

## POLICY MATTERS:

# Making Energy Upgrades Healthier for Residents, Workers, and Neighbors

**This paper summarizes a recent study about the prevalence of toxic chemicals in common building materials that are used in the retrofits of affordable multifamily housing. The study, *Making Affordable Multifamily Housing More Energy Efficient: A Guide to Healthier Upgrade Materials*, was sponsored by Energy Efficiency for All (EEFA), a partnership of more than 50 national, state, and local affordable housing, energy-efficiency, healthy building, consumer rights, and environmental justice organizations that are working together in 12 states to make multifamily housing affordable and healthy through energy efficiency. The report recommends the adoption of healthier insulation and air-sealing products and identifies policy changes at the state, federal, and local levels that can drive on-the-ground decisions to use healthier products to upgrade affordable multifamily properties in the United States.**

## Our Challenge

There is no question that investing in energy efficiency delivers substantial financial, health, and environmental benefits, particularly for poor-quality housing. What is far less understood and remedied, however, are the significant health risks that can come from the insulating and air-sealing materials usually used for energy-efficiency upgrades. These materials often contain persistent, bioaccumulative, or toxic chemicals that are suspected of being, or for which there is evidence that they are, allergens, irritants, developmental toxicants, endocrine disruptors, or carcinogens. A building's residents aren't the only ones endangered. These chemicals of concern can also pose threats over a product's life cycle to the workers who manufacture, install, and dispose of them. They can also threaten communities adjacent to their manufacturing facilities, as well as the broader environment.

Fortunately, while there is reason for concern about some of the materials used to make the buildings we live, work, and learn in energy efficient, there is also reason for optimism. Transparency about chemicals in building products is growing as chemical contents are disclosed through initiatives like the Health Product



Declaration and Declare. Innovative new products and improved versions of well-known products are regularly coming on the market. These developments often raise performance or decrease cost and may also improve the health profile of a product. The findings and recommendations described below would help to accelerate this encouraging trend toward the use of healthier building materials.



## Information About Healthier Materials Is Now Readily Accessible

EEFA's recent report, *Making Affordable Multifamily Housing More Energy Efficient: A Guide to Healthier Upgrade Materials*, provides a summary of current research on the chemical composition and potential health impacts of the materials commonly used to insulate and air seal multifamily structures. Halogenated flame retardants, formaldehyde-based binders, isocyanates, and phthalate plasticizers are some of the chemicals of highest concern commonly found in insulation and air-sealing products. The health effects of these chemicals include detrimental impacts on reproductive and developmental health, carcinogenicity, and the ability to cause or exacerbate asthma. Moreover, some of these chemicals persist and accumulate in the environment and in people and thus can have far-reaching, long-term impacts.

This report also ranks insulation and air-sealing materials from a health perspective and offers practical recommendations to help those involved in specifying upgrade materials and products select healthier products. The report authors recommend fiber glass and cellulose insulation be used whenever possible. They also recommend avoiding foam insulation, particularly those products, like spray foam, that undergo a chemical reaction on-site. For air-sealing applications, prefoamed materials like foam sealant tapes offer a healthier option for some uses. Acrylic-based sealants with low volatile organic compound (VOC) content are also highly ranked from a health perspective. Modified polymer and polyurethane sealants commonly contain phthalates and other chemicals of highest concern and the authors recommend avoiding these whenever possible.

## We Also Need Policy Change

Although choices of materials for energy-efficiency upgrades are driven by many considerations, those policies that shape standards and certifications at all levels of government have a significant impact and present opportunities for change. The report summarizes recent EEFA-commissioned research that posed the following three questions to energy-upgrade program coordinators, partnering contractors, and specific project teams in 12 states<sup>1</sup> with a wide range of climate and policy contexts:

- 1 What drives multifamily upgrade materials choices now?
- 2 How do healthier materials fit into the building standards and certifications that are commonly used?
- 3 How can we further promote the use of healthier materials in the affordable, multifamily housing sector through the building standards and certification processes?

These interviews led us to focus the bulk of our findings and recommendations on the most common and critical source of financing for new and renovated affordable housing, the state-administered Low-Income Housing Tax Credit (LIHTC). However, we also present recommendations for the federal Weatherization Assistance Program (WAP) and state regulatory and legislative policies and programs. We also point out opportunities for policy change at the local level.

## Our Findings

### Focus on the Low-Income Housing Tax Credit

We found that several factors primarily drive materials decisions for affordable, multifamily upgrade projects financed by the LIHTC:

#### SPECIFICATIONS

Uniformly, our interviewees cited energy performance level, not product type, as the parameter used for setting insulation and air-sealing specifications. For air sealing, this meant that work is generally specified by a measured reduction in air leakage or a target air-exchange level. For insulation, specifications focused on a certain R-value of either the insulation installed or the total targeted R-value. The better a product performed, the more likely a contractor was to rely on it in completing the work.

#### PURCHASING

It is challenging to influence purchasing decisions in a centralized manner. Independent subcontractors doing

specific parts of a retrofit, not the lead or sponsoring housing organization, make purchasing decisions. This means it is the subcontractor’s responsibility to choose healthier building materials, and any attempt to influence material selection must be undertaken early in the process to ensure all participants engaged in the work flow are well versed in healthy building materials. When alternative nonstandard products to meet health criteria are under consideration, the development community must lay the groundwork for addressing the concerns of those who must approve the designs, procure the materials, or both.

## GREEN BUILDING STANDARDS AND CERTIFICATIONS

State housing finance agencies (HFAs) administer the LIHTC program and develop criteria for awarding tax credits among competing projects. Many state HFAs require or encourage developers to follow green building standards as part of the selection criteria. The most commonly used green building standards in the target states’ LIHTC funding criteria are Enterprise Green Communities, LEED, and EarthCraft. While these standards require or encourage the use of some healthier building materials, each green standard could go much further to ensure that healthier building materials are used.

**TABLE 1. HOW HEALTHIER BUILDING MATERIALS HELP MEET STANDARDS REFERENCED IN LIHTC FUNDING CRITERIA**

Standard	Criteria	Required or optional	Points awarded for use of healthier materials
Enterprise Green Communities	<b>Low level- or no-VOC adhesives and sealants:</b> All adhesives and sealants (including caulks) must have VOC levels, in grams per liter, less than or equal to the thresholds established by the South Coast Air Quality Management District Rule 1168. (Section 6.1) <sup>i</sup>	Required	<b>Yes.</b> All those identified in the report as healthier sealant types conform to this standard, so the use of recommended materials can help a project meet this requirement.
	<b>Asthmagen-free materials:</b> Do not install products that contain ingredients that are known to cause or trigger asthma. Key products to avoid include insulation. Do not use spray polyurethane foam or formaldehyde-containing fiber glass batts. [4 points] (Section 6.10)	Optional	<b>Yes.</b> The points for asthmagen-free products are given only for avoiding the specific key products outlined in the criteria. The recommended product types do conform to the requirements laid out for key products, so use of recommended materials can help a project earn these optional points. All recommended types of insulation are commonly asthmagen-free, but some products in the recommended sealant types may contain astmagens.
LEED	<b>Disclosure:</b> The Materials and Resource section of the LEED v4 Certification concerning building products provides up to six points for meeting optional criteria, most of which include requirements for disclosure of chemical ingredients by using, for example, a Health Product Declaration.	Optional	<b>Maybe.</b> Not all manufacturers of identified healthier materials are providing disclosure in a format that conforms to the LEED requirements. To obtain points for disclosure, it is necessary to verify that the particular manufacturer of the recommended material discloses according to the LEED criteria.
	<b>Low-emitting products:</b> The requirements for insulation are in CA Section 01350. At least 90% of a component must meet the requirements to earn credit. [0.5 points]	Optional	<b>Maybe.</b> Many fiber glass products are certified to meet this standard. Cork insulation products and most cellulose insulation products do not have LEED certification. The recommendations in the report do not exactly conform to this metric because the focus has not been on emissions requirements.
EarthCraft	<b>Sealants and adhesives:</b> Use only interior sealants and adhesives that have a VOC content of 250 g/L or less. [2 points] (Section 2.8.3)	Optional	<b>Yes.</b> All air sealants identified as healthier sealant types conform to this standard.
	Do not install insulation that contains added urea-formaldehyde. [1 point] (Section 2.10.1)	Optional	<b>Yes.</b> Materials identified as healthier materials conform to this requirement.

## Recommendations for Strengthening Standards

Our recommendations for strengthening the green building standards embedded in the LIHTC funding criteria at the state level focus on four approaches: disclosure, red list, product category, and product optimization.

### DISCLOSURE

As a first step, green building standards should require the use of building materials made by manufacturers that disclose the chemical ingredients in their materials. Disclosure promotes more informed decision making and may encourage manufacturers to reformulate products to avoid having to disclose undesirable ingredients.

### RED LIST

Under this strategy, contractors must avoid all building materials containing any chemicals on a prohibited “red list.” Providing clear definitions of what chemicals to avoid makes it relatively simple to create incentive structures, whether through housing or efficiency funding sources or certification standards. Given that efficiency programs and standards usually specify the materials to be used for insulation and air sealing by performance level rather than by product type, adding prohibitions of specific ingredients to such performance levels could be relatively easy (in combination with the disclosure approach above). To be effective, red lists must evolve to include additional chemicals and chemical classes of concern as industry knowledge advances.

### PRODUCT CATEGORY

This approach provides incentives for LIHTC-funded retrofits to drive healthier choices by subsidizing some portion of the incremental cost of the healthier, more expensive option for those materials without a readily available nontoxic alternative. It is likely that as healthier products become more available, their cost will decrease. The incentives may be provided, for example, in a utility program or by awarding developers additional points in an LIHTC competition if they commit to using healthier materials.

### PRODUCT OPTIMIZATION

This approach, which would address hazards that have not yet been identified, requires that all ingredients in materials used for LIHTC-subsidized retrofits be assessed through a chemicals assessment protocol (e.g., GreenScreen For Safer Chemicals or the Cradle to Cradle assessment protocol).

With sufficient participation across industries, these four approaches can complement each other and ultimately lead to transforming the market for building materials

used for retrofits. The specifics of the chemical or product in question and its stage of market readiness will help determine which approach or combination of approaches are warranted. Finally, any approach to strengthening materials standards should focus on those product categories used the most, those to which humans are most likely to be exposed, and those for which alternatives are readily available.



## Opportunity: The Federal Weatherization Assistance Program (WAP)

The WAP, a U.S. Department of Energy (DOE) program, is a potential avenue for the introduction of healthier building materials in energy upgrades in multifamily buildings.<sup>2</sup> WAP helps the lowest-income households living in single and multifamily homes. While funded by the federal government, the program is administered at the state level by grantees, generally state agencies that are focused on either energy or poverty. State agencies then fund local community-based organizations to directly provide weatherization services or to contract with qualified contractors to provide such services. Under the American Recovery and Reinvestment Act of 2009 (ARRA), the DOE worked with state agencies to build capacity and capability to serve multifamily buildings. Federal funding has vastly diminished since ARRA, and this in turn has reduced resources available for multifamily buildings.

The WAP has a long history of leveraging significant state and utility resources to augment its federal base of funding. Partnerships with utilities are common, and can take the form of utility incentives to subsidize utility payment or full utility payment for some measures. These vary across the country by types of utilities and level of demand-side management programming required by regulators or offered by local utilities. In addition, the Federal Low Income Home Energy Assistance Program provides weatherization funding in nearly all states.

While most resources are focused specifically on cost-effective weatherization-related upgrades, some WAP funding has also been available for health and safety measures. Also, as part of its Weatherization PLUS initiative,<sup>ii</sup> DOE has encouraged states to partner with other local providers, such as lead reduction programs, to promote healthier and safer housing.

Materials used by the WAP network of providers must conform to standards outlined in an appendix to 10 CFR 440.<sup>iii</sup> These standards are most often based on existing product standards promulgated by organizations such as the American Gas Association, American National Standards Institute, American Society for Testing and Materials, National Electrical Manufacturers Association, and National Fire Protection Association. **There is no reference to health in any of the standards listed above.**

The Weatherization PLUS initiative offers an opportunity to promote change within the federal standards to include reference to the toxicity of products. So, allying with and mobilizing the network of interested groups that have promoted Weatherization PLUS is a logical first step for EEFA and its allies.

## Assess State-Level Opportunities

There are several state-level avenues for using policy or regulation to promote healthier retrofit materials. These avenues, which depend on the specific context, include the following:

- ✓ utility commission proceedings focused on requirements for building materials and cost-effectiveness testing;
- ✓ legislative committee hearings with oversight over public health, housing and community development, and energy policy;
- ✓ state building and energy code development, either when newly introduced or when poised for improvement and revision;
- ✓ professional certifications award decisions at the state level that focus on the building industry;
- ✓ state-owned or managed building improvement decisions and design changes to meet green certifications; and
- ✓ funding or financing allocation processes that could involve healthier materials specifications.

Advocates should look for opportunities in upcoming dockets for public utility commission proceedings, legislative committee schedules, and the public comment process used by state HFAs to solicit feedback on the criteria that determine which buildings will receive an LIHTC allocation award, i.e., the Qualified Allocation Plan (QAP).



## Local Opportunities

Finally, local governments can be early adopters of policy change, particularly if there are new initiatives related to energy, climate, or public health; desired certifications, such as the Living Building Challenge; or local building or energy codes that are scheduled for adoption or revision. Local governments can also help sponsor good-neighbor dialogues between companies and communities heavily affected by pollution and socioeconomic disparities.

## Summary

Decision making about energy upgrades in the affordable, multifamily housing sector occurs within a complex system with many competing demands and driving forces. Although market forces play a critical

role in driving materials decisions, there is clearly a place for public policy in moving toward healthier materials selection given the chemicals of concern present in many commonly used insulating and air-sealing products. This brief points to potentially powerful policy levers in the regulatory processes that shape the Low-Income Housing Tax Credit and the Weatherization Assistance Program, and in state and local decision making about codes, climate change, utility programs, public health, professional certifications, and public buildings.

Industry dialogue is crucial to the success of efforts to encourage the use of healthier materials, and EEFA can help to spur and convene conversation on the topic.

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We envision a future when upgrades not only make buildings energy efficient, but also create living environments that promote the health and well-being of residents, installation workers, and broader communities affected by materials manufacture, production, and disposal.

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1 Information was received from the EEFA states of California, Illinois, Michigan, Minnesota, Rhode Island, Maryland, Louisiana, Virginia, Georgia, New York, and Pennsylvania and the non-EEFA states of Texas, Alaska, and Washington. These states cover International Energy Conservation Code climate regions 2-7. No information was collected for the EEFA state of Missouri, but the other respondents cover the climate regions found in Missouri.

2 Basic information on the WAP at the federal level is available at <https://www.energy.gov/eere/wipo/weatherization-assistance-program>.

i. Rule 1168. Adhesive and Sealant Applications (South Coast Air Quality Management District, 2017), <http://www.aqmd.gov/docs/default-source/rule-book/outdated-sip-rules/rule-1168-adhesive-and-sealant-applications.pdf>

ii. Weatherization Plus 2015 (Weatherization Assistance Program Technical Assistance Center), <https://nascsp.org/healthy-homes/weatherization-plus-health> (January 15, 2018).

iii. Part 440 - Weatherization Assistance for Low-Income Persons (Electronic Code of Federal Regulations), [https://www.ecfr.gov/cgi-bin/text-idx?SID=a1dbec521f24b81c3abb1cc58008c423&mc=true&node=ap10.3.440\\_130.a&rgn=div9](https://www.ecfr.gov/cgi-bin/text-idx?SID=a1dbec521f24b81c3abb1cc58008c423&mc=true&node=ap10.3.440_130.a&rgn=div9) (August 24, 2017).



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