Building Performance Roundtables

Local Governments & Public Schools

September 21, 2022

Who is the VAEEC?

The voice of energy efficiency in Virginia, the VAEEC is a broad coalition of over 100 members whose goal is to facilitate discussions and share resources to advance energy efficiency.

Our vision is for energy efficiency to be an integral part of Virginia's economy and clean energy future.

Learn more at VAEEC.org.

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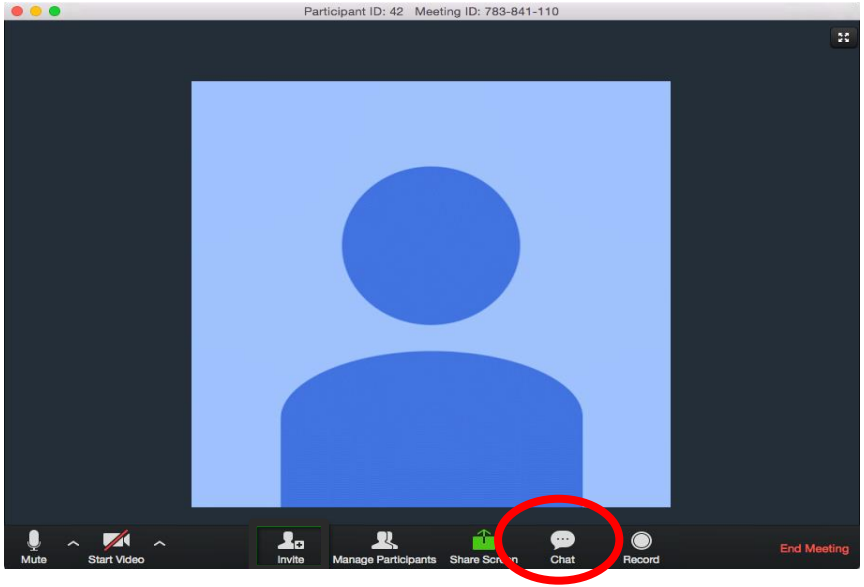
Audience Participation

Submit your questions or comments using the “Chat” button located at the bottom of your screen.



Building Performance Roundtable

Agenda

- Welcome & Introductions
- Green Building Glossary
- Legislation Overview
- The Three Pathways to Compliance
- Audience Polls
- Facilitated Discussions
- Next Steps

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Welcome & Introductions

Key Partners

- Elizabeth Beardsley, *U.S. Green Building Council*
- Bryna Dunn, *Moseley Architects*
- Maggie Kelley-Riggins, *Southeast Energy Efficiency Alliance*

Welcome & Introductions

Respond to the poll questions as they appear on your screen

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HB2001: Local Government Green Building Program

Liz Beardsley
U.S. Green Building Council





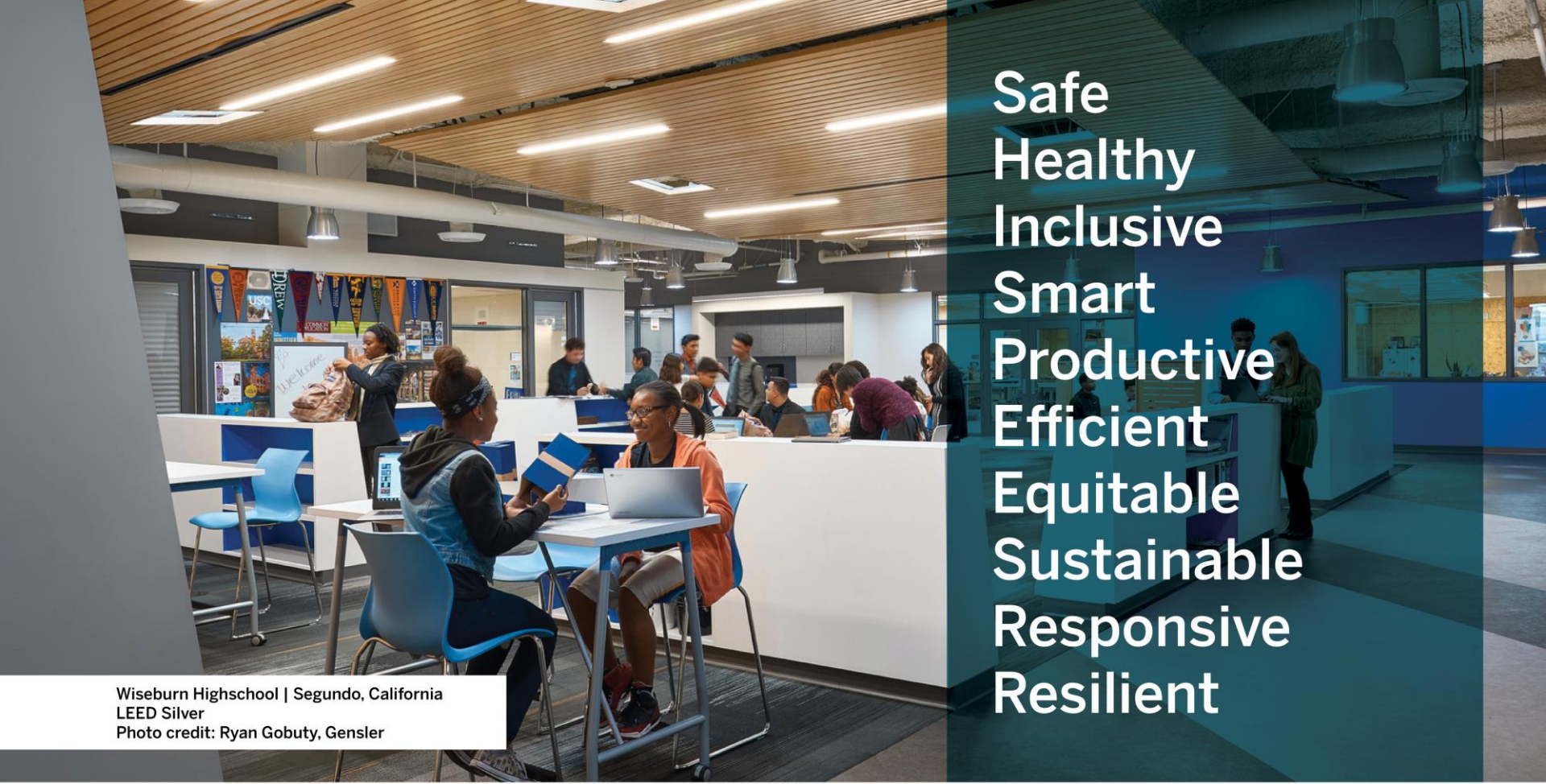



WORLD



THE CLIMATE IS
CHANGING,
WHY AREN'T WE?


EARTH



Wiseburn Highschool | Segundo, California
LEED Silver
Photo credit: Ryan Gobuty, Gensler

Backstory

- 2012 Virginia High Performance Building Act
- Growth in adoption of green building practices
- Goal: to drive better, more efficient, resilient, and futureproof buildings

HB2001 Overview

1. State building program – added requirements
   - EV charging/EV-ready
   - Metering of all utilities
2. NEW Local building program = code section 15.2-1804.1

Green Glossary

In the Virginia statute:

“High Performance Building Certification Program”

- a public building **design, construction, and renovation** program that achieves certification using LEED, Green Globes, or VEES

“High Performance Standard,” “building standard,” “the standard”

- Meeting a High Performance Building Certification program PLUS several additional requirements

"VEES" means the Virginia Energy Conservation and Environmental Standards developed by DGS

In general usage:

Building (Energy) Performance Standards

- outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring **existing buildings** to meet energy and/or GHG emissions-based performance targets (source: DOE)

§ 15.2-1804.1. (For applicability, see Acts 2021, Sp. Sess. I, c. 473, cl. 2) Building by locality; high performance standards.

A. As used in this section:

"Design phase" means the design of a building construction or renovation project, inclusive of the issuance of a request for proposal and the project budget approval.

"EV" means an electric vehicle.

"High performance building certification program" means a public building design, construction, and renovation program that achieves certification using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) green building rating standard or the Green Building Initiative's "Green Globes" building standard, or meets the requirements of VEES.

"Sufficient ZEV charging and fueling infrastructure" means the provision of ZEV charging or fueling infrastructure, including EV-ready charging electrical capacity and pre-wiring, (i) sufficient to support every passenger-type vehicle owned by the locality and available for use by the locality that will be located at such building upon full occupancy, meet projected demand for such infrastructure during the first 10 years following building occupancy, or (ii) that achieves the current ZEV or EV charging credit for a high performance building certification program.

"VEES" means the Virginia Energy Conservation and Environmental Standards developed by the Department considering the U.S. Green Building Council (LEED) green building rating standard, the Green Building Initiative "Green Globes" building standard, and other appropriate requirements as determined by the Department.

"ZEV" means a zero-emissions vehicle.

B. Any locality entering the design phase for the construction of a new building greater than 5,000 gross square feet in size, or the renovation of a building where the cost of the renovation exceeds 50 percent of the value of the building, shall ensure that such building:

1. Is designed, constructed, verified, and operated to comply with a high performance building certification program;

2. Has sufficient ZEV charging and fueling infrastructure. In making a sufficiency determination, the locality may also consider the interest of the Commonwealth in providing infrastructure for nearby locations, geographical gaps in ZEV charging infrastructure, availability of incentives, and other factors;

3. Has features that permit the agency or institution to measure the building's energy consumption and associated carbon emissions, including metering of all electricity, gas, water, and other utilities; and

4. Incorporates appropriate resilience and distributed energy features.

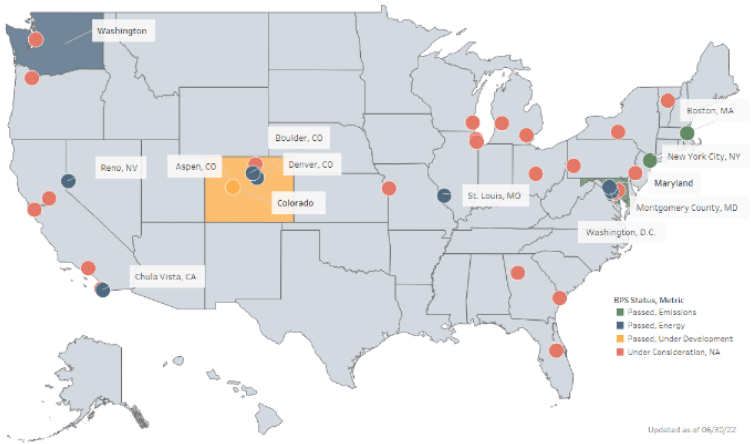
Certification Program

Standard

Building Performance Standards

Building Performance Standards (BPS) are outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring existing buildings to meet energy and/or greenhouse gas emissions-based performance targets. When combined with building codes that regulate performance in specific instances like new construction or major renovations, BPS are powerful policy tools that provide a lifecycle approach to building performance and can empower state and local governments to deliver on their energy and carbon goals for the building sector.

State and Local Building Performance Standards



LEARN MORE...

- BPS IMPLEMENTATION
- BPS TECHNICAL ASSISTANCE
- BPS RESOURCE LIBRARY
- BPS FINANCING

https://www.energycodes.gov/BPS

HB2001 Local Government High Performance Standards

1. Green building; design, construct, verify, and operate to:
   - LEED Certification
   - Green Globes Certification
   - VEES (DGS) verification
2. ZEV infrastructure
3. Metering of all utilities
4. Resilience + distributed energy features

Applicability

- New buildings over 5,000 s.f.
- Renovations where the cost of the renovation exceeds 50% of the value of the building
- Trigger is beginning design phase, including issuing RFP or budget approval
- Beginning July 1, 2021, localities with population 100,000 or more
    - July 1, 2023 for remaining localities

ENERGY STAR Option for smaller projects

For construction or renovation of a building that is less than 20,000 gross square feet in size, the locality may instead:

1. Ensure that such building achieves the relevant ENERGY STAR certification, and
2. Implement mechanical, electrical, plumbing, and envelope commissioning.

Exemption

- The governing body of a locality is authorized to grant an exemption by resolution.
- There must be a written finding that special circumstances make the construction or renovation to the standards impracticable.
- If a locality decides to seek an exemption and cost is part of the reason, it must compare the long-term cost of the building if it complies with that if it does not.
    - 20 years or lifecycle

"By building in this manner, the sustainable features of the buildings pay for themselves through their efficiencies **within 8 years.**"

— V. Lane Rawlins, University of North Texas

In contrast to what most people in the industry think, building Green doesn't necessarily need to cost more. The key to success is to make green an **integrated and natural part of the process** from the first day of planning and through the entire life of a building.

— Pierre Olofsson, CEO of Skanska Sweden

1. Green Building

- LEED Certification,
- Green Globes Certification, or
- the Virginia Energy Conservation and Environmental Standards (“VEES”) established by the Department of General Services, verified by an engineer or other professional

Virginia Beach Parks & Rec Project

1000059285, Virginia Beach, Virginia

VB Parks + Recreation

LEED BD+C: New Construction (v2009)

CERTIFIED, AWARDED JAN 2020

SUSTAINABLE SITES		AWARDED: 8 / 26
SSp1	Construction activity pollution prevention	REQUIRED
SSc1	Site selection	1 / 1
SSc2	Development density and community connectivity	0 / 5
SSc3	Brownfield redevelopment	0 / 1
SSc4.1	Alternative trans portation - public transportation access	0 / 6
SSc4.2	Alternative trans portation - bicycle storage and changing rooms	1 / 1
SSc4.3	Alternative trans portation - low-emitting and fuel-efficient vehicles	3 / 3
SSc4.4	Alternative trans portation - parking capacity	0 / 2
SSc5.1	Site development - protect or restore habitat	1 / 1
SSc5.2	Site development - maximize open space	1 / 1
SSc6.1	Stormwater design - quantity control	1 / 1
SSc6.2	Stormwater design - quality control	0 / 1
SSc7.1	Heat island effect - nonroof	0 / 1
SSc7.2	Heat island effect - roof	0 / 1
SSc8	Light pollution reduction	0 / 1

WATER EFFICIENCY		AWARDED: 7 / 10
WEp1	Water use reduction	REQUIRED
WEc1	Water efficient landscaping	4 / 4
WEc2	Innovative wastewater technologies	0 / 2
WEc3	Water use reduction	3 / 4

ENERGY & ATMOSPHERE		AWARDED: 9 / 35
EAp1	Fundamental commissioning of building energy systems	REQUIRED
EAp2	Minimum energy performance	REQUIRED
EAp3	Fundamental refrigerant Mgmt	REQUIRED
EAc1	Optimize energy performance	5 / 19
EAc2	On-site renewable energy	0 / 7
EAc3	Enhanced commissioning	2 / 2
EAc4	Enhanced refrigerant Mgmt	2 / 2
EAc5	Measurement and verification	0 / 3
EAc6	Green power	0 / 2

MATERIAL & RESOURCES		AWARDED: 4 / 14
MRp1	Storage and collection of recyclables	REQUIRED
MRc1.1	Building reuse - maintain existing walls, floors and roof	0 / 3
MRc1.2	Building reuse - maintain interior nonstructural elements	0 / 1
MRc2	Construction waste Mgmt	0 / 2
MRc3	Materials reuse	0 / 2
MRc4	Recycled content	2 / 2

MATERIAL & RESOURCES		CONTINUED
MRc5	Regional materials	2 / 2
MRc6	Rapidly renewable materials	0 / 1
MRc7	Certified wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY		AWARDED: 9 / 15
EQp1	Minimum IAQ performance	REQUIRED
EQp2	Environmental Tobacco Smoke (ETS) control	REQUIRED
EQc1	Outdoor air delivery monitoring	0 / 1
EQc2	Increased ventilation	0 / 1
EQc3.1	Construction IAQ Mgmt plan - during construction	1 / 1
EQc3.2	Construction IAQ Mgmt plan - before occupancy	0 / 1
EQc4.1	Low-emitting materials - adhesives and sealants	1 / 1
EQc4.2	Low-emitting materials - paints and coatings	1 / 1
EQc4.3	Low-emitting materials - flooring systems	1 / 1
EQc4.4	Low-emitting materials - composite wood and agrifiber products	1 / 1
EQc5	Indoor chemical and pollutant source control	1 / 1
EQc6.1	Controllability of systems - lighting	1 / 1
EQc6.2	Controllability of systems - thermal comfort	0 / 1
EQc7.1	Thermal comfort - design	1 / 1
EQc7.2	Thermal comfort - verification	0 / 1
EQc8.1	Daylight and views - daylight	0 / 1
EQc8.2	Daylight and views - views	1 / 1

INNOVATION		AWARDED: 3 / 6
IDc1	Innovation in design	1 / 1
IDc2	LEED Accredited Professional	1 / 1

REGIONAL PRIORITY CREDITS		AWARDED: 2 / 4
RAc1	Optimize energy performance	0 / 1
EQc7.1	Thermal comfort - design	1 / 1
SSc6.1	Stormwater design - quantity control	1 / 1
WEc3	Water use reduction	0 / 1

TOTAL	42 / 110

40-49 Points CERTIFIED | 50-59 Points SILVER | 60-79 Points GOLD | 80+ Points PLATINUM

2. Zero Emission Vehicle (ZEV) Charging and Fueling Infrastructure

"Sufficient ZEV charging and fueling infrastructure" means the provision of ZEV charging or fueling infrastructure, including EV-ready charging electrical capacity and pre-wiring,

(i) sufficient to support every passenger-type vehicle owned by the locality and available for use by the locality that will be located at such building upon full occupancy,

(ii) meet projected demand for such infrastructure during the first 10 years following building occupancy, or

(iii) that achieves the current ZEV or EV charging credit for a high performance building certification program.

3. Metering

- Measure the building's energy consumption and associated carbon emissions, including metering of all electricity, gas, water, and other utilities

4. Resilience and Distributed Energy

- The locality should determine what features are appropriate for a particular project.
- Examples
  - Assess the hazards (such as sea level rise or hurricanes/high wind) and decide to provide features enabling the building to stay at a safe thermal condition to protect occupants
  - Based on the planned use of a building, the locality may determine no special features are appropriate.

LEED Strategies for Resilient Design

Locality Program

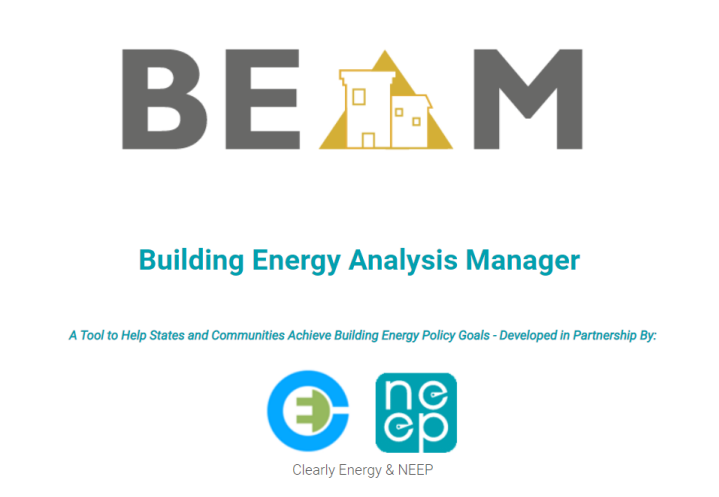
Any local governing body may, by ordinance, adopt its own green design and construction program that includes standards that are more stringent that the law’s requirements

SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

Technical Assistance

- Technical assistance with policy creation & stakeholder engagement
- BPS implementation tool connection & support
- Technical assistance and training on BEAM tool

Starting October 1



Resources

VA HB2001: SUMMARY & FAQ FOR LOCAL GOVERNMENTS

A look at the new high performance building law

KEY TAKEAWAY

Beginning July 1, 2021, localities with population of 100,000 or greater are responsible to incorporate high performance standards into certain projects entering the design phase, including new construction projects over 5,000 square feet and major renovation.

BACKGROUND

For over a decade, the Commonwealth of Virginia has had a high performance building requirement for state buildings. In the 2021 Virginia General Assembly session, Delegate Helmer introduced revisions to this requirement which also established a similar high performance building provision for local buildings. The bill, HB2001, was amended several times, enacted, and signed into law.

The local government provision is codified as § 15.2-1804.1 and entitled "Building by locality; high performance standards." Full text of the bill is available here.

Loudon County Lucketts Fire & Rescue Station, currently under construction and designed for green building certification

FAQ

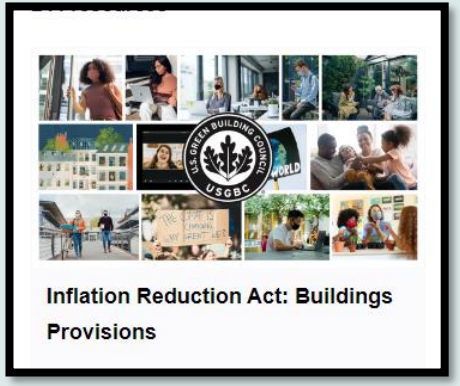
What do local governments need to do?

If a locality has a new project that is starting the design phase such as the locality is reviewing the budget for approval, or is preparing a request for proposal for design, or design and construction, services, then the locality needs to include high performance building requirements.

Are any localities exempt?

A locality may, by ordinance, adopt its own green design and construction program that includes standards that are more stringent than the requirements of the law. It is expected that a number of Virginia local governments which already have green building programs will evaluate their programs, make any adjustments needed, and pursue an ordinance to continue their own programs. A locality without an existing program is also eligible to establish a new program complying with the law.

U.S. GREEN BUILDING COUNCIL 1



GETTING STARTED WITH HIGH PERFORMANCE GREEN BUILDING

A Guide for Virginia Localities

VIRGINIA IS A LEADER IN GREEN BUILDING

Virginia is home to a growing number of high-performing green buildings, in both the private and public sectors. In fact, Virginia has placed in the USGBC "Top Ten" States for LEED projects for the past several years. In 2020, 97 projects were certified representing over 16 million gross square feet.

Jefferson Houston School, LEED Gold, City of Alexandria

If your locality hasn't yet worked with high performance building systems, know that you aren't alone! Local governments in Virginia that already use high performance green building systems for their buildings include Fairfax County, the City of Alexandria, Arlington County, Henrico County, Charlottesville, Virginia Beach, and Richmond.

Through organizations such as the Virginia Energy Efficiency Council (VAEEC), these experienced localities can help those who are new to this approach and help you achieve better buildings - to save money over time and to deliver efficient, more climate-friendly, and healthier spaces for your employees, citizens, and students. And, should you choose LEED for your project, USGBC offers free LEED Coaches to guide you through the process and find what you need.

NEW TO HIGH PERFORMING GREEN BUILDING? START HERE

If you are new to high performance green building, start with an introduction, such as one or more of these resources:

- What is Green Building (article with link to a video)
- Green Building 101: What is LEED
- Green Building for Everyone (free course with series of short videos and links)

Henrico County Short Pump Firehouse 19, LEED Gold

LEARN MORE

Find a green building in your area by searching the LEED Directory here.

Browse LEED case studies.

View green schools in Virginia here.

Learn about green schools and browse green school case studies.

Dive into LEED credits and see a LEED Scorecard.

Contact us at publicpolicies@usgbc.org .

U.S. GREEN BUILDING COUNCIL 1

Questions?

Ebeardsley@usgbc.org

Virginia's High Performance Buildings Act: Three Pathways for Local Governments and Schools

Bryna Dunn, Associate AIA, AICP, GGP, LEED Fellow

September 21, 2022

The Legislation | Recap

BUILDINGS MUST:

- Be designed, constructed, verified, and operated to comply with a high-performance building certification program
- Have sufficient ZEV charging and fueling infrastructure
- Include features that permit the measurement of energy consumption and associated carbon emissions
- Incorporate appropriate resilience and distributed energy features

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Check your building size

§ 15.2-1804.1 C

- Notwithstanding the provisions of subsection B, for any such construction or renovation of a building that is less than 20,000 gross square feet in size, the locality may instead ensure that such building achieves the relevant ENERGY STAR certification and implement mechanical, electrical, plumbing, and envelope commissioning.
  - **TIP**: ask design team to pursue Designed to Earn the ENERGY STAR designation for applicable building types
  - **TIP**: not all property types are eligible for ENERGY STAR
    - Property Types Eligible to Receive a 1-100 ENERGY STAR Score | ENERGY STAR

Check your local policy

§ 15.2-1804.1 E

- Any local governing body may, by ordinance, adopt its own green design and construction program that includes standards that are more stringent than any equivalent standard in subsection B. While such program remains in effect, the locality shall be deemed compliant with the provisions of this section
  - **TIP**: some jurisdictions have no policy, so HPBA governs
  - **TIP**: some jurisdictions have policy that states compliance path and higher certification level
  - **TIP**: some jurisdictions have policy that states compliance path and higher certification level and specific credits that must be earned

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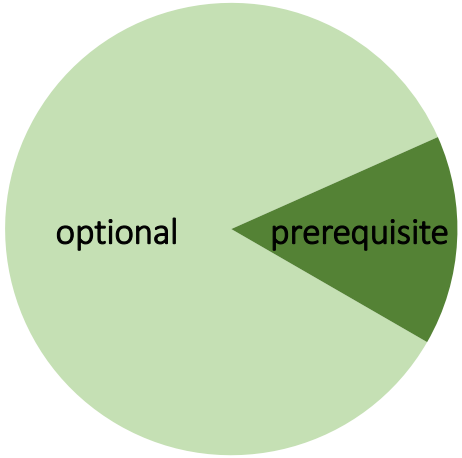
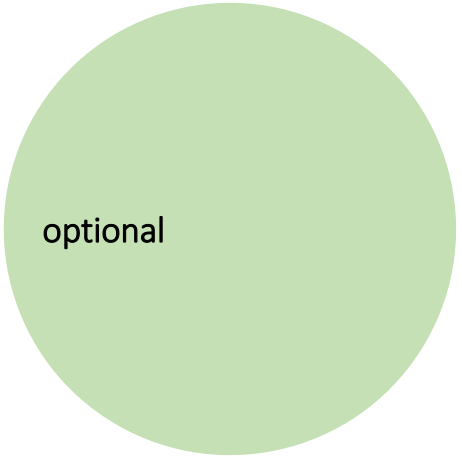
Pick One of Three Compliance Pathways

LEED

GREEN GLOBES





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Pick One of Three Compliance Pathways

IgCC 2018

- Also called VEES; comply with all requirements in chapters 5-11
- Some requirements are amended by the VEES
- See Appendix V of the CPSM for amendments
- Written as code; compliance reviewed by DEB

LEED v4

- Comply with prerequisites + earn minimum 40 of 100 optional points
- Written as a voluntary green building certification program with supplementary reference material
- Provides user support
- Compliance reviewed for a fee by the GBCI

Green Globes

- Earn a minimum of 35% of the optional 1,000 points available
- Written as a voluntary green building certification program with supplementary reference material
- Provides user support
- Compliance reviewed for a fee by the GBI

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Mandatory Provisions of the VEES

§ 401.3.1	Electric Vehicle Parking Spaces/Charging Stations (comply with CPSM Appendix G)
§ 401.3.2.1	Identify basic building information for Energy Reporting in design documents; record in Form DGS-30-382
§ 401.3.2.2	Provide measurement devices to collect energy consumption data for each energy supply source to building
§ 401.3.2.3	Store energy data for 36 months and compute Source EUI, Site EUI, CO_2e, and CO_2e/ft^2
§ 401.3.2.4	Submit annual report to the Governor
§ 401.3.3	At completion of construction, submit Form DGS-30-381 and supporting documentation

Outcomes

IgCC 2018

PASS

/

FAIL

LEED v4

- CERTIFIED (40-49 points)
- SILVER (50-59 points)
- GOLD (60-79 points)
- PLATINUM (80-100 points)

Green Globes

- 1 Globe (35% -54% of applicable points)
- 2 Globes (55%-69% of applicable points)
- 3 Globes (70-84% of applicable points)
- 4 Globes (85%-100% of applicable points)

Think about ZEV charging and fueling infrastructure

§ 15.2-1804.1 B.2

- Any locality entering the design phase for the construction of a new building greater than 5,000 gross square feet in size, or the renovation of a building where the cost of the renovation exceeds 50% of the value of the building, shall ensure that such building has sufficient ZEV charging and fueling infrastructure.

- In making a sufficiency determination, the locality may also consider the interest of the Commonwealth in providing infrastructure for nearby locations, geographical gaps in ZEV charging infrastructure, availability of incentives, and other factors.

  - **TIP**: the high-performance building certification program you choose may influence how you comply with this mandatory provision

ZEV compliance in the Act

§ 15.2-1804.1 A

- Sufficient ZEV charging and fueling infrastructure means the provision of charging or fueling infrastructure, including EV-ready charging electrical capacity and prewiring
  - sufficient to support every passenger type vehicle owned by the locality and available for use by the locality that will be located at such building upon full occupancy, meet projected demand for such infrastructure during the first 10 years following building occupancy; OR
  - that achieves the current ZEV or EV charging credit for a high-performance building certification program

ZEV compliance in Certification Programs

IgCC 2018

- Two or more EV charging stations shall be available to the building occupants and shall be located not more than ¼ mile from building project, OR
- Electrical raceways shall be installed from building's electrical power distribution panels to the number of parking spaces indicated based on total number of spaces provided

LEED v4

- 5% of all spaces designated as preferred for green vehicles, and
- Install compliant EVSE in 2% of all parking spaces; OR
- Install compliant EVSE in 5% of all parking spaces (minimum 2); OR
- Make 10% of all parking spaces EV-ready with dedicated electrical circuit (minimum 6)

Green Globes

- Confirm there are alternative refueling facilities or electric charging stations located on site or within 0.25 mi of the site

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Appropriate Resilience and Distributed Energy

§ 15.2-1804.1 B.4

- Any locality entering the design phase for the construction of a new building greater than 5,000 gross square feet in size, or the renovation of a building where the cost of the renovation exceeds 50% of the value of the building, shall ensure that such building incorporates appropriate resilience and distributed energy features.
  - **TIP**: clarify the project's vulnerability to identified hazards early in the design process
  - **TIP**: prioritize energy efficiency so that renewable energy features will carry a lower cost with greater overall impact
  - **TIP**: consider developing a solar PV master plan and then finance via a PPA

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Tips for Success

- Clarify project's high performance design priorities and goals in the RFP and in the Owner's Project Requirements documents
  - Include electric vehicle infrastructure, metering, renewable energy, and resilience
- Convene an integrative "high performance" strategy session as the project kicks off, and follow up regularly
- Confirm HPBA compliance pathway no later than the project's Schematic Design phase
- Stay the course! (switching compliance pathways mid-project can be costly and confusing)

Audience Polls

Respond to each poll question as they appear on your screen.

Facilitated Discussions

Please select a breakout room based on the following topics:

- Room #1: General Legislation Overview
- Room #2: Developing a Green Building Policy
- Room #3: Local, regional, or state-wide green building priorities

There will be a 30-minute facilitated discussion based on the above topics.

If you would like to change rooms at any time, select “breakout rooms” in the control bar and select the room you would like to move to.

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Facilitated Discussion Summaries

Each room will provide the group a 3-5 minute summary of what they discussed:

- Room #1: General Legislation Overview
- Room #2: Developing a Green Building Policy
- Room #3: Local, regional, or state-wide green building priorities

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Next Steps

Taking a proactive approach to:

- Update the existing law to better suit local governments, schools, and state agencies
- Use today's feedback as the foundation for future green building policies

Join us on October 31st and November 1st for the 2022 VAEEC Energy Efficiency Forum!

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