



OCCH
OHIO CAPITAL
CORPORATION
FOR HOUSING

GREEN DEVELOPMENT COMPANION

Incorporating green elements into the construction process, although not an OhioMHAS requirement, has become common as people have an increased interest in environmental sustainability. From a practical perspective, green development features can lower the long-term operating costs of your project with a nominal or even no increase in construction costs. Green building materials can also have positive health benefits. Both the U.S. Department of Energy (<https://www.energy.gov>) and the ENERGYSTAR (<https://www.energystar.gov>) websites are a wealth of information for you to explore.



Helpful Hints:

Some municipalities may offer tax abatement programs for following certain green building standards. This may be something to research and consider.

Water conserving features

- Low flow fixtures can save you money by delivering a decreased amount of water without a loss of functionality. The following are guidelines for water flow of specific types of fixtures;
 - o Toilets: No more than 1.28 gallons per flush
 - o Urinals: No more than 0.5 gallons per flush
 - o Showerheads: No more than 2.0 gallons per minute
 - o Kitchen faucets: No more than 2.0 gallons per minute
 - o Bathroom faucets: No more than 1.5 gallons per minute

Appliances

- All appliances are recommended to be ENERGYSTAR* certified. ENERGYSTAR rated products use less energy, which will decrease your operating costs (<https://www.energystar.gov/products/appliances>).
- This does not apply to small appliances like a toaster.

HVAC

- To create a high level of energy efficiency, it is recommended for a furnace to be at least 90% efficient.
- Size and select heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manuals J and S or ASHRAE handbooks.
- You may wish to include a cage or fencing for exterior air conditioning condenser units to deter theft.

Lighting

- All lighting fixtures are recommended to be ENERGYSTAR certified. ENERGYSTAR rated products use less energy, which will decrease your operating costs (https://www.energystar.gov/products/lighting_fans).
- Use of compact florescent bulbs or LED is recommended. They use 25-80% less energy and last 3-25 times longer than incandescent bulbs (<https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/how-energy-efficient-light>).

Insulation

- Insulating your building can lead to lower energy bills, sound mitigation, and moisture control. The following guidelines are recommended to help you achieve those goals.
 - o **Water pipes:** Heat loss can occur as hot water travels from the tank to the faucet. Insulating the pipes will help to mitigate this as well decrease the possibility that water can freeze in your pipes during the winter.
 - o **Exterior walls:** The U.S. Department of Energy recommends a minimum of R-19 insulation for exterior walls in Ohio's climate. Traditional rolls or bats are fine, but blown insulation with recycled content is the gold star.
 - o **Attic:** The U.S. Department of Energy recommends a minimum of R-38 insulation for attics in Ohio's climate. Traditional rolls or bats are fine, but blown insulation with recycled content is considered to be the highest environmentally sustainable standard.
 - o **Doors:** ENERGYSTAR rated doors are recommended and have become the standard at home improvement stores. Windows and doors are the primary points of energy loss in a building.
 - o **Windows:** Install only windows that have NFRC ratings that meet or exceed the window requirements for ENERGYSTAR rating. Windows and doors are the primary points of energy loss in a building.

Flooring

- Use of non-vinyl, non-carpet floor coverings throughout the building is recommended. Such products have low levels of Volatile Organic Compounds (VOCs) VOCs and eco-friendly production methods.
- Use alternative flooring materials such as natural linoleum, ceramic tile, bamboo, cork or hardwood. Bamboo and cork in particular can be regrown very quickly.
- If you must use carpet, do not install it in areas where there is a preponderance of water, like near an entryway, the kitchen, or a bathroom. These high moisture areas will increase the likelihood of developing mold.
- The Pharos Project provides specifics regarding the environmental sustainability, health benefits, production methodology, and lifespan of these building materials at; <https://www.pharosproject.net/>.

Walls

- No Volatile Organic Compounds (VOCs) in your paint, primer, sealant, caulk or other coatings. Exposure to VOCs can create nausea, headaches, liver and kidney damage, and some are carcinogens.

- If no VOC products are not available, low VOC products can be substituted within the following recommended tolerances as established by the South Coast Air Quality Management District (SCAQMD) Rules 113 & 1168;

PAINT TYPE	MAXIMUM VOC LIMIT (g/L)
Primers & sealers	100
Coatings, flats & non-flats	50
Opaque floor coatings	50
Rest preventative coatings	100
Clear wood finishes	275

VOC LIMIT PRODUCT TYPE	MAXIMUM VOC LIMIT (g/L)
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesives	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Structural wood member adhesive	140
Architectural sealants, including caulk	250



Note: These products have become the norm at most home improvement stores but make certain you convey this to your general contractor.

Landscaping

- Strategically placed trees can create shade and help lower your energy usage. Other landscaping can slow or even prevent runoff, which minimizes the impact on the sewer system. This is something you should convey to your architect or contractor.

ADVANCED GREEN ELEMENTS

These items are a little more expensive than the aforementioned green items but could be included if you have room in your budget. They are very effective in lowering your operating costs and adding to the environmental sustainability of your project.

Tankless water heaters

- In lieu of a conventional hot water tank which must perpetually keep 30 or 40 gallons of water hot, this unit heats water at the faucet.
- Individual heating units are attached under your sink or at other supply line distribution points.

Solar Thermal

- If you do have a hot water tank, instead of heating it with natural gas or electricity, you can harness the sun's rays to heat your water. This requires the installation of a solar panel on your building's roof.

Photovoltaic

- These panels are installed on your roof and can use the sun to power your electric devices instead of electricity.
- Keep in mind that Ohio only has sunny or partially sunny days approximately 125 day a year, so do not expect to live "off the grid" anytime soon.

** Tax credits are available for a variety of ENERGYSTAR products. More information can be found here. https://www.energystar.gov/about/federal_tax_credits*