

Culture Over Carbon— Codes & Policies Factsheet

National Museum of the American Indian

Federal, state, and local governments are using codes and policies to meet greenhouse gas (GHG) emission reduction and decarbonization goals. Cultural institutions should be aware of these codes and policies since they may be required to comply.

This factsheet covers common energy and low-carbon codes and policies for new construction and existing buildings and how they affect cultural institutions. The codes and policies are organized by the “point” when cultural institutions are more likely to intersect with the three phases of a building’s lifecycle, focusing on building operations first, construction and remodels, followed by federal regulations.

COMMON BUILDING CODES AND POLICIES BY THE PHASES OF A BUILDING’S LIFECYCLE



Operations

Operational policies often require reporting on a specific component during building operations, continuous monitoring of building performance, and some will require building or system level upgrades to remain in compliance.

Energy Benchmarking

Building Labeling

Audits and Retro-Commissioning

Building Performance Standards



Construction and Remodel

These policies apply with new construction, renovations, or procurement requiring designers or owners to meet a specific standard or report the purchase or buy a product that meets certain specifications.

Building Codes

Electrification Mandates

Low Energy and Carbon Procurement Policies



Federal Regulations

Some regulations do not require specific action by building decision-makers, but they could impact facilities and operations through the supply chain and product availability. Policies in this category may include:

Appliance Standards

Refrigerant Regulations



Operations

Primary Responsibility: Owners and Managers

ENERGY BENCHMARKING

What is energy benchmarking?

Energy benchmarking serves as a mechanism for federal, state, or local governments to measure and track building energy performance over time. Facilities required to comply with a benchmarking regulation may be required to collect and report energy from electricity, fossil fuels, steam, and other energy sources and calculate carbon emissions. The same policy mechanism could be applied to water, carbon, or other sustainability performance measures.

Why is energy benchmarking important?

Cultural institutions may benefit from consistently tracking energy consumption and carbon emissions, even if they are not in jurisdictions with a benchmarking policy. Armed with information about building performance, owners and occupants can understand their building's energy performance and carbon emissions relative to similar buildings over time to help identify opportunities to reduce energy use.

BUILDING LABELING

What is building labeling?

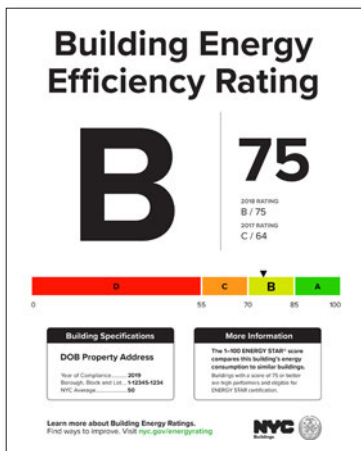
Building labeling is the physical public display of a building's energy efficiency or carbon emission grade, score, or certification. Examples include the building label of ENERGY STAR or LEED green building certification, or other energy performance information.

Why is building labeling important?

Building labeling policies increase consumer awareness about building energy performance and create market signals by making energy performance information visible to the market. Cultural institutions in jurisdictions requiring implementation and enforcement of building labeling will benefit from monitoring, reporting,

and displaying the building's energy efficiency grade, score, or certification, showing their commitment to limiting the impacts of climate change. Institutions not required to do building labeling can

[New York City Building Energy Efficiency Rating Label](#)



lead by example by creating public displays showcasing the energy and sustainability attributes of their facilities as educational and awareness tools.

BUILDING PERFORMANCE STANDARDS

What are building performance standards?

A building performance standard (BPS) requires building owners to meet performance energy or carbon targets by actively improving their buildings over time.

Why are building performance standards important?

BPS is important for cultural institutions because it allow for continuous improvement over time. It enables owners to improve energy efficiency in their buildings, which comes with the added benefit of improving the health and well-being of their occupants and saving money for their organizations. This is especially important to cultural institutions as they have a high occupancy of visitors and staff.

ENERGY AUDITS AND RETRO-COMMISSIONING

What is energy audit and retro-commissioning?

Energy audits identify baseline building energy performance characteristics and energy consuming devices and systems, while retro-commissioning requires addressing system inefficiencies.

Why are energy audits and retro-commissioning important?

Cultural institutions can benefit from energy audits and retro-commissioning, especially those with larger buildings welcoming visitors and hosting staff even without policy requirements. These policies identify opportunities for building energy improvement and operational cost savings by assessing where building equipment and systems are not operating as designed, often resulting in excessive energy consumption.



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Construction and Remodel

Primary Responsibility: Designers

BUILDING CODES

What are model building energy codes?

Model building energy codes and standards, also called base codes, are used in the design, construction, and operations process to create safe, sustainable, affordable, and resilient structures. Developed by the International Code Council (ICC), fifteen national model building codes set minimum requirements for new construction and major renovation. ICC model codes include, but are not limited to:

- International Building Code (IBC)
- International Energy Conservation Code (IECC)
- International Plumbing Code (IPC)
- International Mechanical Code (IMC)

Why are building codes important?

Facilities are required to comply with building codes during construction or renovation. Addressing fire hazards, energy efficiency, or resilience during renovations can limit damage from the effects of climate change and reduce operations costs while complying with future policies. Since codes address energy performance, cultural institutions can plan for improved building performance during construction and renovation.

What are stretch building energy codes?

While model codes set the minimum safety and energy requirements for buildings, stretch codes, also called reach codes, have more stringent requirements than model codes. They are usually a locally mandated code or alternative compliance path. Stretch codes realize higher energy savings than base codes.

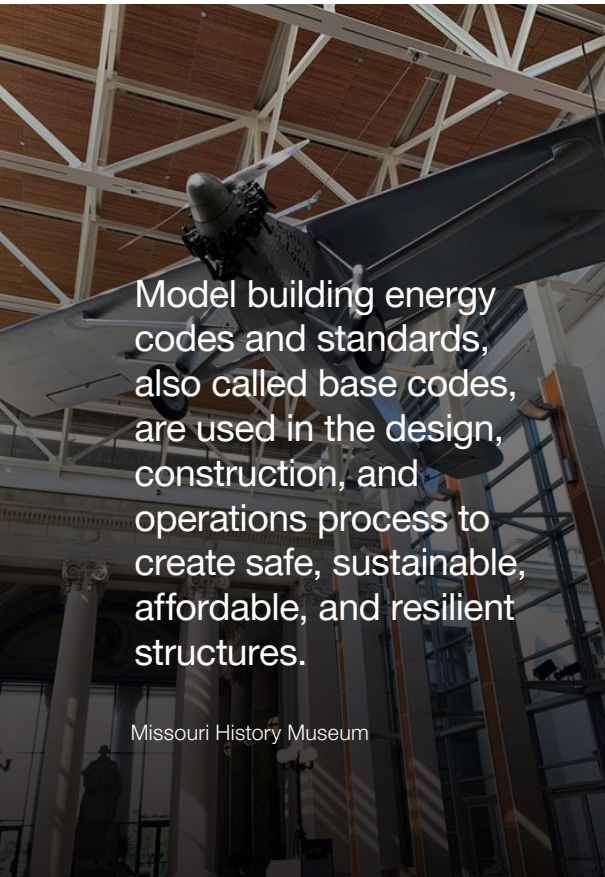
Why are stretch/reach codes important?

Stretch codes allow state and local governments to familiarize design and construction communities with advanced practices before the measures are included in the next base energy code. A cultural institution's design team should find out if their project will be affected by a stretch code and understand the impacts. Stretch code measure examples include improved window performance or renewable and electrical vehicle readiness.

ELECTRIFICATION

What are electrification mandates?

State and city electrification mandates encourage transitioning away from fuel oil, propane, and natural gas (also known as fossil gas)-fired systems to all-electric buildings, which can quickly curb regional GHG emissions in new construction. As electric grids offer more clean energy, all-electric buildings can approach zero emissions. Electrification mandates prevent the use of fossil fuels primarily for water heating, space heating, and cooking applications.

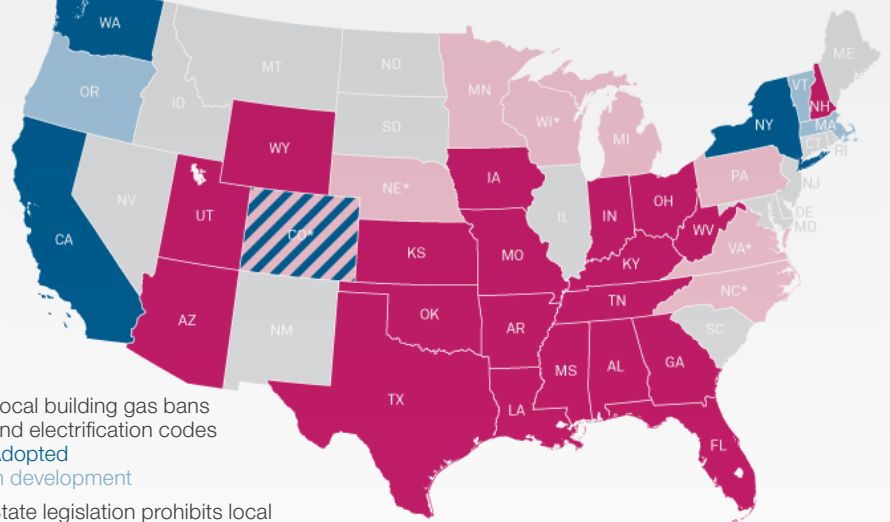


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Missouri History Museum

What State Are You In?

States advancing or prohibiting building gas bans and electrification codes



Local building gas bans and electrification codes

Adopted

In development

State legislation prohibits local restrictions on gas use in buildings

Passed

Introduced in latest session

*Failed to advance

As of April 21, 2022.
Map credit: Ciaralou Agpalo Palicpic
Source: [S&P Global Market Intelligence](#)



Electrification mandates may limit the type of equipment purchased and installed in new buildings or additions.



America's Car Museum | Tacoma, WA

Why are electrification mandates important?

Electrification mandates may limit the type of equipment purchased and installed in new buildings or additions. Cultural institutions should be aware of state and city decarbonization goals as these measures will impact future renovations and equipment replacements. Institutions can be proactive by planning to phase out standard gas equipment, such as heating, water heating, cooking, drying, and lighting.

LOW ENERGY AND CARBON PROCUREMENT AND CONSTRUCTION

What are low energy and carbon procurement and construction policies?

Procurement and construction policies incorporate energy efficiency and decarbonization into everyday purchasing decisions. Thoughtfully procuring products supports the development of a low-carbon future and encourages market innovation to support low-carbon products on the market. State and local governments

are adopting a policy for their jurisdictionally owned and/or leased assets, including:

- Fleet efficiency and vehicle infrastructure
- Public lighting
- New buildings and equipment
- Low carbon procurement policies

Why are procurement policies important?

Purchasing and construction policies impact everyday federal, state, or local government-funded projects, which cultural institutions can lead by example and mirror within their operations. For instance, if a government with such a policy is funding a cultural institution's site work, the cultural institution may need to comply with new requirements for replacing a city sidewalk or other infrastructure. For example, as government funding drives the market adoption of electric vehicles, LED lighting, and other environmentally preferred products may become feasible options for institution purchases.



Federal Regulations

Primary Responsibility: Manufacturers

APPLIANCE AND EQUIPMENT STANDARDS

What are appliance and equipment standards?

Appliance and equipment standards are regulated at the federal and state levels. They set requirements for the minimum energy efficiency of specific products sold or purchased within a jurisdiction. These policies save energy and water on products such as water heaters and efficient lighting elements.

Cultural institution buyers do not interact with appliance standards since product efficiency is addressed at the manufacturer level. However, they may find that they cannot replace an old appliance for the same appliance. Increases in federal efficiency standards will benefit owners at appliance replacements without requiring knowledge or action on the part of the owner. Where emissions standards may be under consideration, or in jurisdictions with electrification requirements on replacement, owners should be aware that replacement may require electrical work to support the new appliance.

REFRIGERANT REGULATIONS

What are refrigerant regulations?

Refrigerants are potent GHG emissions regulated at the federal and state-level. Local policies may include requiring refrigerant reporting or management plans. Properly managing and maintaining refrigerants means promptly repairing leaks from equipment and properly collecting, recycling, or disposing of refrigerants during maintenance and when equipment is retired.

Why are refrigerant policies important?

Space cooling equipment, drinking fountains, refrigerators, heat pumps, and more use refrigerants. As high-GWP refrigerants are phased out, HVAC service technicians may be unable to use the same refrigerants, and equipment adjustments or replacements may be necessary. Policies may require increased maintenance of systems to limit leaks and eliminate emissions. Cultural institutions must plan for these changes and requirements to monitor and maintain systems that use refrigerants and should ask service technicians about options to phase into using lower-GWP refrigerants.



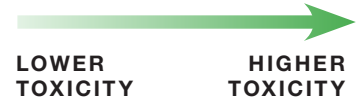
Portland Japanese Garden

Refrigerants Flammability and Toxicity

Refrigerant regulations require low-GWP refrigerants which are often lower in toxicity but are low flammability.

HIGHER FLAMMABILITY	A3 propane, butane	B3 R-1140
	A2 R-142b R-152a	B2 R-611 and ammonia
LOWER FLAMMABILITY	A2L HFO-1234yf HFO-1234ze	
	A1 R-32 R-410A	B1 R-10 R-123
NO FLAME PROPAGATION		

Note: Some refrigerants may be phased out as allowable products change.





Lady Bird Johnson Wildflower Center

About Culture Over Carbon

The Culture Over Carbon project provides cultural institutions actionable data and recommendations to understand how their buildings use energy, help create roadmaps to reduce energy at individual institutions and the sector as a whole, and lower carbon and other greenhouse gas (GHG) emissions to reduce their impacts on climate change.

Under the project, over 130 cultural institutions from across the country provided energy use data for over 240 buildings. Analysts evaluated the data, looking for field-wide use patterns, and provided recommendations for key efficiency actions. The analysts provided recommendations to prepare institutions for expected building code and policy changes that may impact them.

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