



Charlottesville High Performance Buildings

March 16, 2026

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PURPOSE

Presentation of a Charlottesville High Performance Buildings Resolution to replace the 2008 Green Building Resolution

- Accomplishes alignment with state requirements
- Establishes High Performance Building Standards for the design, construction, operation, maintenance, and renovation of all municipal buildings.

BACKGROUND – Commitments and Policy

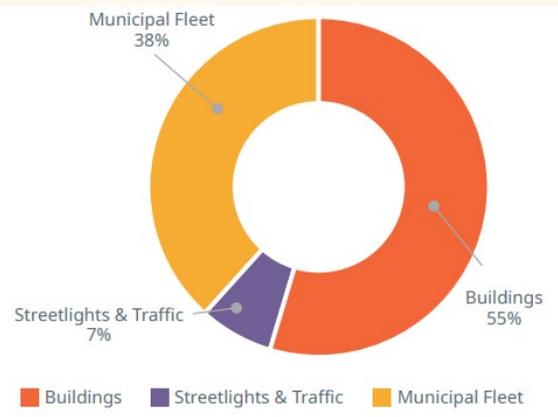


In 2019, the City of Charlottesville committed to updated greenhouse gas *emissions reduction goals* of 45% by 2030 and carbon neutrality by 2050.

- City Manager approved an internal *Energy and Water Management Policy*.

In 2023, the *Climate Action Plan (CAP)* was adopted to pursue these goals.

- The municipal sector represents 5% of Charlottesville’s GHG emissions
- Buildings account for about 55% of the municipal emissions
- The CAP identifies various building-related strategies
 - Reduce Energy Demand in Existing Buildings
 - Reduce Energy Demand for New Construction
 - Achieve carbon neutrality for all electricity used by City facilities by 2030
 - Incorporate internal process adjustments to improve coordination effectiveness and collaboration on capital projects and planning.



Charlottesville’s *Comprehensive Plan* also contains statements and strategies that support high performance, sustainable, and energy-efficient buildings.

BACKGROUND



**Environmental Regulations
and Policy Review**

This project is also aligned with the City's **Environmental Regulations and Policy Review Project** within that project's Energy Efficiency topic.

The Environmental Review is a multi-year project that will have deliverables along the way, dependent on related City initiatives.

The Environmental Review Project phasing is aligned with:

- The timing of related plans and programs (such as the High-Performance Building Standards)
- Impact on Comprehensive Plan implementation
- Regulatory complexity

BACKGROUND – State Requirements



- In 2021, the Virginia General Assembly passed Virginia Code Section 15.2-1804.1, requiring localities to meet the standards of the High Performance Building Act (HB 2001).
 - The Act became effective for localities with populations under 100,000 on July 1, 2023. Updates were passed in 2024.
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- Section 15.2-1804.1 requires that, unless exempted under that section, new buildings and major renovations are designed, constructed, verified and operated to comply with a **high performance building certification program**, such as LEED.
 - Section 15.2-1804.1 further requires that localities ensure that these building have sufficient zero-emissions **vehicle charging and fueling infrastructure**, features that permit the locality to **measure** the building's **utility consumption** and associated carbon emissions and **incorporates appropriate resilience and distributed energy features**.

BACKGROUND – City Green Building Experience

In 2008, City Council adopted its first Green Buildings Policy, making commitments to environmentally sustainable building practices.

Since then, all major City building projects have achieved Leadership in Energy and Environmental Design (LEED) certification through the US Green Building Council.



- Charlottesville Middle School – Certification anticipated in 2026
- ByPass Fire Station – Certification anticipated in 2026
- Circuit Court – 2020 - Gold
- Fontaine Fire Station – 2014 - Platinum
- Facilities Maintenance Building – 2013 - Gold
- Charlottesville Area Transit – 2012 - Gold
- Smith Aquatic Center – 2010 - Platinum
- ecoREM0D – 2009 - Platinum
- Downtown Transit Station – 2008 - Gold

High Performance Building Standards

- Project Goals
 - Develop a tool to effectively guide the design, construction, and operation of municipal buildings by codifying and consolidating an already robust set of best practices and standard operating procedures.
 - Establish a central repository for best practices recognized by those engaged in delivering and managing buildings and building systems.
 - Model facility design and performance for local building owners, operators, and builders.
- Outcomes of the High Performance Building Standards
 - Defines **expectations** for new and existing buildings
 - Brings practices into **alignment** with City commitments to climate and sustainability.
 - Captures **mandates** established by the Commonwealth of Virginia
 - Provides **actionable** guidelines
 - Support the delivery of **quality** and **consistency** across the organization

HPBS PROJECT TIMELINE

2024

- Development of Green Building Standards included in the Climate Workplan (since FY24)
- Reviewed examples from peer communities
- Contracted with Thrive and CMTA consultant team for the development of standards
- Technical Meetings with PW and OS staff

2026

- HPBS Rollout (Open House launch)
- *High Performance Building Resolution*
- Implementation
- Additional resources/training

- Technical Meetings with PW and OS staff (continued)
- Multiple reviews of versions of deliverables
- Issue resolution and reconciliation
- HPBS published (December 31, 2025)

2025

HPBS SCOPE

SCOPE

Defines specific requirements by project type

Project planning & design

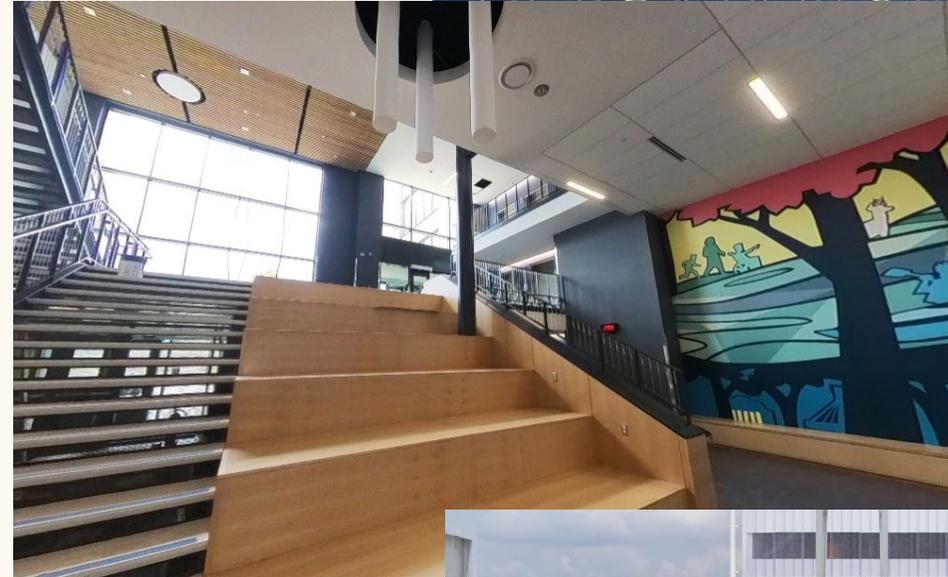
Building envelope requirements

Building materials requirements

Building systems (aka MEP)

Basic site design

Monitoring and maintenance



PROJECT TYPES & COMPLIANCE PATH

- **New Construction**
 - Over 20k SF
 - Between 5-20k SF
 - Conditioned
 - Unconditioned
 - Under 5k SF
- **Renovations**
 - Over 20k SF
 - with costs > 50% of Bldg Value
 - with costs <50% of Bldg Value
 - Under 20k SF
 - with costs > 50% of Bldg Value
 - with costs <50% of Bldg Value
- **Other**
 (Energy Performance, Retrocommissioning, Maintenance, Emergency Maintenance)

	Referenced Section	Renovation Project Description			
		Over 20k SF		Under 20k SF	
		Major Renovations			
		Reno Cost > 50% of Bldg. Value	Reno Cost < 50% of Bldg. Value	Reno Cost > 50% of Bldg. Value	Reno Cost < 50% of Bldg. Value
Primary Compliance Method					
Certify to most recent version of LEED NC	Section 2.6	Certified+		Certified+	
Has sufficient ZEV charging and fueling infrastructure	Section 9.4	Required	Recommended	Required	
Metering of all electricity, gas, and water	Section 9.5	Required	Recommended	Required	
Incorporates appropriate onsite renewable energy generation + energy storage	Section 3.11	Required	Recommended	Required	
Incorporates appropriate resilience features	Section 3.4	Required	Recommended	Required	
Fundamental Commissioning (LEED Definition)	Section 10.1	Required	Recommended	Required	
Building Envelope Commissioning	Section 10.3	Recommended	Recommended	Recommended	
Meet HPBS as applicable		Required	Required	Required	

HPBS STRUCTURE

STRUCTURE

Required Basis: Virginia State Code; applicable laws and regulations

Current Practice:

What we've been doing; or propose we should be doing going forward

Opportunities:

Strategies and technologies that might be appropriate for certain projects.

Stretch Goals:

Strategies and technologies to keep our eyes on.

Resources:

Links to further detailed explanation or information

8.6 Heat Pumps

Heat pumps utilize a refrigeration cycle, rejecting heat to the atmosphere or a condenser water loop to efficiently heat and cool spaces. These systems, whether air-source or water-source, help reduce energy consumption and improve operational efficiency.

8.6.1 Current Practice

8.6.1.1 Where Applicable

These systems are extremely flexible and should be considered in all new construction projects and major renovations.

8.6.1.2 Low Ambient Package

Utilize heat pumps with low-ambient rating, such as NEEP Cold Climate Air Source Heat Pump Specification V4.0 or equivalent to ensure efficient operation in colder temperatures.

8.6.1.3 Minimum COP

Maintain 15% better than code required minimum COP/EER values to maximize system performance

8.6.1.4 Heat Pump Sizing

Right size heat pumps for space to improve longevity for the system

8.6.1.5 Multi-Stage Compressor

Provide with multi-staged compressor modulating operation to increase efficiency

8.6.1.6 Refrigerant Requirements

Low global warming potential refrigerant gas emissions. Refer to LEED 2019 MR Prerequisite: Refrigerant Management.

8.6.2 Opportunities

8.6.2.1 Water-Source Configuration

Utilize ground/water-source options to provide higher efficiency due to stable temperature conditions, offering a longer system life and lower maintenance needs.

8.6.2.2 Scheduling

Integrate setback temperatures when spaces become unoccupied for extended periods of time.

8.6.3 Stretch Goals

8.6.3.1 Hybrid Systems

Consider dual-source hybrid systems to combine traditional cooling equipment like cooling towers and geothermal exchange fields in projects that do not have adequate space for a full geothermal wellfield. This will result in reduced first cost and year-round energy savings.

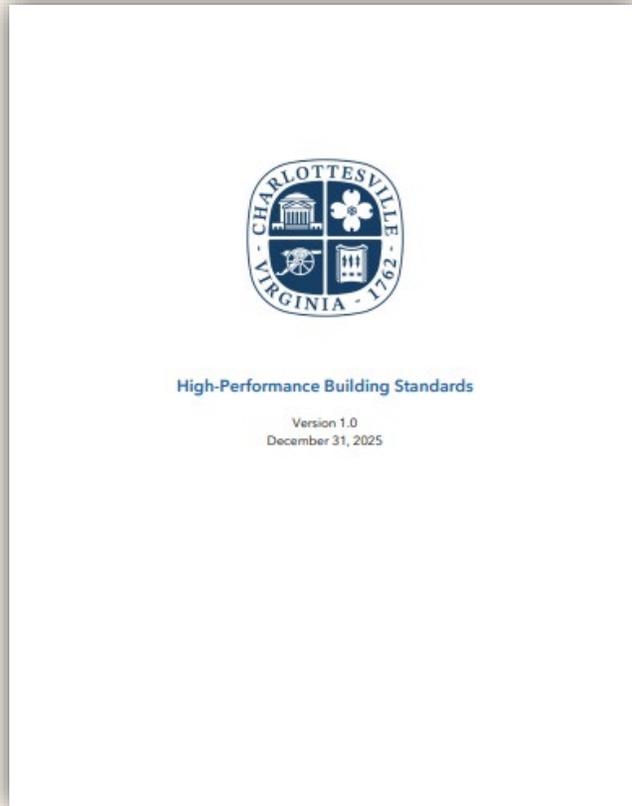
8.6.3.2 Demand Usage

Implement peak demand management via a building management system to shift heating/cooling to off-peak hours, reducing grid strain and lowering electricity costs.

8.6.4 Resources

- NEEP Cold Climate Air-Source Heat Pump Standard
<https://neep.org/heating-electrification/ccashp-specification-product-list>

OTHER HPBS ITEMS



- Waivers
 - When compliance with the HPBS is technically infeasible, a waiver may be requested.
 - Relief from HPBS practices required by the Code of Virginia requires a resolution by City Council.
- HBPS Reviews
 - to ensure they provide appropriate current practices
 - to ensure they are supportive of project delivery,
 - To ensure compliance with state requirements,
 - To ensure they remain aligned with local goals and commitments.
- Internal SOP

RESOURCES

City of Charlottesville
HIGH-PERFORMANCE BUILDING STANDARDS CHECKLIST
Checklist Version 1.0 (12.31.25)

Project Name: _____

Section 3 Building Planning

3.1 Development and Permitting Requirements	
3.1.1.1	Use the City of Charlottesville's website outlining the full development review process.
3.1.1.2	Use VCC Section 108 to determine when a building permit is required.
3.1.1.3	Develop and submit construction documents to the Building Official in accordance with VCC Section 109.
3.2 Design Professional Requirements	
3.2.1.1	Determine when an Architect or Engineer is required.
3.3 Accessibility Features	
3.3.1	Meet the VCC and the Americans with Disabilities Act (ADA).
3.4 Resilience Features	
3.4.1.1	Do not locate buildings, hardscapes, or systems in sensitive locations described in this section.
3.5 Building Reuse	
3.5.1.1	Fully assess opportunities for building renovation, rehabilitation, or re-purposing before demolishing and replacing any existing building.
3.6 Salvaged Materials	
3.6.1.1	Assess building materials and furnishings for potential salvage, re-use, and re-purposing.
3.6.1.2	Salvage retired furnishings with useful life remaining for re-use.
3.6.1.3	Recover and store phasing-out refrigerants that are still in use elsewhere in the City. Legally dispose of obsolete refrigerants.
3.6.1.4	Do not reclaim faucets and pipes with unknown levels of lead.
3.7 Construction and Demolition Debris	
3.7.1.1	Implement a C&D waste recovery program.
3.7.1.2	Divert aluminum, steel, glass, cardboard, wood, paper, films, and carpet from landfills.
3.7.1.3	Use a single stream co-mingled recycling container OR deploy multiple recycling containers for on-site separation.
3.7.1.4	Process carpet for removal through a manufacturer take-back program.
3.8 Construction Materials and Methods	
3.8.1	Evaluate and consider the materials and methods used for a building's primary structural frame, walls, and partitions.
3.9 All-Electric Buildings	
3.9.1.1	Design all new construction and major renovations as fully electric, generally.
3.9.1.2	Avoid fossil fuel-based heating systems.
3.10 Roof Planning and Design	
3.10.1.1	Where Applicable
3.10.1.2	Consider all aspects of the roof design.
3.10.1.2.1	Design new roofs shall be designed to be green roofs.
3.10.1.2.2	Consider the building's roof structure.

- HPBS Checklist
- Intranet site for easy staff access to the HPBS and related materials
- Updated public City webpage (in development)
- More to come

The screenshot shows the City of Charlottesville website. At the top left is the city seal. The navigation bar includes 'EMPLOYEE RESOURCES', 'DEPARTMENTS', and 'HOW DO I...?'. Below the navigation bar is a search bar with social media icons for Facebook, X, YouTube, Instagram, and Zoom. The main content area features a large image of a building with the text 'WELCOME TO Charlottesville'. Below this is a sidebar with 'Employee Recognition Program: THRIVE!', 'Energy and Water Management Program', and 'High Performance Buildings Program'. The main text area contains the title 'High Performance Buildings Program' and a paragraph: 'Published in December 2025, the Charlottesville's High-Performance Building Standards define the City's expectations for its new and existing municipal buildings.' At the bottom, there is a link: 'Access the Charlottesville High-Performance Building Standards Document (Version 1.0) Here (PDF)'.



RECOMMENDED ACTION

- Adoption of the proposed High Performance Buildings Resolution
 - Accomplishes alignment with state requirements
 - Establishes High Performance Building Standards for the design, construction, operation, maintenance, and renovation of all municipal buildings.