COMMUNITY CHANGE GRANTS
Environmental and Climate Justice
U.S. Environmental Protection Agency

EnDyna

Climate Action Strategy 3: Energy-Efficient, Healthy, and Resilient Housing and Buildings

Energy-Efficient, Healthy, and Resilient Buildings 101

Energy-efficient homes (including multi-family housing units) and buildings use less energy to heat, cool, or run appliances and electronics. A healthy home or building is dry, clean, safe, properly ventilated, and free of pests and contaminants. Resilient housing and buildings refer to those that can resist, recover from, and adapt to harmful effects of climate change or natural disasters. Homes and buildings that are energy-efficient, healthy, and climate resilient help occupants experience safe temperatures and safe indoor air quality. These structures also have lower greenhouse gas emissions and reduced energy costs relative to average homes and buildings. There are many ways to improve building energy-efficiency, climate resilience, and indoor air quality, but the following are some common approaches:

Electrification: Replacing building appliances and systems with electric power instead of power created from fossil fuels (such as home heating with oil or cooking with natural gas).

Cool roof: Roofing materials that absorb less heat from the sun than traditional roofing materials. A cool roof can lower the temperature of a building, just as wearing light-colored clothing keeps you cool on a sunny day.

Low- or zero-emission technologies: Technologies that produce few or no greenhouse gas emissions and can make homes and buildings more sustainable.

Ventilation: Exchange of indoor and outdoor air. Without proper ventilation, a well-insulated and air sealed home can have unsafe indoor air quality due to trapped pollutants such as carbon monoxide or radon.

A house with energy-efficient features

Energy-Efficient, Healthy, and Resilient Housing and Buildings

Efficient and Resilient Building Solutions for Community Challenges

High Energy Burden

Community Challenges	Possible Solutions

Low-income communities spend a larger proportion of their income on energy costs than higher income communities. This energy burden can cause some households to cut down on spending on nutritious food and important healthcare in order to pay their energy bill.
• Climate change is making weather more extreme, driving up energy demand during events such as a polar vortex or a prolonged heat wave. Those who cannot afford to increase energy spending will go without heating or cooling their home to a safe temperature. This raises their risk of illnesses related to cold stress or heat stress such as hypothermia or heat stroke.
	• Lower the energy burden by implementing energy efficiency measures. These will help to lower heating and cooling bills. These measures might include:
	  • Electrification of appliances and systems.
	  • Replacing old appliances with those that are ENERGY STAR®-certified.
	  • Installing smart thermostats for a more efficient heating, ventilation, and air conditioning (HVAC) system.
	  • Upgrading building insulation or windows. Increase quantity of insulation, especially for roofs, and replace single-paned windows with double- or triple-paned windows.
	  • Installing solar panels. Solar panels create electricity without harmful emissions.
	  • Installing or upgrading heating systems. For example, install or upgrade to tankless hot water heaters. These use less energy than traditional hot water heaters and reduce the demand for fossil fuels.

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Efficient and Resilient Building Solutions for Community Challenges

Health Risks from Poor Indoor Air Quality

Community Challenges	Possible Solutions

Indoor pollutants (such as asbestos, dust mites, mold, lead, radon, and carbon monoxide) are likely to be found in low-income communities with old or low-quality buildings.
• Health problems from long-term exposure to these pollutants varies by pollutant. Possibilities include asthma attacks; cancer; issues with the heart and lungs; and effects on vision, hearing, growth, intelligence, and learning.
	• Create a program to upgrade HVAC systems in homes to improve indoor air quality. This can include:
	  • Providing and installing high-efficiency particulate air (HEPA) filters
	  • Set aside funds to contract with an HVAC maintenance company to regularly clean the systems installed through this program.
	  • Provide households with portable, plug-in air cleaners or purifiers. This will be especially beneficial to homes that require structural repairs prior to HVAC system installation.

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Efficient and Resilient Building Solutions for Community Challenges

Heat Island Effects

Community Challenges	Possible Solutions
Buildings and streets hold on to the sun's heat longer than trees or streams and can create heat islands. • People living in poor housing conditions face a greater risk of heat-related illnesses. This is because of factors such as lack of air conditioning, small living spaces, and old buildings that do not have enough insulation in the roof and walls.	• Upgrade traditional roofs to cool roofs. • Increase the number of trees or plants surrounding homes and other buildings in the neighborhood. This could include at least one green roof or rooftop garden at a community center or other community building open to the residents. • Upgrade conventional pavement on sidewalks and driveways to cool pavements that reflect heat rather than absorb it.

Disclaimer: This document was created to help Community Change Grant applicants think through various potential solutions to the problems their community may be facing. All the listed "Community Challenges" and "Possible Solutions" are only examples. We did not attempt to list all possible challenges or solutions.

For more information on Energy-Efficient, Healthy, and Resilient Housing and Buildings, see EPA's Indoor Air Quality (IAQ), Heat Island Effects, and Energy Efficiency pages.

For more information on the Energy-Efficient, Healthy, and Resilient Housing and Buildings Climate Action Strategy, read Section I.G and Appendices C and F of the Notice of Funding Opportunity (NOFO).

For further questions regarding technical assistance, please contact EJ_TechAssist@epa.gov or call 1(800) 540-8123.

For questions regarding the Notice of Funding Opportunity (NOFO), please contact CCGP@epa.gov.

http://bit.ly/CCGTA