

Community Planning and Development Green Building Retrofit Checklist

Instructions

This Green Building Retrofit Infrastructure Checklist is derived from the U.S. Department of Housing and Urban Development (HUD) [Community Planning and Development Green Building Retrofit Checklist](#). It has been specifically adapted to align with the five eligible rehabilitation activities and another option under the Office of Community Development and Rural Affairs' Owner-Occupied Rehabilitation (OOR) program:

1. Roof Repair or Replacement
2. Heating and Cooling (HVAC) Replacement
3. Water Heater Replacement
4. Select Lighting and Electrical Upgrades
5. ADA Accessibility Upgrades
6. Other Options

The checklist prioritizes energy-efficient and cost-effective measures and eligible scope items for an OOR project, including but not limited to insulation, air sealing, the installation of ENERGY STAR-certified equipment, and referrals to supplementary energy savings programs. It is important to note that not all checklist categories will be applicable to every grant proposal.

Applicants are required to submit a clear and concise narrative within the [Form OOR-001 CDBG Owner Occupied Program Specific Form](#). This narrative must detail the methodology for complying with the checklist standards and describe the procedures for collecting and submitting the necessary verification documentation. Supporting attachments should be included to substantiate the claims made in the narrative. Failure to provide a credible and complete justification may result in the denial of incentive points.

Green Building Checklist

A. Roof Repair or Replacement

Roof repair or replacement activities present an opportunity to incorporate green infrastructure items. The following scope items are recommended and eligible costs to be included in OCRA's OOR projects to improve thermal performance, reduce utility costs, and energy efficiency for low to moderate income households.

☐ Radiant Barriers

- **Description:** Radiant barriers consist of reflective materials—such as foil or specialized sheathing—installed beneath the roof deck during replacement. These barriers are designed to reflect radiant heat, thereby maintaining cooler indoor temperatures during warmer seasons.
- **Requirements:**
 - Radiant barrier sheathing or foil must be installed during roof replacement. In Indiana, perforated barriers are required to prevent moisture accumulation. Integration with cool roofing systems is encouraged where feasible.
- **Expected Benefits:** May reduce cooling expenses by approximately 10–15%.
- **OOR Guidance:** Contractors should be instructed to use perforated radiant barriers appropriate for [Indiana's climate](#).

☐ Cool Roofs

- **Description:** Cool roofs utilize materials with high solar reflectance to minimize heat absorption. These may include specialized shingles or coatings certified by the Cool Roof Rating Council (CRRC).
- **Requirements:**
 - **Flat roofs:** Materials must reflect at least 65% of sunlight.
 - **Sloped roofs:** Materials must reflect at least 25% of sunlight.
- **Expected Benefits:** By reflecting sunlight, cool roofs lower cooling bills, extend the life of the roof, and contributes to mitigation of summer heat effect.
- **OOR Guidance:** Recommended only when budget permits. Optimal results are achieved when combined with insulation and proper ventilation.
- **Cost Note:** Installation is optional due to higher associated costs.

☐ Recycled Roofing Materials

- **Description:** Environmentally conscious roofing options include materials manufactured with recycled content, such as shingles or metal panels
- **Requirements:**
 - Choose shingles or metal with 20%+ recycled material for roof replacements.
- **Benefits:** Reduces landfill waste.
- **OOR Guidance:** Old roofing materials should be recycled during the replacement process.

☐ Water Management (Gutters)

- **Description:** Proper gutter installation or repair that ensures effective rainwater diversion from the structure to permeable surfaces such as lawns or gardens.
- **Requirements:**

- Gutters must be configured to direct water away from storm sewers and toward permeable ground areas
- **Expected Benefits:** Protects the building foundation and minimizes stormwater runoff.
- **OOR Guidance:** When feasible, pair gutter upgrades with the use of recycled roofing materials to maximize retrofit.

B. Heating and Cooling (HVAC)

Heating and cooling system upgrades under the Owner-Occupied Rehabilitation (OOR) program are designed to enhance energy efficiency, improve indoor comfort, and ensure safe operation. The following scope items are recommended and eligible costs to be included in OCRA's OOR projects during HVAC-related rehabilitation activities.

☐ **ENERGY STAR Heating & Cooling Equipment**

- **Description:** Install high-efficiency furnaces, heat pumps, or air conditioning units that meet ENERGY STAR standards to reduce energy consumption.
- **Requirements:**
 - All newly installed HVAC units must be ENERGY STAR certified (SEER2/AFUE ratings).
 - Equipment sizing must be determined using Manual J calculations.
 - All accessible ductworks must be sealed and insulated
- **Expected Benefits:** Saves 10-20% on energy bills; improves comfort.
- **OOR Guidance:** Contractors must provide documentation of ENERGY STAR certification and Manual J sizing calculations as part of their bid submissions.

☐ **Safe Combustion Appliance Venting**

- **Description:** Proper venting of gas furnaces is essential to prevent indoor air pollution and ensure occupant safety.
- **Requirements:**
 - New gas furnaces must utilize power-vented or direct-vent systems.
- **Benefits:** Safer home; better efficiency.
- **OOR Guidance:** Venting systems should be inspected during HVAC installation to confirm compliance.

☐ **Duct Sealing**

- **Description:** Sealing ductwork in forced-air systems minimizes air leakage and improves system performance.
- **Requirements:**
 - Ducts must be sealed to ENERGY STAR standards, achieving less than 10% leakage.
 - Acceptable sealing materials include mastic, mastic tape, or aerosol sealants.
 - Cloth-backed duct tape is not permitted.
 - Required for all HVAC replacements involving ducted systems.
- **Expected Benefits:** Up to 20% on energy savings; improves air flow and system efficiency.
- **OOR Guidance:** Conduct duct leakage testing before and after sealing. Apply insulation wraps to ducts located in unconditioned spaces.

☐ **Flooring or Crawl Space Insulation**

- **Description:** Insulating under floors and within crawl spaces helps retain heat and supports HVAC efficiency, particularly where ductwork is present.

- **Requirements:**
 - Install insulation rated R-19 or higher against the subfloor.
 - Apply a 6-mil vapor barrier to cover 100% of the crawl space ground.
- **Expected Benefits:** Warmer floors; reduced risk of mold and moisture intrusion.
- **OOR Guidance:** Prioritize insulation upgrades in homes with vented crawl spaces. Consider spray foam insulation for enhanced sealing around ductwork.

☐ **Ventilation Improvements**

- **Description:** Add or upgrade ventilation systems helps remove indoor moisture and pollutants, contributing to healthier living environments.
- **Requirements:**
 - Install ENERGY STAR-rated exhaust fans during HVAC replacements.
 - Minimum airflow: 50 CFM for bathrooms; 100 CFM for kitchens.
 - All fans must be ducted to the exterior.
- **Expected Benefits:** Improved indoor air quality; reduced humidity and mold risk.
- **OOR Guidance:** Include ventilation upgrades when HVAC work affects bathrooms or kitchens.

☐ **Proper Sizing of HVAC Equipment**

- **Description:** Choose the right size for new HVAC systems to avoid wasting energy.
- **Requirements:**
 - Manual J calculations are mandatory for all HVAC replacements.
- **Expected Benefits:** Energy savings of 10–15%; reduced wear and tear on equipment.
- **OOR Guidance:** Require contractors to submit sizing documentation with their proposals.

☐ **Programmable or Smart Thermostats**

- **Description:** Install thermostats with programmable or smart features that allow homeowners to manage heating and cooling schedules efficiently.
- **Requirements:**
 - Must be included with ENERGY STAR HVAC installations.
- **Expected Benefits:** Enhanced energy savings; user-friendly controls and ability to sign up to energy savings with utility company.
- **OOR Guidance:** Strongly recommended as part of HVAC upgrades to maximize energy efficiency.

C. Water Heater Replacement

Water heater upgrades under the Owner-Occupied Rehabilitation (OOR) program are intended to enhance energy efficiency, improve safety, and reduce water and energy consumption. The following scope items are recommended and eligible costs for inclusion during water heater replacement activities.

☐ **ENERGY STAR Certified Water Heaters**

- **Description:** Installation of high-efficiency water heaters that meet ENERGY STAR standards that significantly reduces energy usage.
- **Requirements:**
 - ENERGY STAR-certified water heaters: Electric units must have an Energy Factor (EF) of 0.67 or higher.
 - ENERGY STAR-certified water heaters: Gas units must have an EF of 0.82 or higher.

- Where budget permits, tankless or solar-assisted models are preferred.
- All associated piping must be insulated with R-3 or greater insulation.
- **Expected Benefits:** May reduce water heating costs by up to 30%.
- **OOB Guidance:** If electrical upgrades are feasible, consider incorporating timers or recirculating pumps to further enhance efficiency.
- **Cost Consideration:** Due to higher costs, tankless or solar-assisted models may not be practical for all OOB projects; standard ENERGY STAR units offer a cost-effective alternative.

☐ **Pipe Insulation**

- **Description:** Insulate hot and cold-water pipes to minimize heat loss and accelerate hot water delivery.
- **Requirements:**
 - Insulate a minimum of six feet of both hot and cold-water piping from the water heater using R-4 insulation.
 - Include insulation under sinks and at water line connections located within exterior walls.
- **Expected Benefits:** Reduces energy loss and conserves water.
- **OOB Guidance:** Ensure that pipes are leak-free prior to pipe insulation.

☐ **Safe Combustion Appliance Venting**

- **Description:** Proper venting of gas water heaters is essential to prevent indoor air contamination and ensure safe operation.
- **Requirements:**
 - New gas water heaters must utilize power-vented or direct-vent systems.
 - Atmospheric venting systems are prohibited.
- **Expected Benefits:** Enhances household safety and improves efficiency.
- **OOB Guidance:** Venting systems should be inspected and verified during installation.

☐ **Mold Prevention**

- **Description:** Catch pans installed beneath tank-style water heaters help contain leaks and prevent water damage.
- **Requirements:**
 - Tank-style units must be equipped with a catch pan connected to a drain line that leads to an exterior location or approved waste receptor.
- **Expected Benefits:** Prevents structural damage and mitigates mold risk.
- **OOB Guidance:** Confirm that drainage systems are properly installed and functional during water heater replacement

D. Select Lighting and Electrical Upgrades

Lighting and electrical improvements under the Owner-Occupied Rehabilitation (OOR) program are designed to enhance energy efficiency and promote healthier indoor air quality. The following scope items are recommended and eligible costs for inclusion during electrical upgrade activities:

☐ **Energy Efficient Lighting Upgrades**

- **Description:** Replacing outdated lighting fixtures with high-efficiency alternatives significantly reduces electricity consumption and enhances lighting quality.

- **Requirements:**
 - Install ENERGY STAR-certified LED or CFL bulbs with a minimum efficacy of 2.0 lumens per watt.
 - At least 80% of newly installed indoor fixtures and all outdoor fixtures must be ENERGY STAR-certified or LED-rated with a minimum of 45 lumens per watt.
 - Incorporate occupancy sensors and dimmer switches where appropriate to further optimize energy use.
- **Expected Benefits:** Lighting energy consumption may be reduced by up to 75% compared to traditional incandescent bulbs.
- **OOR Guidance:** Smart lighting controls, such as dimmers and sensors, should be included during electrical upgrades to maximize energy savings and user convenience, if cost is permissible.

☐ **Low-VOC Materials in Electrical Work**

- **Description:** Utilizing low-volatile organic compound (VOC) materials during electrical installations helps maintain healthy indoor air quality and minimizes exposure to harmful emissions.
- **Requirements:** All wiring coatings, caulks, and adhesives used during electrical work must contain less than 50 grams per liter (g/L) of VOCs.
- **Expected Benefits:** Reduces potential health risks, including respiratory issues such as asthma; cost-effective and environmentally responsible.
- **OOR Guidance:** Require all contractor bids for electrical work to specify the use of low-VOC materials to ensure compliance with indoor air quality standards.

E. ADA Accessibility Up To The Threshold Of The Home

ADA accessibility up to the threshold of the home enhancements under the Owner-Occupied Rehabilitation (OOR) program aim to improve mobility and safety for residents while incorporating sustainable building practices. The following scope items are recommended and eligible costs for inclusion during ADA-related rehabilitation activities

☐ **Accessible Green Features**

- **Description:** Incorporating eco-friendly materials into accessibility improvements supports both durability and energy efficiency.
- **Requirements:**
 - Construct ramps using recycled composite materials.
 - Install remote control energy-efficient threshold lighting to enhance visibility and safety.
- **Expected Benefits:** Provides long-lasting accessibility solutions while reducing energy consumption. Estimated cost range: \$200–\$500.
- **OOR Guidance:** Apply universal design principles and prioritize the use of eco-friendly materials
- **Cost Consideration:** These upgrades are moderately priced; applicants should confirm alignment with available budget resources.

☐ **Low-VOC Materials in ADA Work**

- **Description:** Utilizing low-volatile organic compound (VOC) materials during ADA upgrades promotes healthier indoor air quality and minimizes exposure to harmful emissions.
- **Requirements:**
 - All caulks, paints, and adhesives used in ramp construction and related ADA improvements must contain less than 50 grams per liter (g/L) of VOCs.

- **Expected Benefits:** Reduces potential health risks, including respiratory conditions such as asthma; cost-effective
- **OOR Tip:** Require all contractor bids for ADA-related work to specify the use of low-VOC materials to ensure compliance with reduced harmful emissions standards.

F. Other Options

☐ Locally Sourced Materials

- **Description:** Utilizing materials sourced from regional suppliers, typically defined as within a 100-mile radius of the project site, supports environmentally responsible construction practices and strengthens local economies.
- **Requirements:**
 - This recommendation applies across all eligible rehabilitation categories, including roofing, HVAC, water heaters, electrical upgrades, and ADA accessibility improvements.
- **Expected Benefits:** Encourages local business development, reduces transportation-related emissions, and promotes regional economic growth.
- **OOR Guidance:** Require for all contractor bids to prioritize local materials for OOR projects.

☐ Educational Materials for Homeowners

- **Description:** Providing homeowners with educational resources allows them to participate in complementary state and federal programs that promote energy efficiency, safety, and overall well-being.
- **Requirements:**
 - Distribute concise and accessible materials such as brochures, one-pagers, and informational guides related to energy savings programs.
 - The local OOR program must establish clear policies outlining:
 - When educational materials will be provided
 - Who is responsible for dissemination
 - What specific content will be included
 - Materials should equip homeowners with practical knowledge to apply, identify eligibility to access additional funds to implement additional energy or water savings features.
 - Recommended programs include:
 - **Indiana Housing and Community Development:** [Weatherization Program](#)
 - **Indiana Housing and Community Development:** [Energy Assistance Program](#)
 - **Indiana Office of Energy Development:** [Indiana Energy Saver Program](#)
 - **Any other relevant state or federal funding programs**
- **Expected Benefits:** Expands access to resources for low- to moderate-income households, helping to ensure a safe, healthy, and energy-efficient home.
- **OOR Tip:** Program administrators are encouraged to coordinate with external agencies to identify and share the most relevant and up-to-date resources with participating homeowners.