

CITY OF CLEVELAND SUSTAINABLE MUNICIPAL BUILDING POLICY



CITY OF CLEVELAND
Mayor Frank G. Jackson



SUSTAINABLE CLEVELAND
TOGETHER, WE'RE BUILDING A THRIVING
GREEN CITY ON A BLUE LAKE

April 2013

Sustainable Municipal Building Policy

I. Policy Statement

The City of Cleveland shall incorporate green building practices into the siting, design, construction, remodeling, repair, maintenance, operation, and deconstruction of all City facilities. This citywide policy is expected to yield savings by efficiently managing energy, water, waste, and storm water, while improving the employee and visitor experience. Implementation of this policy is intended to result in:

- Significant savings through reduced utility costs
- Lower operation and maintenance costs
- Reduced impact on municipal infrastructure
- Creation of local, green jobs
- Enhanced environmental quality and decreased pollution
- Reduced greenhouse gas emissions and heat island effect
- Improved health, comfort, and productivity of building occupants
- Leadership by example for other building owners and other sustainable building stakeholders in Northeast Ohio

The Sustainable Building Policy outlines the minimum requirements that City departments and divisions must take to realize these benefits.

II. Background

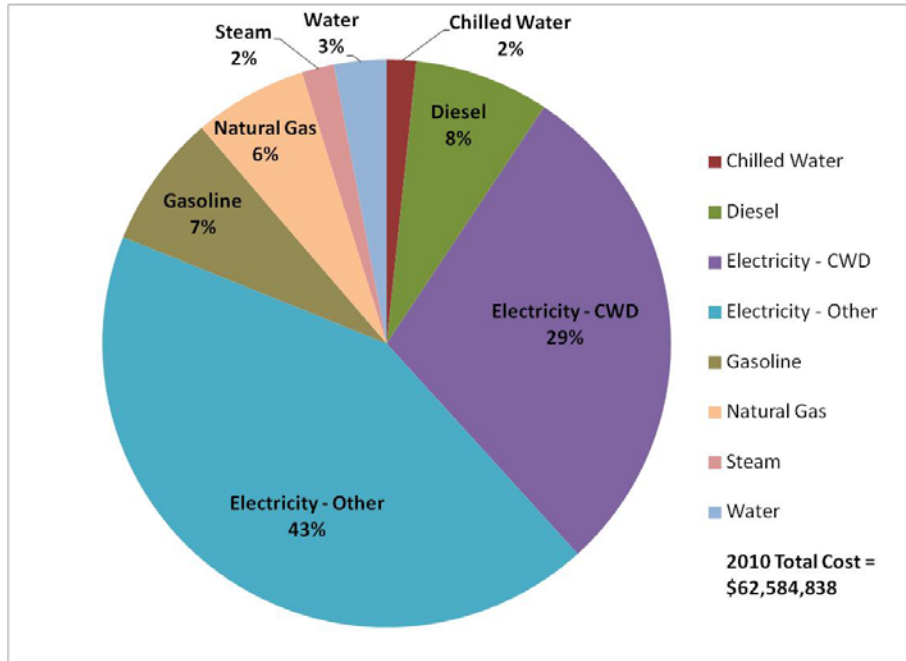
In May 2012, The City of Cleveland joined the Cleveland 2030 District and the Better Buildings Challenge. The 2030 District works to create a coalition of building owners, service professionals and community stakeholders working together to rapidly transform the built environment of the city through large-scale reductions in energy use, water use, and greenhouse gas emissions. The Better Buildings Challenge is a White House and Department of Energy initiative. As part of the Challenge, the City of Cleveland has committed to publicly share its energy data and reduce its building energy usage 20% by 2020, using a 2010 baseline.

Because of these commitments, the City of Cleveland has the following energy reduction and conservation goals:

- 20% reduction in building utility energy consumption by 2020, with incremental targets reaching 50% reduction by 2030
- 10% reduction in water consumption below the Downtown District buildings' average by 2015, with incremental targets reaching 50% reduction by 2030, and
- 10% reduction in greenhouse gas emissions below Downtown District buildings' average by 2015, with incremental targets reaching 50% by 2030.

Additionally, in June 2008, the City of Cleveland adopted a citywide Advanced Energy Portfolio Standard (AEPS) to ensure that 15% of Cleveland Public Power’s energy comes from advanced or renewable sources by 2015, 20% by 2020, and 25% by 2025.

The City of Cleveland spends more than \$50 Million annually on energy and utilities for its own operations. There are numerous opportunities to significantly reduce this number through cost-effective energy efficiency and conservation measures. Now is the time to take advantage of these opportunities by building off of recent progress in data collection and energy project implementation.



As a prime recipient of federal funding from the Energy Efficiency and Conservation Block Grant (EECBG) program, the City has initiated several energy and sustainability projects for City buildings and in the community. One of these projects is implementation of an organization-wide energy and utility data management system (EnergyCAP). This system allows the City to track and measure cost and consumption of energy as well as water, sewer, and fuel utilities. Initial data input capturing energy usage dating back to January 2010 is complete, with data validation currently taking place. As a result:

- the City can now utilize this data to benchmark utility use and costs against similar facilities,
- track the impact of specific energy and water conservation measures, and
- identify new savings opportunities.

The City currently has three new construction projects that have been built to Leadership in Energy and Environmental Design (LEED) certification standards. These include the Collinwood Recreation Center (Gold level certification), the Kirtland Pump (Silver level certification), and the Bike Rack (certification in process). The City also has multiple

LEED Accredited Professionals (APs) who understand the process for LEED certification. In addition, residents and developers seeking tax abatement for residential projects must meet the Cleveland Green Building Standards, which includes the option for utilizing LEED certification. Because of this momentum, it is time for the City to take the next, logical step in ensuring sustainable buildings and operations.

III. The Business Case for Sustainable Buildings

The most common reason given for not incorporating sustainable building practices into building designs is the initial cost premium. Studies show an average cost premium of 1-2% for LEED Silver certified buildings, and that a growing number of projects report no increase in cost to incorporate sustainable features. In Seattle, for instance, the premium for LEED Silver buildings has fallen from 3-4% in the late 1990s to under 2% today.

Green building is a proactive way to guard against the rising costs of materials, construction, waste removal, and energy. In fact, the long-term costs of not building green are substantial.

In 2011, the Government Services Administration evaluated 22 LEED Certified Federal Buildings and found that compared to national averages, the government buildings:

- Used 25% less energy
- Had 19% lower operating costs
- Rated 27% higher occupant satisfaction
- Reported 36% fewer carbon emissions¹

It is clear from dozens of studies that reasonable levels of sustainable design can be incorporated into most building types at little or no additional cost.² In addition, sustainable materials and systems are becoming more affordable, sustainable design elements are becoming widely accepted in the mainstream of project design, and building owners and tenants are beginning to demand and value those features.

In Summary:

- In the event up-front costs are higher for high performance green buildings, they can be recovered through utility and maintenance cost savings.
- Better buildings equate to better employee productivity.
- New technologies enhance health and well-being.
- Many financial incentive programs are available.
- Using best practices yields more predictable results.

¹ GSA Public Buildings Service Office of Applied Science Applied Research, Green Building Performance: A Post Occupancy Evaluation of 22 GSA Buildings, (August 2011) p.2.

² Davis Langdon, Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption, (July 2007) p. 4.

IV. Policy Requirements

Policy Strategy #1: The City of Cleveland shall plan, design, construct, renovate, operate, maintain, and deconstruct its occupied facilities and buildings to be sustainable whenever feasible.

Building Type

New Construction and Major Renovations

All occupied City-owned new construction and major renovations,³ including building additions, over 10,000 square feet, and entering the design phase after January 1, 2013, shall achieve LEED Silver certification or higher, and meet the following performance levels. All City-owned new construction under 10,000 square feet shall strive to achieve LEED Silver certification or higher and the following performance levels.

- a) Recycle at least 75% of all construction, remodeling and demolition waste.
- b) Use no potable water for building-related landscape irrigation, except for the first two years to establish plantings. Install a gray water collection system where feasible, and cost effective to implement and maintain, use native plantings, and capture rainwater for irrigation.
- c) For new construction, including building additions, reduce the energy use by at least 30 percent compared to the baseline building performance rating, per the most recently published American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE)/Illuminating Engineering Society of North America (IESNA) Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential.
- d) For major renovations, reduce the energy use by at least 20 percent below the pre-renovations baseline.
- e) New roofs and roof replacements shall be reflective/cool (if low-sloped), specify ENERGY STAR rated roof components, and incorporate one or more of the following sustainable roof solutions if feasible: Vegetative Roof, Solar Thermal Hot Water, and/or Photovoltaic Roof Systems.
- f) The design of new facilities and parking lots shall consider the incorporation of renewable energy systems to the maximum extent practicable, e.g. fuel cells, photovoltaic arrays, solar hot water, etc. Provided the systems are economically feasible, and cost effective to implement and maintain, project managers will incorporate renewable energy systems into the project. If the budget for the renewable energy systems is not specifically approved as part of the project, project managers will at a minimum include the installation of wiring and plumbing conduits to allow easy installation of renewable systems at a later time. Use of reflective pavement is also encouraged to mitigate heat island effect.

³ A “major renovation” takes place when the total cost of the renovation related to the building envelope or the technical building systems is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated.

- g) Install building level electricity and water meters to track and continuously optimize performance. Use equivalent meters for natural gas and steam when applicable. For major renovations and retrofits, install sub-meters to better track energy use reductions.
- h) Compare actual performance data from the first year of operation with the energy design target using ENERGY STAR® Portfolio Manager.
- i) All parking areas should offer preferential parking for carpools and fuel-efficient vehicles, provide sufficient bicycle parking, and when applicable, install alternative fuel and electric charging stations.
- j) Employ strategies citywide that reduce stormwater runoff and discharges of polluted water offsite, such as permeable pavement, vegetative roofs, bioswales, rain gardens, and other green infrastructure strategies, pending state and federal approvals as necessary. These strategies may allow the City to take advantage of the Northeast Ohio Regional Sewer District's Stormwater Fee Credit.
- k) Encourage "Clean Construction" provisions to reduce vehicular diesel emissions associated with construction projects.
- l) Consider renovating an existing building as opposed to undertaking a new construction project when the same building performance can be achieved in terms of operations and efficiency.

Tenant Improvements and Leased Spaces

- a) All interior improvement projects of City-owned spaces to be occupied by City employees shall achieve, to the greatest extent feasible, LEED for Commercial Interiors (CI) Silver certification at a minimum.
- b) When entering into leases for occupancy, including the renegotiation or extension of existing leases, the City shall include a preference for office space that is certified under ENERGY STAR, LEED, and/or an equivalent standard.

"Fix it First" Projects

Capital repairs to City facilities provide an opportunity to integrate energy efficiency and conservation into planned projects. In 2011, the City began prioritizing the repair and replacement of existing facilities. These "Fix it First" repairs can help the City meet its energy reduction and sustainability goals. The following minimum specifications apply:

- a) All new and replacement purchases of lighting (where the fixture allows), HVAC equipment, air compressors, motors, and refrigeration shall be eligible for rebates from applicable energy efficiency programs such as Efficiency \$mart. The Office of Sustainability can assist departments that install this equipment to apply for rebates.
- b) Roof replacements shall be reflective/cool (if low-sloped), specify ENERGY STAR rated roof components and incorporate one or more of the following sustainable roof solutions if feasible, and cost effective to implement and

maintain: Vegetative Roof, Solar Thermal Hot Water, and/or Photovoltaic Roof Systems.

- c) Use of reflective pavement is also encouraged to mitigate heat island effect.
- d) Appliances shall be ENERGY STAR rated or if a rating is unavailable, in the top 25% of energy efficiency for an appliance of its type.
- e) Employ strategies citywide that reduce stormwater runoff and discharges of polluted water offsite, such as permeable pavement, vegetative roofs, bioswales, rain gardens, and other green infrastructure strategies, pending state and federal approvals as necessary. These strategies may allow the City to take advantage of the Northeast Ohio Regional Sewer District's Stormwater Fee Credit in Enterprise Facilities.
- f) Where applicable, purchase water efficient products and services, including WaterSense® labeled products, and use contractors who are certified through a WaterSense labeled program. Examples of WaterSense labeled products include bathroom sink faucets, toilets, and urinals.

All Buildings

- a) All projects shall practice waste management strategies that minimize waste generation through prevention, preservation, restoration, salvage, reuse and recycling.
- b) Green building expertise shall be a criterion in selecting architectural and engineering firms. This may be shown through direct experience designing green buildings that meet LEED standards and familiarity with the certification process as well as inclusion of LEED Accredited Professionals. Green Building Specification and Consultant Selection Criteria should be tailored to standardize this requirement in all City projects to ensure consistency.
- c) All Departments shall use LEED for Existing Buildings: Operation and Maintenance (EBOM) to guide asset management, site maintenance, and capital improvements.
- d) To the greatest extent feasible, install a Building Automation Systems (BAS) for new construction, major renovations, and buildings with high energy use or complex systems.
- e) Employ commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met. Building Commissioning is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained. Commissioning shall be performed by an experienced commissioning provider.
- f) Aim to receive an ENERGY STAR® rating of 75 or higher for applicable buildings.
- g) Incorporate on-site renewable energy systems on City property, as practical.
- h) For City property slated for demolition, ensure that deconstruction is practiced to the greatest extent practical, whereby salvaged materials are re-used or re-cycled rather than disposed in landfills.

Policy Strategy #2: The City of Cleveland shall finance projects at a level suitable to meet the Policy requirements.

- a) The City will pursue federal, state and local incentives to facilitate the implementation of the Sustainable Building Policy for its own buildings.
- b) The City will fund building operation and maintenance strategies for its own buildings that support the implementation of this policy.
- c) The City seeks to utilize life-cycle costing to identify and prioritize projects for funding.
- d) The requirements set forth in the Sustainable Building Policy will be incorporated into capital improvement project cost estimates.

Policy Strategy #3: Directors and/or their assigned designees of all City Departments whose responsibilities include the design, construction, remodeling, repair, maintenance, operation, and deconstruction of City facilities shall be responsible for ensuring compliance with the adopted policies.

- a) Architecture, site development, engineering, and construction service contracts will reflect the policy goals and requirements.
- b) Capital project managers shall program budget and time for building operations and maintenance personnel to participate in the design and development phases to ensure optimal operations and maintenance of the building. Designers will be required to specify materials and systems that simplify and reduce maintenance requirements; require less water, energy, and toxic chemicals and cleaners to maintain; efficiently remove collected trash and recycling; and are cost-effective and reduce life-cycle costs.
- c) All appropriate project managers and maintenance and operations staff are responsible for pursuing green building training. The Mayor's Office of Sustainability will support and/or provide green building training to project managers, maintenance or facility managers and other project team members. The Office will encourage ongoing participation in green building professional organizations, conferences, trainings and other opportunities in order to expand expertise in green building.
- d) The Mayor's Office of Sustainability can provide technical assistance to help all City departments meet the requirements of this policy.

V. Exemptions

If the Director of a City department charged with planning or construction of a City building or facility determines that compliance with one or more policies set forth in Section IV above is uniquely cost prohibitive (due to site constraints, building or zoning regulations, or other unique conditions), the Director may request the Consultant Review Committee to approve an exemption from the policies. Uniquely cost prohibitive is defined as greater than 5% cost premium for LEED Silver certified buildings (the cost increase attributed to the inclusion of green features). If the cost premium exceeds 5%,

the Director is encouraged to include as many sustainable building practices as possible, and strive to achieve LEED at the “Certified” level, with 40-49 points. Directors may also request use of an alternative rating system to LEED if appropriate.

VI. Reporting

The Mayor’s Office of Sustainability shall include an annual update on the implementation of the Sustainable Municipal Building Policy in the Mayor’s Annual Report.

VII. Key Definitions

ASHRAE: a building technology society focused on developing standards for building systems, energy efficiency, indoor air quality and sustainability.

ENERGY STAR®: a U.S. Environmental Protection Agency (EPA) program that has developed specifications for energy efficient products in more than 60 product categories. EPA and the Department of Energy work together to develop standards that a product must meet to qualify. ENERGY STAR products typically use 10-75% less energy than conventional products. ENERGY STAR certification is also available for entire facilities. For many facility types one can rate building energy performance on a scale of 1–100 relative to similar buildings nationwide using Portfolio Manager, an interactive energy and water management tool.

HVAC: HVAC stands for heating, ventilation, and air conditioning, and refers to technology that improves indoor environmental comfort and air quality.

LEED Rating System: LEED, administered by the U.S. Green Building Council, stands for Leadership in Energy and Environmental Design, and is a voluntary, consensus-based, market-driven green building rating system. It is based on existing, proven technology and evaluates environmental performance from a "whole building" perspective. LEED is designed for rating a variety of building types, such as new and existing commercial, institutional, and multi-family residential buildings. It contains prerequisites and credits in five categories: Location and Transportation, Sustainable Sites, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Water Efficiency. There are four rating levels: Certified, Silver, Gold, and Platinum.

Major Renovation: A major renovation generally involves major HVAC renovation, significant envelope modifications, and major interior rehabilitation. In monetary terms, a “major renovation” means the renovations of a building where the total cost of the renovation related to the building envelope or the technical building systems is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated.

Photovoltaic Roof Systems: Photovoltaic modules are installed on roof systems and used as a power system. Installing photovoltaic systems can reduce overall utility costs.

Reflective Roof: a reflective (or cool) roof reflects more of the sun's rays. This can lower roof surface temperature by up to 100F, decreasing the amount of heat transferred into a building. Reflective roofs help reduce the amount of air conditioning needed in buildings, and can reduce peak cooling demand by 10-15 percent.

Sustainable Building: Sustainable (or green) building integrates building materials and methods that promote environmental quality, economic vitality, and social benefit through the design, construction and operation of the built environment. Sustainable design encompasses the following broad topics: efficient management of energy and water resources, management of material resources and waste, protection of environmental quality, protection of health and indoor environmental quality, reinforcement of natural systems, and integrating the design approach.

Vegetative Roof: a vegetative (or green) roof is a rooftop that is either partially or completely covered in vegetation on top of the human-made roofing structure. Vegetative roofs filter the air and water, produce oxygen, absorb heat and carbon dioxide, absorb rainwater which reduces stormwater runoff, insulate the building against external sound, and protect existing roofing, which reduces the number of replacements required and roofing waste.

WaterSense®: The EPA WaterSense program labels products that are independently tested to meet water efficiency and performance criteria. Labeling criteria have been established for plumbing fixtures and irrigation. Products that receive the WaterSense label are at least 20% more water efficient than conventional products. These products also reduce the amount of energy required to deliver and treat water.