafe housing conditions to persist. For instance, HUD currently permits fossil fuel-fired appliances like gas stoves that emit dangerous pollutants that cause lasting health impacts for residents. Existing regulations also force residents to endure extreme temperatures without safe heating and cooling options. Though we understand that HUD is always working to improve public housing conditions, the existing system continues to thrust harmful conditions upon families and individuals who are disproportionately Black, Hispanic, disabled, elderly, children, and necessarily lacking in the financial resources to cope with illness or injury. As the nation settles into the new normal of climate change, HUD must do everything within its power to ensure the health and safety of its most vulnerable assisted residents by weather-proofing homes, cleansing buildings of fossil fuel-fired appliances, improving indoor air quality, and ultimately eliminating greenhouse gas emissions from public housing and the grant programs the agency administers. Fortunately, the Inflation Reduction Act and other federal, state, and local policies are making these upgrades more affordable and accessible every day.

Standing up against injustice is rarely easy. But HUD is no newcomer to hard fights. Just a few years ago, HUD stood up to Big Tobacco—one of the most nefarious industries in history—by passing the Smoke-Free Public Housing rule. In the face of powerful opposition, HUD acted to protect residents from the health impacts of secondhand smoke, fulfilling its obligation to provide decent, safe, and sanitary housing for all. Now, we are calling upon HUD to once again act for the benefit of the people the agency is duty-bound to serve. As detailed in this Petition, HUD has the power to counteract the climate crisis and bring about dramatic improvements in

health, safety, and wellbeing for hundreds of thousands of people. We hope our policy proposals will help HUD wield that power as effectively as possible. We look forward to working with you to achieve our shared goals.

Thank you for your work and consideration,

Petitioners



# Table of Contents

PETITION..... 1

INTRODUCTION ..... 1

DATA & ARGUMENTS IN SUPPORT OF PETITION ..... 4

I. HUD has a legal obligation to ensure Federally assisted housing is a healthy environment for residents. .... 5

II. Public housing residents are ready to embrace electrification and build resilience in their communities. ... 10

III. The proposed regulatory changes are urgently needed to protect the health and wellbeing of residents in the face of climate change..... 15

    A. HUD regulations must be updated to address poor indoor air quality. .... 15

        1. Mold and pest infestations must be remediated to avoid increased adverse health impacts from indoor exposures. .... 18

        2. Removing gas cooking appliances is a necessary step to reduce harm from indoor air pollution..... 22

    B. HUD’s regulations must reflect the universal need for cooling. .... 35

    C. HUD must increase planning requirements to account for climate-related risks. .... 38

    D. HUD must phase fossil fuels out of HUD-assisted housing to mitigate future health impacts from climate change. .... 41

IV. Phasing fossil fuel-fired appliances out of HUD housing will reduce fire risk. .... 43

V. The proposed regulatory changes will save renters and housing providers money in the long run. .... 45

VI. Government intervention is necessary to combat the fossil fuel industry’s campaign of deception. .... 54

VII. Petitioners’ Proposed Regulatory Changes would help HUD provide decent, safe, and sanitary housing for residents..... 59

INFORMATION GATHERING & PLANNING ..... 60

    A. Proposal A defines “fossil fuel-fired systems and appliances” to clarify which fuels are prohibited under this Petition’s electrification requirements. .... 60

    B. Proposal B requires that all PHAs create Green PNAs covering 20-year time frames. .... 60

    C. Proposal C requires PHAs to sequence their improvement measures using a holistic cost effectiveness measure that accounts for negative externalities. .... 64

    D. Proposal D requires that each PHA’s 5-Year Plan account for how it will electrify its existing public housing stock..... 67

    E. Proposal E standardizes the energy audit process to ensure PHAs are receiving the information they need to undertake informed planning. .... 68

    F. Proposal F establishes a graduated schedule for electrification to the greatest extent practicable. .... 70

G.	PNA Cost Allocation: Include a new PNA cost in Operating Fund subsidies.....	74
CAPITAL FUND LIMITATIONS.....		74
H.	Proposal H institutes an in-kind replacement ban that disallows replacement of fossil fuel appliances with another fossil fuel appliance.....	74
I.	Proposal I extends the allowable financing term for Capital Fund expenditures to 30 years and allows pledges related to electrification, energy-efficiency, and climate preparedness to exceed 33% of future funding.....	75
UNIFORM PHYSICAL CONDITION STANDARDS UPDATES.....		79
J.	Proposal J updates the Uniform Physical Condition Standards to disallow gas-fired stoves, cooktops, and ranges beginning January 1, 2026. ....	79
K.	Proposal K updates the Uniform Physical Condition Standards to disallow fossil fuel-fired appliances beginning January 1, 2040.....	80
L.	Proposal L updates the Uniform Physical Condition Standards to require that units provide both heating and cooling beginning January 1, 2026. ....	81
STABILIZING UTILITY COSTS.....		81
M.	Proposal M creates an exception to the utility consumption incentive to keep the pursuit of energy efficiency from undermining electrification efforts.....	81
N.	Proposal N creates an incentive for electrification where fossil fuel rates are higher than electric rates.....	82
O.	Proposal O transforms HUD’s energy conservation incentives into a suite of incentives that support reducing energy burden for public housing residents.....	83
P.	Proposal P requires that PHAs update their utility allowance formulas to include common electric appliances and requires that utility allowance formulas be made public. ....	85
Q.	Proposal Q requires that landlords be transparent and accountable for condition deficiencies prior to assessing utility surcharges.....	89
R.	Proposal R includes electrification measures as add-on expenses for calculating operating subsidy.	90
RESIDENT SUPPORT.....		91
S.	Proposal S requires that PHAs support resident efforts to remedy health impacts and provide information about housing-related health risks and remediation. ....	91
GRANT PROGRAM REQUIREMENTS.....		92
T.	Proposal T requires that Consolidated Plans describe anticipated impacts of foreseeable disasters on extremely low-income, low-income, and moderate-income residents.....	92
U.	Proposal U adds a definition of renewable energy systems to facilitate decarbonization efforts.....	93

V.	Proposal V explicitly allows jurisdictions to use HOME funds for costs related to electrification and installation of renewable energy systems as eligible for HOME financing and prohibits jurisdictions from using HOME funds for new fossil fuel connections.....	94
W.	Proposal W allows HOME funds to cover costs related to assessing and remediating residential health risks, including healthy home visits.....	95
X.	Proposal X requires that all new HOME projects be all-electric, and that all rehabilitation projects be all-electric to the extent feasible. ....	95
Y.	Proposal Y requires any new Community Development Block Grant new construction to be all-electric.....	96
Z.	Proposal Z explicitly allows Community Development Block Grant funds to go towards replacement of fossil fuel-fired systems and appliances with electric systems and appliances.....	97
AA.	Proposal AA explicitly allows HTF funds to go towards non-fossil fuel utility work, upgrading to renewables. Prohibit HTF funds from going toward fossil fuel-fired systems and appliances. ....	98
BB.	Proposal BB requires that new and rehabilitated Housing Trust Fund projects be free from fossil fuels to the extent feasible.....	99
CC.	Proposal CC would extend healthy home benefits to residents in RAD conversions. ....	101
	Conclusion.....	103

## **PETITION**

Pursuant to Section 553 of the Administrative Procedure Act,<sup>1</sup> the U.S. Department of Housing and Urban Development’s (“HUD” or “the agency”) regulations implementing the Administrative Procedure Act,<sup>2</sup> and the U.S. Constitution’s First Amendment Petition Clause, the Public Health Law Center (“PHLC”), and the Building Electrification Institute, Center for Black Health and Equity, Center for Law and Social Policy, Chicago Urban League, Dayton Energy Collective, Direct Action Against Centerpoint Energy, Green and Healthy Homes Initiative, Greater Boston Physicians for Social Responsibility, Michigan Climate Action Network, Minnesota Center for Environmental Advocacy, National Association for the Advancement of Colored People Grand Rapids, National Carbon Monoxide Awareness Association, New York Geothermal Energy Association, Oregon Physicians for Social Responsibility, Renewable Energy Partners, Respiratory Health Association, Rewiring America, RMI, Sierra Club, Thurston Climate Action Team, WEACT for Environmental Justice, and Zero Carbon MA (collectively, “Petitioners”) submit this Petition formally requesting that HUD promulgate new and revised rules to support beneficial electrification<sup>3</sup> and to improve residential health in public housing and other HUD-assisted programs.

## **INTRODUCTION**

PHLC has spent nearly a year engaging with fellow Petitioners<sup>4</sup> and other stakeholders in the energy, climate, environmental justice, housing, and public health spaces to create the regulatory proposals advocated for

---

<sup>1</sup> 5 U.S.C. § 553(e).

<sup>2</sup> 24 C.F.R. § 10.20.

<sup>3</sup> Beneficial electrification refers to replacing fossil fuel-fired appliances and systems with electric appliances that can be powered by clean, renewable sources, thereby reducing harmful pollutant exposures, alleviating the dangers of fossil fuel infrastructure, increasing energy efficiency and security, lowering utility and healthcare bills, and boosting housing quality and value.

<sup>4</sup> A list and brief description of the individual petitioning organizations can be found in the Appendix to this Petition. For HUD’s benefit, Petitioners have also included each of the scientific studies relied upon by this Petition in the Appendix.

in this Petition. This broad coalition affirms that housing is a key social determinant of health,<sup>5</sup> and that the changes requested herein are urgently needed to reduce the health harms caused and exacerbated by housing within the agency’s control. The regulatory changes outlined in this Petition were designed to address significant public health risks and economic burdens associated with indoor air pollution, fossil fuel-fired appliances, and climate change. The proposed changes were also designed to avoid diminishing the nation’s public housing stock and avoid adding to residential energy bills.

As detailed in this Petition, there is an urgent need for HUD to account for climate change in agency regulations. Climate change-induced extreme weather events and epidemics are forcing people to spend more time in their homes. Mounting research shows that combustion of fossil fuels in household appliances emit hazardous air pollutants inside the homes HUD manages and regulates, making these homes unsafe and increasing financial burdens on residents and their families. At the same time, systemic racism and classism often prevent HUD-assisted residents from accessing the programs and services that would increase the energy efficiency and overall safety of their homes. Consequently, citizens who are most vulnerable to—and least responsible for—the negative impacts of climate change are left to shoulder onerous energy bills in homes that do not offer adequate protection from the dangers of the modern environment.

The disproportionate burden of fossil fuel infrastructure borne by residents of HUD housing is a major health and economic equity issue. Centuries of systemic and institutional racism have deprived many marginalized<sup>6</sup> peoples of critical resources—financial and otherwise. HUD-assisted residents are often members

---

<sup>5</sup> “Social determinants of health are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.” U.S. Department of Health and Human Services, *Social Determinants of Health*, <https://health.gov/healthypeople/priority-areas/social-determinants-health> (last accessed Sept. 4, 2022).

<sup>6</sup> Here, Petitioners use the term “marginalized” as an umbrella term to refer to various racial, ethnic, cultural, socioeconomic and geographic subgroups who have historically been and continue to be harmed by misguided and prejudicial national, state, and local policies. *See, e.g., Texas Dep’t of Housing & Community Affairs v. Inclusive Communities Project, Inc.*, 579 U.S. 519, 528-29 (2015) (describing government endorsed discriminatory housing practices such as redlining that led to inequalities that remain today). By using this term, Petitioners do not mean to imply the treatment of any one subgroup has been comparable to the treatment of another. Petitioners recognize that individual groups have suffered unique harms at the hands of industries and the U.S. government, and where possible, we make efforts to name impacts that are specific to particular subgroups.



of these populations. In particular, public housing residents are disproportionately Black, Hispanic, elderly, people living with disabilities, single-income, and single female parents with children.<sup>7</sup> Redlining and environmental racism cause these residents to experience more industrial pollution than whiter, more affluent communities.<sup>8</sup> Further, low-income populations such as those served by HUD are already experiencing and will continue to experience the most severe effects of our changing climate.<sup>9</sup>

The regulatory changes requested in this Petition are needed to ensure HUD is fulfilling its legal obligation to ensure that the properties proposed for use in HUD programs are “free of hazardous materials [and] toxic chemicals and gasses . . . where a hazard could affect the health and safety of occupants.”<sup>10</sup> More generally, the proposed changes are necessary to ensure HUD housing is “decent, safe, sanitary and in good repair.”<sup>11</sup> The requested changes also closely align with President Biden’s unequivocal direction that federal agencies—including HUD—take action to address environmental justice and climate change.<sup>12</sup> While these proposals are not nearly enough to rectify past wrongs or completely protect HUD residents from the dangers of climate change, they do represent a commonsense starting point for HUD to begin holistically addressing these challenges.

The regulatory proposals set forth in Section VII of this Petition fall into seven categories. Specifically, Petitioners are requesting that the agency: (1) revive the Green Physical Needs Assessment (“Green PNA”) rule requiring public housing authorities (“PHAs”) to generate forward-looking planning documents that identify modifications necessary to prepare for and mitigate against climate-related health risks; (2) implement an in-kind replacement ban on fossil fuel-fired appliances in some HUD-assisted properties; (3) update the applicable physical condition standards to reflect the significant public health risks posed by indoor combustion of fossil

---

<sup>7</sup> See HUD, *Assisted Housing: National and Local*, available at <https://www.huduser.gov/portal/datasets/assthsg.html> (last accessed July 31, 2022).

<sup>8</sup> Haley M. Lane et al., *Historical Redlining Is Associated with Present-Day Air Pollution Disparities in U.S. Cities*, 9 ENVTL. SCIENCE & TECH. LETTERS 345, 345-46 (March 9, 2022).

<sup>9</sup> See generally EPA, CLIMATE CHANGE AND SOCIAL VULNERABILITY IN THE UNITED STATES: A FOCUS ON SIX IMPACTS (Sept. 2021), [https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability\\_september-2021\\_508.pdf](https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf).

<sup>10</sup> 24 C.F.R. § 58.5(i)(2)(i).

<sup>11</sup> 24 C.F.R. § 5.703.

<sup>12</sup> See generally Tackling the Climate Crisis at Home and Abroad, Exec. Order No. 14008, 86 Fed. Reg. 7,619 (Feb. 1, 2021).

fuels, as well as by extreme temperature exposure; (4) revise utility allowances to save residents money by accounting for increased electrification, weatherization, and energy efficiency efforts; (5) require that PHAs assist residents in reducing in-home health hazards and to advocate for resident throughout the planning process; (6) revise several of HUD’s grant programs to support beneficial electrification and climate-preparedness; and (7) edit the guidance for the Rental Assistance Demonstration (“RAD”) to ensure climate-related risks are addressed in converted properties as well. While Petitioners believe these proposals will operate best if enacted together, Petitioners also request that HUD consider the merits of each measure individually as necessary.

Pursuant to 24 C.F.R. § 10.20, this Petition consists of data and arguments in support of Petitioners’ regulatory proposals. Section I lays out the legal framework that forms the basis for Petitioners’ requests. Section II chronicles PHLC’s engagement with HUD-assisted residents and describes how that engagement informed this Petition. Section III provides up-to-date public health research regarding the individualized and cumulative effects of in-home hazards like fossil fuel-fired appliances, mold, and pests. Section III also explains the health risks that can be mitigated by planning and preparing for climate change, including by providing residents with universal access to in-unit heating and cooling. Section IV explains how fossil fuel infrastructure poses a fire hazard and describes how electrification policy can reduce that hazard. Section V describes how implementing the changes sought by Petitioners will save money on energy bills and healthcare costs in the long run. Section VI discusses the insidious influence of the fossil fuel industry and why HUD’s leadership is critical to achieving climate and health justice. Finally, Section VII provides sample language of the rules Petitioners are asking HUD to promulgate.

## DATA & ARGUMENTS IN SUPPORT OF PETITION

### **I. HUD has a legal obligation to ensure Federally assisted housing is a healthy environment for residents.**

“As the Federal agency dedicated to creating strong, sustainable, inclusive communities and quality affordable homes, HUD is on the front lines of the nation’s efforts to increase resilience to climate impacts.”<sup>13</sup> In fact, several Federal statutes authorize and instruct HUD to safeguard resident health by providing safe and resilient housing. The Housing Act of 1937 tasks HUD with promoting national welfare by remedying unsafe housing conditions, particularly the “acute shortage of decent and safe dwellings for low-income families.”<sup>14</sup> Additionally, the Fair Housing Act charges HUD and its grantees with affirmatively furthering the purposes of the Act by “taking meaningful actions that not only overcome patterns of segregation but foster inclusive communities free from barriers that restrict access to opportunity.”<sup>15</sup>

While there are many forms of HUD housing assistance, this Petition focuses primarily on public housing. With this focus, Petitioners aim to increase access to crucial health protections within a class of housing that is desperately underfunded,<sup>16</sup> while avoiding impacts on the availability of low-income housing through HUD’s other assistance programs. However, Petitioners also propose more limited changes to the Housing Choice Voucher, the Community Development Block Grant, the Housing Trust Fund, and the HOME Investment Partnership programs. This Section discusses each of these programs, as well as HUD’s responsibilities toward public health under the applicable laws.

---

<sup>13</sup> HUD, CLIMATE ACTION PLAN 5 (Nov. 2021), <https://www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf>.

<sup>14</sup> 42 U.S.C. § 1437(a)(1).

<sup>15</sup> HUD, CLIMATE ACTION PLAN 32 (Nov. 2021), <https://www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf>; *see also* 42 U.S.C. § 3608(a) & (d).

<sup>16</sup> *See* National Low Income Housing Coalition, *Public Housing: Where Do We Stand* (Oct. 17, 2019), <https://nlihc.org/resource/public-housing-where-do-we-stand> (describing decades of underfunding for public housing); Sarah Kleiner, Center for Public Integrity, *The U.S. Ignored Public Housing. This Is What Happened*. (Jan. 7, 2022), <https://publicintegrity.org/inside-publici/newsletters/watchdog-newsletter/us-ignored-public-housing/> (same).

## *Public Housing*

In general, PHAs and the management companies they subcontract with operate public housing projects in accordance with planning documents that describe, *inter alia*, the “capital improvements necessary to ensure long-term physical and social viability of the projects;” procedures for addressing the “long-term operating, capital investment, rehabilitation, modernization, disposition, and other needs of the [PHA’s housing] inventory; and the PHA’s strategies for deconcentrating poverty.”<sup>17</sup> HUD is empowered to disapprove plans that do not comply with the law or are contrary to information before the agency, and to take enforcement action against PHAs that fail to comply with their plans.<sup>18</sup> While disapproval of a plan is limited to certain circumstances, HUD is specifically required to approve a PHA’s list of capital improvements necessary to ensure long term physical and social viability of the project.<sup>19</sup>

PHA plans are driven in large part by the applicable physical condition and inspection standards.<sup>20</sup> The existing standards require that HUD housing be “decent, safe, sanitary and in good repair.”<sup>21</sup> Attaining this standard requires that each building’s systems, including domestic water, electrical, HVAC, and sanitary systems, “be free of health and safety hazards, functionally adequate, and in good repair.”<sup>22</sup> Further, “[a]ll areas and components of the housing must be free of health and safety hazards,” including air quality, fire, pests, mold, and electrical hazards.<sup>23</sup> The regulations also specifically require “proper ventilation” and that units be free of odors

---

<sup>17</sup> 42 U.S.C. § 1437c-1(d); 24 C.F.R. §§ 903.2, 903.7.

<sup>18</sup> 42 U.S.C. § 1437c-1(i); 24 C.F.R. § 903.23(c).

<sup>19</sup> See 24 C.F.R. § 903.23(b) (citing 24 C.F.R. § 903.7(g)).

<sup>20</sup> Presently, the Uniform Physical Condition Standards, 24 C.F.R. §§ 902.20(b), 902.22(a), 5.703, govern many PHAs, but others are governed by the National Standards for the Physical Inspection of Real Estate, HUD, *NSPIRE Standards*, [https://www.hud.gov/program\\_offices/public\\_indian\\_housing/reac/nspire/standards](https://www.hud.gov/program_offices/public_indian_housing/reac/nspire/standards) (last accessed Sept. 1, 2022). Request for Comments: National Standards for the Physical Inspection of Real Estate and Associated Protocols, 87 Fed. Reg. 36426, 36427 (June 17, 2022). HUD has proposed to make the NSPIRE standards generally applicable to most HUD-assisted properties. While the regulatory changes proposed in Section VII are for the codified Uniform Physical Condition Standards, the requested changes apply equally to the NSPIRE standards, as detailed in part in PHLC’s comments on the NSPIRE standards. Public Health Law Center, Comments on NSPIRE and Associated Protocols, App’x I, Exhibit A at 12-13.

<sup>21</sup> 24 C.F.R. § 5.703.

<sup>22</sup> *Id.* C.F.R. § 5.703(c).

<sup>23</sup> *Id.* § 5.703(f).

from propane, natural gas, or methane.<sup>24</sup> In sum, “each dwelling unit must be structurally sound, habitable, and in good repair.”<sup>25</sup>

Of relevance to this Petition, PHAs also support the health of public housing residents by providing allowances to help residents pay for utility bills.<sup>26</sup> Utility allowances must be designed to “approximate a reasonable consumption of utilities by an energy conservative household of modest circumstances consistent with the requirements of a safe, sanitary, and healthful living environment.”<sup>27</sup>

### ***Section 8 Housing Choice Vouchers***

Through the Housing Choice Voucher program, PHAs contract with private landlords to pay rental subsidies for eligible low-income families through agreements known as housing assistance payment (“HAP”) contracts.<sup>28</sup> HUD’s Housing Quality Standards for the tenant-based HCV program are enumerated at 24 C.F.R. § 982.401, and “all program housing must meet the [Housing Quality Standards] performance requirements both at the commencement of assisted occupancy, and throughout the assisted tenancy.”<sup>29</sup> Crucially, these Housing Quality Standards require that units “have and be capable of maintaining a thermal environment [that is] healthy for the human body.”<sup>30</sup> Further, thermal systems must be in proper operating condition and able to “assure a healthy living environment appropriate to the climate.”<sup>31</sup> In cases where utility costs are charged to HCV recipients separately and in addition to rent, HUD also provides utility allowances to help cover those costs.<sup>32</sup>

---

<sup>24</sup> *Id.*

<sup>25</sup> *Id.* § 5.703(d)(1).

<sup>26</sup> *Id.* § 965.502; *see also* MEENAKSHI VENKATRAMAN & SRINIDHI SAMPATH KUMAR, CALIFORNIA HOUSING PARTNERSHIP, FACILITATING BUILDING CARBONIZATION THROUGH UTILITY ALLOWANCES 5-6 (March 2022), <https://1p08d91kd0c03rlxhmtydpr-wpengine.netdna-ssl.com/wp-content/uploads/2022/03/Decarbonization-by-Utility-Allowances-2022-Report.pdf>.

<sup>27</sup> 24 C.F.R. § 965.505(A).

<sup>28</sup> *Id.* § 982.451.

<sup>29</sup> *Id.* § 982.401(a)(3).

<sup>30</sup> *Id.* § 982.401(e).

<sup>31</sup> *Id.* § 982.401(e)(2)(i).

<sup>32</sup> *Id.* § 982.517.

Similar to utility allowances for public housing, PHAs must base their schedules on “the typical cost of utilities and services paid by energy-conservative households.”<sup>33</sup>

### ***Housing Trust Fund***

The Housing Trust Fund provides grants to states to provide decent, safe, and sanitary affordable housing for low-income households.<sup>34</sup> Activities eligible for grant funding include the production, acquisition, operation, preservation, and rehabilitation of low-income rental housing and housing for homeownership.<sup>35</sup> Units being newly constructed with Housing Trust Fund grants must be constructed to mitigate foreseeable natural disasters.<sup>36</sup> Rehabilitation projects must comply with the Uniform Physical Condition Standards.<sup>37</sup> Any jurisdiction applying for a Housing Trust Fund grant must describe how the grant will be used for a purpose consistent with their Consolidated Plan, a document that chronicles the jurisdiction’s strategy for carrying out the purposes of any HUD programs in which the jurisdiction is participating.<sup>38</sup>

### ***HOME Investment Partnerships Program***

The HOME Investment Partnership Program (“HOME”) is “the primary Federal tool of States and local governments for the production of affordable renter and owner-occupied housing for low-income to extremely low-income families.”<sup>39</sup> Consistent with this expansive goal, HOME is a broad and flexible program, with funding for tenant-based rental assistance, new construction, rehabilitation, mortgage lending, inspections, monitoring, audits, and more.<sup>40</sup> All properties benefiting from HOME grants must meet the property standards enumerated at 24 C.F.R. § 92.251. These standards vary depending on project type, but at minimum, all rental

---

<sup>33</sup> *Id.* § 982.517(b)(1).

<sup>34</sup> *Id.* § 93.1(a); 12 U.S.C. § 4568.

<sup>35</sup> 12 U.S.C. § 4568(c)(7); 24 C.F.R. §§ 93.200, 93.201.

<sup>36</sup> 24 C.F.R. § 93.301(a); HUD, Energy Codes for HUD-Assisted and FHA-Insured Properties, [https://www.hud.gov/program\\_offices/economic\\_development/eegb/standards](https://www.hud.gov/program_offices/economic_development/eegb/standards).

<sup>37</sup> 24 C.F.R. § 93.301(b).

<sup>38</sup> *Id.* §§ 91.1-91.2, 91.215-91.220, 91.315-91.320.

<sup>39</sup> HUD, HOME Investment Partnership Program, [https://www.hud.gov/sites/dfiles/CFO/documents/20\\_2022CJ-HOME.pdf](https://www.hud.gov/sites/dfiles/CFO/documents/20_2022CJ-HOME.pdf) at 17-1.

<sup>40</sup> *See* 42 U.S.C. §§ 12722 (HOME program purposes), 12742 (eligible grant uses); 24 C.F.R. §§ 92.2 (defining “commitment” as a written agreement to use funds for a specific set of purposes); 92.205(a) (eligible HOME activities), 92.206 (eligible project costs); 92.207 (eligible administrative costs).

housing must meet the Uniform Physical Condition Standards.<sup>41</sup> Upon receiving notice that it has been selected for a HOME grant, the recipient must submit a Consolidated Plan in accordance with 24 C.F.R. part 91.<sup>42</sup>

### ***Community Development Block Grants***

The purpose of a Community Development Block Grant is to develop “viable urban communities, by providing decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low and moderate income.”<sup>43</sup> While Community Development Block Grants cannot be used for the construction of new low-income housing,<sup>44</sup> funds can be used for some rental rehabilitation work, as well as site improvements.<sup>45</sup> Additionally, funds can be used to construct, rehabilitate, and generally improve public use buildings that support low-income residents.<sup>46</sup> Like the grant programs listed above, Community Development Block Grants must be consistent with the receiving jurisdiction’s Consolidated Plan.<sup>47</sup>

### ***Rental Assistance Demonstration***

RAD is a program designed to address the traditional public housing sector’s serious backlog of capital projects by preserving and improving HUD’s affordable housing stock.<sup>48</sup> RAD authorizes the conversion of public housing to long-term Section 8 Project-Based Assistance.<sup>49</sup> Units converted under RAD must meet the applicable physical condition standards, currently the Uniform Physical Condition Standards, to ensure housing

---

<sup>41</sup> 24 C.F.R. §§ 92.209(i), 92.251(f). *See also id.* § 92.251(b)(1)(viii) (requiring that jurisdictions undertaking rehabilitation projects establish standards sufficient to ensure that the finished project will comply with the Uniform Physical Condition Standards).

<sup>42</sup> *Id.* §§ 92.104, 92.150.

<sup>43</sup> 42 U.S.C. § 5301; 24 C.F.R. § 570.1(c).

<sup>44</sup> 24 C.F.R. § 570.207(b)(3).

<sup>45</sup> *Id.* §§ 570.201(m), 570.207(b)(3).

<sup>46</sup> *Id.* § 570.201(c).

<sup>47</sup> *Id.* § 91.2(a).

<sup>48</sup> Rental Assistance Demonstration, 42 U.S.C. § 1437f note, Pub. L. 112-55, as amended; *see also* Ji Hwang, *The Final Frontier of the Privatization of Public Housing: The Rental Assistance Demonstration Program*, 21 Pub. Int. L. Rep. 124, 125-126 (2016) (describing RAD and its history).

<sup>49</sup> Rental Assistance Demonstration, 42 U.S.C. § 1437f note, Pub. L. 112-55, as amended; RAD Notice Rev 4, H-2019-09 PIH-2019-23 (HA), <https://omb.report/icr/202104-2502-001/doc/110665100>.

is decent, safe, and sanitary.<sup>50</sup> RAD also authorizes HUD to “establish requirements for converted assistance. . . through contracts, use agreements, regulations, or other means.”<sup>51</sup>

HUD has used the power granted by the statute that authorized RAD to require that projects selected for participation in RAD conduct a Capital Needs Assessment detailing “short-term rehabilitation needs to be included as a Scope of Work that will be completed as part of the RAD conversion and long-term capital needs to be addressed through a Reserve for Replacement Account.”<sup>52</sup> Reserve for Replacement accounts are interest-bearing accounts that RAD project owners must maintain as specified in a Regulatory Agreement with the FHA.<sup>53</sup> In compiling their Capital Needs Assessments, property owners must identify “critical repairs,” which must be completed before residents can occupy affected units.<sup>54</sup> Where a project’s Capital Needs Assessment identifies systems and appliances that must be replaced, housing providers are “strongly encouraged”—but not required—to choose cost-effective components that will improve indoor air quality and reduce environmental impacts.<sup>55</sup> Properties undergoing RAD conversions must meet or exceed certain codes for energy efficiency and environmental impact, but compliance with codes and certifications on the stricter end of the spectrum are merely encouraged.<sup>56</sup> Similarly, applicants are only encouraged to use a “long-term and holistic view of costs and benefits” in their planning documents.<sup>57</sup>

## **II. Public housing residents are ready to embrace electrification and build resilience in their communities.**

Too often, decisions about public housing are made for residents without their input. Although HUD’s public housing program aims to provide temporary assistance that helps recipients exit the cycles of poverty and

---

<sup>50</sup> 42 U.S.C. §§ 1437f note, Pub. L. 112-55, as amended, 1437d(f), 1437d(l)(3).

<sup>51</sup> *Id.* § 1437f note, Pub. L. 112-55, as amended.

<sup>52</sup> HUD, RAD Notice Rev 4, H-2019-09 PIH-2019-23 (HA), <https://omb.report/icr/202104-2502-001/doc/110665100> at 23-24.

<sup>53</sup> *Id.* at 73.

<sup>54</sup> *Id.* at 11.

<sup>55</sup> *Id.* at 25.

<sup>56</sup> *Id.*

<sup>57</sup> *Id.* at 29.



housing instability, many residents spend a decade or more in public housing communities. Some residents live the majority of their lives in public housing units. Consequently, it is imperative that the system governing public housing be informed by and responsive to resident feedback. The purpose of this Petition is to improve the health and wellbeing of residents. Petitioners believe residents themselves are in the best position to shed light on the resources and regulatory changes that will achieve that mission. Thus, in developing the measures proposed in Section VII, PHLC sought out resident input and have proposed policies that are supported by the communities they will primarily impact.

Specifically, PHLC coordinated focus groups with public and affordable housing residents in Chicago to discuss housing conditions and related health and wellness impacts. One of the most striking themes unearthed during these focus groups was a fear of abandonment. Residents are acutely aware that public and PHA-managed housing is no longer in vogue with the political powers that guide the flow of federal money and resources. They have witnessed first-hand the disinvestment in their homes and apathy toward what will become of their futures if their communities are privatized. There was significant anxiety about rising prices and gentrification. Given these concerns, Petitioners want to be clear that this Petition's call to action is a plea for reinvestment in public housing. HUD has an opportunity to right the environmental injustices our society has dealt to its most vulnerable citizens, but such reform can only be achieved by zealous advocacy for public housing and respect for the communities residents built against all odds.

Our focus groups were organized into two sessions with two groups in each session. Participating residents were Black and ranged from approximately age 20 to 70. Some residents were new arrivals to HUD-assisted housing, but most had been there for at least 10 years and a few families had been residing in public housing for generations. Approximately half of participating residents had children living in their units, while many older residents reported babysitting grandchildren in their units.

Participating residents reported many condition issues that impact health and wellness, but a few themes emerged. First, residents are aware of the environmental hazards within their homes, but are in a position of powerlessness to improve their surroundings. Residents report submitting maintenance requests for mice, insects, and mold, but effective solutions to these issues are slow to come if they come at all. Often, residents are provided

with band-aids that simply abate the worst of the symptoms without addressing the underlying causes. For instance, exterminators are called for pests, but doors are not properly sealed to prevent reentry when the pesticides wear off. Similarly, windows with inadequate weatherization allow snow and rain to infiltrate the home, generating an ideal environment for mold and mildew in the windowsill and walls surrounding the window. These deficiencies create recurring problems that put stress on residents and cost housing managers money in the long run. Residents desire a plan for lasting solutions to these recurring dangerous housing deficiencies. Several residents indicated that the failure to communicate such a plan foments distrust. As one resident explained, “Everyone makes money off the poor. They capitalize off us being uneducated, poor, and black. We are powerless in the system of public housing.”

Second, our focus groups described the struggle of facing extreme temperatures in public and affordable housing. Although most residents reported having heating and air conditioning, most also reported that the heaters were unable to sustain a comfortable temperature during winter. One resident shared that she has not had working heat in two years, and often relies on her neighbors to stay warm in the winter. Alarming, nearly 100 percent of participating residents reported using their gas stoves for supplemental heat. Moreover, functioning kitchen ventilation was relatively rare, causing residents to feel anxious about oven fumes while cooking and using the stove for supplemental heat. One resident even reported using her own money to rig a kitchen ventilation system out of a series of fans. Generally, the residents most sensitive to indoor pollution and extreme temperatures have asthma or other respiratory illnesses, or live with someone who does. Our focus group reflected the disproportionately high levels of asthma and respiratory disease among Black communities, with a few residents reporting elevated symptoms in the winter when they spend most of their time indoors.

Third, residents expressed frustration with management practices that make them feel unseen. A common complaint was the overall “hands off” management approach from their local public housing provider. Residents shared that private management companies are often tasked with handling the operations of their communities, complicating the process for residents to raise and address concerns. Residents also expressed anxiety that their buildings would be sold to private developers rather than retained by the public housing provider and fear that this would lead to gentrification and living cost increases. Finally, residents explained that members of resident

advisory committees sometimes receive special treatment, including new appliances and monetary incentives. These incentives were seen as unfair and potentially corrupt. While Petitioners acknowledge that implementing the changes outlined in the Petition will take time and careful planning, it is imperative that changes are made in an equitable manner that avoids preferential treatment and ensures safe and sanitary conditions for all residents.

In addition to gathering information from residents, a secondary purpose of the focus group was to educate residents about the most recent science concerning indoor air quality and health. After the listening session, PHLC provided participating residents with an overview of the same information explained in detail throughout this Petition. PHLC then asked residents whether they would be interested in electrifying their homes. The results were overwhelmingly in favor of electrification.

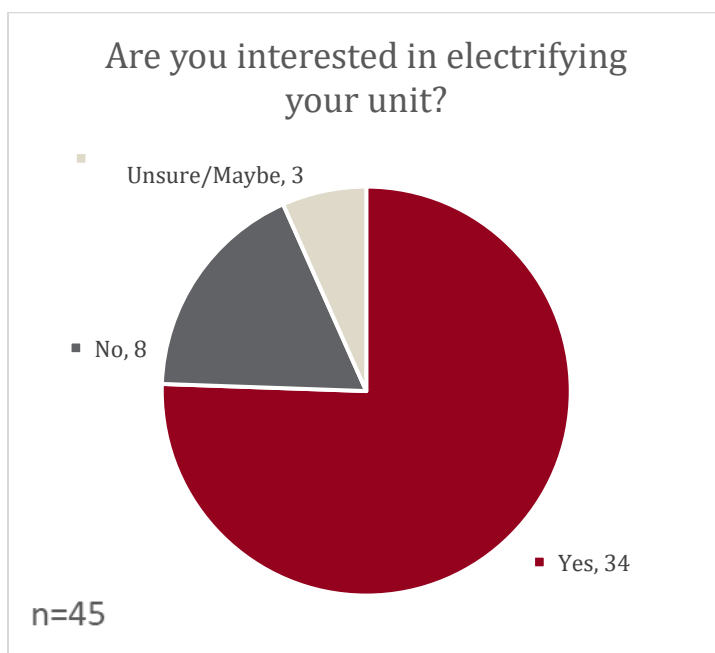


Fig. 1. Focus group participants' interest in beneficial electrification.

Moreover, the interest in electrification appears to be linked to learning about the health hazards of indoor fossil fuel combustion, with 43 out of 45 participants reporting the focus group changed their thoughts about the fossil fuel appliances. Importantly, among residents who were still hesitant to support electrification, the most common concerns were the possibility of increased rents and the perceived unreliability of electricity due to lived experiences with power outages and faulty wiring in their units. In accordance with this feedback, Petitioners have designed policies aimed at reducing energy bills and ensuring electrification is undertaken in

conjunction with holistic upgrades that will improve the energy reliability. With these safeguards in place, it is possible that even the small number of electrification skeptics could be convinced that electrification is the best choice.

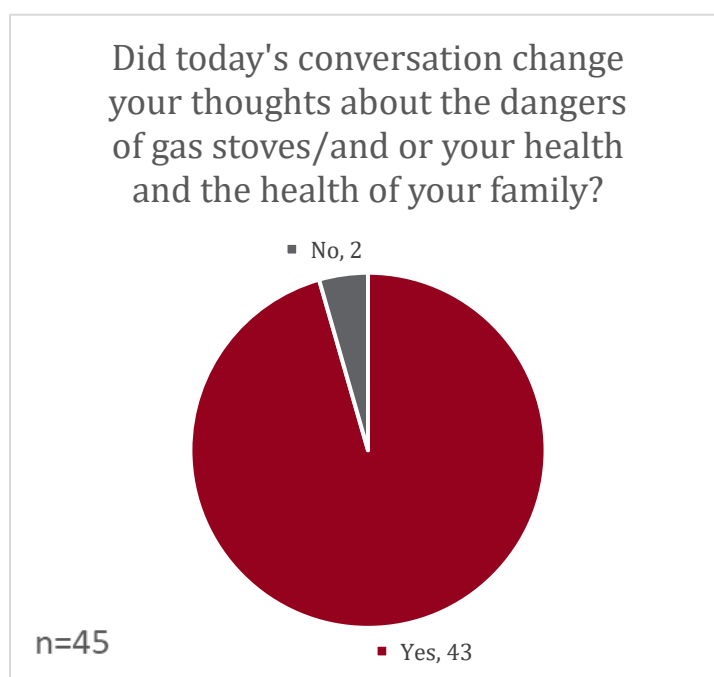


Fig. 2. Changed perspective of gas stoves among focus group participants.

The complex in which PHLC held its focus groups is home to a population of residents who are driven to improve their community. Despite the crushing hardships of generational poverty, there is a sense of momentum among residents who are taking active roles in educating others and advocating for their rights as tenants and as human beings. Yet, there is also a fear of losing the characteristics that define their community in pursuit of progress. One resident predicted, “The community will start to change soon—white people are starting to take interest.”

Avoiding gentrification means investing in the communities that already exist. There are over 1.7 million people living in public housing communities, and even more living in HUD-assisted housing more generally.

These residents deserve communities that are reflective of their identities and responsive to their wants and needs. With this Petition’s broad requests, HUD has an opportunity to reinvest in public housing and to encourage others to do the same. Public housing can serve an invaluable role in modern society, delivering much-needed assistance to communities that have been discriminated against and cast aside. But without intervention, the current system will continue to drive this crucial public service to its demolition. Petitioners submit the following policy proposals and justifications as a vehicle to create lasting change in the lives of residents.

### **III. The proposed regulatory changes are urgently needed to protect the health and wellbeing of residents in the face of climate change.**

Our shifting environment has created a new, unpredictable, and often dangerous reality that all living things—including humans—must now learn to navigate. During this confusing time, it is the government’s responsibility to implement policies that will help citizens prepare for and mitigate against increasingly extreme weather events. HUD’s role in this effort cannot be overstated as “[e]xposure to climate change’s risks is particularly acute for residents of assisted housing units.”<sup>58</sup> If HUD-assisted residents are to safely take refuge in their homes during extreme weather, housing must be resilient against the most common weather-related threats. While the effects of climate change differ across the diverse U.S. landscape, several adaptations are universally necessary to protect against harmful conditions and help prevent even more catastrophic disasters in the future. This section provides scientific evidence linking climate impacts to adverse health outcomes affecting low-income and marginalized populations and explains the deep roots these maladies have in the home environment. More importantly, the science detailed in this section emphasizes the need for systematic regulatory change aimed at rectifying these supremely inequitable living conditions.

#### **A. HUD regulations must be updated to address poor indoor air quality.**

In-home air quality interventions should be prioritized in public housing. The longstanding health risks associated with indoor air pollution are exacerbated by climate change because extreme weather forces people to spend more time indoors where pollutants are concentrated, reduces opportunities for window ventilation, and

---

<sup>58</sup> Carlos Martín, *Exploring Climate Change in U.S. Housing Policy*, HOUSING POLICY DEBATE 2 (Jan. 2022).

elevates the risk of carbon monoxide poisoning.<sup>59</sup> According to a study conducted well before the COVID-19 pandemic, U.S. residents spend approximately 87 percent of their time indoors.<sup>60</sup> With many people sheltering in place from infection and extreme weather events, that percentage is likely even higher today. Thus, one of the most important steps to safeguarding health is ensuring homes are free from irritants, toxins, and pests.<sup>61</sup> While HUD’s existing regulatory standards help protect residents from some of these dangers, HUD-assisted housing occupants often still face a dizzying array of home health hazards. From mice-ridden bedrooms to mold-infested bathrooms and kitchens full of noxious fumes, the conditions in many low-income housing units force residents to endure unsafe pollution on a daily basis. In fact, the state of low-income housing in the United States is a public health crisis plaguing the country’s most vulnerable citizens.<sup>62</sup>

As HUD attempts to fulfill its mission of providing decent, safe, and sanitary housing for low-income residents, the agency must be mindful of the demographics it serves and of the health issues that uniquely impact these communities. Public housing residents are disproportionately Black and Hispanic,<sup>63</sup> communities where respiratory illnesses—and especially asthma—are a primary concern. Asthma is an enormous problem in the United States, costing an estimated 82 billion dollars per year in medical expenses, missed work and school, and

---

<sup>59</sup> See Patti Verbanas, *Carbon Monoxide Poisoning Risk Rises During Winter Storms* (Feb. 16, 2021), <https://www.rutgers.edu/news/carbon-monoxide-poisoning-risk-rises-during-winter-storms>.

<sup>60</sup> Neil E. Klepeis et al., *The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants*, 11 J. EXPOSURE ANALYSIS & ENVTL. EPIDEMIOLOGY 231, 242 (2001).

<sup>61</sup> See HUD, *Making Homes Healthier for Families*, [https://www.hud.gov/program\\_offices/healthy\\_homes/healthyhomes](https://www.hud.gov/program_offices/healthy_homes/healthyhomes) (last accessed Oct. 3, 2022) (describing “Eight Healthy Home Principles,” including keeping homes dry, well-ventilated, clean, pest- and contaminant-free, and thermally controlled).

<sup>62</sup> Samiya A Bashir, *Home is Where the Harm Is: Inadequate Housing as a Public Health Crisis*, 92 Am. J. Public Health 733, 735 (2002).

<sup>63</sup> See HUD, *Assisted Housing: National and Local*, available at <https://www.huduser.gov/portal/datasets/assths.html> (last accessed July 31, 2022); ASTHMA AND ALLERGY FOUNDATION OF AMERICA, *ASTHMA DISPARITIES IN AMERICA: A ROADMAP TO REDUCING BURDEN ON RACIAL AND ETHNIC MINORITIES* 11, 35-50 (2020), <https://www.aafa.org/media/2743/asthma-disparities-in-america-burden-on-racial-ethnic-minorities.pdf> (“In the United States, the burden of asthma falls disproportionately on Black, Hispanic and American Indian and Alaska Native people.”).

mortality.<sup>64</sup> Asthma disproportionately impacts marginalized and low-income communities,<sup>65</sup> in large part because these populations have been systematically deprived of health care resources and forced into sub-par housing in neighborhoods with relatively high industrial pollution levels.<sup>66</sup> Because many public housing residents are members of these marginalized groups, public housing residents are more likely than the general public to suffer from asthma.

Public housing residents are also disproportionately children,<sup>67</sup> whose still-developing respiratory systems are more susceptible to asthma than adult respiratory systems.<sup>68</sup> Moreover, due to historical and ongoing prejudicial treatment, Black, Puerto Rican and Indigenous children are far more likely to suffer from asthma than white children.<sup>69</sup> Asthma is one of the leading causes of school absences overall, and children from low-income, Black, and Hispanic families are more likely to miss school because of asthma.<sup>70</sup> Chronic school absences and irregular attendance prevent kids from reaching critical learning milestones and increase the odds that a child will not graduate from high school.<sup>71</sup> In turn, dropping out is correlated with diminished health, increased

---

<sup>64</sup> Tursynbek Nurmagambetov et al., *The Economic Burden of Asthma in the United States, 2008-2013*, 15 ANNALS OF THE AMERICAN THORACIC SOCIETY 348, 353 (2018).

<sup>65</sup> Cynthia A. Pate et al., *Asthma Surveillance – United States, 2006-2018*, Surveillance Summaries (Sept. 17, 2021), [https://www.cdc.gov/mmwr/volumes/70/ss/ss7005a1.htm?s\\_cid=ss7005a1\\_w](https://www.cdc.gov/mmwr/volumes/70/ss/ss7005a1.htm?s_cid=ss7005a1_w).

<sup>66</sup> Haley M. Lane et al., *Historical Redlining Is Associated with Present-Day Air Pollution Disparities in U.S. Cities*, 9 ENVTL. SCIENCE & TECH. LETTERS 345, 345-46 (March 9, 2022). *see also* Anna Rosofsky et al., *Breathe Easy at Home: A Qualitative Evaluation of a Pediatric Asthma Intervention*, GLOBAL QUALITATIVE NURSING RES., Vol. 3 2016, at 7-8.

<sup>67</sup> *Supra* n.63.

<sup>68</sup> AMERICAN LUNG ASSOCIATION, *Children and Air Pollution*, <https://www.lung.org/clean-air/outdoors/who-is-at-risk/children-and-air-pollution> (last visited July 22, 2022).

<sup>69</sup> Asthma and Allergy Foundation of America, *supra* n.63; Asthma and Allergy Foundation of America, *Asthma Facts and Figures* (updated April 2022) <https://www.aafa.org/asthma-facts/>; Mary Kreger et al., *An Underpinning of School Inequities: Asthma Absences and Lost Revenue in California*, J. SCHOOL HEALTH, Vol. 90 2020, at 1, 6.

<sup>70</sup> Hatice S. Zahran, MD, et al., *Vital Signs: Asthma in Children—United States, 2001-2016*, MORBIDITY AND MORTALITY WEEKLY REPORT Vol. 67, No. 5 (Feb. 9, 2018), at 149, <https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6705e1-H.pdf>; Joy Hsu et al., *Asthma-Related School Absenteeism, Morbidity, and Modifiable Factors*, 51 AM. J. PREVENTATIVE MEDIC. 23, 23 (2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4914465/pdf/nihms759133.pdf>; Sara B. Johnson et al., *Asthma and Attendance in Urban Schools*. PREVENTING CHRONIC DISEASE, Oct. 2019, at 1, <http://dx.doi.org/10.5888/pcd16.190074>.

<sup>71</sup> DEPARTMENT OF EDUCATION, *Chronic Absenteeism in the Nation's Schools*, <https://www2.ed.gov/datastory/chronicabsenteeism.html#two> (last visited July 31, 2022).

involvement in the criminal justice system, and a continuation of the vicious cycle of poverty.<sup>72</sup> Given these severe consequences, even minor physical condition deficiencies in HUD-assisted housing are contributing to cumulative racial and socioeconomic inequities.

There are numerous in-home asthma triggers that HUD's regulatory scheme must address to adequately protect all residents, but particularly to protect children. Overall, about 44 percent of asthma risk is attributable to airborne irritants, allergens, and pollutants from residential sources like fossil fuel-fired cooking appliances, mold, and pests.<sup>73</sup> This section explores the links between household conditions, childhood asthma, and other health issues. Ultimately, the evidence provided explains why this Petition's proposed changes to HUD's regulations would make them more protective of public health.

**1. Mold and pest infestations must be remediated to avoid increased adverse health impacts from indoor exposures.**

While gas cooking appliances are a major threat to indoor air quality, they are far from the only threat to HUD-assisted residents' lungs. Petitioners recognize that a lack of reliable funding has caused many public housing properties to fall behind on the repairs and capital upgrades necessary to provide residents with safe indoor air quality. Mold and pest infestations are among the top contributors to indoor irritants, allergens, and pollutants, despite existing physical condition standards that recognize mold and pests as deficiencies.<sup>74</sup>

Molds are a health hazard because they produce allergens and irritants that contribute to eye, skin, nose, and throat irritation.<sup>75</sup> For children, the elderly, immunocompromised individuals, and individuals with existing

---

<sup>72</sup> *Id.*; see also WORLD VISION CANADA, *What Is the Cycle of Poverty?*, <https://www.worldvision.ca/stories/child-sponsorship/what-is-the-cycle-of-poverty> (Mar. 4, 2021) (“The cycle of poverty begins when a child is born into a poor family. These families often have limited or no resources to create opportunities to advance themselves, which leaves them stuck in the poverty trap.”)

<sup>73</sup> Evan Lemire et al., *Unequal Housing Conditions and Code Enforcement Contribute to Asthma Disparities in Boston, Massachusetts*, 41 HEALTH AFFAIRS 563, 563 (2022).

<sup>74</sup> Evan Lemire et al., *supra* n.73, at 563; Lili Pike, *In Public Housing, a Battle Against Mold and Rising Seas*, (March 25, 2020).

<sup>75</sup> *Mold and Health*, <https://www.epa.gov/mold/mold-and-health> (last visited July 19, 2022); *Mold*, <https://www.cdc.gov/mold/> (last visited July 19, 2022).



respiratory and conditions, mold can also cause asthma attacks and more severe respiratory distress.<sup>76</sup> In fact, a 2009 Surgeon General report estimated that mold in low-ventilation homes contributed to 21 percent of all asthma cases.<sup>77</sup> Without intervention, this number is likely to increase because weatherization traps moisture inside the home and contributes to mold growth.<sup>78</sup>

Allergies and asthma are not the only health hazards caused by mold. People who live in buildings with toxic mold growths may also exhibit nervous-system effects, suppressed immune responses, hemorrhaging mucous membranes in the intestinal and respiratory tracts, rheumatoid disease, fatigue, and loss of appetite.<sup>79</sup> When excessive dampness or visible mold growths are left untreated, chronic exposure may worsen symptoms and the mold becomes difficult and expensive to remove.<sup>80</sup> Thus, “the most effective way to manage mold in a building is to eliminate or limit the conditions that foster its establishment and growth.”<sup>81</sup> Limiting the conditions that encourage mold growth will require additional work moving forward because of the increased flooding risk created by climate change.<sup>82</sup> Accordingly, Petitioners are fully supportive of HUD’s proposal to include moisture detection in its physical condition inspections.<sup>83</sup> If inspectors provided PHAs with information about moisture deficiencies, PHAs could easily use that information to calculate remediation costs in their Green PNAs. Petitioners also propose explicitly including dehumidifiers as appliances that must be covered by utility allowances.

---

<sup>76</sup> *Id.*; see also INSTITUTE OF MEDICINE COMMITTEE ON DAMP INDOOR SPACES AND HEALTH, DAMP INDOOR SPACES AND HEALTH, Ch.5 Human Health Effects Associated with Damp Environments 31-46 (2004), <https://www.ncbi.nlm.nih.gov/books/NBK215650/?report=reader>.

<sup>77</sup> Lemire et al., *supra* n.74, at 563.

<sup>78</sup> Fabian et al., *supra* n.107, at 79 (showing that weatherization alone dramatically increases dampness).

<sup>79</sup> INSTITUTE OF MEDICINE COMMITTEE ON DAMP INDOOR SPACES AND HEALTH, *supra* n.76 at Ch.4 Toxic Effects of Fungi and Bacteria, 1 & Ch.5 Human Health Effects Associated with Damp Environments, 1-78.

<sup>80</sup> *Id.* at Ch.6, Prevention and Remediation of Damp Indoor Environments, 11-12.

<sup>81</sup> *Id.* at Ch. 6, Prevention and Remediation of Damp Indoor Environments, 1.

<sup>82</sup> CDC, *Climate Change and Infectious Diseases*, <https://www.cdc.gov/nceizid/what-we-do/climate-change-and-infectious-diseases/index.html> (last visited Aug. 8, 2022).

<sup>83</sup> See Public Health Law Center, Comments on NSPIRE and Associated Protocols, App’x I, Exhibit A at 2-5 (detailing the benefits of a moisture-related deficiency and inspection procedure).

Pests are another common cause of asthma and respiratory distress in public housing projects.<sup>84</sup> One study of public and Section 8 housing found that over half of the residents surveyed had experienced problems with rodents in the previous year.<sup>85</sup> Another study of a single public housing project uncovered that 71 percent of residents were dealing with a pest infestation, though only 22 percent reported the problem to building management.<sup>86</sup> In a single public housing project in New York City, researchers found evidence of cockroaches in 77 percent of units and evidence of mice in 13 percent of units.<sup>87</sup> Researchers at another public housing complex in Gary, Indiana found cockroach allergens in 98 percent of the units surveyed.<sup>88</sup> Overall, a 2004 survey conducted by HUD found that more than half of public housing residents struggle with pest infestations.<sup>89</sup> Residents PHLC spoke with during resident engagement to inform this Petition also confirmed the persistence of pest problems in public housing.

“The respiratory health effects of pest infestation are well documented.”<sup>90</sup> Exposure to allergens produced by these pests is “associated with wheezing and asthma morbidity. . . including more hospitalizations, more medical visits, and more reported symptoms.”<sup>91</sup> A pregnant person’s exposure to pest allergens may even

---

<sup>84</sup> See Snehal N. Shah et al., *Housing Quality and Mental Health: The Association between Pest Infestation and Depressive Symptoms among Public Housing Residents*, 95 J. URBAN HEALTH 691, 692 (2022).

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* There are many reasons that low-income renters choose not to report housing quality issues. Residents who complain are not infrequently retaliated against for being “trouble-makers.” Thus, residents often choose to live with substandard housing rather than risk eviction.

<sup>87</sup> William J. Sheehan et al., *Pest and Allergen Exposure and Abatement in Inner-City Asthma: A Work Group Report of the American Academy of Allergy, Asthma and Immunology Indoor Allergy/Air Pollution Committee*, 125 J. Allergy and Clinical Immunology 575, 575 (2010).

<sup>88</sup> NATIONAL CENTER FOR HEALTHY HOUSING, PESTS PERSIST IN FEDERALLY SUBSIDIZED HOUSING 2 (2007), [https://nchh.org/resource-library/Case\\_Study\\_Conditions\\_10-14-07.pdf](https://nchh.org/resource-library/Case_Study_Conditions_10-14-07.pdf).

<sup>89</sup> *Id.*

<sup>90</sup> Shah et al., *supra* n.84, at 692.

<sup>91</sup> Sheehan, *supra* n.87, at 576.

contribute to development of prenatal allergies.<sup>92</sup> Further, pest infestations are often treated with pesticides, and repeat exposure to pesticides can also be hazardous to resident health.<sup>93</sup>

Moreover, pests are a mental stressor. Boston public housing residents living in homes with roach infestations are 2.8 times more likely to experience depressive symptoms than individuals living in units without current roach infestations.<sup>94</sup> Dual infestations of mice and roaches were associated with over five times the odds of experiencing depressive symptoms.<sup>95</sup> These findings are especially worrisome in the cumulative context, as public housing residents also contend with many other contributors to stress, anxiety, and depression, including poverty<sup>96</sup> and other housing quality-related stressors like crowding, dampness, and mold.<sup>97</sup> Poor mental health also increases the risk of many other adverse health conditions, including diabetes, heart disease, and stroke.<sup>98</sup> Thus, pests are another hurdle that must be addressed during HUD's pursuit of health equity for residents, and Green PNAs would help housing advocates better understand the nature of the problem and possible solutions. For instance, remediating a pest problem may require work on a building's envelope that can be paired with an insulation project for less than the two projects would cost if completed separately.

With residents spending more time at home due to climate change, a healthy indoor environment is more important than ever. Together, pests, mold, and gas appliances account for a significant amount of the existing

---

<sup>92</sup> *Id.*

<sup>93</sup> See Chensheng Lu et al., *Household Pesticide Contamination from Indoor Pest Control Applications in Urban Low Income Public Housing Dwellings: A Community-Based Participatory Research*, *Envtl. Sci & Tech.* (2018) at 5-8 (finding harmful pesticides in public housing units with pervasive pest issues).

<sup>94</sup> *Id.* at 696.

<sup>95</sup> *Id.*

<sup>96</sup> See Matthew Ridley et al., *Poverty, Depression, and Anxiety: Causal Evidence and Mechanisms*, Nov. 2020, at 2, <https://economics.mit.edu/files/18694.pdf> (“Those with the lowest incomes in a community suffer 1.5 to 3 times more frequently from depression, anxiety and other common mental illnesses.”); Clancy Blair & C. Cybele Raver, *Poverty, Stress, and Brain Development: New Directions for Prevention and Intervention*, 16 *Academic Pediatrics* S30, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5765853/>.

<sup>97</sup> Edmond D. Shenassa et al., *Dampness and Mold in the Home and Depression: An Examination of Mold-Related Illness and Perceived Control of Ones Home as Possible Depression Pathways*, 97 *Am. J. Public Health* 1893, 1897 (Oct. 2007).

<sup>98</sup> Centers for Disease Control and Prevention, *About Mental Health*, <https://www.cdc.gov/mentalhealth/learn/index.htm> (last accessed Aug. 15, 2022).

health burden that weighs on low-income individuals and marginalized communities.<sup>99</sup> Regulatory changes are needed to better understand and address these problems, especially as increasing energy prices and more stringent energy efficiency standards are driving building envelope updates that reduce ventilation, essentially trapping pollutants inside peoples' homes.<sup>100</sup>

## 2. **Removing gas cooking appliances is a necessary step to reduce harm from indoor air pollution.**

For generations, gas-fired stoves, cooktops and ranges (collectively, gas cooking appliances) have been peddled to the public as clean, safe options for home kitchens. However, contrary to the industry's oft-repeated claims, an ever-mounting body of evidence now shows that these appliances are major public health hazards and environmental justice concerns.<sup>101</sup> The gas that fuels the familiar blue cooking flame used in kitchens across the country is actually a complex concoction of chemicals,<sup>102</sup> the most prevalent of which is methane. Methane—a potent greenhouse gas<sup>103</sup>—comprises between 60 and 90 percent of cooking gas,<sup>104</sup> and when combusted, the

---

<sup>99</sup> See Lemire et al., *supra* n.73, at 563 (citing a 2009 Surgeon General report that estimated mold and poor ventilation contributed to 21 percent of all asthma cases).

<sup>100</sup> See *supra* n.107 and accompanying text.

<sup>101</sup> See generally American Medical Association House of Delegates, Draft Resolution 439 (A-22), <https://www.ama-assn.org/system/files/a22-439.pdf> (explaining the disparate health risks of gas stoves); see also ANNA BELOVA ET AL., AMERICAN LUNG ASSOCIATION, LITERATURE REVIEW ON THE IMPACTS OF RESIDENTIAL COMBUSTION xi (July 2022), [https://www.lung.org/getmedia/2786f983-d971-43ad-962b-8370c950cbd6/icf\\_impacts-of-residential-combustion\\_final\\_071022.pdf](https://www.lung.org/getmedia/2786f983-d971-43ad-962b-8370c950cbd6/icf_impacts-of-residential-combustion_final_071022.pdf) (“Gas kitchen appliances can emit substantial amounts of carbon monoxide (CO) and nitrogen oxides (NOx) and modest amounts of particulate matter (PM) and polycyclic aromatic hydrocarbons (PAHs).”)

<sup>102</sup> Drew R. Michanowicz et al., *Home Is Where the Pipeline Ends: Characterization of Volatile Organic Compounds Present in Natural Gas at the Point of the Residential End User* 56 ENVTL. SCI. & TECH. 10258, 10258 (2022) (identifying 296 volatile organic compounds aside from methane in cooking gas samples); Eric D. Lebel et al., *Composition, Emissions, and Air Quality Impacts of Hazardous Air Pollutants in Unburned Natural Gas from Residential Stoves in California*, ENVTL. SCI. & TECH. (forthcoming 2022) at D-E, <https://pubs.acs.org/doi/pdf/10.1021/acs.est.2c02581>.

<sup>103</sup> See EPA, *Overview of Greenhouse Gases*, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases> (last accessed Sept. 29, 2022) (“Pound for pound, the comparative impact of [methane] is 25 times greater than [carbon dioxide] over a 100-year period.”); see also Eric D. Lebel et al., *Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes*, 56 ENVTL. SCI. & TECH. 2529, 2534, (2022) (“Using a 20 year timescale for the lifetime of methane, [gas stove and oven] methane emissions were comparable in climate impact to the carbon dioxide emissions of approximately 500,000 gas powered cars.”); Belova et al., *supra* n.101, at xi (“[Methane] is 56 times more potent than [carbon dioxide] in global warming potential over a 20-year period.”).

<sup>104</sup> Michanowicz et al, *supra* n.102, at 10258.

chemical reaction produces more than just heat. Byproducts of gas combustion include carbon dioxide, nitrogen oxide, nitrogen dioxide, carbon monoxide, particulate matter, and volatile organic compounds (“VOCs”) such as formaldehyde.<sup>105</sup> Moreover, recent research demonstrates that gas stoves leak unburned gas containing carcinogenic pollutants into homes at a near-constant rate even when the appliance is off.<sup>106</sup> Confined inside increasingly impermeable walls,<sup>107</sup> these chemicals degrade air quality in ways that impact the health of all residents, but especially children due to their heightened vulnerability to air pollution.<sup>108</sup>

### ***Nitrogen Dioxide***

Among the gas combustion pollutants affecting lung health, nitrogen dioxide is one of the most concerning. The EPA’s 2008 Integrated Science Report for Nitrogen Dioxide notes that “[d]epending on geographical location, season, other sources of [nitrogen dioxide], and household characteristics, homes with gas cooking appliances have approximately 50 percent to over 400 percent higher [nitrogen dioxide] concentrations than homes with electric cooking appliances.”<sup>109</sup> The National Ambient Air Quality Standard (EPA’s outdoor

---

<sup>105</sup> DR. YIFANG ZHU ET AL., UCLA FIELDING SCHOOL OF PUBLIC HEALTH, EFFECTS OF RESIDENTIAL GAS APPLIANCES ON INDOOR AND OUTDOOR AIR QUALITY AND PUBLIC HEALTH IN CALIFORNIA 6-11 (2020), <https://ucla.app.box.com/s/xyzt8jclixnetiv0269qe704wu0ihif7>; Heather Payne & Jennifer D. Oliva, *Warrantying Health Equity*, 70 UCLA Law Rev. (forthcoming 2023) at 11, available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4188216](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4188216) (last accessed Sept. 28, 2022).

<sup>106</sup> See Lebel et al., *supra* n.103, at 2534 (explaining research results showing that “most stoves and associated nearby piping leak some methane continuously”); Michanowicz et al., *supra* n.102, at 10266 (finding benzene and other carcinogenic pollutants in gas samples taken from home kitchens); Lebel et al., *supra* n.102, at D-E (same).

<sup>107</sup> Weatherization without complimentary ventilation updates increases indoor concentrations of pollutants. Lindsay Jeanne Underhill, *Modeling the Resiliency of Energy Efficient Retrofits in Low-Income Multifamily Housing*, 28 Indoor Air 459, 459 (May 2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6386461/pdf/nihms-1012515.pdf>; Maria Patricia Fabian et al., *A Simulation Model of Building Intervention Impacts on Indoor Environmental Quality, Pediatric Asthma, and Costs*, 133 J. Allergy Clinical Immunology 77, 77 (Jan. 2014), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3874261/> (“Weatherization efforts targeted solely toward tightening a building envelope led to 20% more serious asthma events, but bundling with repairing kitchen exhaust fans and eliminating indoor sources (i.e. gas stoves or smokers) mitigated this effect.”).

<sup>108</sup> See *supra* n.68 and associated text.

<sup>109</sup> DR. DENNIS J. KOTCHMAR ET AL., EPA, INTEGRATED SCIENCE ASSESSMENT FOR NITROGEN DIOXIDE – HEALTH CRITERIA 2-38 (July 2008).

limit) for one-hour exposure to nitrogen dioxide is 100 parts per billion (ppb).<sup>110</sup> Scientists at the Lawrence Berkeley National Laboratory demonstrated that up to 70 percent of residents living in homes with unvented gas cooking appliances are exposed to nitrogen dioxide concentrations that exceed this standard.<sup>111</sup> Thus, even under the United States' relatively weak limits,<sup>112</sup> gas cooking appliances are regularly causing indoor pollution levels that exceed outdoor air quality standards.

Public housing and other HUD-assisted housing units that use gas cooking appliances are likely to be at the higher end of the nitrogen dioxide ranges provided because the physical characteristics of HUD-assisted housing often amplify health risks.<sup>113</sup> First, pollution impacts are likely to be more intense in multifamily buildings,<sup>114</sup> in part because “upper-level apartments have higher humidity and pollutant levels.”<sup>115</sup> Second, multifamily buildings tend to have smaller living spaces, which contributes to higher concentrations of indoor pollutants.<sup>116</sup> Third, multifamily properties—and low-income households more generally—are also distinguished by higher occupant density,<sup>117</sup> meaning gas cooking appliances are likely used more frequently. Fourth,

---

<sup>110</sup> EPA, *Review of the Primary National Ambient Air Quality Standards for Oxides of Nitrogen*, 83 Fed. Reg. 17,226, 17, 226-27 (April 18, 2018).

<sup>111</sup> Jennifer M. Logue et al., *Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern Californians*, 122 ENVTL. HEALTH PERSPECTIVES 43, 47, 49-50 (Jan. 2014).

<sup>112</sup> Notably, Canada's short-term, residential limit for nitrogen dioxide is 90 ppb, a value that would have been set even lower to protect asthmatics and people with COPD were it not for the fact that most homes with gas stoves would have been out of compliance. *Residential Indoor Air Quality Guideline: Nitrogen Dioxide* (Nov. 26, 2015), <https://www.canada.ca/en/health-canada/services/publications/healthy-living/residential-indoor-air-quality-guideline-nitrogen-dioxide.html#c4a>. The WHO guideline, which applies to indoor as well as outdoor concentrations, is even lower. WORLD HEALTH ORGANIZATION, *Ambient (outdoor) Air Pollution* (Sept. 22, 2021), [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health#:~:text=The%20current%20WHO%20guideline%20value,effects%20of%20gaseous%20nitrogen%20dioxide](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health#:~:text=The%20current%20WHO%20guideline%20value,effects%20of%20gaseous%20nitrogen%20dioxide) (listing the recommended 24-hour mean limit as 25 µg/m<sup>3</sup> which equates to approximately 13 ppb and explaining that there is no scientific basis for indoor standards to differ from outdoor standards).

<sup>113</sup> A. Zota et al., *Ventilation in Public Housing: Implications for Indoor Nitrogen Dioxide Concentrations*, 15 INDOOR AIR 393, 398 (2005).

<sup>114</sup> See Kotchmar, *supra* n.109, at 3-21 (noting that children in multifamily buildings are exposed to higher nitrogen dioxide levels than children in single-family homes).

<sup>115</sup> Patricia Fabian et al., *Simulating Indoor Concentrations of NO<sub>2</sub> and PM<sub>2.5</sub> in Multi-family Housing for Use in Health-Based Intervention Modeling*, 22 Indoor Air 12, 2 (2012).

<sup>116</sup> Zhu et al., *supra* n.105, at 6, 10.

<sup>117</sup> Seals & Krasner, *supra* n.141, at 14.

individuals living in multifamily housing often have less control over the temperature in their units and may use polluting gas ovens and space heaters for supplemental heat in the winter.<sup>118</sup> Finally, HUD-assisted multifamily buildings are often situated in areas with high outdoor pollution levels, and these cumulative contaminant sources exacerbate personal exposure levels.<sup>119</sup> Nitrogen dioxide boosts outdoor pollution by serving as a building block for ground-level ozone, the primary component of smog.<sup>120</sup>

Reducing indoor nitrogen dioxide levels is important because nitrogen dioxide is a known contributor to respiratory ailments like asthma.<sup>121</sup> A 1992 meta-analysis concluded that children who were exposed to elevated levels of nitrogen dioxide were 20 percent more likely to suffer from a respiratory illness.<sup>122</sup> More than twenty years later, when the analysis was updated and improved with modern research and methods, evidence showed that for every 15 ppb increase in indoor nitrogen dioxide levels, children were 15 percent more likely to experience

---

<sup>118</sup> See *id.* (in a study of 150 asthmatic preschoolers, finding “that 14 percent of households use the stove/oven as a source of heat, which consistently produced higher levels of NO<sub>2</sub> than using stoves only for cooking”); see also Fabian et al., *supra* n.115, at 7, 10 (describing use of ovens for supplemental heat in Boston public housing units and explaining that units with the highest nitrogen dioxide levels used gas stoves for heat); YU ANN TAN ET AL., RMI, DECARBONIZING HOMES: IMPROVING HEALTH IN LOW-INCOME COMMUNITIES THROUGH BENEFICIAL ELECTRIFICATION (Oct. 2021) (estimating that children in homes that use gas ovens for supplemental heat are 80 percent more likely to have asthma); Zota et al., *supra* n.113, at 396 (finding that 27% of studied public housing residents in Boston used their stoves for supplemental heat).

<sup>119</sup> Tan et al., *supra* n.118, at 28; Pacheco, *supra* n.147, at 468.

<sup>120</sup> Kotchmar, *supra* n.109, at 2-1. Ozone itself is a greenhouse gas with known adverse health effects, including respiratory impacts. DR. THOMAS LUBEN ET AL., EPA, INTEGRATED SCIENTIFIC ASSESSMENT FOR OZONE AND RELATED PHOTOCHEMICAL OXIDANTS ES-5—ES-17 (April 2020); see also Sierra Club et al., Petition for Rulemaking to List Heating Appliances as a Source Category Under Section 111(b)(1)(A) of the Clean Air Act 7-10 (Aug. 23, 2022), <https://www.sierraclub.org/sites/www.sierraclub.org/files/Sierra%20Club%20Heating%20Appliance%20Rulemaking%20Petition.pdf>; Belova, *supra* n.101, at xii (“[E]vidence is strong that long-term exposure to ambient PM<sub>2.5</sub>, ambient ozone, and household air pollution contributes to premature mortality and increased risk of illness, including ischemic heart disease, stroke, chronic obstructive pulmonary disease (COPD), lung cancer, type 2 diabetes, and lower respiratory infections. . .”).

<sup>121</sup> EPA, INTEGRATED SCIENCE ASSESSMENT FOR OXIDES OF NITROGEN – HEALTH CRITERIA lxxxiii–lxxxv, 1-17 – 1-21, (Jan. 2016), available at <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879>; Payne & Oliva, *supra* n.105, at 13.

<sup>122</sup> Vic Hasselblad et al., *Synthesis of Environmental Evidence: Nitrogen Dioxide Epidemiology Studies*, 42 J. AIR & WASTE MGMT. STUDIES 662, 669 (1992) (“[T]aken as a whole, the collective evidence from the evaluated studies strongly suggests an increase of at least 20 percent in the odds of respiratory illness in children exposed to an increase of 30 µg/m<sup>3</sup> NO<sub>2</sub> for extended periods of time.”).

wheezing.<sup>123</sup> Around the same time, a New England-based study of elementary school-age children confirmed that even low levels of nitrogen dioxide contribute to asthma morbidity.<sup>124</sup> Further, the American Lung Association recently released a literature review concluding that indoor exposure to nitrogen dioxide from gas cooking can “exacerbate asthma symptoms, wheeze, [lower respiratory infections], and result in reduced lung function parameters in children.”<sup>125</sup>

Beyond respiratory impacts, another analysis uncovered a statistically significant relationship between prenatal nitrogen dioxide exposure and negative impacts on psychomotor skills in children.<sup>126</sup> The authors also found studies suggesting a relationship between in-utero nitrogen dioxide exposure, impaired IQ, and behavioral issues, though they called for more research into the subject.<sup>127</sup> Similarly, a 2009 study found evidence that children under four who were exposed to higher nitrogen dioxide levels were at greater risk of developing ADHD symptoms and experiencing lower cognitive outcomes.<sup>128</sup>

Harm stemming from nitrogen dioxide pollution is not confined to children and those with existing respiratory diseases. In adults, nitrogen dioxide pollution is associated with increased instances of cardiovascular disease and diabetes,<sup>129</sup> and even increased COVID-19 mortalities.<sup>130</sup> Further, a 2008 EPA report described a host of adverse health impacts that even small amounts of nitrogen dioxide can cause in the general population. These include enhanced susceptibility to respiratory infection, airway inflammation, and heightened allergic

---

<sup>123</sup> Weiwei Lin et al., *Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children*, 42 INT’L J. OF EPIDEMIOLOGY 1724, 1731 (2013).

<sup>124</sup> Kathleen Belanger et al., *Household Levels of Nitrogen Dioxide and Pediatric Asthma*, 24 EPIDEMIOLOGY 320, 325 (March 2013).

<sup>125</sup> Belova et al., *supra* n.101, at xii.

<sup>126</sup> Li Shang et al., *Effects of Prenatal Exposure to NOx on Children’s Neurological Development: A Systematic Review and Meta-analysis*, 27 ENVTL. SCI & POLLUTION RES. 24786, 24794-24796 (2020).

<sup>127</sup> *Id.*

<sup>128</sup> Eva Morales et al., *Association of Early-Life Exposure to Household Gas Appliances and Indoor Nitrogen Dioxide with Cognition and Attention Behavior in Preschoolers*, 169 AM. J. OF EPIDEMIOLOGY 1327, 1331 (2009).

<sup>129</sup> Kai Luo et al., NATURE, *Acute Impacts of Nitrogen Dioxide on Cardiovascular Mortality in Beijing: An Exploration of Spatial Heterogeneity and the District-Specific Predictors* 5 (Dec. 2, 2016) <https://www.nature.com/articles/srep38328.pdf>; EPA, *supra* n.121, at lxxxv, 1-22 – 1-25.

<sup>130</sup> Marco Mele et al., *NO<sub>2</sub> Levels As a Contributing Factor to COVID-19 Deaths: The First Empirical Estimate of Threshold Values*, ENVTL. RES. Mar. 2021, at 10, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7783466/pdf/main.pdf>; see also Payne & Oliva, *supra* n.105, at 1.



responses.<sup>131</sup> Given these demonstrated harms, HUD’s responsibility to provide decent, safe, and sanitary housing requires that the agency remove indoor sources of nitrogen dioxide—such as gas cooking appliances—from homes within the agency’s purview.

A California study recently highlighted the connection between elevated nitrogen dioxide and gas cooking appliances. Specifically, researchers found that “gas stove usage results in both peak and weekly average [nitrogen dioxide] concentrations exceeding the level set by. . . the acute National Ambient Air Quality Standards (NAAQS, set by the US EPA) 1-hour limit.”<sup>132</sup> This conclusion validated a previous study of Southern California residents which indicated gas stoves create somewhere between 25 and 39 percent of in-home nitrogen dioxide, and that 70 percent of households that cook with gas at least once per week experience pollution levels that exceed outdoor air quality standards.<sup>133</sup> Thus, under EPA’s standards for outdoor air quality, approximately 12 million Americans in Southern California alone are regularly exposed to dangerous indoor nitrogen dioxide levels from gas cooking appliances.<sup>134</sup>

Similar research conducted in Boston indicates the nexus between gas stoves and adverse health impacts is not limited to any one region. In a simulation modeled on one thousand Boston public housing units, nearly 100 percent of households in the highest quartile for nitrogen dioxide concentrations had a gas stove, used a gas oven for supplemental heating in the winter, and did not operate a fan<sup>135</sup> while cooking.<sup>136</sup> Conversely, in the lowest quartile, only 44 percent of households owned a gas stove and 49 percent did not operate the fan while cooking.<sup>137</sup> Accordingly, gas stoves were deemed the biggest contributor to indoor nitrogen dioxide—a conclusion with which the EPA now concurs.<sup>138</sup>

---

<sup>131</sup> Kotchmar et al., *supra* n.109 at 3-5, 3-9, 3-17, 3-41.

<sup>132</sup> Zhu et al., *supra* n.105, at 12.

<sup>133</sup> Logue et al., *supra* n.111, at 46, 49.

<sup>134</sup> *Id.* at 49.

<sup>135</sup> Fans differ from true ventilation in that they merely circulate indoor air rather than exhausting to the outside. While fans may lower pollutant concentrations by distributing the pollutants more widely throughout the home, they are not nearly as effective as ventilation that removes pollution from inside the home.

<sup>136</sup> Fabian et al., *supra* n.115, at 18.

<sup>137</sup> *Id.*

<sup>138</sup> *Id.* at 20; *see also* Kotchmar, *supra* n.109, at 2-28 (calling combustion of fossil and biomass fuels “the major indoor source of nitrogen”).

## *Particulate Matter*

Nitrogen dioxide is far from the only pollutant of concern associated with gas cooking appliances.<sup>139</sup> As mentioned, cooking with gas also creates particulate matter,<sup>140</sup> another form of pollution that poses a unique threat to human health. Particulate matter, tiny pieces of airborne liquid and solid chemicals, comes in three sizes: PM10 (particles less than 10 micrometers in diameter), PM2.5 (particles less than 2.5 micrometers in diameter), and UFP (“ultrafine particles”) or particles less than 100 nanometers in diameter.<sup>141</sup> Humans inhale these tiny particles deep into their lungs where the pollution then makes its way into the bloodstream, disrupting the respiratory and cardiovascular systems.<sup>142</sup> Symptoms associated with particulate matter exposure include irregular heartbeat, heart attack, asthma, decreased lung function, nervous system impacts, cancer, and even premature death in people with heart or lung disease.<sup>143</sup> The mortality cost attributable to PM2.5 emissions from the residential sector is staggering: up to 20,000 deaths per year with economic impacts reaching 220 billion dollars annually according to data from 2017.<sup>144</sup>

Particulate matter is emitted directly during the cooking process, but it is also created when other combustion byproducts like nitrogen oxides react with chemicals in the air.<sup>145</sup> Thus, while all heat cooking

---

<sup>139</sup> See Lin et al., *supra* n.123, at 1734 (referencing an Australian study that found the association between gas cooking and adverse respiratory symptoms persisted even after adjusting for nitrogen dioxide).

<sup>140</sup> Zhu et al., *supra* n.105.

<sup>141</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Particulate Matter (PM) Basics*, <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#:~:text=PM%20stands%20for%20particulate%20matter,seen%20with%20the%20naked%20eye> (last visited July 20, 2022); see also BRADY ANNE SEALS & ANDEE KRASNER, HEALTH EFFECTS FROM GAS STOVE POLLUTION 8 (May 2020), <https://www.psr.org/wp-content/uploads/2020/05/health-effects-from-gas-stove-pollution.pdf>.

<sup>142</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Health and Environmental Effects of Particulate Matter*, <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (last visited July 20, 2022).

<sup>143</sup> *Id.*; see also EPA, INTEGRATED SCIENCE REPORT FOR PARTICULATE MATTER ES-12—ES-17 (2019), available at <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534>; Payne & Oliva, *supra* n.105, at 15.

<sup>144</sup> Jonathan J. Buonocore et al., *A Decade of the U.S. Energy Mix Transitioning Away from Coal: Historical Reconstruction of the Reductions in the Public Health Burden of Energy*, 16 *Envtl. Res. Letters* 1, Table 1, <https://iopscience.iop.org/article/10.1088/1748-9326/abe74c/pdf>; see also Brady Seals & Leah Louis-Prescott, *Uncovering the Deadly Toll of Air Pollution from Buildings* (May 5, 2021), <https://rmi.org/uncovering-the-deadly-toll-of-air-pollution-from-buildings/> (discussing the findings of Buonocore et al.).

<sup>145</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Particulate Matter (PM) Basics*, <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#:~:text=PM%20stands%20for%20particulate%20matter,seen%20with%20the%20naked%20eye>

methods release some particulate matter, gas stoves emit twice as much as electric stoves.<sup>146</sup> This extra pollution is especially harmful in places where ambient particulate matter is already high due to disproportionate exposure to traffic and industrial sources of pollution, as is the case in many of the low-income, marginalized neighborhoods where HUD-assisted housing is located.<sup>147</sup> Indeed, it is increasingly important to eradicate controllable sources of particulate matter in light of the growing number of people who are regularly exposed to severe wildfire smoke, another major source of particle pollution.<sup>148</sup> As explained in EPA’s most recent Integrated Science Assessment for Particulate Matter, there is no safe level of PM<sub>2.5</sub> exposure above zero.<sup>149</sup>

### ***Carbon Monoxide***

Carbon monoxide is another harmful pollutant released by gas cooking. HUD recently identified carbon monoxide as a risk that justified banning unvented fuel-powered space heaters in the proposed National Standards for the Physical Inspection of Real Estate (“NSPIRE”).<sup>150</sup> According to the CDC, carbon monoxide is the leading

---

[basics#:~:text=PM%20stands%20for%20particulate%20matter,seen%20with%20the%20naked%20eye](#) (last visited July 20, 2022); *see also* Seals & Krasner, *supra* n.141, at 8.

<sup>146</sup> TIANCHAO HU ET AL., BERKELEY NAT’L LAB., COMPILATION OF PUBLISHED PM<sub>2.5</sub> EMISSION RATES FOR COOKING, CANDLES AND INCENSE FOR USE IN MODELING OF EXPOSURES IN RESIDENCES 11 (Aug. 2012), <https://doi.org/10.2172/1172959>.

<sup>147</sup> *See* Christina M. Pacheco et al., *Homes of Low-Income Minority Families with Asthmatic Children Have Increased Condition Issues*, 35 ASTHMA & ALLERGY PROCEEDINGS 467, 468 (2014); Payne & Oliva, *supra* n.130, at 1 (explaining that Black, Latino, and low-income communities suffer greater health impacts from pollution because they tend to live in close proximity to hazardous facilities).

<sup>148</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Why Wildfire Smoke Is a Health Concern*, <https://www.epa.gov/wildfire-smoke-course/why-wildfire-smoke-health-concern> (last visited July 19, 2022).

<sup>149</sup> EPA, INTEGRATED SCIENCE REPORT FOR PARTICULATE MATTER ES-23 (2019), available at <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534> (“Evidence continues to support a linear, no-threshold concentration—response relationship, but with less certainty in the shape of the curve at lower concentrations (i.e. below about 8µg/m<sup>3</sup>).”)

<sup>150</sup> 87 Fed. Reg. 36426, 36429; HUD, National Standards for the Physical Inspection of Real Estate V2.2, Carbon Monoxide Alarm (Apr. 18, 2022), <https://www.hud.gov/sites/dfiles/PIH/documents/NSPIRE-Standards-v2.2-Carbon-Monoxide-Alarm.pdf>; *see also* U.S. ENVIRONMENTAL PROTECTION AGENCY, *Carbon Monoxide’s Impact on Indoor Air Quality*, <https://www.epa.gov/indoor-air-quality-iaq/carbon-monoxides-impact-indoor-air-quality> (listing gas stoves as a source of carbon monoxide and describing health effects of exposure) (last visited July 19, 2022); CONSUMER PRODUCT SAFETY COMMISSION, *CPSC Urges Caution with Heating as Winter Weather Arrives; Carbon Monoxide Deaths on the Rise* (Dec. 22, 2009), <https://www.cpsc.gov/Newsroom/News-Releases/2010/CPSC-Urges-Caution-with-Heating-as-Winter-Weather-Arrives-Carbon-Monoxide-Deaths-on-the-Rise>.

cause of nondrug poisoning deaths in the United States.<sup>151</sup> At lower concentrations, carbon monoxide causes fatigue, impaired vision, headaches, reduced brain function, and chest pain.<sup>152</sup> “Even low-level exposure to carbon monoxide elevates the risk of adverse health outcomes in infants, children, individuals with cardiovascular disease or compromised respiratory systems, and other vulnerable groups.”<sup>153</sup> Annually, carbon monoxide is responsible for approximately 40,000 emergency department visits involving children.<sup>154</sup> While carbon monoxide has many sources, fuel-powered space heaters are among the top contributors to carbon monoxide deaths.<sup>155</sup> As such, Petitioners are supportive of HUD recognizing these appliances as a physical condition deficiency, as explained in PHLC’s comments on the NSPIRE standards.<sup>156</sup> However, space heaters are not the only residential carbon monoxide hazards.

According to EPA, homes with gas stoves have higher carbon monoxide levels than homes without gas stoves.<sup>157</sup> Indeed, some gas stoves create carbon monoxide levels at or near the levels permitted by outdoor air quality standards,<sup>158</sup> and faulty gas cooking appliances have even been linked to fatal carbon monoxide poisonings

---

<sup>151</sup> CENTER FOR DISEASE CONTROL, POISONING: PICTURE OF AMERICA REPORT 1,

[https://www.cdc.gov/pictureofamerica/pdfs/Picture\\_of\\_America\\_Poisoning.pdf](https://www.cdc.gov/pictureofamerica/pdfs/Picture_of_America_Poisoning.pdf) (last visited July 31, 2022).

<sup>152</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Carbon Monoxide’s Impact on Indoor Air Quality*, <https://www.epa.gov/indoor-air-quality-iaq/carbon-monoxides-impact-indoor-air-quality> (last visited July 19, 2022).

<sup>153</sup> Payne & Oliva, *supra* n.105, at 12.

<sup>154</sup> CRAIG JOHNSTON ET AL., LEGAL PROTECTION OF THE ENVIRONMENT 361 (4th ed. 2017).

<sup>155</sup> CONSUMER PRODUCT SAFETY COMMISSION, *CPSC Urges Caution with Heating as Winter Weather Arrives; Carbon Monoxide Deaths on the Rise* (Dec. 22, 2009) <https://www.cpsc.gov/Newsroom/News-Releases/2010/CPSC-Urges-Caution-with-Heating-as-Winter-Weather-Arrives-Carbon-Monoxide-Deaths-on-the-Rise>; JOHNS HOPKINS MEDICINE, *Carbon Monoxide Poisoning*, <https://www.hopkinsmedicine.org/health/conditions-and-diseases/carbon-monoxide-poisoning#:~:text=The%20most%20common%20source%20of,the%20room%2C%20instead%20of%20outdoors> (last visited July 19, 2022).

<sup>156</sup> Public Health Law Center, Comments on NSPIRE and Associated Protocols, App’x I, Exhibit A at 12-13.

<sup>157</sup> See U.S. ENVIRONMENTAL PROTECTION AGENCY, *Carbon Monoxide’s Impact on Indoor Air Quality*, <https://www.epa.gov/indoor-air-quality-iaq/carbon-monoxides-impact-indoor-air-quality> (last visited July 19, 2022)

<sup>158</sup> See *id.* (acknowledging that gas stoves can create conditions that exceed 30ppm carbon dioxide); see also Zhu et al., *supra* n.105, at 13 (noting that “CO concentrations above the [California Ambient Air Quality Standards] 8-hour standard of 10 mg/m<sup>3</sup> have been reported during preparation of a full meal and under broiling conditions, without range hood use (though these were peak values and these concentrations did not persist for an entire 8-hour period)”; 40 C.F.R. § 50.8 (setting NAAQS for carbon monoxide at 9 ppm for 8-hour exposure window and 35ppm for a 1-hour exposure window).

in public housing in recent years.<sup>159</sup> Regardless of the precise source, appliances that run on fossil fuel combustion are especially dangerous during winter weather when people spend more time indoors and use space heaters and ovens for supplemental heat in spaces without adequate ventilation.<sup>160</sup> With climate change ramping up the intensity of winter storms in the eastern United States,<sup>161</sup> the carbon monoxide risk is becoming even more potent. Even Texas is no longer safe from disastrous winter storms and the concomitant carbon monoxide risks.<sup>162</sup> While HUD has taken the commendable step of mandating carbon monoxide detectors in HUD-assisted units, many detectors do not warn of low-level leaks even when they are functioning properly. Moreover, detached or broken detectors are not uncommon in public housing projects.<sup>163</sup> Ultimately, the best way to protect residents from carbon monoxide is to remove and replace all residential systems and appliances that burn fossil fuels.

### ***Volatile and Semi-Volatile Organic Compounds***

In addition to producing carbon monoxide, research indicates "that natural gas combustion could be a substantial source of PAHs [polycyclic aromatic hydrocarbons] in indoor environments."<sup>164</sup> PAHs are semi-

---

<sup>159</sup> Suzy Khimm & Laura Strickler, *Carbon Monoxide is Killing Public Housing Residents, but HUD Doesn't Require Detectors* (March 1, 2019) <https://www.nbcnews.com/news/us-news/carbon-monoxide-killing-public-housing-residents-hud-doesn-t-require-n977896>.

<sup>160</sup> Patti Verbanas, *Carbon Monoxide Poisoning Risk Rises During Winter Storms* (Feb. 16, 2021), <https://www.rutgers.edu/news/carbon-monoxide-poisoning-risk-rises-during-winter-storms>.

<sup>161</sup> See J. Cohen et al., *Divergent Consensuses on Arctic Amplification Influence on Midlatitude Severe Winter Weather*, *Nature Climate Change* (Jan. 2020), at 22 ("In addition to cold temperatures, recent observations show that high-latitude blocking is related to more frequent heavy snowfalls in the eastern United States, and an index of disruptive northeastern US snowfalls shows that over the most recent decade the population centers of this region have been adversely impacted by snowstorms three times as often as in any previous decade."); see also Judah Cohen et al., *Linking Arctic Variability and Change with Extreme Winter Weather in the United States*, 373 *Science* 1116, 1116 (Sept. 1, 2021), <https://www.science.org/doi/10.1126/science.abi9167>.

<sup>162</sup> See Jess Donald, *Winter Storm Uri 2021: The Economic Impact of the Storm*, (Oct. 2021) <https://comptroller.texas.gov/economy/fiscal-notes/2021/oct/winter-storm-impact.php> (describing the 2021 storm that coated Texas in a sheet of ice and left 210 people dead, some from carbon monoxide poisoning).

<sup>163</sup> See *id.* (noting that firefighters found missing and broken smoke detectors in a public housing building when responding to a carbon monoxide poisoning).

<sup>164</sup> Kotchmar, *supra* n.109, at 2-55 – 2-56; see also Wolfgang F. Rogge et al., *Sources of Fine Organic Aerosol 5: Natural Gas Home Appliances*, 27 *Envtl. Sci. & Tech.* 2736, 2736 (1993).

volatile organic compounds that pollute the air and endanger the health of those who inhale them.<sup>165</sup> According to the CDC, elevated PAH levels may lead to everything from skin irritation and breathing problems to cancer.<sup>166</sup> Gas stoves also release volatile organic compounds like formaldehyde and benzene.<sup>167</sup> Formaldehyde, one of the major products of natural gas combustion,<sup>168</sup> is a carcinogen that also contributes to asthma and respiratory distress.<sup>169</sup> Benzene, another carcinogen, is a product of the incomplete combustion of gas.<sup>170</sup> According to WHO guidelines, the use of gas for cooking leads to higher concentrations of benzene indoors.<sup>171</sup> Those guidelines also make explicit that “no safe level of [benzene] can be recommended.”<sup>172</sup> Notably, the dissemination of carcinogenic pollutants for which there is “no risk-free level of exposure” was one of HUD’s primary justifications when the agency banned a similarly harmful source of indoor air pollution—cigarettes—in 2016.<sup>173</sup>

Given the dangers posed by even trace amounts of benzene, emerging research that found benzene in 95 percent of gas samples collected throughout the Boston metropolitan area is highly concerning.<sup>174</sup> Alarming, benzene was far from the only hazardous pollutant present in the gas sampled. In total, the researchers determined

---

<sup>165</sup> WHO GUIDELINES FOR INDOOR AIR QUALITY: SELECTED POLLUTANTS, 6 POLYCYCLIC AROMATIC HYDROCARBONS 1-2 (2010).

<sup>166</sup> U.S. CENTER FOR DISEASE CONTROL, *Polycyclic Aromatic Hydrocarbons (PAHs) Fact Sheet*, [https://www.cdc.gov/biomonitoring/PAHs\\_FactSheet.html](https://www.cdc.gov/biomonitoring/PAHs_FactSheet.html). (last visited July 19, 2022).

<sup>167</sup> Kotchmar, *supra* n.109, at 2-54; *See* Lebel et al., *supra* n.103, at 2534; Michanowicz et al., *supra* n.102, at 10266; Lebel et al., *supra* n.102, at D-E.

<sup>168</sup> *Id.* Carlos Martín, *supra* n.58, at 2.

<sup>169</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *What Should I Know About Formaldehyde and Indoor Air Quality*, <https://www.epa.gov/indoor-air-quality-iaq/what-should-i-know-about-formaldehyde-and-indoor-air-quality> (last visited July 19, 2022); Payne & Oliva, *supra* n.105, at 15.

<sup>170</sup> *See* Megan Woolhouse, BU TODAY, *The Problem with Cooking with (Fracked) Gas*, <https://www.bu.edu/articles/2018/the-problem-with-cooking-with-fracked-gas/> (Mar. 20, 2018) (including an interview with Boston University professor Nathan Phillips).

<sup>171</sup> ROY HARRISON ET AL., WORLD HEALTH ORGANIZATION, WHO GUIDELINES FOR INDOOR AIR QUALITY: SELECTED POLLUTANTS (2010), <https://www.ncbi.nlm.nih.gov/books/NBK138708/>.

<sup>172</sup> *Id.*

<sup>173</sup> Instituting Smoke Free Public Housing, 80 Fed. Reg. 71,762, 71,763 (Nov. 17, 2015); Instituting Smoke-Free Public Housing, 81 Fed. Reg. 87,430, 87,430 (Dec. 5, 2016); *see also* Hilary Bambrick et al., CLIMATE COUNCIL OF AUSTRALIA, KICKING THE GAS HABIT: HOW GAS IS HARMING OUR HEALTH 25 (2021), <https://www.climatecouncil.org.au/wp-content/uploads/2021/05/Kicking-the-Gas-Habit-How-Gas-is-Harming-our-Health.pdf> (likening asthma risk from gas stoves to that of secondhand smoke).

<sup>174</sup> Mechanowicz et al., *supra* n.102, at 10258.

that Boston’s gas supply contained 296 volatile organic compounds aside from methane, 21 of which were designated hazardous air pollutants.<sup>175</sup> This study was subsequently replicated in California, where researchers found 12 hazardous air pollutants in cooking gas, including benzene in similar concentrations to those in secondhand tobacco smoke.<sup>176</sup> The presence of these chemicals in unburned gas is especially worrisome because more than 75 percent of methane emissions from residential gas cooking appliances originate from leaks while the appliances are turned off and ventilation is unlikely to be engaged.<sup>177</sup> These findings indicate that kitchen gas lines are leaking a constant stream of not only methane, but also numerous other hazardous air pollutants into the homes they serve.<sup>178</sup>

Undeniably, pollutants released by gas cooking appliances are hazardous to human health, and new research is continuing to show gas cooking appliances themselves are the cause of adverse health impacts. A 2013 analysis estimated that children living in homes that cook with gas are 42 percent more likely to presently have asthma and 24 percent more likely to have asthma at some point during their lives.<sup>179</sup> Relatedly, a 2014 cost analysis of healthy home interventions listed replacing gas stoves as one of the most cost-effective ways to reduce asthma morbidity.<sup>180</sup> The cumulative weight of gas stove research even spurred the American Medical Association to adopt a resolution formally recognizing that gas stoves increase the risk and severity of asthma.<sup>181</sup>

Removing gas cooking appliances from homes is necessary even if HUD implements the stricter kitchen ventilation requirements PHLC suggested in its NSPIRE comments.<sup>182</sup> Given the tendency for building envelope

---

<sup>175</sup> *Id.*

<sup>176</sup> Lebel et al., *supra* n.102, at H.

<sup>177</sup> Eric D. Lebel et al., *Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes*, 56 ENVTL. SCI. & TECH. 2529, 2529 (2022).

<sup>178</sup> *See id.* at 2534 (“[M]ost stoves and associated nearby piping leak some methane continuously.”); Mechanowicz et al., *supra* n.102, at 10262 (describing hazardous air pollutants commonly found in gas samples).

<sup>179</sup> Lin et al., *supra* n.123, at 1728.

<sup>180</sup> Fabian et al., *supra* n.107, at Fig. 4.

<sup>181</sup> AMERICAN MEDICAL ASSOCIATION, RES. 439 INFORMING PHYSICIANS, HEALTH CARE PROVIDERS, AND THE PUBLIC THAT COOKING WITH A GAS STOVE INCREASES HOUSEHOLD AIR POLLUTION AND THE RISK OF CHILDHOOD ASTHMA 71 (2022), <https://www.ama-assn.org/system/files/a22-resolutions.pdf>.

<sup>182</sup> *See* Public Health Law Center, *supra* n.156, at 24-28 (requesting that the NSPIRE comments use ASHRAE standard 62.2, but explaining that ventilation is not the solution to gas stove pollution).

updates and other weatherization measures to trap moisture and pollution inside homes, functional ventilation is crucial.<sup>183</sup> However, even ventilation that truly expels air to the exterior of the building—as opposed to merely circulating pollutants throughout the interior—is not effective in reducing gas stove pollution to safe levels.<sup>184</sup> Both nitrogen dioxide and particulate matter remain a problem in even relatively well-ventilated units.<sup>185</sup> Additionally, ventilation cannot serve as a mitigation tool when the venting systems are not turned on. Research indicates that most people do not use range hoods to ventilate their kitchens while cooking, even if they are present and operational.<sup>186</sup> Moreover, devising circuitous strategies for removing pollutants is utterly unnecessary where, as here, non-polluting options are readily available. Just as HUD did not rely on ventilation to get rid of tobacco smoke,<sup>187</sup> ventilation should not be relied upon here when HUD can simply eliminate the pollution source. While adequate ventilation is an important feature of a healthy home, ventilation standards alone are not sufficient to protect against the air pollution contributing to unacceptable health inequities.

Due to the overwhelming evidence that gas cooking appliances and fuel-powered space heaters are causing unacceptable levels of pollution and undermining HUD’s environmental justice commitments<sup>188</sup> and President Biden’s Justice40 initiative,<sup>189</sup> HUD should not permit these appliances in public housing or HOME, HTF, or CDBG-assisted properties. Indeed, a reasonable interpretation of HUD’s existing rules, as well as the agency’s obligation to provide decent, safe, and sanitary housing, already requires the removal of these technologies.<sup>190</sup>

---

<sup>183</sup> See *supra* n.107 and accompanying text.

<sup>184</sup> NATIONAL CENTER FOR HEALTHY HOUSING, STUDYING THE OPTIMAL VENTILATION FOR ENVIRONMENTAL INDOOR AIR QUALITY 2 (2022).

<sup>185</sup> *Id.* at 3.

<sup>186</sup> Zhu et al., *supra* n.105, at 16.

<sup>187</sup> 81 Fed. Reg. 87,430, 87,442; 80 Fed. Reg. 71,762, 71,763.

<sup>188</sup> HUD, CLIMATE ACTION PLAN 30 (Nov. 2021), <https://www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf> (“Addressing climate and environmental justice is at the core of HUD’s mission to create strong, sustainable, inclusive communities.”).

<sup>189</sup> See HUD, *Pursuing Environmental Justice*, [https://www.hud.gov/climate/environmental\\_justice](https://www.hud.gov/climate/environmental_justice) (last visited July 30, 2022) (“HUD strongly supports [Justice40](#), the Administration’s whole-of-government effort to ensure that at least 40 percent of overall Federal investments in climate and clean energy are delivered to disadvantaged communities.”).

<sup>190</sup> See 24 C.F.R. § 5.703(f) (requiring that HUD housing units be free from air quality hazards, including propane, methane, and natural gas); 24 C.F.R. § 982.401(h) (requiring that Section 8 housing be free from “pollutants in the air that threaten the health of residents,” including “dangerous levels of carbon monoxide, fuel gas, and other harmful pollutants”).



Tellingly, HUD demonstrated that it has the framework to address air quality-related health issues when the agency enacted its smoke-free public housing rule.<sup>191</sup> Many of the justifications HUD gave for banning smoking inside public housing projects, such as improving respiratory health, also justify banning gas cooking appliances.<sup>192</sup> In particular, HUD recognized a national smoke-free policy was necessary to “eliminate the risk of [secondhand smoke] exposure to public housing residents, reduce the risk of catastrophic fires, lower overall maintenance costs, and implement uniform requirements to ensure that all public housing residents are equally protected.”<sup>193</sup> As will be demonstrated throughout this Petition, each of these rationales also supports banning gas cooking appliances. Thus, regulations governing fossil fuel-fired cooking appliances should be as protective as existing regulatory standards governing cigarettes.<sup>194</sup>

## **B. HUD’s regulations must reflect the universal need for cooling.**

It has been 45 years since global temperatures last dipped below the twentieth century average.<sup>195</sup> For nearly a decade, average temperatures have ranked among the 10 warmest years on record.<sup>196</sup> Across the United States, summer months are marked by increasingly sweltering temperatures, and even cities that used to remain reliably temperate throughout the year can no longer be counted on to do so.<sup>197</sup> Despite these alarming trends, HUD regulations have yet to recognize that homes without cooling are a major health and safety hazard. Accordingly, regulatory changes are needed to protect public housing residents from extreme heat and ensure cooling costs are included in utility allowances.

---

<sup>191</sup> 81 Fed. Reg. 87,430, 87,430.

<sup>192</sup> *Id.* at 87,431.

<sup>193</sup> *Id.* at 87,433.

<sup>194</sup> See Hilary Bambrick et al., CLIMATE COUNCIL OF AUSTRALIA, KICKING THE GAS HABIT: HOW GAS IS HARMING OUR HEALTH 25 (2021), <https://www.climatecouncil.org.au/wp-content/uploads/2021/05/Kicking-the-Gas-Habit-How-Gas-is-Harming-our-Health.pdf> (likening asthma risk from gas stoves to that of secondhand smoke); Bruce P. Lanphear et al., *Residential Exposure Associated with Asthma in US Children*, 107 *Pediatrics* 505,

<sup>195</sup> NOAA, *2021 Was World’s 6<sup>th</sup> Warmest Year on Record* (Jan. 13, 2022), <https://www.noaa.gov/news/2021-was-worlds-6th-warmest-year-on-record>.

<sup>196</sup> *Id.*

<sup>197</sup> See, e.g., April Ehrlich, *Exactly One Year Since “Heat Dome,” Portland Remembers Those Lost* (June 27, 2022), <https://www.opb.org/article/2022/06/27/portland-remembers-people-died-heat-dome-one-year-ago/>.

Without question, climate change-fueled heat waves are sweeping the entire country.<sup>198</sup> For those without a cool space to retreat to, these heat waves are dangerous and even deadly. In fact, heat is the leading cause of weather-related deaths in the United States, and the health burdens of extreme heat are disproportionately borne by communities of color and low-income communities.<sup>199</sup> During the Pacific Northwest’s infamous 2021 heat wave, 69 lives were lost in Portland, Oregon alone.<sup>200</sup> The majority of those who died lived in multifamily units, and 6 people lost their lives in PHA-operated housing complexes.<sup>201</sup> Tellingly, only 3 of the people who perished had working air conditioners.<sup>202</sup>

Short of death, exposure to extreme heat can cause fatigue, heat stroke, heat exhaustion, and cardiovascular distress or collapse.<sup>203</sup> Heat worsens chronic cardiovascular, respiratory, and cerebrovascular diseases, as well as diabetes-related illnesses.<sup>204</sup> Long-term exposure has been shown to damage organs, cells, and DNA.<sup>205</sup> Extreme heat also impacts cognitive function and mental health. High temperatures interfere with memory, attention, and reaction time, impeding residents’ abilities to work from home during the COVID-19

---

<sup>198</sup> FIRST STREET FOUNDATION, THE 6<sup>TH</sup> NATIONAL RISK ASSESSMENT: HAZARDOUS HEAT 6 (2022), available at [https://firststreet.org/research-lab/published-research/article-highlights-from-hazardous-heat/?utm\\_source=First+Street+Foundation&utm\\_campaign=91c94c6221-EMAIL\\_CAMPAIGN\\_2020\\_06\\_02\\_04\\_42\\_COPY\\_01&utm\\_medium=email&utm\\_term=0\\_65ade308d1-91c94c6221-438310154](https://firststreet.org/research-lab/published-research/article-highlights-from-hazardous-heat/?utm_source=First+Street+Foundation&utm_campaign=91c94c6221-EMAIL_CAMPAIGN_2020_06_02_04_42_COPY_01&utm_medium=email&utm_term=0_65ade308d1-91c94c6221-438310154); Isabella Grullón Paz, *Nearly a Third of the U.S. Faces Excessive Heat, with Misery Spreading to the Coasts* (June 20, 2022), <https://www.nytimes.com/2022/07/20/us/heat-advisories-warnings-oklahoma-texas-arkansas.html>.

<sup>199</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Climate Change Indicators: Heat-Related Deaths*, <https://www.epa.gov/climate-indicators/climate-change-indicators-heat-related-deaths> (last visited July 20, 2022); see also U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, *LIHEAP IM-2022-06 Heat Stress Flexibilities and Resources FY2022* (July 19, 2022), <https://www.acf.hhs.gov/ocs/policy-guidance/liheap-im-2022-06-heat-stress-flexibilities-and-resources-fy2022>.

<sup>200</sup> See Ehrlich, *supra* n.197 (reflecting on the 69 lives lost during Portland’s 2021 heat wave).

<sup>201</sup> *Id.*

<sup>202</sup> *Id.*

<sup>203</sup> First Street Foundation, *supra* n.198.

<sup>204</sup> U.S. Global Change Research Program, *supra* n.241, at 46.

<sup>205</sup> *Id.*

pandemic.<sup>206</sup> Further, people facing extreme heat are more likely to experience depression, irritability, suicidal tendencies, aggression, and substance abuse.<sup>207</sup> Rising temperatures and other climate change induced disasters are also associated with increased domestic and gender-based violence,<sup>208</sup> implicating HUD's statutory responsibility to serve victims of domestic abuse.<sup>209</sup> Importantly, children and the elderly are especially vulnerable to heat-related health impacts.<sup>210</sup>

The data on heat-related death and illness indicates that acclimation matters just as much as absolute temperature in determining the health risk associated with a heat wave.<sup>211</sup> Though southern communities—and especially those in the “extreme heat belt” stretching from Texas and Louisiana throughout much of the Midwest—are expected to see the highest temperatures over the coming decades, relatively lower temperatures in other parts of the country are equally dangerous because people are unaccustomed to dealing with them.<sup>212</sup> Similarly, prolonged heat waves that expose regions to multiple days of high temperatures in a row are also associated with increased health impacts.<sup>213</sup> Evidence even suggests the health burdens of heat can be amplified by intra-day temperature variations, such as when locations do not have a chance to cool overnight.<sup>214</sup> In urban areas, where much of the housing that this Petition would affect is concentrated,<sup>215</sup> residents are also at elevated

---

<sup>206</sup> AMERICAN PSYCHIATRIC ASSOCIATION, *Extreme Heat Contributes to Worsening Mental Health, Especially Among Vulnerable Populations* (June 30, 2021), <https://psychiatry.org/news-room/news-releases/extreme-heat-contributes-to-worsening-mental-health>.

<sup>207</sup> *Id.*

<sup>208</sup> Kim Robin van Daalen et al., *Extreme Events and Gender-Based Violence: A Mixed-Methods Systematic Review*, 6 *The Lancet Planetary Health* E504, E518-19 (June 2022).

<sup>209</sup> 34 U.S.C. § 12471.

<sup>210</sup> U.S. Global Change Research Program, *supra* n.245, at 44.

<sup>211</sup> First Street Foundation, *supra* n.198, at 5, 9-10.

<sup>212</sup> *Id.*

<sup>213</sup> *Id.* at 19-20.

<sup>214</sup> Cheng He et al., *The Effects of Night-Time Warming on Mortality Burden Under Future Climate Change Scenarios: A Modelling Study*, 6 *THE LANCET PLANETARY HEALTH* e648, e655 (Aug. 2022), [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(22\)00139-5/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(22)00139-5/fulltext).

<sup>215</sup> CENTER ON BUDGET AND POLICY PRIORITIES, *Rental Assistance in Urban and Rural Areas* (May 12, 2015), <https://www.cbpp.org/sites/default/files/atoms/files/RentalAssistance-RuralFactsheetandMethodology.pdf> (estimating that just 13 percent of HUD-assisted public housing, Section 8 HCV, and multifamily units were outside major metropolitan areas).

risk of heat-related health impacts from the urban heat island effect.<sup>216</sup> Thus, while dangers vary by region, “virtually the entire country is subject to increasing perils associated with heat exposure.”<sup>217</sup>

Heat has become a serious health and safety hazard. Yet, HUD’s regulations do not demand that PHAs provide functional home cooling unless applicable state or local codes require them. In fact, HUD’s reluctance to make landlords provide safe cooling devices has forced tenants to choose between their air conditioners and eviction.<sup>218</sup> This situation is clearly in violation of HUD’s responsibility to promulgate regulations designed to keep public housing units safe for residents.<sup>219</sup> Moreover, these risks can no longer be justified by cost effectiveness given the availability of highly efficient heat pumps that provide dual heating and cooling without any in-home emissions.<sup>220</sup>

### **C. HUD must increase planning requirements to account for climate-related risks.**

Petitioners are also asking that jurisdictions receiving grant funding for low-income housing be required to undertake climate planning. This change is necessary to prepare for place-specific climate impacts with the potential to adversely impact residents. Though many jurisdictions receiving federal housing funds are already incorporating climate planning into their governmental processes,<sup>221</sup> HUD guidance is necessary to ensure all residents receive the health benefits of forward thinking.

---

<sup>216</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, *Heat Island Effect*, <https://www.epa.gov/heatislands> (last visited July 26, 2022) (explaining that urban environments generally have higher temperatures). Urban heat island effect refers to the higher temperatures city environments experience due to the replacement of natural land cover with concrete and other building materials that retain heat.

<sup>217</sup> First Street Foundation, *supra* n.198, at 5.

<sup>218</sup> Blair Best, *‘It’s Horrible’: Tenants Face Eviction Over Window AC Units at Low-Income Housing Complex in Newberg* (July 26, 2022), <https://www.kgw.com/amp/article/news/local/tenants-face-eviction-window-ac-units/283-a94ed541-e91c-44d8-a0c1-ffcfbcd2a989>.

<sup>219</sup> 24 C.F.R. § 5.703.

<sup>220</sup> *See infra* nn. 289-296 and accompanying text.

<sup>221</sup> *See, e.g.*, Seattle Housing Authority, *Sustainability Agenda*, [https://www.seattlehousing.org/sites/default/files/Sustainability\\_Agenda\\_2020-2025.pdf](https://www.seattlehousing.org/sites/default/files/Sustainability_Agenda_2020-2025.pdf) (describing the Seattle Housing Authority’s plan to make its portfolio healthier and more sustainable for residents); New York City Housing Authority, *NYCHA Climate Mitigation Roadmap*, <https://www1.nyc.gov/assets/nycha/downloads/pdf/NYCHA-LL97-Whitepaper.pdf> (describing the New York Housing Authority’s plans to decarbonize its housing stock).

Currently, HUD regulations require that jurisdictions receiving certain grant funds for affordable housing have Consolidated Plans.<sup>222</sup> One of the purposes of a Consolidated Plan is to develop a strategy to provide a suitable living environment for low-income individuals by “improving the safety and livability of neighborhoods.”<sup>223</sup> This goal cannot be achieved without considering and preparing for the inevitable consequences of climate change.

Just as heatwaves that used to be once-in-a-lifetime events have become increasingly common, dangerous storms that used to occur once every hundred years can now be expected to occur annually in some parts of the United States.<sup>224</sup> According to a study that investigated the impacts of sea level rise and modern tropical storm patterns on hurricane flood hazards, people living on the coasts of the 8 states that make up the Southeast Atlantic and Gulf of Mexico regions of the United States should now expect 100-year flooding every 1-30 years.<sup>225</sup> Even more alarmingly, the New England and mid-Atlantic states may see 100-year flooding on an annual basis.<sup>226</sup> With this knowledge, housing providers and community groups can start to prepare by reinforcing and weatherproofing infrastructure, as well as constructing community centers where people can take refuge during severe storms and share resources afterwards. As demonstrated by the tragic aftermath of the flooding in Kentucky this year,<sup>227</sup> lack of adequate preparation can make storms deadliest after the rain has passed.<sup>228</sup>

---

<sup>222</sup> 24 C.F.R. § 91.2 (requiring Consolidated Plans from, *inter alia*, jurisdictions participating in the Community Development Block Grant, Emergency Solutions Grants, HOME Investment Partnership, and Housing Trust Fund programs).

<sup>223</sup> 24 C.F.R. § 91.1(a).

<sup>224</sup> Reza Marsooli et al., *Climate Change Exacerbates Hurricane Flood Hazards Along US Atlantic and Gulf Coasts in Spatially Varying Patterns*, NATURE COMMUNICATIONS (2019), at 7, <https://www.nature.com/articles/s41467-019-11755-z>; see also U.S. Global Change Research Project, *supra* n.241, at 100-01 (projecting increases in the occurrence and severity of extreme weather events).

<sup>225</sup> *Id.* at 3, 7.

<sup>226</sup> *Id.*

<sup>227</sup> BBC, *Kentucky Floods: Death Toll Rises to 37, Hundreds Still Missing* (Aug. 2, 2022), <https://www.bbc.com/news/world-us-canada-62381798>.

<sup>228</sup> See Centers for Disease Control, *Climate and Health: Precipitation Extremes*, [https://www.cdc.gov/climateandhealth/effects/precipitation\\_extremes.htm](https://www.cdc.gov/climateandhealth/effects/precipitation_extremes.htm) (last accessed August 5, 2022) (calling flooding the second deadliest weather-related hazard and noting increasing risk throughout the country).

Relatedly, increased flooding is a contributor to disease outbreaks.<sup>229</sup> Climate change is expected to cause a spike in diseases as the seasonality and location of exposure to pathogens shifts with weather patterns.<sup>230</sup> Flooding causes standing water, which is a breeding ground for mosquitoes carrying diseases like West Nile virus and dengue fever.<sup>231</sup> Shrinking habitats have forced other disease-carrying animals into more frequent interactions with humans as well.<sup>232</sup> This proximity is amenable to increased zoonotic spillover—the transmission of disease from one species to another.<sup>233</sup> Accordingly, vulnerability to infectious disease is a growing problem in many American communities, especially for low-income individuals who lack access to adequate healthcare resources. With this in mind, jurisdictions would be well served by plans that reduce the presence of standing water and help people remain as comfortable as possible during epidemics.

Finally, HUD must ensure jurisdictions are preparing for and mitigating against the growing wildfire risk. Climate change is fueling an increase in the number and severity of wildfires, generating additional air pollution on top of the burn risks.<sup>234</sup> Particulate matter and ozone released during a blaze are likely to contribute to further adverse health outcomes.<sup>235</sup> By planning with fire risk in mind, jurisdictions can design buildings to reduce the likelihood of human-caused fires and make neighborhoods more fire-resilient. Upgrading building envelopes helps prepare communities for wildfires by creating an airtight seal that keeps smoke outdoors. As mentioned, wildfire smoke is high in particulate matter that threatens the respiratory and cardiac health of those who inhale it.<sup>236</sup> Thus, having access to safe, well-sealed indoor refuges is key to reducing health disparities in locations prone

---

<sup>229</sup> *Id.*

<sup>230</sup> U.S. Global Change Research Program, *supra* n.245, at 142.

<sup>231</sup> *Id.* at 130.

<sup>232</sup> CDC, *Climate Change and Infectious Diseases*, <https://www.cdc.gov/ncezid/what-we-do/climate-change-and-infectious-diseases/index.html> (last visited Aug. 8, 2022).

<sup>233</sup> Colin J. Carlson et al., *Climate Change Increases Cross-Species Viral Transmission Risk*, 607 *Nature* 555, 555 (Apr. 28, 2022).

<sup>234</sup> U.S. Global Change Research Program, *supra* n.245, at 9.

<sup>235</sup> *Id.*

<sup>236</sup> Colleen E. Reid, *Critical Review of Health Impacts of Wildfires*, 124 *Env'tl. Health Perspectives* 1334, 1340 (2022); U.S. ENVIRONMENTAL PROTECTION AGENCY, *Why Wildfire Smoke Is a Health Concern*, <https://www.epa.gov/wildfire-smoke-course/why-wildfire-smoke-health-concern> (last visited July 19, 2022); U.S. ENVIRONMENTAL PROTECTION AGENCY, *Health Effects Attributed to Wildfire Smoke*, <https://www.epa.gov/wildfire->

to fire. Moreover, tightly sealed buildings reduce the transfer of heat into and out of living spaces, lowering utility costs and helping residents maintain safe indoor temperatures on extremely hot or cold days.

Boosting climate resilience and preparedness through thoughtful planning will safeguard and improve public health. Climate planning can save lives by identifying the biggest risks, designing buildings to be resilient, and filling gaps in emergency plans. Because low-income renters live in the least climate resilient buildings,<sup>237</sup> it is critical that HUD institute more stringent climate planning requirements for programs serving low-income populations wherever possible.

**D. HUD must phase fossil fuels out of HUD-assisted housing to mitigate future health impacts from climate change.**

Poor indoor air quality and lack of adequate weatherization are not the only contributors to health disparities that HUD must address in the age of climate change. When home appliances burn methane gas or other fossil fuels for energy, they release greenhouse gases into the atmosphere, further exacerbating the perilous health impacts of climate change. Emissions from residential appliances also impact local outdoor air quality, especially where units are concentrated, as they are in many urban public housing and grant-funded settings.

Though the transportation and industrial sectors are some of the largest targets for emission reduction efforts, residential appliances also emit massive quantities of air pollution throughout the year. Unlike gas stoves, appliances like furnaces, hot water heaters, and clothes dryers typically belch pollution outside the home rather than inside. However, that does not mean these emissions are benign to human health. Fossil fuel-fired residential appliances emit approximately 643 million metric tons of greenhouse gases annually.<sup>238</sup> That equates to 10

---

[smoke-course/health-effects-attributed-wildfire-smoke](#) (last visited July 19, 2022); *see also infra* Section III.A.1 (describing the health impacts of particulate matter).

<sup>237</sup> CHELSEA KIRK, STRATEGIC ACTION FOR A JUST ECONOMY, LOS ANGELES BUILDING DECARBONIZATION: TENANT IMPACT AND RECOMMENDATIONS 7 (Dec. 2021).

<sup>238</sup> RMI & SIERRA CLUB, FACTSHEET: WHY EPA MUST ADDRESS APPLIANCE POLLUTION 1 (June 4, 2021), [https://rmi.org/wp-content/uploads/2021/04/rmi\\_factsheet\\_appliance\\_pollution.pdf](https://rmi.org/wp-content/uploads/2021/04/rmi_factsheet_appliance_pollution.pdf); JIM DENNISON ET AL., HOW AIR AGENCIES CAN HELP END FOSSIL FUEL POLLUTION FROM BUILDINGS, RMI 5 (2021), available at <https://rmi.org/insight/outdoor-air-quality-brief>.

percent of the United States' overall carbon footprint.<sup>239</sup> In the United States, gas stoves alone emit enough methane over the course of the year to rival the warming potential of greenhouse gas emissions from 500,000 cars.<sup>240</sup>

While a full accounting of the health harms associated with greenhouse gas emissions and anthropogenic climate change is too expansive to fit in the pages of this Petition, the physical and mental toll that extreme weather and rising seas are exacting on human bodies is difficult to overstate.<sup>241</sup> The glut of greenhouse gases in our atmosphere is causing and will continue to cause extreme heat events, deadly storms, droughts, floods, fires, and pathogenic outbreaks in increasing numbers.<sup>242</sup> The health implications of these changes are numerous and overwhelmingly adverse, ranging from malnutrition to increased susceptibility to domestic violence.<sup>243</sup> Indeed, for some communities, climate change poses an “existential threat,” and the risk of adverse impacts is heightened for low-income and marginalized communities.<sup>244</sup> In all, the Fourth National Climate Assessment predicted that extreme temperatures alone will cause 9,300 additional premature deaths per year by 2090 in the United States.<sup>245</sup>

In addition to worsening the dangerous effects of climate change, fossil fuel-fired residential appliances also contribute to localized impacts in the neighborhoods where HUD-assisted rental units are situated. Each

---

<sup>239</sup> *Id.*

<sup>240</sup> Lebel et al., *supra* n.177, at 2535.

<sup>241</sup> See generally U.S. GLOBAL CHANGE RESEARCH PROGRAM, THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT 113 (2016) (“Health impacts associated with climate-related changes in exposure to extreme events include death, injury, or illness; exacerbation of underlying medical conditions; and adverse effects on mental health.”).

<sup>242</sup> See generally HANS-O. PÖRTNER ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS (2022),

[https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC\\_AR6\\_WGII\\_SummaryForPolicymakers.pdf](https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf).

<sup>243</sup> *Id.* at 8, 11; see also Kim Robin van Daalen et al., *Extreme Events and Gender-Based Violence: A Mixed-Methods Systematic Review*, 6 *The Lancet Planetary Health* E504, E518-19 (June 2022); see also HUD, CLIMATE ACTION PLAN 5 (Nov. 2021), <https://www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf> (“[C]limate change creates new risks and exacerbates existing vulnerabilities in communities across the U.S., presenting growing challenges to human health and safety, quality of life, and economic prosperity.”).

<sup>244</sup> *Id.* at 15, 27; HUD, CLIMATE ACTION PLAN 5-6 (Nov. 2021),

<https://www.hud.gov/sites/dfiles/Main/documents/HUD-Climate-Action-Plan.pdf>.

<sup>245</sup> U.S. GLOBAL CHANGE RESEARCH PROGRAM, IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES: FOURTH NATIONAL CLIMATE ASSESSMENT, VOLUME II 552 (2018),

[https://nca2018.globalchange.gov/downloads/NCA4\\_2018\\_FullReport.pdf](https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf).



year, residential appliances emit 425,000 tons of nitrogen oxides and other toxic pollutants.<sup>246</sup> While pollutants vented outside the home are diluted in the open air, low-income Black, Hispanic, Asian, and Indigenous communities still experience approximately 28% higher nitrogen dioxide levels than higher-income white communities, largely due to discriminatory practices that sited diesel truck routes near segregated communities of color.<sup>247</sup> This pollution disparity increases marginalized peoples' cumulative exposure to hazardous nitrogen dioxide, making it all the more imperative that electrification efforts are focused on these communities first.

With time running out to prevent the very worst impacts of climate change, policymakers must pursue every path toward emission reductions. Utility consumption paid for by HUD is responsible for approximately 13.6 million metric tons of carbon emissions each year.<sup>248</sup> By granting this Petition and beginning to phase fossil fuels out of HUD-assisted housing, the agency would put itself on a track to significantly cut its greenhouse gas emissions and reduce the adverse health impacts associated with climate change. Further, implementation of Petitioners' moderately paced regulatory proposals could inform the agency's climate adaptation policy moving forward. In particular, lessons from the public housing sphere could influence how HUD approaches emission reductions in HUD-assisted housing owned and operated by private entities without inadvertently restricting the availability of affordable housing.

#### **IV. Phasing fossil fuel-fired appliances out of HUD housing will reduce fire risk.**

In addition to contributing to climate change and indoor air pollution, fossil fuel-fired appliances and the pipelines that supply them with fuel are liable to ignite fires and even cause explosions. As discussed, the primary component of the gas that flows through these appliances is a potent greenhouse gas known as methane.<sup>249</sup> Throughout the supply chain, pipelines that carry gas from underground seams to our homes leak methane into

---

<sup>246</sup> JIM DENNISON ET AL., *supra* n.238, at 3.

<sup>247</sup> Mary Angelique G. Demetillo et al., *Space-Based Observational Constraints on NO<sub>2</sub> Air Pollution Inequality from Diesel Traffic in Major US Cities*, 48 GEOPHYSICAL RESEARCH LETTERS (2021), at 8-9, <https://repository.library.noaa.gov/view/noaa/40167>.

<sup>248</sup> HUD, Climate Initiative 3-3, [https://www.hud.gov/sites/dfiles/CFO/documents/6\\_2022CJ\\_ClimateInitiative.pdf](https://www.hud.gov/sites/dfiles/CFO/documents/6_2022CJ_ClimateInitiative.pdf) (last accessed August 17, 2022).

<sup>249</sup> Michanowicz et al., *supra* n.102, at 10258.

the air.<sup>250</sup> As methane is highly flammable, gas leaks create immediate health risks in the form of fires and explosions.<sup>251</sup> For instance, a recent survey of one Washington, D.C. neighborhood revealed hundreds of potentially explosive gas leaks.<sup>252</sup> These potentially deadly incidents pose an unacceptable risk to the lives of families and community members residing in HUD-assisted housing. Petitioners' proposals to phase fossil fuel-fired appliances out of public housing and HUD-assisted grant programs would reduce residential reliance on gas and consequently lower the fire and explosion risks associated with gas infrastructure.

Additionally, the open flames that are the hallmark of gas cooking can cause devastating fires. Unlike electric ranges and cooktops, gas ranges and cooktops rely on combustion to create heat. The resulting flame is a well-known fire hazard, responsible for numerous deaths and injuries and substantial property damage.<sup>253</sup> Cooking fires are “the leading cause of reported home fires and home fire injuries and the second leading cause of home fire deaths.”<sup>254</sup> The elderly, differently-abled people, and children—who comprise a large percentage of HUD-assisted residents—are disproportionately likely to be killed in cooking fires.<sup>255</sup>

While electric ranges have historically carried their own fire risks, this is likely due to outdated electric ranges that do not adequately control heat or alert the user that the cook surface is hot, ultimately causing food

---

<sup>250</sup> *See id.*; *see generally* Ramon A. Alvarez et al., *Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain*, 361 *Science* 186, (2018) (describing considerable methane leaks throughout the supply chain); Lebel et al., *supra* n.177, at 2535 (estimating that gas stoves nationwide emit methane equivalent to the carbon dioxide emissions of 500,000 cars annually).

<sup>251</sup> Tan et al., *supra* n.118 at 23 (describing several gas explosions); *see also* Tony Dutzik et al., U.S. PIRG, METHANE GAS LEAKS: FREQUENT LEAKS ARE RESULTING IN DEATH, INJURY AND OTHER DAMAGE TO OUR HEALTH AND ENVIRONMENT 10-11 (June 2022), <https://publicinterestnetwork.org/wp-content/uploads/2022/05/USP-EA-FG-Methane-Gas-Leaks-Jun22-screen.pdf>.

<sup>252</sup> BEYOND GAS DC, *Neighborhood Researchers Find Hundreds of Methane Gas Leaks Across DC* (Feb. 23, 2022) <https://www.sierraclub.org/sites/www.sierraclub.org/files/sce/washington-dc-chapter/Methane-Leaks-Across-DC-FINAL.pdf>.

<sup>253</sup> MARTY AHRENS, NATIONAL FIRE PROTECTION ASSOCIATION, HOME COOKING FIRES 1-4 (July 2020) <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/US-Fire-Problem/Fire-causes/oscooking.pdf>.

<sup>254</sup> *Id.* at 1.

<sup>255</sup> *Id.* at 6; *see also* *Household Oven and Range Standards: Helping to Mitigate the Risk of Burns*, UNDERWRITERS LABORATORIES (June 17, 2021) <https://ul.org/standards-and-engagement/standards-matter/household-oven-and-range-standards-helping>.

or cooking materials to ignite.<sup>256</sup> In comments on the NSPIRE standards, PHLC proposed several changes to the Cooking Appliance standard that would significantly reduce the risks from electric ranges.<sup>257</sup> Without reiterating those suggestions in full, Petitioners incorporate them by reference here and ask that HUD require compliance with the UL 858 Standard for Household Electric Ranges and require that electric coil ranges visually indicate heat.<sup>258</sup>

By enacting these changes and removing fossil fuel-fired appliances from HUD-assisted housing, HUD could significantly reduce catastrophic fire risk, just as the agency did by promulgating the smoke-free rule.<sup>259</sup> Intervention to remove fire hazards within HUD's control is especially important with climate change-fueled wildfires increasing the cumulative fire risk for many U.S. residents.

#### **V. The proposed regulatory changes will save renters and housing providers money in the long run.**

Despite the urgent need to electrify and otherwise account for the impacts of climate change, obtaining the financial resources necessary to making such changes can be challenging. One of Petitioners' primary concerns in developing the policy proposals described herein was to ensure the new regulatory scheme did not place an excessive financial burden on housing providers or residents. Though additional investments in retrofitting and rehabilitating low-income housing are still desperately needed, Petitioners' policy proposals can be implemented in a manner that saves money for residents and for housing providers in the long run. This section explores the costs of electrification and climate preparedness, and explains why current events have rendered electrification and the other proposals in this Petition the most financially feasible option for PHAs, HUD, and tenants.

Electrification represents a step towards stability because fossil fuel prices depend on volatile international politics.<sup>260</sup> The Russian war against Ukraine is a timely example of how situations beyond U.S. control can wield

---

<sup>256</sup> Ahrens, *supra* n.253, at 9.

<sup>257</sup> PHLC, NSPIRE Comments, App'x I at 31.

<sup>258</sup> *See id.*

<sup>259</sup> 81 Fed. Reg. 87,430, 87,430.

<sup>260</sup> MATT MALINOWSKI ET AL., CLASP, COMBATING HIGH FUEL PRICES WITH HYBRID HEATING: THE CASE FOR SWAPPING AIR CONDITIONERS FOR HEAT PUMPS 5 (July 2022), available at <https://www.clasp.ngo/research/all/ac-to-heat-pumps/>; *see also* Sam Calisch, *Exporting Oil and Gas Does Not Create Energy Independence, Electrification Does*, <https://www.rewiringamerica.org/circuit-breakers-energy-independence> (last accessed Oct. 3, 2022) (describing the

a powerful influence on fuel prices. In response to the Russian aggression, Germany pulled its approval of a major gas pipeline and Russia began to stem the tide of energy exports to European countries that had come to rely on the steady stream of Russian gas.<sup>261</sup> Thus, as much of Europe rushed to buy gas and petroleum from other sources, energy markets—and consequently, prices—were thrown into chaos.<sup>262</sup> Indeed, gas prices more than tripled from February to March 2021.<sup>263</sup> While there is no telling how long the situation in Ukraine will last, the need to transition to more stable sources of energy has never been more apparent.

By embracing electrification, HUD would also be helping to create jobs and fight inflation. Adopting the policy proposals set forth in Section VII would send a clear signal to manufacturers nationwide that heat pumps, induction ovens, and other electric appliances are going to be in high demand. Combined with the market opportunities created by Europe’s desire to reduce its reliance on Russian fossil fuels,<sup>264</sup> this signal from HUD could catalyze companies toward major workforce investments that will be necessary to meet demand. Electricity is also anti-inflationary by nature in that the market is local, regulated, and predictable, providing residents with reliable and affordable energy.<sup>265</sup> In fact, research shows that every year a U.S. household waits to electrify costs hundreds of dollars in utility bills.<sup>266</sup>

---

impacts of volatile international politics on U.S. families and explaining how electrification provides a path toward true energy independence).

<sup>261</sup> Jeff Tollefson, *What the War in Ukraine Means for Energy, Climate, Food*, (Apr. 5, 2022), <https://www.nature.com/articles/d41586-022-00969-9>; Christoph Steitz & Nina Chestney, *Russia Cuts Gas Flow Further as Europe Urges Energy Savings*, (July 27, 2022), <https://www.reuters.com/business/energy/physical-flows-through-nord-stream-1-pipeline-dip-2022-07-27>.

<sup>262</sup> Shawn Baldwin, *The Role of Natural Gas in the Russia-Ukraine Conflict*, (Apr. 8, 2022) <https://www.cnbc.com/2022/04/08/the-role-of-natural-gas-in-the-russia-ukraine-conflict.html>.

<sup>263</sup> *Id.* Though Russia’s actions have exacerbated fossil fuel price volatility, it is important to note that fossil fuel prices have historically been between two and four times more volatile than electricity prices. NOAH GOLDMANN ET AL., REWIRING AMERICA, CLEAN ENERGY INVESTMENTS ARE THE ANTIDOTE TO INFLATION 4 (July 14, 2022), <https://content.rewiringamerica.org/reports/Clean%20Energy%20Provisions.pdf>.

<sup>264</sup> See RACHAEL GRACE ET AL., REWIRING AMERICA, MEMORANDUM FROM REWIRING AMERICA TO ALL INTERESTED PARTIES: ELECTRIFY FOR PEACE POLICY PLAN 4-5 (March 9, 2022), <https://content.rewiringamerica.org/reports/Electrify%20for%20Peace%20Policy%20Plan.pdf> (describing the approximately 70 billion dollar market gap created by the Russian war in Ukraine).

<sup>265</sup> Goldman et al., *supra* n.263, at 4.

<sup>266</sup> *Id.* (estimating that electrifying in 2021 would have saved the average household \$970 in utilities over the year).

Although the U.S. Energy Information Administration forecasts that residential electricity prices will average approximately 10 percent higher this winter than they were last winter, the forecast for residential gas prices is still worse at approximately 28 percent growth.<sup>267</sup> As U.S. electricity generation switches from volatile natural gas to renewables, electricity prices are expected to fall.<sup>268</sup> Indeed, a flurry of renewable energy and energy efficiency incentives at the executive and legislative levels is already driving electricity prices even lower than expected. On August 16, 2022, President Biden signed the Inflation Reduction Act of 2022 (“IRA”) into law.<sup>269</sup> With 369 billion dollars in climate and energy investments, the IRA is the largest clean energy investment in U.S. history, including funding for renewable energy infrastructure, energy-efficient home rebates, heat pump production, and climate change mitigation.<sup>270</sup> The IRA commits 4.5 billion dollars to home rebate<sup>271</sup> programs for high-efficiency electric appliances.<sup>272</sup> For households with incomes below 80 percent of the local median, Federal funding is available to cover 100 percent of project costs.<sup>273</sup> Eligible entities for these rebates include low-income households (i.e. public housing residents), multifamily building owners whose properties house more than 50 percent residents with low- to moderate-income (i.e. PHAs), and government, commercial, or nonprofit

---

<sup>267</sup> Compare EIA, SHORT-TERM ENERGY OUTLOOK 1 (Oct. 12, 2022), [https://www.eia.gov/outlooks/steo/pdf/steo\\_full.pdf](https://www.eia.gov/outlooks/steo/pdf/steo_full.pdf).

<sup>268</sup> See EIA, *Short-Term Energy Outlook: Electricity* (Oct. 12, 2022), <https://www.eia.gov/outlooks/steo/report/electricity.php> (“Higher retail electricity prices largely reflect an increase in wholesale power prices, which are driven by higher natural gas prices.”).

<sup>269</sup> See generally Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818.

<sup>270</sup> John Coequyt & Sarah Ladislaw, *Landmark Deal Resets US Climate and Clean Energy Goals, Lifts Prospects for Global Progress*, Rocky Mountain Institute (Jul. 28, 2022), <https://rmi.org/landmark-deal-resets-us-climate-and-clean-energy-goals-lifts-prospects-for-global-progress/> (last visited Aug. 18, 2022); see generally JAMAL LEWIS, REWIRING AMERICA, THE INFLATION REDUCTION ACT OF 2022 INVESTMENTS FOR DISADVANTAGED COMMUNITIES (Aug. 5, 2022), <https://content.rewiringamerica.org/reports/IRA%20Benefits%20to%20Disadvantaged%20Communities.pdf> (describing programs created and funded by the IRA that will benefit low-income and marginalized communities specifically).

<sup>271</sup> Though the IRA uses the term “rebate,” reimbursements happen at the time of purchase, making these funds available for low-income individuals and organizations with tight budgets.

<sup>272</sup> Inflation Reduction Act of 2022, sec. 50122, Pub. L. No. 117-169, 136 Stat. 1818 (to be codified at 42 U.S.C. § 18795a).

<sup>273</sup> *Id.*

entities carrying out electrification projects on behalf of low-income households or multifamily properties (i.e. all properties covered by this Petition).<sup>274</sup>

Section 30002 of the IRA also devotes substantial funding toward increasing the climate resiliency of affordable housing specifically.<sup>275</sup> Pursuant to the Act, HUD will receive over 800 million dollars for direct loans and grants for projects that improve energy efficiency, reduce water use, enhance indoor air quality, and otherwise prepare affordable housing for climate change.<sup>276</sup> Unfortunately, PHAs are not among the entities eligible to receive this much needed financial support,<sup>277</sup> making it all the more important that HUD enact Petitioners' regulatory proposals to ensure all HUD-assisted properties—not just those included in Section 30002—are undertaking the work necessary to keep residents safe going forward. While the omission of public housing from this portion of the bill is lamentable, the 60 million dollars earmarked for HUD to conduct research related to climate resiliency in affordable housing may very well help in the pursuit of similar goals for properties covered by this Petition. Moreover, Section 30002 funds are available for properties converting to project-based rental assistance under RAD, underlining the need for HUD to update its RAD implementation guidance to ensure conversions require decarbonization, electrification and weatherization.<sup>278</sup>

Overall, the IRA provides significant investments that will help HUD accomplish Petitioners' requests. However, the law is far from a perfect solution to the climate crises. Numerous environmental justice activists have criticized the IRA's concessions to the fossil fuel industry.<sup>279</sup> Frontline communities, most often comprised of low-income and marginalized peoples, would bear the brunt of any harmful impacts from these projects. The

---

<sup>274</sup> *Id.*

<sup>275</sup> *Id.* at sec. 30002.

<sup>276</sup> *Id.* at sec. 30002(a)(1).

<sup>277</sup> *Id.* at sec. 30002(c)(2).

<sup>278</sup> *Id.* at sec. 30002(c)(2)(D).

<sup>279</sup> Climate Justice Alliance, *The Inflation Reduction Act Is Not a Climate Justice Bill* (Aug. 6, 2022), <https://climatejusticealliance.org/the-inflation-reduction-act-is-not-a-climate-justice-bill/> (accusing the IRA of making significant investments in false climate solutions like carbon capture and storage and hydrogen fuels that will only prolong the nation's reliance on fossil fuels); *WE ACT for Environmental Justice Responds to the Passage of the Inflation Reduction Act of 2022* (Aug. 12, 2022), <https://www.weact.org/2022/08/we-act-for-environmental-justice-responds-to-the-passage-of-the-inflation-reduction-act-of-2022/>;

conflict surrounding the IRA’s environmental justice impacts makes it even more imperative that HUD take regulatory action to protect these often overlooked and vulnerable communities.

With climate policies becoming more stringent and ubiquitous, gas utilities are beginning to acknowledge the constraints climate change has placed on fossil fuels’ future. Recognizing that climate legislation in many places will force gas resources off the market before they have been completely exhausted, utilities are already calculating how to recover the sunk costs of fossil fuel projects from consumers.<sup>280</sup> Importantly, experts are envisioning future situations where low-income renters who have the least agency over their energy sources and consumption may be left behind to shoulder the financial burden of a dying fossil fuel industry while wealthier people reap the financial and health benefits of renewables.<sup>281</sup> This inequitable outcome must be avoided by pursuing policies that prioritize replacing fossil fuels in low-income households first.

The regulatory proposals contained in this Petition are designed to reduce energy burden. Energy burden refers to the proportion of household income spent on energy bills. Low-income households as well as Black and Hispanic households have disproportionately high energy burdens, with some facing levels 10 times as high as the average burden for non-low-income homes.<sup>282</sup> On average, 67 percent of low-income households experience high energy burden and 60 percent of those households experience severe energy burden.<sup>283</sup> There are many reasons for this disparity, but one contributing factor is the overall absence of equity-driven strategies in mainstream U.S. politics in past years. One report shows that just 6 percent of energy efficiency spending in 2015 was devoted to

---

<sup>280</sup> See Gannett Fleming, *NYSEG and RGE Depreciation Study: Potential Impacts of Climate Change Policies and Laws I-34* (March 14, 2022) (discussing the “very real possibility that gas demand could decline precipitously and that a significant portion of a utility’s customer base could change energy sources” due to climate change).

<sup>281</sup> DAN YORK ET AL., ACEEE, BUILDING DECARBONIZATION SOLUTIONS FOR THE AFFORDABLE HOUSING 20 (Apr. 2022).

<sup>282</sup> Dept. of Energy, *Low-Income Community Energy Solutions: State and Local Solution Center*, <https://www.energy.gov/eere/slsc/low-income-community-energy-solutions> (last visited Aug. 11, 2022); Kirk et al., *supra* n.237, at 7; Ariel Drehobl et al., ACEEE, How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden 7 (Sept. 2020).

<sup>283</sup> Drehobl et al., *supra* n.282, at iii (defining high energy burden as spending more than 6 percent of one’s income on energy bills and severe energy burden as spending more than 10 percent of one’s income on energy bills).

low-income programming.<sup>284</sup> Consequently, roughly one-third of all renters are behind on their energy bills, with even greater numbers of Black, Hispanic, and low-income renters struggling to pay for energy utilities.<sup>285</sup>

Energy burden is also a health equity issue. When forced to choose between temperature control and food, families often choose temperature control.<sup>286</sup> Many people are also spending limited income on utility bills rather than buying medicines, including inhalers used to treat asthma.<sup>287</sup> Moreover, being forced to make these kinds of decisions is a significant source of stress, which also contributes to negative health outcomes.<sup>288</sup> Switching to electric appliances—especially heat pumps or a hybrid—is projected to reduce energy bills in most locations, helping to offset the costs of electrification and broader utility allowances.<sup>289</sup> Depending on the geographic region, heat pumps are between 2.4 and 4.5 times more efficient than even the most efficient gas furnaces.<sup>290</sup> Because heat pumps use so much less energy, substituting a heat pump for a gas-fired air conditioning system reduces heating bills by an average of 12 percent annually.<sup>291</sup> Savings are significantly higher for units that switch from HVAC systems powered by other fossil fuels or electric resistance.<sup>292</sup> Helpfully, site-specific savings projections—such as the study that confirmed electrification of low- and mid-rise apartments in Los Angeles would result in utility bill reductions—are increasingly available for housing providers to use in their electrification plans.<sup>293</sup> Although the impacts of electrification on energy costs will vary, experts predict that roughly 80 percent of low-income households would benefit financially from the installation of a heat pump.<sup>294</sup>

---

<sup>284</sup> *Id.* at 3.

<sup>285</sup> Stefen Samarripas, *One-Third of Tenants Behind on Utility Bills, Highlighting Need for Energy Upgrades*, (Aug. 17, 2022) <https://www.aceee.org/blog-post/2022/08/one-third-tenants-behind-utility-bills-highlighting-need-energy-upgrades>

<sup>286</sup> Tan, *supra* n.118, at 31.

<sup>287</sup> *Id.*

<sup>288</sup> *See supra* n.96 and accompanying text.

<sup>289</sup> *See* STEVEN NADEL & LYLA FADALI, ACEEE, ANALYSIS OF ELECTRIC AND GAS DECARBONIZATION OPTIONS FOR HOMES AND APARTMENTS 37-39 (July 2022), available at <https://www.aceee.org/research-report/b2205>.

<sup>290</sup> *Id.*; *see also* John Matson, RMI, *Clean Energy 101: Heat Pumps* (July 12, 2022), <https://rmi.org/clean-energy-101-heat-pumps/> (estimating that heat pumps in Minneapolis operate at 2.34 efficiency while heat pumps in Los Angeles operate at 4.06 efficiency).

<sup>291</sup> Malinowski et al., *supra* n.260, at 19.

<sup>292</sup> *Id.* at 17-20; York et al., *supra* n.281, at 10.

<sup>293</sup> Kirk, *supra* n.237, at 21.

<sup>294</sup> York et al., *supra* n.281, at 10.



For new construction, full electrification is an obvious choice as it saves money not just for residents, but also for developers who can forego expensive and dangerous gas infrastructure.<sup>295</sup> In California, for instance, developers save an average of 3,300 dollars per unit by building all-electric.<sup>296</sup>

Petitioners also suggest changes to the utility allowance structure to avoid overburdening residents while ensuring that housing providers can recover costs expended for upgrades. Because utility allowances are part of the total assistance a housing provider is eligible to receive from HUD, high utility allowances limit the rents providers are permitted to collect.<sup>297</sup> Accordingly, to encourage electrification, HUD must assure housing providers that utility allowances are accounting for physical upgrades that increase energy efficiency or otherwise lower utility costs.<sup>298</sup> Increased transparency around utility allowance formulas and calculations will also help to incentivize electrification while simultaneously protecting residents from overly burdensome rents.<sup>299</sup>

Overall, “[w]hole-building, deep energy retrofits [of public housing] would [] deliver energy cost savings of up to 70 percent, cutting public housing energy bills by up to \$613 million a year.”<sup>300</sup> Of course, this type of transformational work will not happen overnight. Petitioners appreciate that rehabilitating and retrofitting public housing and other affordable housing projects to equip them for modern climate challenges is an enormous undertaking. For this reason, Petitioners’ regulatory proposals are flexible and focus primarily on stepping up collaborative planning requirements. For instance, Petitioners’ proposals require “electrification to the fullest extent practicable,” a standard that permits limited fossil fuel use to prevent violations of housing quality standards where residences in cold climates may still require fossil fuel-fired appliances to deliver reliable energy

---

<sup>295</sup> *Id.* at 13.

<sup>296</sup> *Id.*

<sup>297</sup> Venkatraman & Kumar, *supra* n.26, at 5.

<sup>298</sup> *Id.* at 5-7, 9.

<sup>299</sup> *Id.* at 12.

<sup>300</sup> DANIEL ALDANA COHEN ET AL., CLIMATE + COMMUNITY PROJECT, A GREEN NEW DEAL FOR PUBLIC HOUSING TO DELIVER RACIAL, ECONOMIC, AND CLIMATE JUSTICE 8 (April 19, 2021), [https://www.climateandcommunity.org/\\_files/ugd/d6378b\\_4ac05fb79e03497c8634141a8019f62c.pdf](https://www.climateandcommunity.org/_files/ugd/d6378b_4ac05fb79e03497c8634141a8019f62c.pdf).

throughout peak winter demand and where financial constraints limit a housing providers ability to replace fossil fuel-fired systems, at least in the short term.<sup>301</sup>

In addition to reducing energy costs across the board, granting the requests of this Petition would result in significant healthcare savings. A study that compared the healthcare savings associated with several healthy home interventions against the cost of implementing those interventions showed that gas stove removal, increased ventilation, and pest remediation were the most cost-effective ways to realize savings through improved indoor air quality.<sup>302</sup> All of these physical condition issues would be addressed by the proposed Green PNAs, and by phasing gas stoves and other fossil fuel-fired appliances out of public housing and HUD grant programs. Another study determined that “[i]f all residential gas appliances were immediately replaced with clean electric alternatives, the reduction of outdoor NO<sub>x</sub> and PM<sub>2.5</sub> would result in 354 fewer deaths, as well as 596 fewer cases of acute bronchitis and 304 fewer cases of chronic bronchitis annually in California.”<sup>303</sup> Researchers concluded that these health benefits equated to approximately 3.5 billion dollars in savings over the course of one year in California alone, and only accounted for exposures to outdoor appliance pollution.<sup>304</sup> The true savings would also encompass benefits from improved indoor air quality and would therefore be even greater.<sup>305</sup>

Eliminating home asthma triggers “would have a profound impact on hospitalization rates, emergency and clinic visits, direct and indirect medical costs, school absences, and the health and functioning of children.”<sup>306</sup> The New York City Housing Authority estimates that full implementation of healthy home interventions in its housing stock would cut asthma rates by 18 to 30 percent.<sup>307</sup> Making these changes in public housing units throughout the country would manifest enormous savings for not only residents, but for all taxpayers. According

---

<sup>301</sup> See Michael Gartman & Amar Shah, RMI, *Heat Pumps: A Practical Solution for Cold Climates* (Dec. 10, 2020), <https://rmi.org/heat-pumps-a-practical-solution-for-cold-climates/> (detailing advances in cold climate heat pumps that increasingly make them a practical solution for all parts of the United States).

<sup>302</sup> Fabian et al., *supra* n.180, at Fig.4.

<sup>303</sup> Zhu et al., *supra* n.105, at 7.

<sup>304</sup> *Id.*

<sup>305</sup> *Id.* at 7, 27 (noting that replacing fossil fuel appliances would also reduce carbon monoxide risk, which costs approximately 1.3 billion dollars annually in the United States).

<sup>306</sup> Lanphear et al., *supra* n.194, at 507.

<sup>307</sup> Daniel Aldana Cohen et al., *supra* n.300, at 9.

to a study conducted by the CDC, asthma-related emergency department visits alone cost Medicaid and the Children’s Health Insurance Program approximately 272 million dollars each year.<sup>308</sup> Yet, many of these attacks are preventable with healthy home interventions.<sup>309</sup> In fact, a “large body of evidence suggests that home visiting programs that address indoor environmental triggers. . . can improve asthma control, reduce asthma-related hospitalizations and emergency department visits, and provide a positive return on investment.”<sup>310</sup> This principle has been demonstrated by projects like the Breathe Easy Asthma Home Visiting Program, in which the nonprofit Breathe DC partnered with Medicaid MCOs to pay for home interventions that improved indoor air quality.<sup>311</sup> Many other public interest organizations are also engaged in this work.<sup>312</sup> For instance, Green and Healthy Homes Initiative has a wealth of experience with facilitating healthy home visits.<sup>313</sup>

Reducing healthcare costs for households covered by Petitioners’ regulatory proposals is one of the most influential steps HUD could take to promote equity.<sup>314</sup> The low-income populations and marginalized communities that HUD primarily serves are more likely to suffer from poor health and disabilities that simultaneously drive up healthcare costs and prevent individuals from bringing home a steady income.<sup>315</sup> These factors interact to create a cruel cycle, systematically increasing healthcare burdens on those who are least able to afford them. It is time that HUD’s regulations account for the negative externalities sub-standard housing has

---

<sup>308</sup> William S. Pearson et al., *State-Based Medicaid Costs for Pediatric Asthma Emergency Department Visits*, Preventing Chronic Disease 3 (June 27, 2014), [https://www.cdc.gov/pcd/issues/2014/pdf/14\\_0139.pdf](https://www.cdc.gov/pcd/issues/2014/pdf/14_0139.pdf).

<sup>309</sup> See National Center for Healthy Housing, *Case Studies in Healthcare Financing of Healthy Homes Services: Medicaid Reimbursement for Home-Based Asthma Services in the District of Columbia 1* (2016).

<sup>310</sup> *Id.* at 1-3.

<sup>311</sup> NATIONAL CENTER FOR HEALTHY HOUSING, *CASE STUDIES IN HEALTHCARE FINANCING OF HEALTHY HOMES SERVICES: MEDICAID REIMBURSEMENT FOR HOME-BASED ASTHMA SERVICES IN THE DISTRICT OF COLUMBIA 2* (March 2016), [https://nchh.org/resource-library/case-study\\_healthcare-financing-of-hh-services\\_asthma\\_dc.pdf](https://nchh.org/resource-library/case-study_healthcare-financing-of-hh-services_asthma_dc.pdf).

<sup>312</sup> See, e.g., Rosofsky et al., *supra* n.66 (discussing a similar approach used by the Breathe Easy at Home Program in Boston).

<sup>313</sup> See generally Ruth Ann Norton et al., GREEN & HEALTHY HOMES INITIATIVE, *RECOMMENDATIONS FOR EVALUATION METRICS FOR ASTHMA HOME VISITING PROGRAMS: MEASURING ENVIRONMENTAL MANAGEMENT & HEALTH OUTCOMES* (2019).

<sup>314</sup> See generally HUD, *EQUITY ACTION PLAN* (2022) <https://www.hud.gov/sites/dfiles/PA/documents/HUDEquity508compliant.pdf>.

<sup>315</sup> Dhruv Khullar & Dave A. Chokshi, *Health, Income, & Poverty: Where We Are and What Could Help* (Oct. 4, 2018) <https://www.healthaffairs.org/doi/10.1377/hpb20180817.901935/>.

thrust upon low-income residents. Thus, Petitioners ask that housing providers incorporate into planning processes the social cost of greenhouse gases and, where available, the projected healthcare costs or savings associated with either forgoing or undertaking a particular capital upgrade.

The social cost of greenhouse gases “is the monetary value of the net harm to society associated with adding a small amount of [carbon dioxide, methane, or nitrous oxide] to the atmosphere in a given year.”<sup>316</sup> These metrics are important because they account for the astronomical costs from health harm and resource loss associated with climate change in a way that fossil fuel market prices do not.<sup>317</sup> Emissions data necessary to conduct these analyses will be provided to PHAs and other housing providers through energy audits. The proposed rules also encourage PHAs to incorporate data on healthcare costs associated with certain home health triggers, where such data is available. For instance, in determining how to prioritize items in a Capital Fund budget, housing providers may include information about the relative healthcare savings of replacing gas stoves versus improving ventilation.<sup>318</sup> Using the social cost of greenhouse gases and healthcare cost estimates will provide housing providers, HUD, and the public with valuable information about holistic, long-term costs and who is being asked to bear those costs. These analyses are crucial to centering environmental justice and health equity in decisions about housing—one of the most fundamental social determinants of health.

## **VI. Government intervention is necessary to combat the fossil fuel industry’s campaign of deception.**

From smiling 1950s-era housewives to a quintet of rapping 1980s teens, the fossil fuel industry has employed a varied cast of characters to convince customers that methane gas is clean-burning and safe for in-home

---

<sup>316</sup> INTERAGENCY WORKING GROUP ON SOCIAL COST OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON, METHANE, AND NITROUS OXIDE: INTERIM ESTIMATES UNDER EXECUTIVE ORDER 13990 2 (Feb. 2021), [https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument\\_SocialCostofCarbonMethaneNitrousOxide.pdf](https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf); see also EPA, *The Social Cost of Carbon: Estimating the Benefits of Reducing Greenhouse Gas Emissions*, [https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon\\_.html](https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html) (last accessed Sept. 19, 2022).

<sup>317</sup> Kevin Rennert et al., *Comprehensive Evidence Implies a Higher Social Cost of CO<sub>2</sub>*, *Nature* (2022), <https://www.nature.com/articles/s41586-022-05224-9.epdf>.

<sup>318</sup> Fabian et al., *supra* n.180, at 16.

use.<sup>319</sup> For decades, these corporations have intentionally targeted the public—and especially marginalized subgroups who were denied equal access to education—with lies about the safety of fossil fuel products. Unsurprisingly, this targeting has contributed to the health inequities discussed throughout this Petition. Now, entities with close ties to the fossil fuel industry are doing everything within their power to prevent municipalities from exacting justice on the corporations that made trillions of dollars off an elaborate misinformation campaign while simultaneously wreaking havoc on the ecosystems upon which all life depends.<sup>320</sup> To counteract the fossil fuel industry’s dangerous propaganda and protect low-income renters with little control over the appliances in their homes, HUD must intervene by phasing these hazardous substances out of federally-assisted housing according to an aggressive, but realistic schedule.

Despite the myriad health impacts of in-home fossil fuel combustion detailed in this Petition, the American Gas Association (“AGA”) has a “Fact Sheet” that attempts to allay concerns about the correlation between gas stoves and poor indoor air quality. On that sheet, the industry group claims that “there are no documented risks to respiratory health from natural gas stoves from the regulatory and advisory agencies and organizations responsible for protecting residential consumer health and safety.”<sup>321</sup> This statement ignores the “Home Characteristics and Asthma Triggers Checklist for Home Visitors”—a document coauthored by the Department of Health and Human Services, the Centers for Disease Control and Prevention, the Environmental Protection Agency, and HUD—that lists gas cooking appliances in its “Glossary of Asthma Triggers Commonly Found in Homes.”<sup>322</sup>

---

<sup>319</sup> Rebecca Leber, *How the Fossil Fuel Industry Convinced Americans to Love Gas Stoves* (July 17, 2021), <https://www.motherjones.com/environment/2021/06/how-the-fossil-fuel-industry-convinced-americans-to-love-gas-stoves/>.

<sup>320</sup> See generally CENTER FOR CLIMATE INTEGRITY, PUSHING PREEMPTION: THE CORPORATE CAMPAIGN TO DENY MUNICIPALITIES ACCESS TO THE COURTS (August 2022), <https://climateintegrity.org/uploads/media/Pushing-Preemption-Report-2022.pdf>.

<sup>321</sup> American Gas Association, *Cooking with Gas: Indoor Air Quality and Residential Gas Ranges* (Sept. 4, 2020), <https://www.aga.org/research/fact-sheets/indoor-air-quality-and-residential-gas-ranges/>.

<sup>322</sup> See generally CDC, Home Characteristics and Asthma Triggers Checklist for Home Visitors, [https://www.cdc.gov/asthma/pdfs/home\\_assess\\_checklist\\_P.pdf](https://www.cdc.gov/asthma/pdfs/home_assess_checklist_P.pdf) (last accessed Aug. 19, 2022).

Further, the AGA’s claim that the Consumer Product Safety Commission (“CPSC”) does not recognize gas cooking appliances as a threat to respiratory health may change in the near future. On August 1, 2022, Representative Raja Krishnamoorthi, the Chairman of the Subcommittee on Economic and Consumer Policy, sent the CPSC a letter requesting “documents and information about the CPSC’s failure to establish safety standards or provide warnings to consumers on the significant health risks posed by air pollutants emitted from gas stoves.”<sup>323</sup> Notably, the Chairman lambasted the CPSC for failing to act on gas stove regulation despite a 1986 EPA report<sup>324</sup> that the Commission specifically requested to identify potential health hazards associated with exposure to nitrogen dioxide from indoor combustion sources.<sup>325</sup> In that report, the EPA’s Clean Air Scientific Advisory Committee concluded that “repeated exposures to concentrations of 0.3 ppm of nitrogen dioxide may cause health effects in some individuals and there is a possibility that such effects may occur at concentrations as low as 0.1 ppm.”<sup>326</sup> As Section III explains, gas stoves regularly cause indoor nitrogen dioxide concentrations to exceed 0.1 ppm.<sup>327</sup> The report went on to note that “the population groups that appear most sensitive to nitrogen dioxide exposure include children, chronic bronchitics [sic], asthmatics and individuals with emphysema.”<sup>328</sup>

The 1986 EPA report is hardly the only evidence demonstrating that the fossil fuel industry has known for decades about the noxious fumes its products spill into family homes. In 1984, the Energy Law Journal published an article inviting the gas industry to fulfill its responsibility to customer safety by “develop[ing] an informative position on indoor air quality and the proper use of gas appliances.”<sup>329</sup> The article mentions that nitrogen dioxide and carbon monoxide from the combustion of fossil fuel-fired appliances are “frequently

---

<sup>323</sup> House Committee on Oversight and Reform, *Chairman Krishnamoorthi Requests Information from Consumer Product Safety Commission on Failure to Establish Safety Standards for Gas Stoves* (Aug. 1, 2022), <https://oversight.house.gov/news/press-releases/chairman-krishnamoorthi-requests-information-from-consumer-product-safety>.

<sup>324</sup> See generally EPA CLEAN AIR SCIENTIFIC ADVISORY BOARD, REVIEW OF THE U.S. CONSUMER PRODUCT SAFETY COMMISSION’S HEALTH EFFECTS AND EXPOSURE ASSESSMENT DOCUMENTS ON NITROGEN DIOXIDE (1988).

<sup>325</sup> House Committee on Oversight and Reform, *supra* n.323.

<sup>326</sup> EPA CLEAN AIR SCIENTIFIC ADVISORY BOARD, *supra* n.324, at introductory letter.

<sup>327</sup> *Supra* Section III.A.1.

<sup>328</sup> *Id.*

<sup>329</sup> Raymond A. Haik & Joanne E. Hinderaker, *The Impact of Indoor Air Quality on the Gas Industry*, 5 Energy L. J. 383, 383 (1984).

discussed as being ‘hazardous,’” and describes the problem of accidentally sealing pollutants indoors during the process of making building envelopes more efficient.<sup>330</sup> The authors even cite numerous other scientific articles, publications, and research projects that in 1984 had already highlighted the connection between gas appliances and indoor air pollution.<sup>331</sup> While much of the scientific information in the law review article is outdated, the mere fact that relatively pro-industry critics were calling for increased indoor air quality protections from residential fossil fuel-fired appliances is telling. How is it that the gas industry was able to continue polluting homes on a daily basis for almost 40 more years without warning consumers about the risks?

The answer is simple: industries that profit from unhealthy products are well-practiced in misinformation campaigns. Just as the tobacco industry once spearheaded a massive effort to mislead the public about the health impacts of cigarettes,<sup>332</sup> the fossil fuel industry has been untiring in its efforts to mislead the public about the health impacts of burning fossil fuels both inside and outside the home.<sup>333</sup> In 2006, Judge Gladys Kessler found multiple representatives of the tobacco industry had violated the Racketeer Influenced and Corrupt Organizations Act by engaging in a massive scheme to defraud the public by, among other tactics, making false and misleading statements in a document called “Fact or Fancy?” that denied cigarettes caused adverse health effects; spreading the false narrative that there was no “scientific consensus” on the health impacts of smoking; and undermining independent scientific research with industry-funded research designed and controlled to engineer results that benefitted the industry.<sup>334</sup> The tobacco industry also insidiously targets marginalized communities, providing them with much-needed financial backing in order to secure a market for its products.<sup>335</sup>

The overlap between the tactics used by the commercial tobacco industry and those used by the fossil fuel industry is stark. Evidence released a few years ago shows that Exxon, one of the world’s largest oil and gas

---

<sup>330</sup> *Id.*

<sup>331</sup> *Id.* at 384.

<sup>332</sup> See PUBLIC HEALTH LAW CENTER, THE TOBACCO INDUSTRY & THE BLACK COMMUNITY: THE TARGETING OF AFRICAN AMERICANS 2-3 (June 2021) (quoting Judge Gladys Kessler in her 2006 *U.S. v. Philip Morris* decision).

<sup>333</sup> See generally UNION OF CONCERNED SCIENTISTS, SMOKE, MIRRORS, AND HOT AIR: HOW EXXONMOBIL USES BIG TOBACCO’S TACTICS TO MANUFACTURE UNCERTAINTY ON CLIMATE SCIENCE (2007) (describing

<sup>334</sup> *United States v. Philip Morris USA, Inc.*, 449 F.Supp.2d 1, 723-24, 788(2006) (vacated in part on other grounds, 477 F.Supp.2d 191 (2007)).

<sup>335</sup> PUBLIC HEALTH LAW CENTER, *supra* n.332, at 3-4.

companies, “became a leader in campaigns of confusion” related to anthropogenic climate change even though company scientists had known since at least 1977 that fossil fuel combustion was warming the planet to a dangerous degree.<sup>336</sup> Other major producers soon joined in, spreading deceptive information with the explicit goals that average citizens and the media associate climate science with uncertainty and consider supporters of the Kyoto Protocol<sup>337</sup> to be “out of touch with reality.”<sup>338</sup> Further, just like the tobacco industry, the fossil fuel industry has a history of co-opting science by funding fringe research to exploit uncertainty about the causes and effects of climate change.<sup>339</sup> Some industry representatives even posed as grassroots activists and nonprofits to sow opposition to efforts to regulate fossil fuels.<sup>340</sup>

Overall, the fossil fuel industry has a long, dirty history of setting aside moral qualms about public and planetary health in favor of deception and profits.<sup>341</sup> Cities, counties, and states across the country have ongoing lawsuits against various arms of the industry, each alleging that fossil fuel companies deliberately deceived the public about climate change.<sup>342</sup> As such, the misinformation campaign the AGA and other industry groups are now running to confuse consumers and policymakers about the true impacts of fossil fuel-fired appliances is unsurprising. Likewise, the industry’s strategy to convince young, left-leaning Black and Hispanic voters that gas is clean with pandering ad campaigns is a play right out of Big Tobacco’s book. The pattern also holds for a

---

<sup>336</sup> Shannon Hall, *Exxon Knew about Climate Change almost 40 Years Ago* (Oct. 26, 2015), <https://www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/>.

<sup>337</sup> The Kyoto Protocol is an international agreement adopted by most of the world’s countries in 1997 to operationalize the United Nations Framework Convention on Climate Change by creating greenhouse gas emission reduction targets. United Nations, *What is the Kyoto Protocol?*, [https://unfccc.int/kyoto\\_protocol](https://unfccc.int/kyoto_protocol) (last accessed Sept. 2, 2022).

<sup>338</sup> KATHY MULVEY ET AL., UNION OF CONCERNED SCIENTISTS, *THE CLIMATE DECEPTION DOSSIERS: INTERNAL FOSSIL FUEL INDUSTRY MEMOS REVEAL DECADES OF CORPORATE DISINFORMATION* 9-10, 19-20 (July 2015), <https://www.ucsusa.org/sites/default/files/attach/2015/07/The-Climate-Deception-Dossiers.pdf>.

<sup>339</sup> *Id.* at 6-8.

<sup>340</sup> *Id.* at 13-18.

<sup>341</sup> *See generally id.*

<sup>342</sup> *See, e.g.,* Complaint, *State of Minnesota v. American Petroleum Institute*, No. 20-1636 (D. Minn. June 24, 2020); *see also* Center for Climate Integrity, *supra* n. 320, at 3 (“A growing wave of climate liability lawsuits filed by cities, counties, and states across the country are asking the courts to protect their communities from the mounting costs of adapting and responding to a host of dangerous climate-related damages that the fossil fuel industry predicted decades ago.”).



California gas utility that was recently caught impersonating community members on the *Nextdoor* platform to drum up opposition against a local gas ban proposal.<sup>343</sup>

Every year, the fossil fuel industry spends millions of dollars and countless hours developing and implementing strategies to preserve their profits by fighting policies that would clean up our energy grid, improve air quality, and prevent adverse health impacts.<sup>344</sup> HUD's mission is to act for the benefit of the people, regulating self-interested corporations to provide people with safe spaces to live and grow. Without HUD's intervention, industry forces will continue to wreak havoc on peoples' health and wellbeing. Just like cigarettes are unequivocally bad for human health, available evidence demonstrates that gas appliances are bad for human health. When confronted with the problem of secondhand smoke, HUD acted to protect residents. Petitioners are asking that HUD intervene once more on behalf of the roughly 9.3 million people the agency assists.

## **VII. Petitioners' Proposed Regulatory Changes would help HUD provide decent, safe, and sanitary housing for residents.**

The following regulatory proposals were designed to facilitate the decarbonization of public housing and low-income housing supplied by one of HUD's grant programs. These changes are urgently needed to protect the most vulnerable residents from the worst impacts of climate change, including the burden of high energy bills. Each proposal is preceded by a brief description of the purpose the new or revised regulation aims to achieve. New regulatory language is presented in underlined text, whereas language proposed for deletion is crossed out.

---

<sup>343</sup> Leber, *supra* n.319.

<sup>344</sup> See, e.g., Mario Alejandro Ariza et al., *Leaked: US Power Companies Secretly Spending Millions to Protect Profits and Fight Clean Energy* (July 27, 2022), <https://www.theguardian.com/environment/2022/jul/27/leaked-us-leaked-power-companies-spending-profits-stop-clean-energy>.

## INFORMATION GATHERING & PLANNING

- A. Proposal A defines “fossil fuel-fired systems and appliances” to clarify which fuels are prohibited under this Petition’s electrification requirements.**

### **24 C.F.R. § 905.108 – Definitions**

... [“1937 Act” – “Force account labor”]

Fossil fuel-fired systems and appliances. Any mechanical system within the building or unit that is powered by the on-site combustion of coal, petroleum, methane gas, hydrogen or any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.

... [“Fungibility” – “Uniform Federal Accessibility Standards (UFAS)”]

- B. Proposal B requires that all PHAs create Green PNAs covering 20-year time frames.**

Proposal B would require that all PHAs create Green PNAs that identify all upgrades and repairs necessary to bring public housing units into compliance with all applicable housing quality standards. If HUD is going to address public housings’ repair and modernization backlog, more information is needed about the amenities units already have and those they lack.<sup>345</sup> For instance, how many gas stoves does a public housing project need to replace, and what is the cost of replacing them? A Green PNA would answer this question, as well as similar questions about other fossil fuel-fired appliances, mold and pest infestations, cooling needs, and more. The primary benefit of a green physical needs assessment lies in its usefulness as a tool that PHAs and housing advocates can use to raise remediation funds and inform planning efforts.

Unlike the existing PNA requirement, Green PNAs would assess costs and benefits over a 20-year time frame. This longer time frame would allow sufficient time for cost savings from lowered utility costs achieved by electrification and energy efficiency upgrades to materialize. More forward-looking planning will allow PHAs to

---

<sup>345</sup> See CHARLIE HARAK, UP THE CHIMNEY: HOW HUD’S INACTION COSTS TAXPAYERS MILLIONS AND DRIVES UP UTILITY BILLS FOR LOW-INCOME FAMILIES 30 (2010), [https://www.nclc.org/images/pdf/pr-reports/up\\_the\\_chimney\\_082610.pdf](https://www.nclc.org/images/pdf/pr-reports/up_the_chimney_082610.pdf) (describing critical lack of information about HUD-assisted units).

better account for the long-term costs and benefits of capital improvements, thereby providing a more realistic financial assessment for long-term sustainability of the project.

The proposed regulation would also require Green PNAs to be informed by a standardized energy audit that specifically advises PHAs about electrification and remediation of home health hazards. By requiring more rigorous energy audits, HUD would be helping to ensure all PHAs have access to the information they need to engage in beneficial electrification. For instance, at present, HUD regulations only require that PHAs undertake energy audits that comply with the applicable state law.<sup>346</sup> But in many states, energy auditors are not required to provide information about fuel-switching. Thus, without updated guidance from HUD, PHAs may miss electrification opportunities as well as information pertaining to rebates and other incentives, such as those recently enacted by Congress in the IRA. Further, they may miss opportunities to combine work projects in economical ways, such as doing intrusive, in-wall work like envelope upgrades and electric work at the same time to prevent duplication of repairs.

Finally, Proposal B would require PHAs to include in their Green PNAs summaries of consultations with utilities and local and state governments about their electrification and home health improvement efforts. This requirement would encourage interested parties to develop creative solutions to electrification challenges and give HUD valuable information about outstanding barriers to funding and implementing electrification. Consequently, Green PNAs would allow HUD to adaptively manage its policymaking to support the clean energy transition.

#### **24 C.F.R. § 905.300 - Capital fund submission requirements**

(a) General. Unless otherwise stated, the requirements in this section apply to both qualified PHAs (as described in § 903.3(c) of this chapter) and nonqualified PHAs. Each PHA must complete and submit to HUD a comprehensive physical needs assessment (PNA) at least once every 5 years. PHAs shall update their PNAs annually to reflect additional work items as well as work completed.

... [(a)(1)]

---

<sup>346</sup> 24 C.F.R. § 965.302.

(2) Content. Each PHA, including Moving to Work PHAs, shall complete a comprehensive PNA at a time and in a form and manner prescribed by HUD. PNAs shall incorporate the life-cycle operation, maintenance, and replacement costs of project systems and components over a 20-year period, for each housing project in a PHA's inventory. PHAs shall inform their PNAs with energy audits completed in conjunction with the PNA.

(i) PNAs and associated estimates shall be prepared without regard to whether funds are available to complete the repair and replacement work projected by the PNA.

(ii) PHAs shall capture all projected capital costs necessary to comply with public housing requirements throughout the 20-year period covered by the PNA, including the National Standards for the Physical Inspection of Real Estate; Uniform Physical Condition Standards, 24 C.F.R. § 5.703; section 504 of the Rehabilitation Act, 29 U.S.C. § 794; and the Residential Lead-Based Paint Hazard Reduction Act of 1992, 42 U.S.C. § 4852d. For units that have not already been certified as lead-based paint free by a certified inspector, PNAs must also include the results of a lead-based paint inspection completed in accordance with HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

(iii) The PNA shall include a work schedule that will allow the PHA to comply with the deadlines enumerated at 24 C.F.R. § 965.901.

(iv) The PNA shall account for the impact of any projected or actual removal of units from the inventory by the corresponding removal of cost associated with physical needs of those removed units.

(v) The PNA shall be performed in conjunction with an energy audit consistent with the requirements at 24 C.F.R. § § 965.302. PHAs that will have completed an energy audit within 2 years of the date that the PHA will complete its first PNA, pursuant to this part, shall not be required to complete a new energy audit concurrent with its first PNA submitted pursuant to this rule so long as the existing energy audit contains the cost-

effectiveness data required by HUD. For each of the energy conservation and electrification measures identified in the energy audit, the PHA shall identify in its PNA specific work items that would achieve the measure and the projected costs of completing those work items. Unless otherwise directed by HUD, the PNA shall incorporate information related to each measure reviewed during the energy audit in a form and manner prescribed by HUD.

(vi) PHAs shall use their completed energy audits and PNAs to consult with electric utilities and local and state governments to determine whether additional funding mechanisms, such as rebates, tax credits, energy performance contracts, on-bill or off-bill financing, or Medicaid funds are available to finance capital improvements identified by the energy audit and PNA. PHAs shall report the results of these consultations to HUD as part of their PNAs. At a minimum, these results shall include:

- A) Available funding mechanisms identified;
- B) Action items the PHA must undertake in order to access available funding;
- C) Additional financing needed to pay for costs of the upgrade not covered by any available funding mechanism;
- D) Barriers to completing the improvement under consideration.

(vii) As modernization and repairs of public housing developments are completed, the PHA shall make revisions to its PNA to indicate that repairs to individual buildings have been addressed. These PNA revisions shall be completed on an annual basis.

(3) Qualified Providers. The PNA provider shall be experienced in the performance of residential building assessment including building systems, health and safety conditions, physical and structural conditions, cost estimating, and building modernization. Providers must have knowledge of all applicable building standards and codes, including federal, state, and local requirements. The PNA provider shall also have knowledge of energy efficiency and green capital upgrade and construction practices. The PNA provider's

qualifications must be demonstrated by experience, training, or certifications. The PNA submission shall identify the PNA provider(s) and list the provider's qualifications.

(4) Submission. The PHA shall submit its PNAs and annual updates to HUD in a time, manner, and format determined by HUD. HUD shall evaluate the quality and accuracy of PNAs and shall provide feedback and technical assistance as needed on the basis of its review. HUD shall require a PHA to revise its PNA to correct errors or inaccuracies, or elements of the PNA that do not comply with HUD requirements, as determined by HUD. To the extent such revisions are required, the PHA shall correct and resubmit its PNA. PHAs must make finalized PNAs publicly available.

(5) Enforcement. A PHA shall not obligate or expend Capital Funds for administration, for transfers to operations, or for management improvements unless:

(i) A PNA has been submitted in a time, manner, and format determined by HUD in accordance with this subpart; and

(ii) Corrections to the PNA required in accordance with paragraph (a)(4) of this section have been completed by the PHA and resubmitted to HUD within 3 months of having been notified of the need for correction by HUD.

**C. Proposal C requires PHAs to sequence their improvement measures using a holistic cost effectiveness measure that accounts for negative externalities.**

Proposal C would require remediation of indoor air quality threats—including fossil fuel-fired appliances, mold, pests, and lead paint—before any energy conservation measure that reduces ventilation. This change is important because upgrades that tighten building envelopes to improve temperature maintenance and reduce infiltration of outdoor pollution into the home also seal pollutants inside the home.<sup>347</sup> Further, this change is likely to increase funding available for weatherization projects because mold is one of the most common reasons

---

<sup>347</sup> EPA, Energy Savings Plus Health: Indoor Air Quality Guidelines for Multifamily Renovations 4 (May 2021), [https://www.epa.gov/sites/default/files/2021-05/documents/epa-oria\\_multifamilyprotocols\\_2021\\_final\\_508.pdf](https://www.epa.gov/sites/default/files/2021-05/documents/epa-oria_multifamilyprotocols_2021_final_508.pdf); *see also* Haik & Hinderaker, *supra* n.329, at 384.

for deferring Weatherization Assistance Program funds.<sup>348</sup> In addition to ensuring PHAs prioritize residential health when undertaking energy efficiency measures, this rule change would instruct PHAs to look at cost effectiveness in a more holistic way by utilizing the social cost of carbon and, where available, information about healthcare savings attributable to specific home improvements. These principles would inform Capital Fund Program 5-Year Action Plans as well. Without these changes, the lack of investment in improving indoor air quality in public housing does not save money, so much as pass costs along to residents in the form of healthcare costs for pollution-related illnesses. Moreover, requiring that PHAs integrate these calculations into their planning documents will facilitate HUD oversight and guidance of the Capital Fund Program.

**24 C.F.R. § 905.300 - Capital fund submission requirements (*cont'd*)**

(6) Sequencing. In their PNAs, PHAs shall assign priorities among individual measures recommended in their energy audits in accordance with the following sequencing principles:

- (i) PHAs shall assign priorities among individual measures recommended in their energy audits in order of cost-effectiveness. As used in this section, cost-effectiveness means the amount by which the recommended measure will result in cost savings over the lifetime of the measure, discounted to present value, that equal or exceed the project cost of materials, installation, and maintenance. When calculating cost savings of measures that recommend replacement of fossil fuel-fired appliances with electric appliances, PHAs must include the social cost of greenhouse gases in their calculations. For recommended measures that will improve resident health, forecasted healthcare savings shall also be incorporated where reliable information pertaining to those projected savings is available. Except as necessary to protect human health, PHAs shall undertake improvements in descending order according to cost effectiveness.
- (ii) Notwithstanding the previous subsection, whenever practicable PHAs shall sequence capital expenditures in a manner that removes threats to indoor air quality, including but not limited to mold

---

<sup>348</sup> See U.S. Dept. of Energy, Deferrals Classification Guide and Tracker Template (May 5, 2022), available at <https://www.energy.gov/eere/wap/articles/deferrals-classification-guide-and-tracker-template> (listing many moisture and mold related reasons for deferral).

hazards, gas stoves and ranges, and lead paint, before undertaking energy conservation measures that reduce ventilation inside housing units.

(b) Capital Fund program submission requirements. At the time that the PHA submits the ACC Amendment(s) for its Capital Fund Grants(s) to HUD, the PHA must also submit the following items:

(1) CFP 5–Year Action Plan.

(i) Content. The CFP 5–Year Action Plan must describe the capital improvements the PHA will undertake within the subsequent 5-year period ~~necessary~~ to ensure long-term ~~physical and social~~ viability of the PHA's public housing developments, ~~including the capital improvements to be undertaken within the 5-year period, their estimated costs, status of environmental review, and any other information required for participation in the CFP, as prescribed by HUD.~~ In order to be entitled to fungibility, PHAs must have an approved 5–year Action Plan. Except in the case of emergency/disaster work, the PHA shall not spend Capital Funds on any work that is not included in an approved CFP 5–Year Action Plan and its amendments.

(A) Action Plans must estimate the cost of the capital improvements to be undertaken, describe the status of any applicable environmental reviews associated with the improvements, and provide any other information required for participation in the CFP, as prescribed by HUD.

(B) PHAs must prioritize capital improvements that will improve the health and safety of residents. In their Action Plans, PHAs shall provide a brief description of the health and safety benefits of each capital improvement the PHA plans to undertake over the course of the plan period.

(ii) Budget. The Capital Fund Budget for each of the 5 years shall be prepared by a PHA using the form(s) prescribed by HUD. Work items listed in the budget must include, but are not limited to, the following:

(A) Where a PHA has an approved Capital Fund Financing Program (CFFP) loan, debt service payments for the grants from which the payments are scheduled;

(B) Where a PHA has an approved CFFP loan, the PHA shall also include all work and costs, including debt service payments, in the CFP 5–Year Action Plan. Work associated with



the use of financing proceeds will be reported separately in a form and manner prescribed by HUD;~~or~~

- (C) Work affecting health and safety and compliance with regulatory requirements such as the National Standards for Physical Inspections of Real Estate; the Uniform Physical Condition Standards, 24 C.F.R. § 5.703, section 504 of the Rehabilitation Act of 1973 and HUD's implementing regulations at 24 CFR part 8, and the lead-based paint poisoning prevention standards at 24 CFR part 35, ~~before major systems (e.g., heating, roof, etc.) and other costs of lower priority; and~~
- (D) Items identified in the PHA's PNA.

... [(b)(1)(iii) – (b)(7)]

**D. Proposal D requires that each PHA's 5-Year Plan account for how it will electrify its existing public housing stock.**

As explained throughout Sections III, IV, and V, decarbonizing public housing through electrification will provide residents and housing providers with numerous health, safety, and financial benefits. Proposal D requires that PHAs include in their Capital Fund Program 5-Year Action Plans an electrification planning element that describes how the PHA will use its Capital Fund allocation to electrify its housing stock over the plan period. Electrification plans will help PHAs and HUD track their progress toward electrification to the fullest extent practicable, and help ensure PHAs are abiding by the sequencing principles outlined in Proposal C.

**24 C.F.R. § 903.6 - What information must a PHA provide in the 5-year plan?**

(a) A PHA must include in its 5-Year Plan a statement of:

... [(a)(1) - (3)]

(4) How the PHA plans to electrify its existing public housing stock over the 5-year period covered by the plan in accordance with 24 C.F.R. § 905.300(a)(6). Electrification plans must be informed by energy audits completed in compliance with 24 C.F.R. § 965.302 and include the following:

- (i) An accounting of fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, within the PHA's housing stock;

- (ii) A description of which properties will require electric panel upgrades or other capital expenditures as a prerequisite to full electrification, excluding only those fossil fuel-fired systems or appliances that are necessary as backup energy sources in Climate Zones 6, 7, and 8;
- (iii) Funding available for electrification through profits, grants, tax incentives, on-bill financing, loans, and federal assistance;
- (iv) A description of how the PHA will use available funds to electrify its housing stock over the period covered by the 5-Year Plan;
- (v) An accounting of funds needed to electrify the PHA's remaining housing stock to the standard described in subsection (ii);
- (vi) A certification that the PHA has complied with sequencing principles in 24 C.F.R. § 905.300(a)(6); and
- (vii) A description of the PHA's strategy for lowering resident utility bills, including, if applicable, a summary of how electrification projects have affected utility bills.

**E. Proposal E standardizes the energy audit process to ensure PHAs are receiving the information they need to undertake informed planning.**

At present, HUD regulations only require that PHAs undertake energy audits that comply with the applicable state law.<sup>349</sup> But in many states, energy auditors are not required to provide information about fuel-switching. Thus, without updated guidance from HUD, PHAs may miss electrification opportunities as well as information pertaining to rebates and other incentives. Further, they may miss opportunities to combine work projects in economical ways, such as doing intrusive, in-wall work like envelope upgrades and electric work at the same time to prevent duplication of repairs. Proposal E would require rigorous energy audits to inform every PHA's planning process.

Importantly, the proposed regulatory language requires that energy auditors provide information related to improving health and reducing resident utility bills in addition to simply electrifying. This more holistic

---

<sup>349</sup> 24 C.F.R. § 965.302.

approach to cost and harm reduction will provide PHAs with helpful information that they may not otherwise receive. For instance, though installing electric resistance heating may be the most affordable electrification option up front, overall operating expenses are generally higher than the costs associated with installing and operating a heat pump. An energy audit conducted in accordance with Proposal E would ensure housing providers understand the true costs and benefits of the available options. Proposal E would also make energy audit requirements more uniform across Federal programs by linking HUD's standards to those the Department of Energy uses for the Weatherization Assistance Program.<sup>350</sup> By adopting Proposal E, HUD would be helping to ensure all PHAs have access to the information they need to engage in beneficial electrification.

#### **24 C.F.R. § 965.302 - Requirements for energy audits**

All PHAs shall complete an energy audit for each PHA-owned project under management, not less than once every five years. PHAs shall submit a summary of the energy audit's findings to HUD as part of its PNA. Standards for energy audits shall be equivalent to State standards for energy audits. Energy audits shall analyze all of the energy conservation measures, and the payback period for these measures, that are pertinent to the type of buildings and equipment operated by the PHA.

- (a) At minimum, energy audits must:
- (1) Be performed by a HUD-approved energy auditor certified under the Building Performance Institute's Home Energy Professional certification program or another Department of Energy-approved certification program;
  - (2) Determine existing energy use and energy requirements of the dwelling unit from actual energy bills or by generally accepted engineering calculations;
  - (3) Provide recommendations for capital investments that will improve energy efficiency, lower utility bills, and benefit resident health, including significant heating and cooling needs, in compliance with 10 C.F.R. § 440.21(d)-(f);

---

<sup>350</sup> See *id.* § 440.21.

(4) Where fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, are present, list the recommended capital investments and estimated costs necessary to remove and replace those systems and appliances with electric alternatives;

(5) For each recommended measure, compute the cost of fuel saved per year by taking into account the climatic data of the area where the dwelling unit is located, where the base temperature that determines the number of heating and cooling degree days (if used) reasonably approximates conditions when operation of heating and cooling equipment is required to maintain safe temperatures, and by otherwise using reasonable energy estimating methods and assumptions that are appropriate for the geographic location and dwelling type;

(6) For each recommended electrification measure, compute the approximate reductions in direct greenhouse gas emissions that would be achieved; and

(7) Treat the dwelling unit as a whole system by examining its heating and cooling system, its air exchange system, and its occupants' living habits and needs, and making necessary adjustments to the priority of weatherization materials with adequate documentation of the reasons for such an adjustment.

(b) For similar dwelling units without unusual energy-consuming characteristics, energy audits may be accomplished by conducting site-specific energy audits of a representative subset of these dwellings. PHAs must describe in their PNAs how the subset of similar homes was determined and the circumstances that require site-specific audits in place of a representative sampling.

**F. Proposal F establishes a graduated schedule for electrification to the greatest extent practicable.**

As explained throughout Sections III, IV, and V, decarbonizing public housing through electrification will provide residents and housing providers with numerous health, safety, and financial benefits. Moreover, electrification is necessary for HUD to comply with its obligation to ensure units receiving Federal assistance are decent, safe, and sanitary for residents. Accordingly, Proposal F establishes a graduated schedule for PHAs to electrify their portfolios. The 2040 deadline for electrification to the fullest extent practicable is fashioned after

Executive Order 14057, which requires Federal buildings to achieve net-zero emissions by 2045.<sup>351</sup> Given the government’s dedication to environmental justice, public housing residents—the majority of whom are members of racial and socioeconomic minority groups—should be first in line to benefit from electrification efforts.

Adopting Proposal F also compliments the wave of recently enacted state and local policies that require weatherization, decarbonization, and electrification. For instance, as of September 2022, 60 cities and counties across California have adopted building codes or ordinances that support the phase-out of fossil fuel-fired appliances.<sup>352</sup> These changes comply with California’s 2022 building energy efficiency standards, which require that new and altered residential construction be “electric-ready,”<sup>353</sup> properly ventilated, and capable of meeting strict envelope efficiency standards.<sup>354</sup> Additionally, the California Air Resources Board recently announced a ban on gas heaters, furnaces and water heaters in 2030.<sup>355</sup> Similarly, in New York City, Local Law 97 now requires that large buildings meet strict emissions standards and Local Law 154 prohibits gas hookups in new buildings.<sup>356</sup> In response, the New York City Housing Authority published its Climate Mitigation Roadmap, a data-driven strategic plan outlining the capital investments the Authority needs to substantially decrease its building portfolio’s greenhouse gas emissions.<sup>357</sup> Meanwhile, Boston, Massachusetts is operating under its Building Emissions Reduction and Disclosure Ordinance, which commits the city to net zero building emissions by

---

<sup>351</sup> Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, E.O. 14057 (Dec. 8, 2021), <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/12/08/executive-order-on-catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability/>.

<sup>352</sup> Kristiana Faddoul, *California’s Cities Lead the Way on Pollution-Free Homes and Buildings*, Sierra Club (Jul. 22, 2021), <https://www.sierraclub.org/articles/2021/07/californias-cities-lead-way-pollution-free-homes-and-buildings?amp=> (last visited Aug. 19, 2022).

<sup>353</sup> “Electric-ready” means buildings are equipped with the proper electrical panels and wiring to support a switch from fossil fuel-fired appliances to electric appliances.

<sup>354</sup> See CALIFORNIA ENERGY COMMISSION, BUILDING ENERGY EFFICIENCY STANDARDS FOR RESIDENTIAL AND NONRESIDENTIAL BUILDINGS 360-418 (chronicling the regulations that apply to multifamily buildings), [https://www.energy.ca.gov/sites/default/files/2022-08/CEC-400-2022-010\\_CMF.pdf](https://www.energy.ca.gov/sites/default/files/2022-08/CEC-400-2022-010_CMF.pdf).

<sup>355</sup> California Air Resources Board, *California Adopts Comprehensive Strategy to Meet Federal Ozone Standard in Next 15 Years* (Sept. 22, 2022), <https://ww2.arb.ca.gov/news/california-adopts-comprehensive-strategy-meet-federal-ozone-standard-over-next-15-years>.

<sup>356</sup> New York, N.Y., Local Law No. 97 (2019); New York, N.Y., Local Law No. 154 (2021).

<sup>357</sup> See generally New York City Housing Authority, *NYCHA Climate Mitigation Roadmap*, <https://www1.nyc.gov/assets/nycha/downloads/pdf/NYCHA-LL97-Whitepaper.pdf>.

2050.<sup>358</sup> Large building owners who do not meet reduction goals must pay compliance fees to the Equitable Emissions Investment Fund, which the city uses to “benefit Environmental Justice Populations and populations disproportionately affected by air pollution.”<sup>359</sup>

These policies are just a few examples of the decarbonization efforts already underway at the state, local, and individual PHA levels. Thus, by imposing a federal electrification mandate, HUD will not be overburdening PHAs so much as ensuring all public housing residents are equally protected regardless of geographic location, just as HUD did with its smoke-free rule.<sup>360</sup> Creating uniform requirements for electrification will also put housing providers on more equal footing and could even spur innovation and drive down costs, as was the case in New York City where the Clean Heat for All Challenge led to the development of a window unit heat pump that will soon be used in 30,000 public housing units.<sup>361</sup>

Proposal F’s schedule strikes a balance between the urgent need to mitigate the impacts of climate change for HUD’s most vulnerable residents and recognition that electrification is a significant undertaking that will require time. The rule’s “electrification to the fullest extent practicable” standard reflects that instances will arise where full electrification at a reasonable price is not yet possible to achieve without putting resident health and safety at risk. Likewise, the rule recognizes that PHAs should not be punished for failing to electrify where they have exhausted all funding avenues. Petitioners assert that this schedule will result in significant health and safety improvements, without adversely affecting housing providers or the supply of affordable housing. As technology advances and becomes more widely accessible, Petitioners encourage HUD to revisit the need for practicability exceptions to full electrification. Full electrification in all regions will likely be possible in the near future.<sup>362</sup>

---

<sup>358</sup> See, e.g., City of Boston, Ordinance Amending City of Boston Code, Ordinances, Chapter VII, Sections 7-2.1 and 7-2.2, Buildings Energy Reporting and Disclosure (BERDO), [https://www.boston.gov/sites/default/files/file/2021/12/Final%20Amended%20Docket%200775%20BERDO%202\\_0.pdf](https://www.boston.gov/sites/default/files/file/2021/12/Final%20Amended%20Docket%200775%20BERDO%202_0.pdf) (last accessed Aug. 31, 2022).

<sup>359</sup> *Id.*

<sup>360</sup> 80 Fed. Reg. 71,762, 71,765.

<sup>361</sup> NYSERDA, *Governor Hochul and Mayor Adams Announce \$70 Million Initial Investment to Decarbonize NYCHA Buildings as Part of Clean Heat for All Challenge* (Aug. 2, 2022), <https://www.nysersda.ny.gov/About/Newsroom/2022-Announcements/2022-08-02-Governor-Hochul-and-Mayor-Adams-Announce-Clean-Heat-for-All>.

<sup>362</sup> See Gartman & Shah, *supra* n.301 (describing heat pumps as suitable for cold climates); see also U.S. Dept. of Energy, *DOE Announces Breakthrough in Residential Cold Climate Heat Pump Technology* (June 17, 2022),

## **Subpart J – Electrification**

### **24 C.F.R. § 965.901 - Electrification Compliance Schedule**

- (a) PHAs shall electrify their housing portfolios to the fullest extent practicable in accordance with the schedule outlined in subsection (c). PHAs succeed in electrifying a unit to the fullest extent practicable when the unit is fully electrified except where fossil fuel-fired systems or appliances are needed as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, where full electrification would cause an infraction of any applicable physical condition standard, or where PHAs are unable to finance the upgrades after completing the consultations required by 24 C.F.R. § 905.300(a)(2)(vi).
- (b) PHAs may petition HUD for an extension to any applicable electrification deadline in the form and manner prescribed by HUD. HUD may grant such an extension upon a showing of good cause, including technical infeasibility or extreme financial hardship.
- (c) Electrification Schedules. Electrification plans shall provide a general timeline for capital expenditures necessary to achieve electrification to the fullest extent practicable in all PHA-owned and operated buildings. Electrification plans should allocate expenditures in accordance with the following schedule:
- (i) At least 25 percent of the total estimated cost of electrification to the fullest extent practicable by January 1, 2028;
  - (ii) At least 50 percent of the total estimated cost of electrification to the fullest extent practicable by January 1, 2033;
  - (iii) At least 75 percent of the total estimated cost of electrification to the fullest extent practicable by January 1, 2037;
  - (iv) 100 percent of the total estimated cost of electrification to the fullest extent practicable by 2040.
- (d) Electrification plans must reflect the PHA’s intent to comply with the requirements of 24 C.F.R. § 5.703.

---

<https://www.energy.gov/articles/doe-announces-breakthrough-residential-cold-climate-heat-pump-technology>

(announcing a cold climate heat pump prototype that delivers 100 percent heating at 5 degrees Fahrenheit, and declaring the agency’s continued dedication to supporting advances in cold climate heat pumps).

**G. PNA Cost Allocation: Include a new PNA cost in Operating Fund subsidies.**

Proposal G simply creates an explicit avenue for Congress to fund Green PNAs through the Operating Fund. This change is needed to prevent PHAs from taking on the upfront costs of beneficial electrification without adequate financial support.

**24 C.F.R. § 990.165 - Computation of project expense level (PEL)**

(a) Computation of PEL. The PEL is calculated in terms of PUM cost and represents the costs associated with the project, except for utility and add-on costs. Costs associated with the PEL are administration, management fees, maintenance, protective services, leasing, occupancy, staffing, and other expenses, such as project insurance and the costs associated with completing the physical needs assessment requirements set forth in 24 C.F.R. § 905.300(a). . . .

. . . [(b) - (i)]

**CAPITAL FUND LIMITATIONS**

**H. Proposal H institutes an in-kind replacement ban that disallows replacement of fossil fuel appliances with another fossil fuel appliance.**

Proposal H is a commonsense step to address the significant health and safety risks created by residential fossil fuel combustion. Reinforcing the need to electrify, Proposal H simply bans the replacement of a fossil fuel-fired appliance with another fossil fuel-fired appliance, unless using an electric appliance or system alone would create a health or safety deficiency. Proposal H also includes a temporary exemption of 21 days for emergency equipment replacements to avoid service interruptions throughout any permitting processes or other delays necessary to ensure continuous electric service. This is the lowest cost way to ensure beneficial electrification is being achieved at a steady pace.



## 24 C.F.R. § 905.202 - Ineligible activities and costs

The following are ineligible activities and costs for the [Capital Fund Program]:

... [subsections (a)-(j)].

(k) The purchase and installation of fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, including gas stoves and ranges, gas HVACs, and gas water heaters, unless the failure to install a gas-fired appliance would result in a violation of an applicable physical condition standard or substantially restrict the availability of public housing. Regardless of the preceding sentence, fossil fuel-fired systems and appliances may be used for no more than 21 days during emergency replacements where necessary to avoid service interruptions.

### **I. Proposal I extends the allowable financing term for Capital Fund expenditures to 30 years and allows pledges related to electrification, energy-efficiency, and climate preparedness to exceed 33% of future funding.**

In speaking to PHAs while developing these proposals, many PHA employees identified HUD's loan procurement rules as a barrier to electrification and modernization more generally. Public housing has been chronically underfunded for decades. More recently, Congress left the Capital Fund out of the list of entities eligible for much of the IRA's investment in green affordable housing.<sup>363</sup> Although Petitioners hope that the proposed rule changes can spark a discussion within Congress about the need to reinvest in public housing, the fact remains that PHAs are in dire need of more flexibility to accomplish the monumental task of getting public housing projects up to physical condition standards and preparing units for climate change. Accordingly, Proposal I extends the permitted financing term from 20 years to 30 years, allowing PHAs to take advantage of 25- and 30- year financing terms that are commonly offered for renewable energy loans and contracts. Additionally, Proposal I allows PHAs to temporarily spend up to 50 percent of their Capital Fund grants on electrification, energy efficiency, weatherization, and climate preparedness measures. These changes are necessary

---

<sup>363</sup> *Supra* n.275-278 and accompanying text.

in light of the urgent need to prepare for and mitigate against a climate crisis that is already occurring more rapidly than initially projected.

## 24 C.F.R. § 905.505 – Program Requirements

...[(a)-(f)]

(g) Need for financing.

(1) A PHA must complete the physical needs assessment requirements described at 24 C.F.R. § 905.300. ~~at the project level, in the form and manner prescribed by HUD that covers the PHA's entire public housing portfolio for the term of the financing and that takes into consideration existing needs and the lifecycle repair and replacement of major building components.~~ The activity to be financed must be identified as a need in the physical needs assessment.

(2) Based on the assessment under paragraph (g)(1) of this section, the PHA must demonstrate that the financing will not negatively impact the ability of the PHA to meet the ongoing needs of its public housing portfolio over the term of the financing. In making this demonstration, PHAs must reduce any projected future Capital Fund grants to account for planned or anticipated activities that would have the effect of reducing or otherwise limiting the availability of future Capital Fund grants. PHA projections must be detailed on the portfolio schedule form prescribed by HUD, and shall project a stabilized number of units (Stabilized Base Unit Count) to be reached in no more than 5 years after all planned or anticipated activities have been completed that would reduce future Capital Fund grants. PHAs must also take into consideration projected use of Capital Funds for other eligible activities under part 905, and may take into consideration alternative sources of financing that are available to help meet its needs.

...[(g)(3)—(h)]

(i) Debt Coverage Percentage.

(1) Except as stated in § 905.505(i)(2), a PHA shall not pledge more than 33 percent of its annual future Capital Fund grants for debt service payments, assuming level Capital Fund appropriations over the term of the debt obligation and any reduction attributable to activities projected by the PHA to occur during the term of the financing such as demolition, disposition, or conversion of public housing units or other

occurrences that could limit the availability of Capital Funds, including a voluntary compliance agreement. This percentage of Capital Funds dedicated for debt service, taking into account adjustments for activities that would reduce the receipt of Capital Funds, is called the “Debt Coverage Percentage.”

(2)

(i) A PHA may pledge up to 100 percent of any projected replacement housing factor (RHF) grants for debt service payments, provided that the pledge extends to the formula fund portion of its Capital Fund grants also, but that not more than 50 percent of its overall projected Capital Fund grants (including formula funds and RHF funds) are pledged. RHF projections shall account for any projected reductions in RHF over the term of the financing. Unless otherwise approved by HUD, PHAs shall be limited to sizing their loans based upon increments of RHF currently being received by the PHA. CFFP transactions pledging RHF funds shall include accelerated amortization provisions, requiring all RHF funds received by the PHA to pay debt service as those RHF funds are received. A RHF grant shall be used only to develop or pay financing costs for the development of replacement public housing units in accordance with § 905.10.

(ii) Until January 1, 2040, a PHA may pledge up to 50 percent of its overall projected Capital Fund grants (including formula funds and RHF funds), but any pledges above the 33 percent limit established by subsection (a) must go towards electrification, energy efficiency, weatherization, and climate preparedness measures intended to reduce utility costs for residents or comply with applicable physical condition standards.

(3) Subject to the reasonableness test in § 905.505(a)(2), PHAs may exceed 33 percent when pledging existing Capital Fund grants and RHF grants for the payment of debt service. Existing grants are grants that have been received by the PHA at the time of HUD's approval of the Capital Fund Financing Proposal.

(j) Terms and conditions of financing. The terms and conditions of all financing shall be reasonable based on current market conditions. The financing documents shall include the following, as applicable:

(1) Term. The term of the Capital Fund financing transaction shall not be more than ~~20~~ 30 years. All Capital Fund financing transactions shall be fully amortizing. Bridge loans and other short-term loans are permitted; however, unless otherwise approved by HUD, the CFFP Financing transaction may not be structured in a manner that generates program income.

... [(2)-(6)]

... [(k)-(m)]

(n) Applicability of other Federal requirements. The proceeds of the Capital Fund financing are subject to all laws, regulations, and other requirements applicable to the use of Capital Fund grants made under 24 CFR part 905, unless otherwise approved by HUD in writing. PHAs undertaking CFFP transactions shall be subject to the following requirements, which shall be further enumerated in a Capital Fund Financing Amendment to the Annual Contributions Contract (CFF ACC Amendment).

... [(1)-(5)]

(6) Prior to cumulatively reducing its inventory of public housing units by more than 5 percent of the Stabilized Base Unit Count, if, after the removal of units from inventory, the Debt Coverage Percentage under § 905.505(i)(1) would constitute more than 33 percent of future Capital Funds or 50 percent of future Capital Funds where at least 17 percent are dedicated to purposes listed under subsection (i)(2)(ii) of this part, the PHA shall prepay the financing such that the reduction in inventory shall not cause the Debt Coverage Percentage to increase above the applicable limit. If the reduction in inventory is required by law or public housing requirements, the prepayment is not required to be made prior to the reduction in inventory, but instead shall be made as soon as possible after the PHA becomes aware of the requirement of law or public housing requirements, but only to the extent that Capital Funds are not otherwise needed by the PHA to address the health and safety issues or other requirements of law in the PHA's public housing portfolio, all as determined by HUD. For PHAs that size their loans based upon the projected receipt of RHF funds, prior to undertaking an activity that will reduce its RHF units below the number of units projected in the Capital Fund Financing Proposal as required by § 905.505(i)(3), the PHA shall prepay its loan such that debt service does not exceed 100 percent of projected RHF after accounting for the reduction in RHF units, all as determined by HUD.

... [(o)-(p)]

## **UNIFORM PHYSICAL CONDITION STANDARDS UPDATES**

### **J. Proposal J updates the Uniform Physical Condition Standards to disallow gas-fired stoves, cooktops, and ranges beginning January 1, 2026.**

As discussed in Section II.A, gas-fired stoves, cooktops, and ranges release dangerous pollutants into the buildings where they are used. Moreover, gas infrastructure is a fire and explosion hazard. Importantly, these risks do not apply solely to the people doing the cooking—both pollution and fire escape the confines of the kitchen and may even travel to multiple units in multifamily homes.<sup>364</sup> Because gas stoves pose an immediate health risk, Proposal J updates the Uniform Physical Condition Standards to label gas-fired cooking appliances a health and safety deficiency as of January 1, 2026.

### **24 C.F.R. § 5.703 - Physical condition standards for HUD housing that is decent, safe, sanitary and in good repair**

... [(a) - (e)]

(f) Health and safety concerns. All areas and components of the housing must be free of health and safety hazards. These areas include, but are not limited to, air quality, electrical hazards, elevators, emergency/fire exits, flammable materials, garbage and debris, handrail hazards, infestation, and lead-based paint. For example, the buildings must have fire exits that are not blocked and have hand rails that are undamaged and have no other observable deficiencies. The housing must have no evidence of infestation by rats, mice, or other vermin, or of garbage and debris. The housing must have no evidence of electrical hazards, natural hazards, or fire hazards. The dwelling units and common areas must have proper ventilation and be free of mold, odor (e.g., propane, natural gas, methane gas), or other observable deficiencies. The housing must comply with all requirements related to the

---

<sup>364</sup> See Zhu et al., *supra* n.105, at 12, 24; EPA, *Indoor Air Quality in Multifamily Housing*, <https://www.epa.gov/indoor-air-quality-iaq/indoor-air-quality-multifamily-housing> (“Multifamily buildings pose unique indoor air quality (IAQ) challenges because pollutants may move from unit to unit and residents have limited ability to make changes to the building structure itself.”) (last accessed Sept. 12, 2022).

evaluation and reduction of lead-based paint hazards and have available proper certifications of such (see 24 CFR part 35).

(1) As of January 1, 2026, the presence of gas-fired stoves, cooktops, and ranges in units are a violation of the Uniform Physical Condition Standards.

**K. Proposal K updates the Uniform Physical Condition Standards to disallow fossil fuel-fired appliances beginning January 1, 2040.**

Just as gas-fired stoves pose an immediate risk to indoor air quality, residential fossil fuel-fired appliances like furnaces, water heaters, and clothes dryers pose an immediate risk to outdoor air quality and the climate. Moreover, piping gas to homes is a fire and explosion risk. Thus, Proposal K bans fossil fuel appliances from public housing and several other HUD-assisted properties by labeling the presence of those appliances a health and safety deficiency under the Uniform Physical Condition Standards. Recognizing that replacing all fossil fuel-fired systems and appliances with electric will take time and may not be practicable yet in all instances, Proposal K provides an extended timeline for compliance and an exception for where fossil fuel-fired appliances are necessary as a backup power source in cold climate regions<sup>365</sup> to prevent other health and safety deficiencies.

**24 C.F.R. § 5.703 - Physical condition standards for HUD housing that is decent, safe, sanitary and in good repair (*cont'd*)**

(2) As of January 1, 2040, the presence of fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, will be considered a violation of the Uniform Physical Condition Standards, except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency.

... [(g)]

---

<sup>365</sup> Here and throughout the proposed rules, Petitioners use Climate Zone 6, 7, and 8 as defined by ASHRAE Standard 169 to delineate cold climates that may require in-home fossil fuel combustion in the short term. *See generally* ASHRAE, CLIMATIC DATA FOR BUILDING DESIGN STANDARDS (2020), [https://xp20.ashrae.org/standard169/169\\_2013\\_a\\_20201012.pdf](https://xp20.ashrae.org/standard169/169_2013_a_20201012.pdf).

**L. Proposal L updates the Uniform Physical Condition Standards to require that units provide both heating and cooling beginning January 1, 2026.**

Recognizing that extreme heat is a growing and deadly problem across all parts of the United States, Proposal J labels the absence of in-unit cooling a health and safety deficiency. This measure is urgently needed to save lives.

**24 C.F.R. § 5.703 - Physical condition standards for HUD housing that is decent, safe, sanitary and in good repair (*cont'd*)**

(h) Temperature control. As of January 1, 2026, compliance with this section requires that units be equipped with systems that provide both heating and cooling.

**STABILIZING UTILITY COSTS**

**M. Proposal M creates an exception to the utility consumption incentive to keep the pursuit of energy efficiency from undermining electrification efforts.**

HUD's utility consumption incentive is a carrot and stick provision that adjusts a PHA's Operating Fund grant. The carrot element of the incentive allows PHAs that reduce their utility consumption levels to retain those savings. On the other hand, the stick provision forces PHAs that increase their utility consumption levels to pay for, or "absorb," the increased costs. Ordinarily, this rule rewards capital upgrades and resident education campaigns that promote energy efficiency. However, not all increased utility consumption is necessarily cause for punishment.

As discussed in Sections III through V, electrification will benefit resident health and lower costs in the long-term. But, at present, the utility consumption incentive could punish PHAs for electrification efforts that increase electric utility bills, even if those increases are attributable to replacing a fossil fuel-fired appliance with an electric equivalent. To remedy this problem, Proposal M creates an exception to the utility consumption incentive where PHAs can provide evidence to show increased electric costs are attributable to beneficial electrification efforts.

## 24 C.F.R. § 990.170 - Computation of utilities expense level (UEL): Overview

... [(a) - (b)]

(c) Payable consumption level. The payable consumption level is based on the current consumption level adjusted by a utility consumption incentive. The incentive shall be computed by comparing current consumption levels of each utility to the rolling base consumption level. If the comparison reflects a decrease in the consumption of a utility, the PHA shall retain 75 percent of this decrease. Alternately, if the comparison reflects an increase in the consumption of a utility, the PHA shall absorb 75 percent of this increase. However, under no circumstances will PHAs be required to absorb increased electric utility costs where the PHA demonstrates via receipts and utility bills that the increased electric utility costs are attributable to the replacement of fossil fuel-fired systems and appliances with electric systems and appliances.

... [(d) - (f)]

### **N. Proposal N creates an incentive for electrification where fossil fuel rates are higher than electric rates.**

HUD provides incentives to entice PHAs into undertaking measures to improve the energy efficiency of public housing projects. Presently, however, the regulations are devoid of incentives for beneficial electrification. Proposal N would incentivize electrification by granting PHAs the option to freeze the portion of their Operating Fund grant earmarked for electric and fossil fuel utility expenses. This will allow PHAs to benefit from replacing fossil fuel-fired appliances with electric appliances when fossil fuel rates are high. Proposal N essentially allows PHAs to continue receiving government assistance to pay high fossil fuel rates, even when the PHA is actually paying lower electric rates. This proposal will allow PHAs to retain the financial benefits of electrification, helping them to pay off loans for capital upgrades. This incentive ends in 2040 when PHAs will presumably have electrified to the fullest extent possible.



## **24 C.F.R. § 990.170 - Computation of utilities expense level (UEL): Overview (*cont'd*)**

(g) Optional UEL Freeze. PHAs shall be afforded the option to freeze or unfreeze their aggregated UELs for fossil fuel and electric utilities until January 1, 2040.

### **O. Proposal O transforms HUD's energy conservation incentives into a suite of incentives that support reducing energy burden for public housing residents.**

As Section III explains, low-income, communities of color pay the highest percentage of their incomes toward utility bills. HUD's regulations currently focus on energy conservation, but the agency must take additional action to lower energy burden for these communities. Proposal O focuses on reducing energy burden through several mechanisms. First, Proposal O extends the contract period for energy performance contracts to 30 years. Energy performance contracts allow housing providers to pay for capital upgrades with energy savings to avoid passing upfront costs on to residents. Second, Proposal O mandates PHA participation in EPA EnergyStar benchmarking where the PHA's utility provides information sufficient for the PHA to participate. Benchmarking is a helpful tool that compares energy consumption levels across similar buildings to help housing providers identify measures that can improve energy efficiency and lower energy bills. Third, Proposal O clarifies that HUD will not count community solar energy credits as income that could lower the amount of Federal assistance a unit is receiving. Proposal O also removes references to fossil fuel infrastructure, reflecting the intention to transition HUD-assisted properties to cleaner energy sources.

### **24 C.F.R. § 990.185 – Utilities expense level: Incentives for energy conservation/energy burden reductions.**

(a) General/consumption reduction. If a PHA undertakes energy conservation measures that are financed by an entity other than HUD, the PHA may qualify for the incentives available under this section. For a PHA to qualify for these incentives, the PHA must enter into a contract to finance the energy conservation measures, and must obtain HUD approval. Such approval shall be based on a determination that payments under a contract can be funded from reasonably anticipated energy cost savings. The initial contract period shall not exceed 30 years. The energy conservation measures may include, but are not limited to: Physical improvements financed by a loan from

a bank, utility, or governmental entity; management of costs under the performance contract; or a shared savings agreement with a private energy service company. All such contracts shall be known as energy performance contracts. PHAs may, with notice to HUD, extend an executed energy performance contract with a term of less than 30 years to a term of not more than 30 years, to permit additional energy conservation improvements without the reprocurement of energy performance contractors. The PHA must obtain HUD approval to extend the term of an executed energy performance contract beyond 30 years.

(1) Frozen rolling base.

... [(i)-(iii)]

... [(2)]

(3) Subsidy add-on.

(i) If a PHA qualifies for this incentive (i.e., the subsidy add-on, in accordance with the provisions of paragraph (a) of this section), then the PHA is eligible for additional operating subsidy each year of the contract to amortize the cost of the loan for the energy conservation measures and other direct costs related to the energy project under the contract during the term of the contract subject to the provisions of this paragraph (a)(3) of this section. The PHA's operating subsidy for the current funding year will continue to be calculated in accordance with paragraphs (a), (b), and (c) of § 990.170 (i.e., the rolling base is not frozen). The PHA will be able to retain part of the cost savings in accordance with § 990.170(c).

(ii) The actual cost of energy (of the type affected by the energy conservation measure) after implementation of the energy conservation measure will be subtracted from the expected energy cost, to produce the energy cost savings for the year.

(iii) If the cost savings for any year during the contract period are less than the amount of operating subsidy to be made available under this paragraph to pay for the energy conservation measure in that year, the deficiency will be offset against the PHA's operating subsidy eligibility for the PHA's next fiscal year.

(iv) If energy cost savings are less than the amount necessary to meet amortization payments specified in a contract, the contract term may be extended (~~up to the 20-year limit~~) if HUD determines that the shortfall is the result of changed circumstances, rather than a miscalculation or misrepresentation of projected energy savings by the contractor or PHA. The contract term may be extended only to accommodate payment to the contractor and associated direct costs.

(b) Rate reduction. If a PHA takes action beyond normal public participation in rate-making proceedings, ~~such as well-head purchase of natural gas~~, administrative appeals, or legal action to reduce the rate it pays for utilities, then the PHA will be permitted to retain one-half the annual savings realized from these actions.

(c) Utility benchmarking. ~~HUD will pursue benchmarking utility consumption at the project level as part of the transition to asset management. HUD intends to establish benchmarks by collecting utility consumption and cost information on a project by project basis. In 2009, after conducting a feasibility study, HUD will convene a meeting with representation of appropriate stakeholders to review utility benchmarking options so that HUD may determine whether or how to implement utility benchmarking to be effective in FY 2011. The meeting shall be convened in accordance with the Federal Advisory Committee Act (5 U.S.C. Appendix) (FACA). The HUD study shall take into account typical levels of utilities consumption at public housing developments based upon factors such as building and unit type and size, temperature zones, age and construction of building, and other relevant factors. Where a PHA's servicing utility provides energy data for benchmarking, the PHA will participate in benchmarking using Energy Star Portfolio Manager.~~

(d) Renewable capacity: Net metering credits from participation in community or on-site solar projects shall not be counted as resident income and shall not cause a decrease in utility allowances.

**P. Proposal P requires that PHAs update their utility allowance formulas to include common electric appliances and requires that utility allowance formulas be made public.**

Ensuring the health and safety of public housing residents requires not only a roof over their heads, but also functioning and affordable utilities to provide for temperature control, running water, and more. Thus, utility allowances are essential. However, many PHAs do not publicize the formulas they use to calculate utility allowances, and those that are publicized are often not based on realistic utility costs given the physical attributes

of the units they are assisting.<sup>366</sup> Proposal P aims to reduce energy burden and safeguard health and safety by requiring that utility allowance calculations be based on reasonable energy consumption for the particular unit. Further, Proposal P eliminates judgmental and unnecessary language from HUD's regulations. To support beneficial electrification efforts, Proposal P also clarifies the types of appliances and systems that PHAs should anticipate will be covered by electric bills. Finally, Proposal P reflects the universal cooling requirement by mandating that utility allowances include cooling costs. Notably, Proposal P covers not only public housing, but the Section 8 Housing Choice Voucher program as well.

#### **24 C.F.R. § 965.505 - Standards for allowances for utilities. (Public Housing)**

(a) The objective of a PHA in designing methods of establishing utility allowances for each dwelling unit category and unit size shall be to approximate the unit's reasonable consumption of utilities ~~by an energy conservative household of modest circumstances~~ consistent with the requirements of a safe, sanitary, and healthful living environment. PHAs shall make the method used to calculate utility allowance schedules publicly available on their websites and in their Admissions and Continued Occupancy Policies.

... [(b) - (c)]

(d) In establishing allowances, the PHA shall take into account relevant factors affecting consumption requirements, including:

- (1) The equipment and functions intended to be served by the allowance for which the utility will be used. For instance, electricity bills will increasingly include heating, air conditioning and cooking costs; ~~For instance, natural gas may be used for cooking, heating domestic water, or space heating, or any combination of the three;~~
- (2) The climatic location of the housing projects and projected climate change impacts specific to that location;
- (3) The size of the dwelling units and the number of occupants per dwelling unit;

---

<sup>366</sup> Venkatraman & Kumar, *supra* n.26, at 12.

- (4) Type of construction and design of the housing project;
- (5) The energy efficiency of PHA-supplied appliances and equipment;
- (6) The utility consumption requirements of appliances and equipment whose reasonable consumption is intended to be covered by the total resident payment;
- (7) The physical condition, including insulation and weatherization, of the housing project;
- (8) Temperature levels intended to be maintained in the unit during the day and at night, and in cold and warm weather; and
- (9) Temperature of domestic hot water.

~~(e) Costs attributable to air conditioning will be included in utility allowances. If a PHA installs air conditioning, it shall provide, to the maximum extent economically feasible, systems that give residents the option of choosing to use air conditioning in their units. The design of systems that offer each resident the option to choose air conditioning shall include retail meters or checkmeters, and residents shall pay for the energy used in its operation. For systems that offer residents the option to choose air conditioning, the PHA shall not include air conditioning in the utility allowances. For systems that offer residents the option to choose air conditioning but cannot be checkmetered, residents are to be surcharged in accordance with § 965.506. If an air conditioning system does not provide for resident option, residents are not to be charged, and these systems should be avoided whenever possible.~~

(f) At a minimum, PHAs must offer a utility allowance sufficient to cover energy consumption by the following equipment where present:

- (1) Solar photovoltaic technology;
- (2) Heat pumps for temperature control and water heating;
- (3) Induction cooktops;
- (4) Battery storage; and
- (5) Dehumidifiers.

(g) Utility allowances shall not be altered to account for on-bill utility credits, such as those from participation in community solar projects, that do not affect utility rates.

**24 C.F.R. § 982.517 - Utility allowance schedule. (Section 8)**

(b) How allowances are determined.

(1) The utility allowance schedule must be determined based on the typical cost of utilities and services paid by ~~energy conservative~~ households that occupy housing of similar size and type in the same locality. Schedules must be updated to account for variations in the equipment and functions intended to be served by a particular utility (e.g. electricity bills will increasingly include heating, air conditioning and cooking costs). In developing the schedule, the PHA must use normal patterns of consumption for the community as a whole and current utility rates. At a minimum, PHAs must offer a utility allowance for the following equipment:

(i) Solar photovoltaic technology;

(ii) Heat pumps for temperature control and water heating;

(iii) Induction cooktops; and

(iv) Battery storage.

(2) (i) A PHA's utility allowance schedule, and the utility allowance for an individual family, must include the utilities and services that are necessary in the locality to provide housing that complies with the housing quality standards. However, the PHA may not provide any allowance for non-essential utility costs, such as costs of cable or satellite television.

(ii) In the utility allowance schedule, the PHA must classify utilities and other housing services according to the following general categories: space heating; air conditioning; cooking; water heating; water; sewer; trash collection (disposal of waste and refuse); other electric; refrigerator (cost of tenant-supplied refrigerator); range (cost of tenant-supplied range); and other specified housing services. The PHA must provide a utility allowance for tenant-paid air-conditioning

~~costs. if the majority of housing units in the market provide centrally air conditioned units or there is appropriate wiring for tenant installed air conditioners.~~

(iii) Utility allowances shall not be altered to account for on-bill utility credits, such as those from participation in community solar projects, that do not affect utility rates.

(3) The cost of each utility and housing service category must be stated separately. For each of these categories, the utility allowance schedule must take into consideration unit size (by number of bedrooms), and unit types (e.g., apartment, row-house, town house, single-family detached, and manufactured housing) that are typical in the community.

(4) The utility allowance schedule must be prepared and submitted in accordance with HUD requirements on the form prescribed by HUD. Additionally, PHAs shall make the method used to calculate utility allowance schedules publicly available on their websites.

**Q. Proposal Q requires that landlords be transparent and accountable for condition deficiencies prior to assessing utility surcharges.**

HUD regulations permit PHAs to assign surcharges where residents are using excessive amounts of energy. However, at present, there is no requirement that the PHA provide residents with evidence to justify these surcharges. Similarly, existing regulations contain no protection for residents who are using additional appliances to remedy a physical defect for which the PHA is responsible. For instance, residents should not be charged surcharges for excessive electricity use resulting from an air conditioner when their unit temperature is upwards of 90 degrees Fahrenheit and their building has no central or in-unit cooling. Proposal Q requires that PHAs justify surcharges with utility meter data, and prohibits surcharges for energy use that is remedying a physical condition defect.

**24 C.F.R. § 965.506 - Surcharges for excess**

(a) For dwelling units subject to allowances for PHA-furnished utilities where checkmeters have been installed, the PHA shall establish surcharges for utility consumption in excess of the allowances. Surcharges may be

computed on a straight per unit of purchase basis (e.g., cents per kilowatt hour of electricity) or for stated blocks of excess consumption, and shall be based on the PHA's average utility rate. The basis for calculating such surcharges shall be described in the PHA's schedule of allowances. Changes in the dollar amounts of surcharges based directly on changes in the PHA's average utility rate shall not be subject to the advance notice requirements of this section. PHAs must provide residents with an itemized account of surcharges and checkmeter data justifying the additional charge.

(b) For dwelling units served by PHA-furnished utilities where checkmeters have not been installed, the PHA shall establish schedules of surcharges indicating additional dollar amounts residents will be required to pay by reason of estimated utility consumption attributable to resident-owned major appliances or to optional functions of PHA-furnished equipment. Such surcharge schedules shall state the resident-owned equipment (or functions of PHA-furnished equipment) for which surcharges shall be made and the amounts of such charges, which shall be based on the cost to the PHA of the utility consumption estimated to be attributable to reasonable usage of such equipment. No surcharge for resident-owned major appliances or use of optional functions of PHA-furnished equipment will be allowed where such appliance or equipment is being used to remedy a physical condition defect in the unit.

**R. Proposal R includes electrification measures as add-on expenses for calculating operating subsidy.**

HUD permits PHAs to request add-on expenses for Operating Fund subsidies to undertake improvements where funds are available. Additional government funds would be helpful in preventing electrification costs from burdening residents without adequate financial resources to pay for them. Proposal R creates an add-on option for work related to beneficial electrification.

**24 C.F.R. § 990.190 - Other formula expenses (add-ons)**

In addition to calculating operating subsidy based on the PEL and UEL, a PHA's eligible formula expenses shall be increased by add-ons. The allowed add-ons are:



...[subsections (a) through (i)]

(j) A PHA may request an operating subsidy for payments of principal and interest costs of loans procured to replace fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, with electric systems and appliances.

## **RESIDENT SUPPORT**

### **S. Proposal S requires that PHAs support resident efforts to remedy health impacts and provide information about housing-related health risks and remediation.**

Proposal S simply codifies a mandate that PHAs assist residents in making healthy changes to their homes where possible, including through advocating for resident needs in consultations the PHA must undertake to complete their Green PNAs. Proposal S also creates a requirement that PHAs disseminate information to residents when asked by HUD to do so. This mechanism can be used in the future to spread information about the benefits of electrification, how residents can prepare for climate-related extreme weather events, and other important health and safety notifications.

### **24 C.F.R. § 900.00 - Resident Support Services**

PHAs are obligated to provide the following support to residents of PHA-owned and PHA-leased projects:

- (a) PHAs shall take reasonable steps to support resident efforts to remedy adverse health impacts, including but not limited to:
- (1) Providing healthy home inspectors access to units;
  - (2) Permitting residents to replace fossil fuel-fired appliances and other unhealthy home fixtures where doing so will not adversely affect the property;
  - (3) Providing residents with information about utility bill assistance programs for which residents may be eligible; and
  - (4) Advocating for programs that will benefit residents in consultations with local governments and utilities;

- (b) When instructed by HUD, PHAs shall provide residents with educational information about common housing-related health risks, including how to avoid and remediate those risks.

### **GRANT PROGRAM REQUIREMENTS**

**T. Proposal T requires that Consolidated Plans describe anticipated impacts of foreseeable disasters on extremely low-income, low-income, and moderate-income residents.**

Consolidated Plans are planning documents used by jurisdictions that receive Housing Trust Fund, Community Development Block Grant, and HOME Investment Partnership funding. Because these Federal funds are being used to develop and rehabilitate housing for low-income residents, HUD has an obligation to taxpayers to ensure these funds are not being used in a manner that is unwise in the face of climate change. Many jurisdictions are already planning for climate change, so adding this element to the Consolidated Plan content requirements is unlikely to be an onerous task for most jurisdictions. However, Proposal T is necessary to ensure uniform protections for all residents regardless of their geographic location or the prevailing political attitudes of that jurisdiction toward climate change and low-income residents.

#### **24 C.F.R. § 91.215 - Strategic Plan**

(a) General. For the categories described in paragraphs (b) [Affordable housing], (c) [public housing], (d) [Homelessness], (e) [other special needs], and (f) [nonhousing community development plan] of this section, the consolidated plan must do the following:

- (1) Indicate the general priorities for allocating investment geographically within the jurisdiction (or within the EMSA for the HOPWA program) and among different activities and needs, as identified in tables prescribed by HUD.
- (2) Describe the rationale for establishing the allocation priorities given to each category of priority needs, particularly among extremely low-income, low-income, and moderate-income households;
- (3) Identify any obstacles to meeting underserved needs;

(4) Summarize the priorities and specific objectives the jurisdiction intends to initiate and/or complete during the time period covered by the strategic plan and how funds that are reasonably expected to be available will be used to address identified needs. For each specific objective statement, identify proposed accomplishments and outcomes the jurisdiction hopes to achieve in quantitative terms over a specified time period (e.g., one, two, three or more years), or in other measurable terms as identified and defined by the jurisdiction. This information is to be provided in accordance with guidance to be issued by HUD.

(5) Describe the anticipated effects of natural disasters (e.g. earthquakes, hurricanes, flooding, wildfires, and climate change-induced impacts) on extremely low-income, low-income, and moderate-income residents within the jurisdiction. The participating jurisdiction shall identify and commit to action items to prepare for and mitigate against these effects. All participating jurisdictions must update their plans in compliance with this subsection by January 1, 2025.

**U. Proposal U adds a definition of renewable energy systems to facilitate decarbonization efforts.**

Proposal U is necessary to ensure all jurisdictions participating in the HOME Investment Partnerships program are defining renewable energy systems in a consistent manner, thereby delivering benefits equally across the country. This particular definition is appropriate because it excludes systems that generate hazardous air pollution.

**24 C.F.R. § 92.2 – Definitions**

... [“Act” – “Reconstruction”]

Renewable energy systems means systems delivering energy generated by solar, wind, geothermal or hydropower resources.

... [“Single family housing” – “Very low-income families”]

**V. Proposal V explicitly allows jurisdictions to use HOME funds for costs related to electrification and installation of renewable energy systems as eligible for HOME financing and prohibits jurisdictions from using HOME funds for new fossil fuel connections.**

Given the health and safety harms attributable to in-home fossil fuel combustion, HOME funds should not be used to create new fossil fuel connections in assisted jurisdictions. Proposal V therefore prohibits Federal funds from benefitting the fossil fuel industry. Moreover, Proposal V makes explicit that jurisdictions may use HOME funds for electrification and renewable energy installation that will ultimately improve resident health and lower energy burden on low-income and marginalized communities.

**24 C.F.R. § 92.206 - Eligible project costs**

HOME funds may be used to pay the following eligible costs:

(a) Development hard costs. The actual cost of constructing or rehabilitating housing. These costs include the following:

(1) For new construction projects, costs to meet the new construction standards in § 92.251;

(2) For rehabilitation, costs to meet the property standards for rehabilitation projects in § 92.251;

(3) For both new construction and rehabilitation projects, costs:

(i) To demolish existing structures;

(ii) To make improvements and connections necessary for non-fossil fuel utilities and renewable energy systems including off-site connections from the property line to the adjacent street; and utility connections including off-site connections from the property line to the adjacent street; and

(i) To make improvements to the project site that are in keeping with improvements of surrounding, standard projects. Site improvements may include on-site roads and sewer and water lines necessary to the development of the project. The project site is the property, owned by the project owner, upon which the project is located.

... [(a)(4) - (c)]

(d) Related soft costs. Other reasonable and necessary costs incurred by the owner or participating jurisdiction and associated with the financing, or development (or both) of new construction, rehabilitation or acquisition of housing assisted with HOME funds. These costs include, but are not limited to:

... [(d)(1) - (8)]

**W. Proposal W allows HOME funds to cover costs related to assessing and remediating residential health risks, including healthy home visits.**

As discussed in Sections III and IV, healthy home interventions are an effective method of improving affordable housing and making such housing safe for residents. Thus, healthy home interventions are aligned with the purposes of the HOME Investment Partnerships program. Accordingly, Proposal W makes explicit that jurisdictions may use HOME funds for healthy home visits.

**24 C.F.R. § 92.206 - Eligible project costs (*cont'd*)**

(9) For acquisitions, the cost of consultations or audits to identify and remediate residential health risks, including but not limited to visits provided pursuant to the Maternal, Infant, and Early Childhood Home Visiting Program, 42 U.S.C. § 711, and home visits by a healthcare professional to identify asthma and allergy triggers.

**X. Proposal X requires that all new HOME projects be all-electric, and that all rehabilitation projects be all-electric to the extent feasible.**

As described in Sections III and IV, all-electric homes create major health and safety benefits for residents, developers, and property managers alike. Electrification is especially cost-effective in new construction and during substantial rehabilitations. Because HUD should not be giving Federal dollars to the fossil fuel industry, Proposal X requires that all new construction and rehabilitation projects funded by HOME be all-electric except for those that need fossil fuel-fired backup systems to meet peak demand, as may be necessary in cold climates.

**24 C.F.R. § 92.251 - Property standards**

(a) New construction projects.

... [(a)(1)]

(2) HUD requirements. All new construction projects must also meet the requirements described in this paragraph:

... [(i)-(v)]

(vi) Electrification. The housing must be free from fossil fuel-fired systems and appliances as defined in 24 C.F.R. § 905.108, except to the extent fossil fuel-fired systems are needed as backup in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169.

(b) Rehabilitation projects. All rehabilitation that is performed using HOME funds must meet the requirements of this paragraph (b).

(1) Rehabilitation standards. The participating jurisdiction must establish rehabilitation standards for all HOME- assisted housing rehabilitation activities that set forth the requirements that the housing must meet upon project completion. The participating jurisdiction's description of its standards must be in sufficient detail to determine the required rehabilitation work including methods and materials. The standards may refer to applicable codes or they may establish requirements that exceed the minimum requirements of the codes. The rehabilitation standards must address each of the following:

... [(i)-(x)]

(xi) Electrification. The standards of the participating jurisdiction must require that fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, be removed from HOME-assisted projects and replaced with electric systems and appliances during the course of the rehabilitation, except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency.

**Y. Proposal Y requires any new Community Development Block Grant new construction to be all-electric.**

As described in Sections III and IV, all-electric homes create major health and safety benefits for residents, developers, and property managers alike. Electrification is especially cost-effective in new construction and during

substantial rehabilitations. Because HUD should not be giving Federal dollars to the fossil fuel industry, Proposal Y requires that all new construction funded by a Community Development Block Grant be all-electric.

**24 C.F.R. § 570.207 - Ineligible activities.**

(a) The following activities may not be assisted with CDBG funds:

... [(1)-(3)]

(4) Electrification. CDBG funds shall not be used to assist in the construction of new buildings unless those buildings are free from fossil fuel-fired systems and appliances as defined in 24 C.F.R. § 905.108. CDBG funds shall not be used to purchase or install fossil fuel-fired systems or appliances to replace existing fossil fuel-fired systems or appliances.

**Z. Proposal Z explicitly allows Community Development Block Grant funds to go towards replacement of fossil fuel-fired systems and appliances with electric systems and appliances.**

As described in Section III and IV, all-electric homes create major health and safety benefits for residents, developers, and property managers alike. To encourage beneficial electrification, Proposal Z explicitly makes electrification measures eligible for Community Development Block Grant funding.

**24 C.F.R. § 570.202 - Eligible rehabilitation and preservation activities.**

... [(a)]

(b) Types of assistance. CDBG funds may be used to finance the following types of rehabilitation activities, and related costs, either singly, or in combination, through the use of grants, loans, loan guarantees, interest supplements, or other means for buildings and improvements described in paragraph (a) of this section, except that rehabilitation of commercial or industrial buildings is limited as described in paragraph (a)(3) of this section.

... [(b)(1) - (11)]

(12) Replacement of fossil fuel-fired systems and appliances, as defined in 24 C.F.R. § 905.108, with electric systems and appliances.

**AA. Proposal AA explicitly allows HTF funds to go towards non-fossil fuel utility work, upgrading to renewables. Prohibit HTF funds from going toward fossil fuel-fired systems and appliances.**

As described in Section IV, fossil fuel infrastructure is a health and safety hazard because it can lead to fires and explosions. Moreover, fossil fuel infrastructure will be largely irrelevant in the future due to electrification. Accordingly, Proposal AA disallows the use of HTF funds for new fossil-fuel utility connections, while explicitly allowing funds to continue being used for other utility connections.

**24 C.F.R. § 93.201 - Eligible project costs.**

HTF funds may be used to pay the following eligible costs:

... [(a)(1)-(2)]

(1) For both new construction and rehabilitation projects, costs:

(i) To demolish existing structures;

(ii) To make connections for non-fossil fuel utilities including off-site connections from the property line to the adjacent street; and  
~~utility connections including off-site connections from the property line to the adjacent street; and~~

(iii) To make improvements to the project site that are in keeping with improvements of surrounding, standard projects. Site improvements may include onsite roads and sewer and water lines necessary to the development of the project. The project site is the property, owned by the project owner, upon which the project is located.

... [(a)(4)-(c)]

(d) Related soft costs. Other reasonable and necessary costs incurred by the owner or grantee and associated with the financing, or development (or both) of new construction, rehabilitation or acquisition of housing assisted with HTF funds. These costs include, but are not limited to:



... [(d)(1)—(7)]

(8) For both new construction and rehabilitation, costs associated with upgrading fossil fuel-fired systems and appliances to electric systems and appliances. HTF funds may not be used to purchase or install fossil fuel-fired systems and appliances.

**BB. Proposal BB requires that new and rehabilitated Housing Trust Fund projects be free from fossil fuels to the extent feasible.**

As described in Section III and IV, removing fossil fuel-fired appliances from homes creates major health and safety benefits for residents, developers, and property managers alike. Electrification is especially cost-effective in new construction and during substantial rehabilitations. Because HUD should not be giving Federal dollars to the fossil fuel industry, Proposal BB requires that all new construction funded by the Housing Trust Fund be free from fossil fuels, except where fossil fuel-fired appliances are needed as backup in cold climates. Similarly, Proposal BB requires that Housing Trust Fund rehabilitation projects be all-electric, with the exception of those units in cold climates that need fossil fuel-fired backup systems.

**24 C.F.R. § 93.301 - Property standards.**

(a) New construction projects.

... [(1)]

(2) HUD requirements. All new construction projects must also meet the requirements described in this paragraph:

... [(i)]

(ii) Energy efficiency. The housing must meet the minimum standards set forth in the 2021 IECC/ASHRAE Standard 90.1-2019 or ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2020 or Enterprise Green Communities 2020 or ASHRAE 90.2-2018 for low-rise residential buildings. ~~the energy efficiency standards established pursuant to section 109 of the Cranston-Gonzalez National Affordable Housing Act (42 U.S.C. 12709).~~

(iii) Disaster mitigation. Where relevant, the housing must be constructed to mitigate the impact of potential disasters (e.g., earthquakes, hurricanes, flooding, wildfires, and other climate change-induced disasters), in accordance with State and local codes, ordinances, or other State and local requirements, or such other requirements as HUD may establish.

... [(iv) - (vi)]

(vii) Electrification. Newly constructed buildings must be free from fossil fuel-fired systems and appliances, , except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency.

(b) Rehabilitation projects. All rehabilitation that is performed using HTF funds must meet the requirements of this paragraph (b).

(1) Rehabilitation standards. The grantee must establish rehabilitation standards for all HTF-assisted housing rehabilitation activities that set forth the requirements that the housing must meet upon project completion. The grantee's description of its standards must be in sufficient detail to determine the required rehabilitation work including methods and materials. The standards may refer to applicable codes or they may establish requirements that exceed the minimum requirements of the codes. The rehabilitation standards must address each of the following:

... [(i) - (v)]

(vi) Disaster mitigation. Where relevant, the grantee's standards must require the housing to be improved to mitigate the impact of potential disasters (e.g., earthquake, hurricanes, flooding, wildfires, and climate change-induced disasters) in accordance with State and local codes, ordinances, and requirements, or such other requirements as HUD may establish.

... [(vii) - (x)]

(xi) Electrification. The standards of the grantee must require the replacement of fossil fuel-fired systems and appliances with non-fossil fuel-fired systems (e.g. electric), , except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency.

**CC. Proposal CC would extend healthy home benefits to residents in RAD conversions.**

RAD provides an excellent opportunity to promote beneficial electrification because of its popularity and intensive planning requirements. Though Congress initially capped RAD participation at 455,000 units, HUD generally considers the demonstration to be a success.<sup>367</sup> The President’s 2022 budget request called RAD the “primary mechanism for leveraging private sector funds to fund needed repairs,” and asked for 100 million dollars to expand the RAD program.<sup>368</sup> Thus, we can expect to see even further conversions of public housing to privately held, project-based assistance in the coming years. Moreover, project owners converting their units under RAD are already conducting capital needs assessments using HUD’s online CNA tool to identify critical repairs. Thus, it would be relatively easy for HUD to require that preparers label fossil fuel-fired appliances as critical repairs that must be identified during the assessments and docketed for upgrade, essentially prohibiting in-kind replacement.

Given the enthusiasm for RAD, it is imperative that HUD use its power over RAD contracts to ensure converted properties are undertaking beneficial electrification and climate preparation alongside other

---

<sup>367</sup> See HUD, RENTAL ASSISTANCE DEMONSTRATION 22-1 to 22-2, [https://www.hud.gov/sites/dfiles/CFO/documents/25\\_FY21CJ\\_RAD.pdf](https://www.hud.gov/sites/dfiles/CFO/documents/25_FY21CJ_RAD.pdf) (last accessed Sept. 9, 2022) (noting that RAD has helped to preserve and improve over 162,500 units and to implement over \$8.1 billion in rehabilitation and replacement construction); HUD, *FINAL REPORT: EVALUATION OF HUD’S RENTAL ASSISTANCE DEMONSTRATION (RAD)* 9 (June 2019), <https://www.huduser.gov/portal/sites/default/files/pdf/RAD-Evaluation-Final-Report.pdf> (“The results demonstrate that RAD enabled converted projects to finance construction to address rehabilitation needs and, in some cases, to address other short-term capital needs. Moreover, in absence of RAD, these projects likely would have experienced a significant increase in their rehabilitation and other short-term capital needs.”).

<sup>368</sup> HUD, FISCAL YEAR 2022 BUDGET IN BRIEF 11, [https://www.hud.gov/sites/dfiles/CFO/documents/2022\\_Budget\\_in\\_Brief\\_FINAL.pdf](https://www.hud.gov/sites/dfiles/CFO/documents/2022_Budget_in_Brief_FINAL.pdf) (last accessed Oct. 24, 2022).

capital improvements. RAD is specifically aimed at reducing the repair and modernization backlog in public housing, which means these properties will likely already be undergoing significant renovations. Failing to require electrification and weatherization measures at this juncture would be a wasted opportunity to expand the health and financial benefits discussed in Sections III through V to a growing number of HUD-assisted residents. Accordingly, in addition to the regulatory changes requested, Petitioners ask that HUD update its RAD guidance to require fossil fuel-free units to the extent feasible.

## **Rental Assistance Demonstration – Final Implementation, Revision 4-5**

### 1.4 Project Conversion Requirements and Financing Considerations

#### A. Conversion Planning Requirements

... [A.1 Capital Needs Assessment (CNA)]

2. Healthy Housing and Energy Efficiency. For all projects retrofitted under a RAD conversion, if systems and appliances are being replaced as part of the Work identified in the approved Financing Plan and RCC, PHAs shall utilize the most energy- and water-efficient options that are financially feasible and that are found to be cost-effective by the CNA described above. At a minimum, the scope of work for all retrofitted projects must include replacement of fossil fuel-fired systems and appliances with non-fossil fuel-fired alternatives, , except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency. The CNA will provide detailed analyses of energy-saving alternatives and other green building components, including payback and cost/saving analyses. The use of Energy Star®, WaterSense® or Federal Energy Management Program (FEMP)-designated products and appliances replacements, if any such designation is available for the applicable system or appliance, is presumed to be the minimum threshold for meeting such requirement. PHAs are strongly encouraged, for all RAD conversion projects, to scope rehabilitation and ongoing replacements that utilize the components that the CNA indicates make financial sense, and other components that the CNA indicates will improve indoor air

quality and/or reduce overall environmental impact where those components have little or no cost premium, consistent with the principles and best practices of the green building industry.

Where a PHA is planning to use a RAD conversion in conjunction with new construction, projects shall at a minimum meet or exceed the 2009 International Energy Conservation Code (IECC) for single family or low-rise multifamily properties (three stories or less) or the ASHRAE 90.1-2007 standard for mid- or highrise multifamily projects, or any successor codes that are adopted by HUD under the requirements of the Energy Independence and Security Act of 2007. All new construction projects shall be free from fossil fuel-fired systems and appliances, , except where fossil fuel-fired systems or appliances serve as backup power sources for units in Climate Zones 6, 7, or 8 as defined by ASHRAE Standard 169, or are otherwise necessary to prevent a separate health and safety deficiency. All new construction projects are encouraged to meet or exceed the requirements for Energy Star for New Homes or Energy Star for Multifamily High Rise buildings. Further, in new construction and applicable retrofit projects, HUD strongly encourages the use of industry-recognized, green building certifications, such as the US Green Building Council's LEED Rating System, Enterprise Green Communities Criteria, the National Green Building Standard, Green Globes, GreenPoint Rating, EarthCraft, Earth Advantage, Passive House, or Living Buildings.

### **Conclusion**

For the reasons stated herein, Petitioners formally request that HUD initiate a rulemaking process to codify the regulatory proposals advocated for in this Petition. Only by granting this request can HUD ensure it is providing residents with decent, safe, and sanitary housing that serves HUD's mission. Petitioners also respectfully request that HUD hold a public comment period to inform the agency's decision-making process on this Petition.

Sincerely,

**Public Health Law Center**

Lead Petitioner  
875 Summit Ave,  
St. Paul, MN 55105  
(651) 290-7506