HIGH PERFORMANCE BUILDING STANDARDS

VA. CODE ANN. § 15.2-1804.1

September 13, 2022

Timeline

- 2012 Virginia High Performance Building Act
  - State Agencies
  - Set green building practices
  - Goal: Better, more efficient & resilient buildings
- 2021 Amendments
  - Localities
  - Less than 100,000 delayed implementation until July 1, 2023

Applicability

Buildings

- Any new buildings over 5,000 sq. ft.
- Any renovations where the cost of the renovation exceeds 50% of the value of the building

Trigger

- "Entering the design phase"
  - Includes issuing RFP or budget approval (i.e. at the very beginning of project inception)

The Standard

B.1 Design to a High Performance Building Certification Program

B.2 Include sufficient ZEV and fueling infrastructure

B.3 Include building management software to track all utilities including carbon emissions

B.4 Incorporate appropriate resilience and distributed energy features

B.1 Design to a High Performance Building Certification Program

15.2-1804.1 A.

"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 the Virginia Energy Conservation and Environmental Standards (**VEES**).

B.1 Exception

15.2-1804.1 C.
"Construction or renovation of a building that is less than 20,000 gross square feet in size, the locality may instead:"

1. Achieves the relevant ENERGY STAR certification
2. Implement mechanical, electrical, plumbing, and envelope commissioning
3. Comply with provisions of B.2, B.3, and B.4.

Certification Options

Certification Options	Description	Certification Levels
VEES (2018 IgCC)	Written as code language- Must comply with all provisions. You cannot pick and choose which aspects to use. Some aspects of IgCC were amended by VEES see Append V	**Pass/Fail**
LEED	Has some prerequisites you have to meet regardless of points then you pick from a list to fit your budget and project to meet point total needed. Min 40 points.	**Certified (40 – 49 points)** Silver (50 – 59 points) Gold (60 – 79 points) Platinum (80 – 100 points)
Green Globes	No prerequisites- you pick options from list to meet the percentage of applicable points to meet the certification level. Min 35% of applicable items	**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)

Scope of LEED Certification

1. Location and Transportation
2. Sustainable Sites
3. Water Efficiency
4. Energy and Atmosphere
5. Materials and Resources
6. Indoor Environmental Quality

Scope of Green Globes Certification

Guiding Principles

1. Employ integrated design principles
2. Optimize energy performance
3. Protect and conserve water
4. Enhance indoor environmental quality
5. Reduce environmental impact of materials
6. Assess and consider building resilience

Scope of VEES Certification

1. Site sustainability
2. Water use efficiency
3. Energy efficiency
4. Indoor environmental quality
5. Materials and resources

B.2 Include sufficient ZEV and fueling infrastructure

15.2-1804.1 A.- defines "Sufficient ZEV charging and fueling infrastructure"

Option 1: if using 1804.1 Subsection C Energy Star exception- then must be

- EV-ready= electrical capacity and pre-wiring, including transformers, service equipment, and conduit
- Sized for every City owned passenger-type vehicle that will be located at the building in the next 10 years

B.2 Include sufficient ZEV and fueling infrastructure

15.2-1804.1 A.- defines "Sufficient ZEV charging and fueling infrastructure"

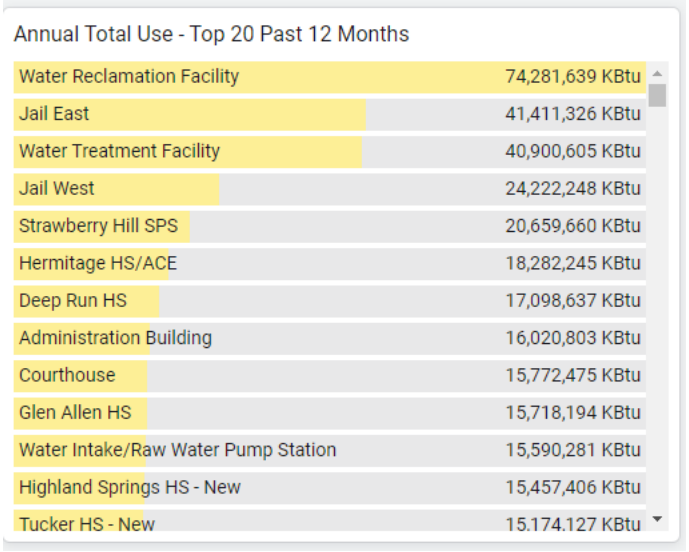
Option 2: if using a high performance building certification program then follow those requirements

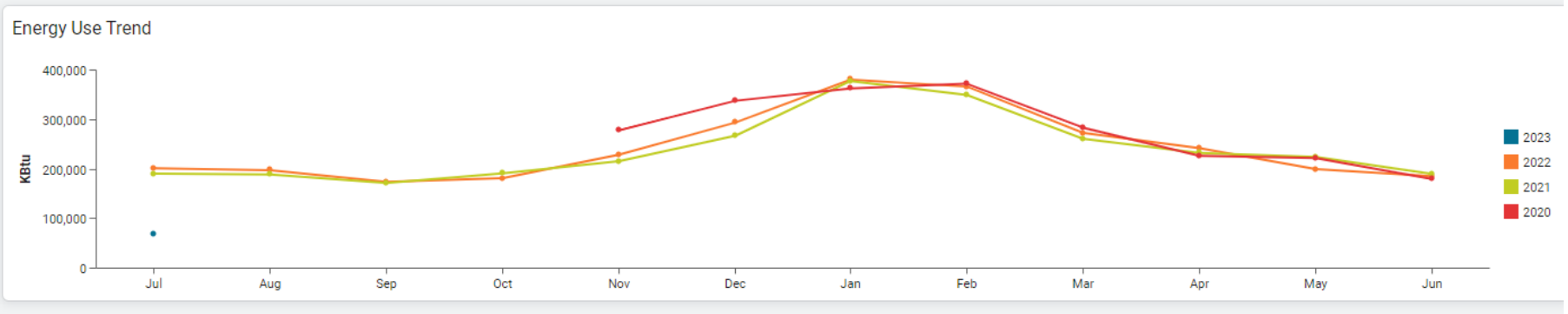
B.2 Option 2 Requirements

VEES	LEED V4	Green Globes
• Comply with most current version of Construction and Professional Services Manual (CPSM) Appendix G • "EVCS capacity shall be provided at a minimum rate of one EVCS for every four (4) fleet EV assigned to the location [over next 10 years]. These EVCS are in addition to those required by Section G4.1.2."	• 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 (min 2) OR • Make 10% of all parking spaces EV-ready with dedicated electrical circuit (min 6)	• Confirm there are alternative refueling facilities or electric charging stations located on site or within ¼ mile of the site.

B.3 Include building management software for all utilities including carbon emissions

Software measures the building's energy consumption and associated carbon emissions





B.4 Incorporate appropriate resilience and distributed energy features

Resilience

- Flood, hurricane, forest fire, etc.

Distributed Energy Features

- Solar
- Wind
- Geothermal
- Natural gas

Solar in Certification Programs

VEES	LEED V4	Green Globes
• On-site renewable energy systems that provide the annual energy production sized according to 701.4.1.1.1 or 701.4.1.1.2	• Tier 1: On-site renewable energy generation • Tier 2: New off-site renewable energy • Tier 3: Off-site renewable energy	• Evaluate applicable renewable electric energy strategies related to the project or building that could support, as needed, agency progress toward renewable energy goals where cost-effective OR • Meet 2018 IGCC Chapter 7 requirements (VEES)

1804.1 Subsection D: Exemptions

Exceptions to requirements:

- Governing body may, by resolution, grant an exemption
- Reason for granting exemption must be stated in resolution
- If cost is a factor, must include a cost comparison the locality will incur over the next 20 years or the lifecycle of the project, whichever is shorter

1804.1 Subsection E: Creating More Stringent Provisions

Locality may adopt ordinance to adopt standards that are more stringent than the items listed in subsection B

Cost Analysis Model

- Uses system performance data to estimate annual savings from solar system
- Includes annual costs such as maintenance, capital replacements (inverters), increases in insurance premiums, and any debt payments
- Generates Payback Year and the ROI for the lifespan of the system
- Includes a sensitivity analysis for electricity rate increases

Example Cost Analysis

Scenario 1:example retrofit project on existing roof

Scenario 1: Rate Inflation at 1.5 %

Payback Year:	**26+ years**
Lifespan ROI Value:	**$ (26,296.79)**

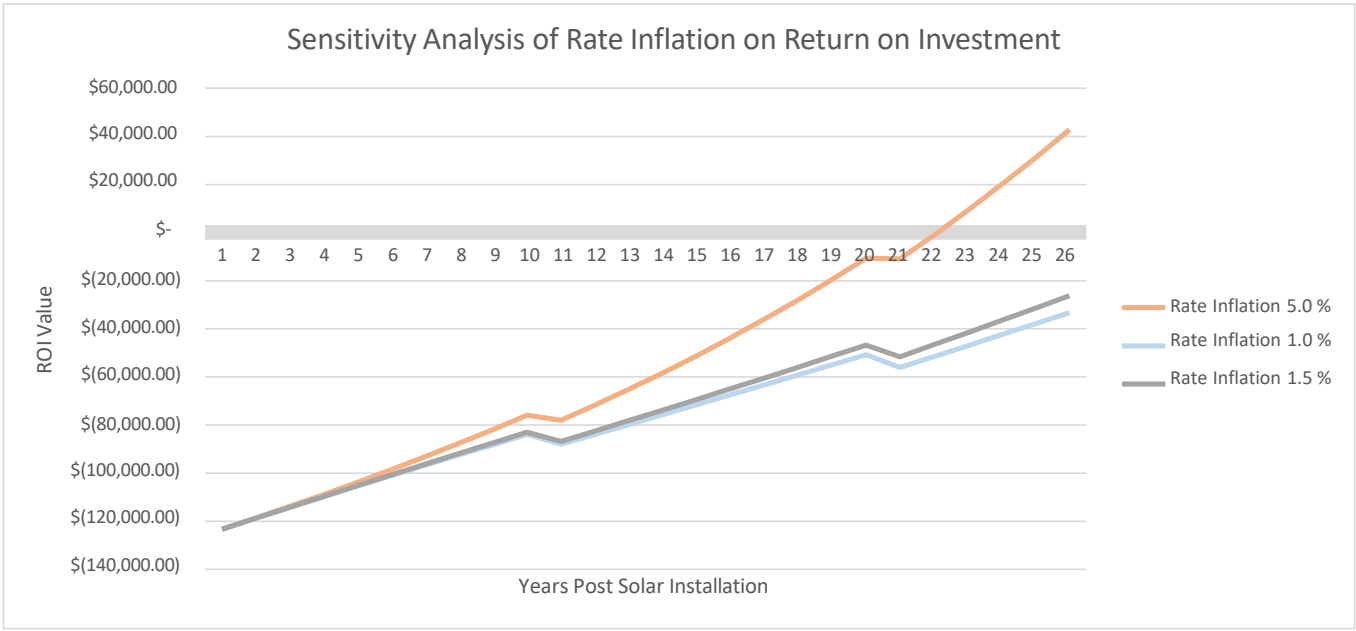
Sensitivity Analysis

Scenario 2: Rate Inflation at 1.0 %

Payback Year:	**26+ years**
Lifespan ROI Value:	**$ (33,334.87)**

Scenario 3: Rate Inflation at 5.0 %

Payback Year:	**22 years**
Lifespan ROI Value:	**$ 42,751.32**



Example Cost Analysis

Scenario 2: example large solar project on new construction or solar ready roof

Scenario 1: Rate Inflation at 1.5 %

Payback Year:	**15 years**
Lifespan ROI Value:	**$ 465,251.50**

Sensitivity Analysis

Scenario 2: Rate Inflation at 1.0 %

Payback Year:	**15 years**
Lifespan ROI Value:	**$ 391,161.06**

Scenario 3: Rate Inflation at 5.0 %

Payback Year:	**12 years**
Lifespan ROI Value:	**$ 1,192,125.74**