

Administration Rule 39
City of Missoula Environmentally Sustainable Building Policy

I hereby sign into effect Administrative Rule No. 39, City of Missoula Environmentally Sustainable Building Policy, this 1st day March, 2023, pursuant to Ordinance 2232 which authorizes the Mayor to develop and approve administrative rules.



Jordan Hess (Mar 1, 2023 22:11 MST)

Jordan Hess, Mayor

Source: Community Development Division
Community Planning, Development, and Innovation
Prepared by: Climate Action Specialist
Replaces: n/a
Applies to: All city departments/entities

CITY OF MISSOULA ENVIRONMENTALLY SUSTAINABLE BUILDING POLICY

Purpose

This policy seeks to improve the environmental sustainability of City of Missoula-owned buildings by establishing standards for the construction and major renovation of city buildings. This policy aligns with, and expands upon, the City's Energy Efficiency and Greenhouse Gas Reduction Policy for Municipal Buildings (Resolution 7241) and supports the City's goal of carbon neutrality in government operations by 2025 (Resolution 7753), the City-County joint commitment to 100% clean electricity by 2030 (Resolution 8329), and the City-County joint plan for a resilient community, Climate Ready Missoula (Resolution 8424), and the Our Missoula Growth Policy 2035.

Scope

This policy is applicable to all City departments and entities. Departments may apply additional requirements if they are equal to or more restrictive than these standards.

Administration

All departments working on new construction or major renovation projects are responsible for implementation of this policy. The City's Climate Action Team will be available as a resource upon request to advise city departments on the implementation of this policy. Exceptions to this policy must be approved by the City's Chief Operating Officer (COO).

Definitions

Embodied Carbon: The greenhouse gas emissions (primarily carbon dioxide) associated with the construction of a building, including extracting, manufacturing, transporting, and installing building materials.

Energy Use Intensity (EUI): A measure of the energy used per square foot of a building, typically reported in units of thousands of British thermal units per square foot per year (kBtu/ft²/yr).

Feasibility: The potential, capability, or likelihood of something being done or accomplished. Some of the standards outlined in this policy may be deemed infeasible by the department and/or the City's COO due to factors such as significant cost differentials, availability of technology, or significant barriers due to current infrastructure.

Major Renovation: The term major renovation is meant to encompass projects that meet one or more of the following criteria: 1) projects affecting over 2,500 square feet of a buildings floor plan with a reasonable potential for energy efficiency upgrades, 2) replacing 75% or more of building heating system, 3) replacing 75% or more of building cooling system, 4) replacing over 50% of the building lighting, 5) involving removal of over 50% of a building's roof, or 6) involving work on over 50% of a building's exterior walls. The term major renovation is not meant to cover cosmetic remodels, emergency repairs or regular maintenance.

Policy

The new construction and major renovation of city buildings will be required to meet the standards outlined below. Solicitations for architecture, engineering, and construction services shall reflect these standards.

Energy Use

In alignment with the city's Greenhouse Gas Reduction Policy for Municipal Buildings (resolution 7241), new construction and major renovation projects owned, occupied or leased by the City of Missoula, larger than 5,000 sq ft, must achieve a specified reduction in energy use intensity (EUI) at least as high or higher as those shown in the table below, relative to a baseline defined as a typical building of the same type normalized by climate zone.

Year of Completion of Construction/ Major Renovation Project	New Construction: Minimum Site EUI Reduction from Baseline	Major Renovation: Minimum Site EUI Reduction from Baseline
2022-2024	40%	25%
2025-2029	50%	30%
2030-2034	60%	40%

Year of Completion of Construction/ Major Renovation Project	New Construction: Minimum Site EUI Reduction from Baseline	Major Renovation: Minimum Site EUI Reduction from Baseline
2035 and beyond	75%	50%

Building-specific EUI targets for new construction/major renovation projects shall be determined using the Zero Tool (zerotool.org) or an equivalent methodology, based on the appropriate EUI reduction from baseline listed in the table above.ⁱ A baseline EUI is calculated using the Zero Tool which is based on median nationwide energy consumption data from the 2003 Commercial Building Energy Consumption Survey conducted by the U.S. Energy Information Administration, normalized by climate, weather, building type, size, and occupancy.ⁱⁱ

Renewable Energy

The feasibility of incorporating on-site renewable energy generation, such as rooftop solar, will be investigated and documented for new construction and major renovation projects. On-site renewable energy generation will be incorporated into all projects for which it is determined to be feasible and may be used to help achieve the EUI target described above. This can be accomplished by calculating the building's EUI as purchased energy per square foot, excluding the estimated annual renewable energy generated on-site.

Electrification

Achieving the city's carbon neutrality goal will require a shift away from the use of natural gas and propane in buildings while transitioning toward use of cleaner, renewable energy. Currently, electrification is the primary path toward powering our buildings with the cleanest renewable energy. For covered projects, the feasibility of substituting or replacing natural gas or propane space and water heating systems with highly efficient, all-electric systems, will be investigated and documented. Highly efficient, all-electric systems must be incorporated into all projects for which it is determined to be feasible. In cases where full electrification is determined to be infeasible, systems shall be designed to accommodate future building electrification (for example, sizing heating coils for the low temperature hot water service characteristic of electric heat pump systems) and justification for an exception to full-building electrification will need to be provided to and approved by the COO.

Indoor Air Quality

For new construction and major renovations, heating, ventilation, and air conditioning (HVAC) systems will be designed and installed to enable filtration of wildfire smoke particular matter (PM2.5) during wildfire smoke events to ensure healthy indoor air quality for occupants.ⁱⁱⁱ In cases where designing and installing sufficient indoor air filtration is determined to be infeasible, justification for an exception will need to be provided to and approved by the COO.

Zero Emissions Vehicle Infrastructure

In alignment with the city's Vehicle Emissions Reduction Policy, and the Metropolitan Planning Organizations Long-Range Transportation Plan, new construction or major renovation of city facilities shall involve investigation and documentation of the need for development of zero emissions vehicle infrastructure, such as electric vehicle charging stations, bike parking infrastructure, etc., to serve city fleet vehicles and/or for public use. As determined feasible, zero emissions vehicle infrastructure shall be developed at all sites where needed to serve the current and/or future needs of city fleet vehicles and/or for public use. Through this practice, the city will model the same development considerations and practices that we encourage building owners throughout our community to adopt.

Embodied Carbon

To reduce embodied carbon, the city encourages the renovation of existing buildings when feasible as an alternative to new construction. In addition, both new construction and major renovation of city buildings will strive to minimize embodied carbon through the reuse of building materials and other low-carbon materials. Quantification of embodied carbon is encouraged and may be accomplished using a tool such as the Embodied Carbon in Construction Calculation (EC3) available at buildingtransparency.org or equivalent systems.

Deconstruction

To reduce greenhouse gas emissions associated with landfill waste, the city requires deconstruction rather than demolition of structures determined to have reached the end of their useful life. In cases where demolition is necessary, city staff must provide a clear explanation as to why deconstruction is not feasible to be approved by the City's COO.

Stormwater Management

To protect water quality, reduce flooding, and provide climate adaptability, green infrastructure shall be prioritized for stormwater management. Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. Best management practices like bioretention, rain gardens, and green roofs manage runoff on-site and treat it before it enters the stormwater system and are encouraged in new construction and major renovation projects.

Climate Resilient Landscaping

Climate resilient landscaping helps provide small wildlife habitat, infiltrates stormwater, and reduces erosion, among many other benefits. Appropriate plant species and placement should consider existing site conditions, micro-climate and design intent. A combination of climate resilient plant species, drought tolerant species, native plants, and flowering plants that provide habitat for pollinator species are to be prioritized for all landscape projects where plants will be

planted or replaced. Placement of landscape trees and wooded shrubs are encouraged on regularly occupied buildings that use HVAC temperature regulation to shade west and south aspects, providing cooling benefits through shading and evapotranspiration. Areas of turf that do not support active recreation are encouraged to be replaced with water-wise climate appropriate landscaping. Sites with existing native vegetation are encouraged to be preserved where possible. To support healthy soils, organic matter in landscape beds and turf areas shall be between 5% - 15% organic matter whenever possible. Eliminate compaction, when possible, on existing soils when used as planting medium.

Water Conservation Measures

Water conservation measures shall be incorporated into interior and exterior systems, unless determined infeasible and approved by the COO. Interior water conservation measures include and are not limited to, water efficient plumbing fixtures such as low-flow toilets and urinals, low-flow and sensored sinks, and water-efficient appliances. Exterior water conservation measures include and are not limited to, water efficient irrigation systems in combination with climate resilient landscaping, gray water/recycling systems and irrigation management.

Management of irrigation systems when feasible & appropriate shall limit watering to no more than three days per week with no watering times between 10 AM and 6 PM to reduce evapotranspiration. Irrigation water runoff from the landscape, pooling of water in the landscape, or spraying onto hard surfaces is not permitted. No watering during rain events (install rain sensors on irrigation systems) or during high wind events. As appropriate, outdoor irrigation systems shall all have a flow meter installed to monitor water consumption / irrigation efficiency. Irrigation systems shall be inspected monthly during the irrigation season to ensure efficient operation.

ⁱ Zero Tool, <https://zerotool.org/zerotool/>

ⁱⁱ U.S Energy Information Administration, Table C10. Consumption and Gross Energy Intensity by Climate Zonea for Non-Mall Buildings, 2003,
https://www.eia.gov/consumption/commercial/archive/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003html/c10.html

ⁱⁱⁱ ASHRAE, Planning Framework for Protecting Commercial Building Occupants From Smoke During Wildfire Events, <https://www.ashrae.org/File%20Library/Technical%20Resources/COVID-19/Planning-Framework-for-Protecting-Commercial-Building-Occupants-from-Smoke-During-Wildfire-Events.pdf>