Xcel Energy®

Best Practices Series

Building Codes Support Program

THE ATTIC

VENTED VS. UNVENTED

SHUMS CODA ASSOCIATES

Group 14 ENGINEERING Inspiring Better Buildings

BUILDTank inc.

The Thermal Envelope

To understand the difference of vented or unvented you must first understand the basic concept of the thermal envelope.

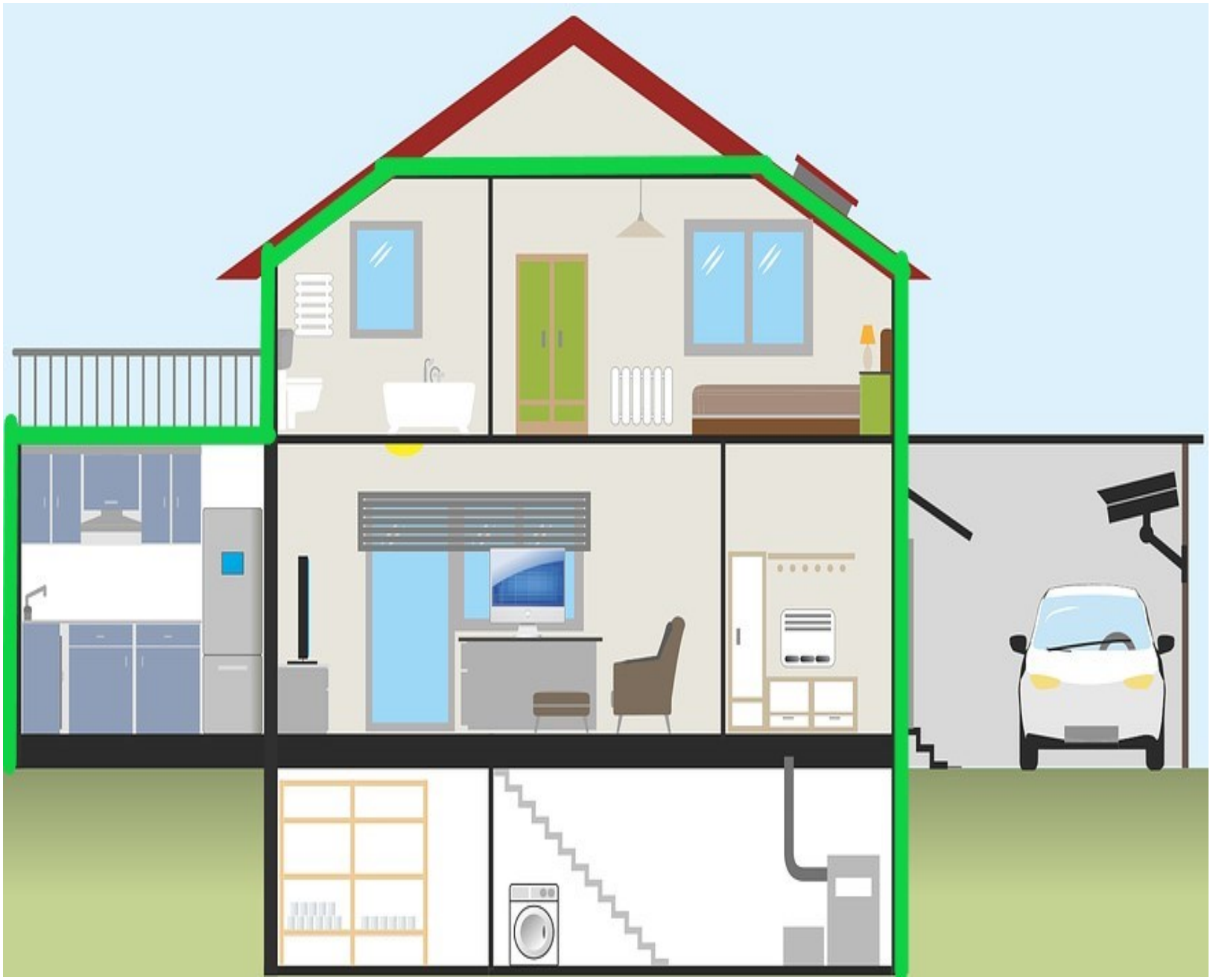
The thermal envelope is the separation of conditioned space and unconditioned space. This separation is made from framing, insulation, and an air barrier, creating an assembly.

Vented/Unconditioned Attic

A vented attic is just that…an attic space with vents installed to move air through the space. These vents can be installed on the exterior wall of the attic or in the ridge of the roof. Insulation is typically installed on the ceiling assembly.

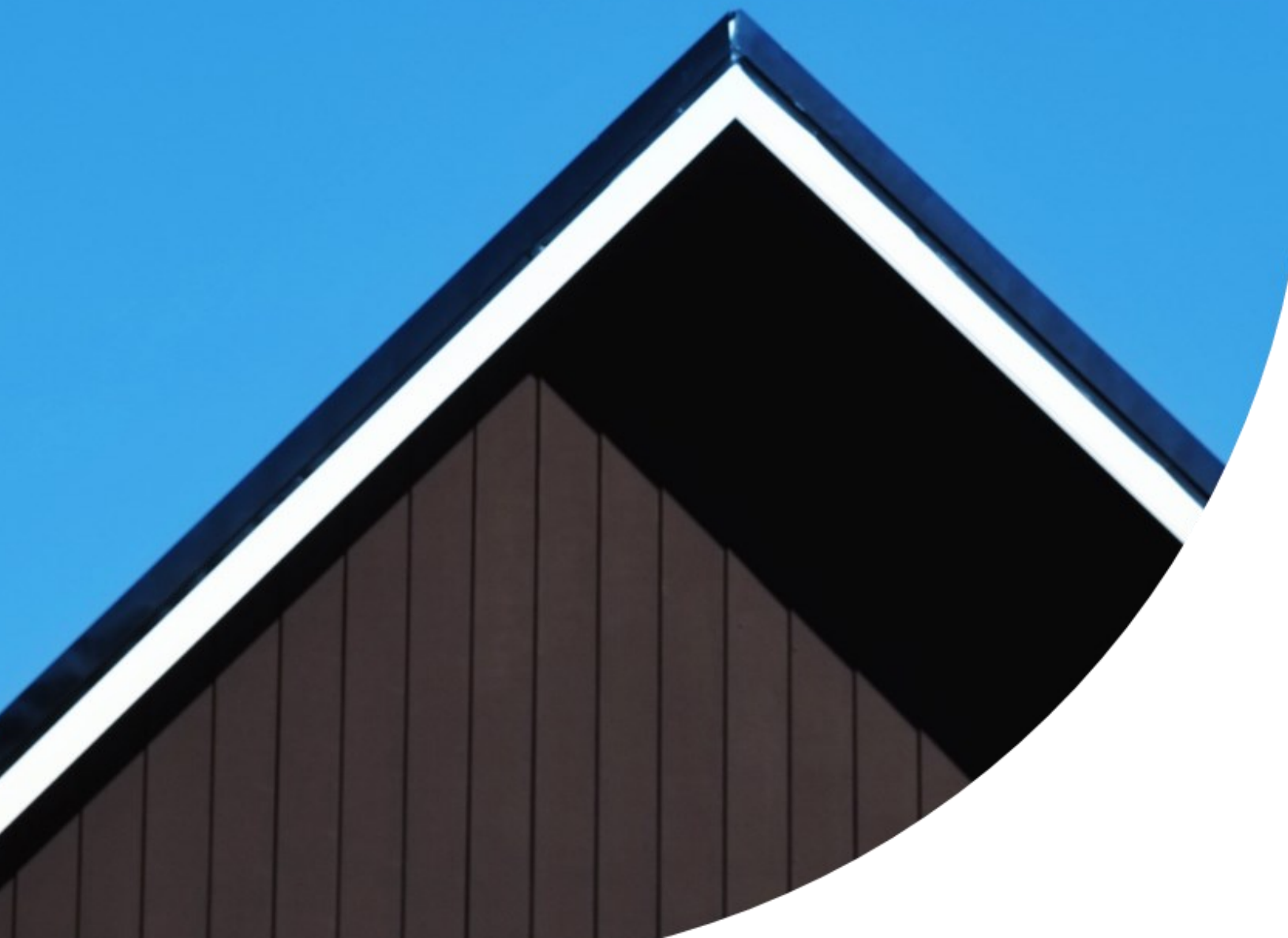
Thermal Envelope for a Vented/ Unconditioned Attic

2018 IECC R402.2.1 2021 IECC R402.2.1



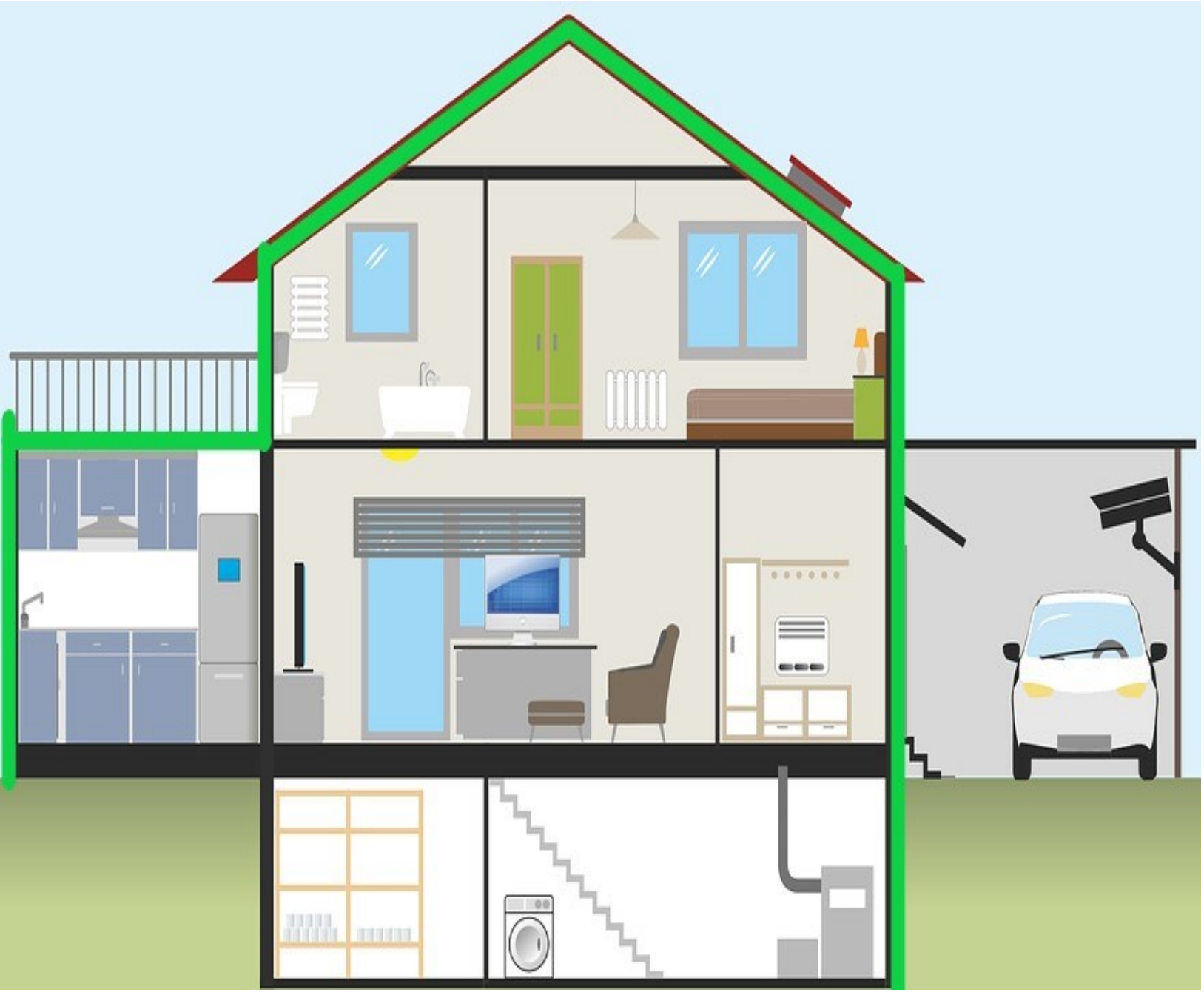
Unvented/Conditioned Attic

A unvented attic is also called a conditioned attic. It is created with no vents to the outside and enclosing the space within the thermal envelope.



Thermal Envelope for an Unvented Attic

2018 IECC R402.2.2 2021 IECC R402.2.2



Pros and Cons

Vented Attic:

Pros:

Generally more cost effective

Builders are more familiar with this type of installation

Cons:

Attic is outside the building thermal envelope

Large heat gains and loses if any HVAC appliances or ducts are located in the attic

Difficult to access without disturbing the insulation

Unvented Attic Assemblies:

Pros:

Attic is within building thermal envelope

Code provides several construction assemblies (based on climate zone)

No heat gains or losses for HVAC appliances or ducts located in the attic

Reduces the temperature differential between the conditioned space below and the attic space

Cons:

Can cost more then a traditional vented attic

Builders not as familiar with this technic