

Certificate No. H-008202



Certification Date: Sept. 19, 2018

# High-Performing Home

2508 Belvue Road, Waynesboro, VA 22980

## Platinum

This home's high-performing asset specifications can be found in the Pearl Certification Report and Appraisal Institute's *Residential Green and Energy Efficient Addendum* that accompany this certificate.

A handwritten signature in cursive script that reads "W. Casey Murphy".

W. Casey Murphy  
Pearl VP of Quality Management

2508 Belvue Road  
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Platinum Home  
Certificate No. H-008202



# Pearl Home Certification Report





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Certified on September 19, 2018  
Pearl Platinum Certificate | Pearl Score: 998

## What You Need to Know

This home has many high-performing features, including its heat pump, air sealing, tankless water heater, forced air ducts and led lighting.

This home will be healthier, more comfortable, cleaner and quieter, and cost less to operate, than most Virginia homes.



**This Pearl Platinum home** has verified high-performing assets for a number of features that enhance the quality of life for its owners. Pearl Platinum Certified: it's what value *feels* like.

### Certification Level



**Platinum**  
**998 Pearl Points**



Building Shell:  
**277 / 300** points



Heating and Cooling:  
**314 / 360** points

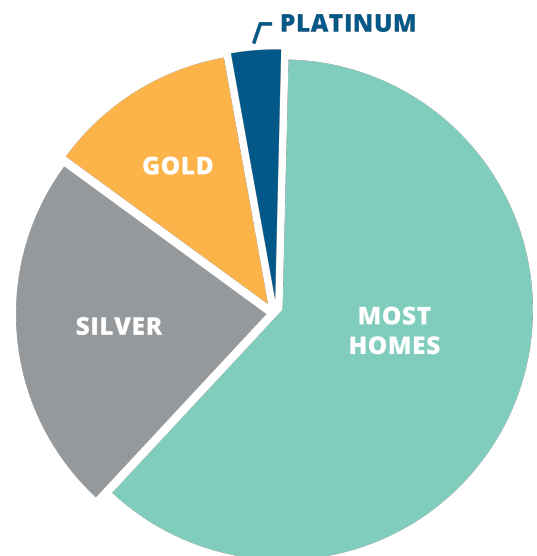


Baseload:  
**218 / 240** points



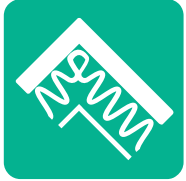
Home Management:  
**189 / 300** points

U.S. Homes Eligible for Pearl Certification Levels





Information below based on Virginia data from the National Renewable Energy Lab.



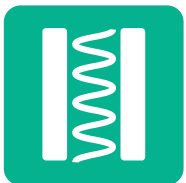
**Attic Insulation :**  
Top 9% of VA homes

This home's attic is well-insulated, which means lower utility bills and greater comfort - particularly in rooms located directly under the attic. Good attic insulation also protects against excessive heat loss in winter that can cause roof damage from snow melt.



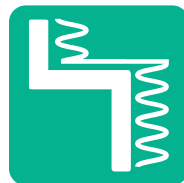
**Attic Hatch :**  
Well-insulated

This home's attic hatch has been insulated. Attic hatches are often the weakest link in a home's attic insulation, and can disproportionately impact a home's heat loss and heat gain. If an uninsulated attic hatch represents only 1% of an attic's surface area, it can decrease the attic's overall R-value by 27%.



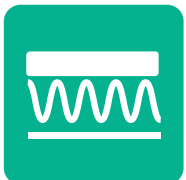
**Wall Insulation :**  
Top 7% of VA homes

This home's wall insulation is outstanding and better than most homes. It will be more energy efficient and quieter as a result. The additional insulation acts as a sound as well as a temperature barrier.



**Rim Joist Insulation :**  
Very Well-Insulated

The rim joist is the outside perimeter of the floor system and can often be overlooked when insulating and air sealing a home. Quality homes are insulated along the rim joist - like this one.



**Sealed crawlspace :**  
Top 15% of VA homes

This home's encapsulated crawlspace has been sealed and insulated - providing significant benefits for keeping energy costs down. It will also improve the indoor air quality of the home.



**Air Sealing :**  
Top 1% of VA homes

A sign of exceptional quality, this home's air tightness exceeds most modern energy codes and as a result, will be more comfortable and less drafty. A well-sealed home will also help manage humidity, prevent dust, and limit entry points for insects.



## Special Performance Features of This Home



**Heat Pump :**  
Top 4% of all electric-heated homes

This home's heat pump is one of the most energy efficient sold. Its year round energy savings will be significant compared to most homes' heating and cooling equipment.



**Forced Air Ducts :**  
In conditioned space, air sealed

This home's ducts are well-insulated and duct tightness exceeds industry minimum standards, preventing loss of conditioned air to your home's individual rooms. Well sealed and insulated ducts are one critical component to maintain even temperatures throughout your home.



**Tankless Water Heater :**  
Top 1% of VA homes

Water heating accounts for about 18% of a home's energy use. This home has a tankless gas water heater. These water heaters are exceptionally energy efficient and provide an "endless" supply of hot water. Unlike a storage tank water heater, a tankless model will heat the water only when it is being used.



**Refrigerator :**  
Very efficient

ENERGY STAR certified refrigerators are about 9-10 percent more energy efficient than models that meet the federal minimum energy efficiency standard.



**Dishwasher :**  
Very efficient

ENERGY STAR certified dishwashers use advanced technology to get your dishes clean while using less water and energy. Dishwashers that have earned the ENERGY STAR are, on average, about 5 percent more energy efficient and 15 percent more water efficient than standard models.



**Clothes Washer :**  
Very efficient

ENERGY STAR certified clothes washers use about 25 percent less energy and 40 percent less water than regular washers.



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## About Pearl Certification

Pearl Certification is a national firm that provides third-party certification of **high-performing homes**: homes with “performance assets” that make them healthy, safe, comfortable, energy and water efficient.

Pearl’s certification system enables home buyers to see and understand the value of a home’s high-performing assets when the home is sold. Research from across the U.S. shows that third-party home performance certifications like Pearl’s add an average of 4% to the sale price of high-performing homes, compared to similar homes lacking these assets.

Pearl is the only private certification firm to sponsor the U.S. Department of Energy’s prestigious Home Performance with ENERGY STAR program.

Pearl is a National Association of Realtors (NAR) REach Accelerator company.

## The Science Behind Pearl Certification

Pearl’s certification system is based on building science. It was developed in consultation with national experts on energy efficiency and home performance, and with technical assistance from the National Renewable Energy Laboratory (NREL). This system is approved for use in the Department of Energy’s Home Performance with ENERGY STAR program.

Pearl’s certification system takes into account how well an asset like insulation or a cooling system was installed. It also takes into account tools that allow a homeowner to view, understand, and improve their home’s performance.

**For more information on Pearl’s Certification, please email us at: [info@pearlcertification.com](mailto:info@pearlcertification.com), or visit our website at [www.pearlcertification.com](http://www.pearlcertification.com)**

### PEARL’S PARTNERS

Pearl works in partnership with the U.S. Department of Energy and many of the nation’s leading real estate, appraisal, contracting, and building science organizations.





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## OVERVIEW OF PEARL CERTIFICATION SYSTEM

Pearl certifies a home's performance assets, such as insulation, heating and cooling, lighting, appliances, smart home devices, and solar energy.

### Building Shell

The building shell consists of the roof and attic, exterior walls, windows, doors, and basement or crawlspace. These assets provide an air, moisture, and thermal barrier that separates the inside from the outside.



Attic



Wall



Rim Joist



Floors &  
Foundation



Windows



Doors



Air Sealing



Roofs

### Heating and Cooling

A home's heating and cooling systems include furnaces, air conditioners, and heat pumps. This equipment heats and cools air, water, or steam. The ducts or pipes that circulate the air, water or steam through the home are also a part of the heating and cooling system.



Cooling



Heating



Heat Pump



Distribution  
System

### Baseload

A home's baseload includes devices that run year-round, not just in the heating or cooling season. Water heaters, refrigerators, dishwashers, clothes washers, lighting, and other features contribute to a home's baseload.



Ventilation



Water Heating  
System



Clothes Dryer



Dish Washer



Clothes  
Washer



Refrigerators



Lighting

### Home Management

A home's management assets include "smart" devices that control heating and cooling systems, lighting, and other technologies: dashboards that provide information about energy use; and plans for improving the home's performance assets.



Controls



Planning

### Solar, Batteries, and Electric Vehicle Readiness

Solar panels, batteries, and electric vehicle charging: Pearl certifies if a home is pre-wired for these high-performing assets or has them installed. Our system captures critical information needed for appraisers. Pearl points are not awarded for these assets.



Solar  
Photovoltaic



Solar Inverter



Electric Vehicle  
Ready Home



Batteries



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HOME ASSET DETAILS

# Building Shell



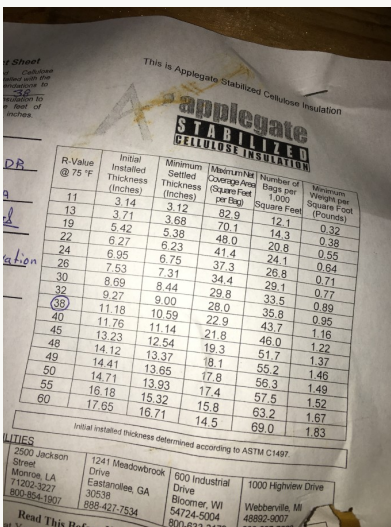
Platinum Level: **244**  
This Home: **277**  
Average Home: **150**

## Attic and Roof: Attic 1



Attic Hatch	<b>R-10 or higher</b>
R-Value	<b>R-38</b>
Insulation Type (predominant)	<b>Fiberglass - Loose Fill</b>

## Attic and Roof: Attic 2



Attic Hatch	<b>None. Attic sealed.</b>
R-Value	<b>R-38</b>





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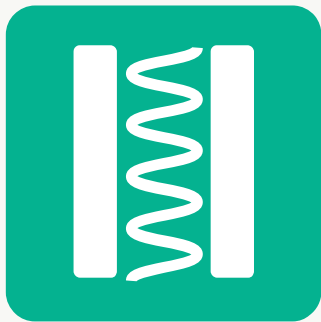
### HOME ASSET DETAILS

# Building Shell



Platinum Level: **244**  
This Home: **277**  
Average Home: **150**

## Wall Insulation



R-Value

**R-15**

## Floor and Foundation Insulation



Foundation Type

**Unvented Crawlspace**

R-Value

**R-10**



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### HOME ASSET DETAILS

# Building Shell



Platinum Level: **244**  
This Home: **277**  
Average Home: **150**

## Rim Joist Insulation



R-Value **R-15**

Installation Quality **Grade 1**

## Air Sealing



Tested and verified using blower door **Yes**

Professionally air sealed **Yes**

Blower door result **981 @CFM50**

Air leakiness: Air changes per hour **1.8 @ACH50**



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### HOME ASSET DETAILS

# Building Shell



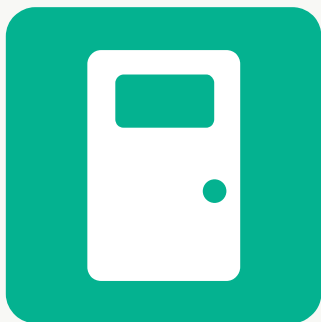
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## Windows and Skylights



Type	Window
U-Factor	0.29
SHGC	0.21

## Doors: Type 1



U-Factor	0.19



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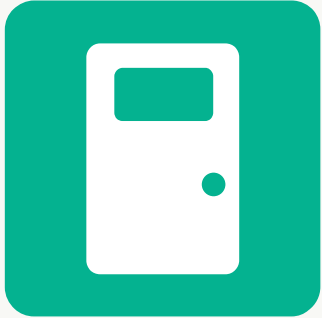
### HOME ASSET DETAILS

# Building Shell



Platinum Level: **244**  
This Home: **277**  
Average Home: **150**

## Doors: Type 2

	U-Factor	<b>0.13</b>

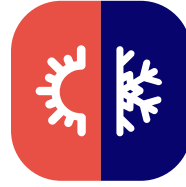


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## HOME ASSET DETAILS

# Heating and Cooling



Platinum Level: **292**  
This Home: **314**  
Average Home: **180**

### Heat Pump



Type	<b>Air Source Heat Pump</b>
HSPF	<b>10.1</b>
SEER	<b>15.8</b>
Quality installation	<b>Yes</b>
Compressor	<b>Variable-speed</b>
ENERGY STAR®	<b>Yes</b>
Manufacturer	<b>Mitsubishi Electric</b>
Outdoor Unit Model Number	<b>MXZ-4C36NAHZ</b>

### Distribution System: System 1



Type	<b>Forced Air System</b>
Location	<b>100% Within Conditioned Space</b>
Duct tightness	<b>92.2%</b>

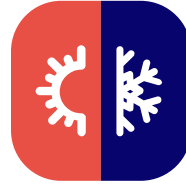


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### HOME ASSET DETAILS

# Heating and Cooling



Platinum Level:	<b>292</b>
This Home:	<b>314</b>
Average Home:	<b>180</b>

## Distribution System: System 2



Type	<b>Forced Air System</b>
R-value	<b>R-8</b>
Duct tightness	<b>93.8%</b>



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### HOME ASSET DETAILS

# Baseload



Platinum Level: **195**  
This Home: **218**  
Average Home: **120**

## Water Heating



Fuel	<b>Propane</b>
Tank Size	<b>none (Tankless / instantaneous)</b>
Energy Factor	<b>0.96</b>

## Refrigerator



ENERGY STAR®	<b>Yes</b>



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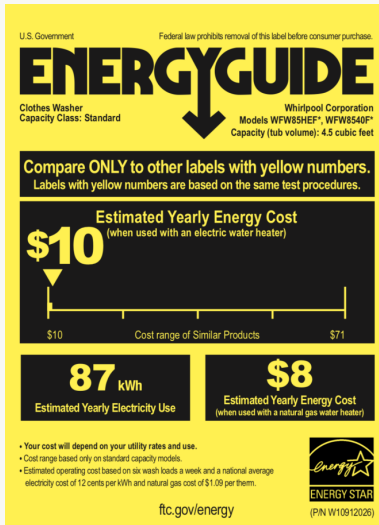
### HOME ASSET DETAILS

# Baseload



Platinum Level: **195**  
This Home: **218**  
Average Home: **120**

## Clothes Washer



ENERGY STAR®

Yes

## Clothes Dryer



ENERGY STAR®

Yes





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### HOME ASSET DETAILS

# Baseload



Platinum Level: **195**  
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Average Home: **120**

## Dishwasher



ENERGY STAR®

**Yes**

## Lighting



Prevalence of ENERGY STAR® Qualified LEDs

**100%**



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### HOME ASSET DETAILS

# Baseload



Platinum Level: **195**  
This Home: **218**  
Average Home: **120**

## Healthy Air



CO Detector(s)	<b>Yes</b>
Whole-house fresh air system	<b>Yes</b>
Dedicated ventilation in every full bathroom	<b>Yes</b>



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### HOME ASSET DETAILS

# Home Management



Platinum Level: **244**  
This Home: **189**  
Average Home: **150**

## Energy Management



Thermostat **Programmable**

Demand-response devices and/or controls **Yes**

## Planning



My Home Profile Issued **Yes (available 2018)**

Comprehensive Home Energy Asset Inventory **Yes**



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## HOME ASSET DETAILS

# Home Management



Platinum Level:	<b>244</b>
This Home:	<b>189</b>
Average Home:	<b>150</b>

This home will have a “My Home Profile” account. This account gives the owner a tool to understand, manage, maintain, and improve the home’s performance.

The “My Home Profile” account access is expected in 2018.

Homeowners wanting to make smart home improvements that can add value to their property use Pearl’s certification for guidance. Descriptions of upgrades relevant to this home can be found in its My Home Profile, as well as general information on expense and complexity. Suggested improvements lower energy or water costs, and increase comfort and indoor air quality. Homeowners may also

choose to work with a Pearl Network Contractor who can create a Home Improvement Plan with more specific advice on what home performance assets should be considered for upgrade or replacement.

**For more information on Pearl’s certification, email at: [info@pearlcertification.com](mailto:info@pearlcertification.com), or visit our website: [www.pearlcertification.com](http://www.pearlcertification.com)**



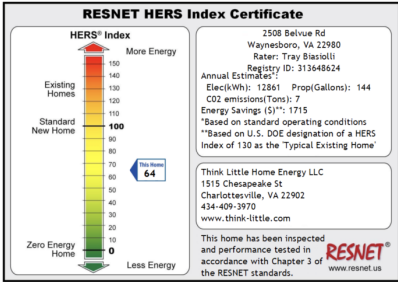
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## HOME ASSET DETAILS

# Third Party Programs

### HERS Index Score

	HERS Index Score	<b>64</b>
	Rating Type	<b>Confirmed Rating</b>
	Registry ID #	<b>313648624</b>
	Certified Rater	<b>Tray Biasioli</b>
	Rater's Organization	<b>Think Little Home Energy LLC</b>
Builder	<b>Hudson Signature Homes</b>	

The HERS Index models the home energy consumption and rates it on a scale from zero (excellent) to over 100 (less efficient than a home built to code in 2006). The HERS Index is often used in conjunction with the ENERGY STAR Certified Homes program, and can be used to demonstrate code compliance in some jurisdictions. This home was rated and earned a HERS Index Score.



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# Appendix A: Appraisal Institute's Green and Energy Efficiency Appraisal Addendum

## Instructions to homeowner or listing agent:

High-performance features can add significant value to a home. Recent studies have indicated that improvements such as air sealing and insulation, high efficiency heating and cooling systems, and other "green" and energy efficient features can add 3-9% onto a home's value, if verified by a third party.

A home may be appraised for different reasons:

- Mortgage refinance
- To discontinue mortgage insurance - if the home's value has increased enough, the homeowner may have sufficient equity in the home to no longer need insurance
- Immediately prior to selling a home to assist in pricing the home
- As part of the home sale process to meet the buyer's lending requirements

Pearl Certification has an AI REPORTS® License Agreement with the Appraisal Institute.

The following appendix can be provided to an appraiser to assist him or her in valuing the home. As stated in the Addendum:

"The objective of this Addendum is to standardize the communication of the high performing features of residential properties. Identifying the features not found on the 1004 form provides a basis for comparable selection and analysis of the features. Builders, contractors, homeowners, and third party verifiers are encouraged to complete this Addendum and present to appraisers, agents, lenders, and homeowners."

*The Appraisal Institute makes no representations, warranties or guarantees as to, and assumes no responsibility for, the data, analysis or work product provided by the individual appraiser(s) or any other individual in the specific contents of the AI Reports®*



## Appendix B: Glossary of Terms

**AFUE:** It's important to choose an energy-efficient, ENERGY STAR rated heating system with a high annual fuel utilization efficiency (AFUE) rating. The higher the AFUE, the more efficient your new heater will be. The AFUE rating is determined by taking the amount of fuel the furnace will use in a year and comparing that to the amount of heat generated by the furnace. An older furnace that has a 70% rating uses 70% of its fuel to make heat. A newer gas fired furnaces are required to have a minimum AFUE rating of 80%. An ENERGY STAR rated furnace will have an AFUE of 90% or higher.

**ACH50:** This term is a measurement of a home's leakiness, and it refers to "Air Changes per Hour" (ACH). ACH means the number of times a home exchanges its volume of indoor air with the outside. Contractors use a "blower door test" for leakiness, and do so at a negative pressure of 50 pascals; hence, energy auditors record the value as ACH50. If an average home has a 15 ACH50, it means the home will exchange its entire volume of air 15 times an hour with the outside. Very efficient and well—sealed homes can be as low as 1 ACH50.

**AC:** This term is short-hand for "air conditioner," which is a piece of equipment that can generate cool air to make your home comfortable in warmer months. Heat pumps, a central AC, mini spits, and window units are kinds of air conditioners.

**Blower Door Test:** Professional contractors use a blower test to determine a home's leakiness (or conversely, its air tightness). To perform the test requires a large fan that pulls air from the house to create negative pressure and a special instrument called a manometer that reads the number of air exchanges your home has under industry standard conditions for testing.

**CAZ Test:** The term "CAZ" stands for "Combustion Appliance Zone," and it is a series of tests contractors perform on gas fueled equipment (furnace, stove, or water heater) for your safety. They will test the appliances for gas leaks, spillage, draft, and carbon monoxide backdrafting when the home is under what's known as "worst case" conditions (e.g., with the dryer, bathroom and oven exhaust fans running). If one or more of the appliances fail the test, your contractor will recommend how to solve for the apparent health and safety issue.

**CFL:** Compact fluorescent lightbulbs (CFLs) are more energy efficient than older incandescent lightbulbs, they do not add additional heat to a room, and they last longer too.

**Conditioned Space:** Rooms in your home which are insulated and heated or cooled by equipment are known as "conditioned space." Conditioned space can include an attic or basement, as well as other common living spaces like bedrooms, bathrooms, and your kitchen.

**Cooling Load:** This term refers to what percentage of the total use or load does a particular cooling unit and its associated duct system provide to the home. For example, if the home has a central air conditioner that provides cool air to the main portion of the home and a window unit that provides cool air to an addition, the cooling load would be a certain percentage split between them.

**Duct Sealing CFM:** Ducts are the tubes which connect your heating and cooling equipment to the floor or ceiling registers which allow the conditioned air into a room. Unfortunately, most homes have leaky ducts which waste a significant amount of energy and can cause comfort, mold, and mildew issues. Ducts should be sealed where they are connected or joined together, and they are tested based on the amount of leakage out of the ducts or air infiltrating (coming into) the ducts. The duct sealing cfm is a measurement of the efficiency of your ductwork.

**Ductless System:** Some heating and cooling equipment does not require ducts, such as radiant floor or radiator heat and window air conditioning units. They are known as "ductless systems."

**Efficiency Factor:** The efficiency factor of a water heater (sometimes referred to as the energy factor), describes a water heater's overall energy efficiency based on the amount of hot water it produces per unit of fuel consumed during a typical day. The water heater's efficiency factor is measured by its energy factor. The higher the number, the more efficient the water heater is. Electric water heaters with an EF of .93 or greater and gas water heaters with an EF of .62 or greater will be 10% more efficient than the standard 40 gallon water heater.



**Energy Management System:** Energy Management Systems have been around for commercial properties for some time, but new technologies have made them applicable and affordable for homeowners to use as well. Energy management is really a process whereby you monitor and control the home's energy usage, with an eye towards conserving it. Typically a Home Energy Management System will include some hardware device as well as software to analyze the data the device picks up from the home's equipment. These systems differ from simpler monitoring devices in that with them, the homeowner can also control features of their home, such as thermostat temperature and lighting, remotely through a website or phone app. They can also provide a report of the home's overall energy performance by analyzing the data they monitor.

**Energy Monitoring System:** In contrast to an energy management system, an energy monitoring system includes devices which help a homeowner see and track energy usage for individual devices or for heating and cooling systems. They measure energy use, but do not manage it.

**EPA Bypass Checklist:** This term refers to a checklist created for ENERGY STAR homes that looks at a list of building details where thermal bypass, or the movement of heat around or through insulation, occurs due to gaps between the air barrier and insulation. If an insulation is installed according to this checklist and can be documented, you are assured to receive the full benefit of that insulation's efficiency.

**ENERGY STAR:** ENERGY STAR is a federal program overseen by the federal government's Environmental Protection Agency. It was designed to encourage greater energy efficiency and bill savings for homeowners through a certified labeling system on appliances and new homes. This program has saved billions of dollars for property owners since its launch in more than 20 years ago.

**Filtration:** This term refers to the filters which are fitted to a home's heating and cooling equipment. A filter's basic function is to protect the longevity of the equipment by protecting it from dust and other airborne particles. Some filters are also designed to improve the indoor air for occupants as well – removing pet dander, pollen, and other impurities from the air passing through the home's ventilation system.

**Forced Air System:** Any home that relies on ducts and vents to move heated or cooled air around has a forced air system installed. Furnaces, central air conditioners, and heat pumps are all examples of forced air systems. Heating Load: This term refers to what percentage of the total use or load a particular heating unit and its associated duct system provide to the home. For example, if the home has a furnace that provides heat to the first level and a heat pump that provides heat to the second level, the heating load would be a certain percentage split between them.

**HEPA Filter:** To be classified as a High Efficiency Particulate Air (HEPA) filter, a filter must meet the Department of Energy standard of removing a minimum of 99.7% of pollen and other particles from the air. HEPA filters can be especially effective in mitigating allergies and asthma triggered by indoor air pollutants.

**HSPF:** This term stands for "Heat Seasonal Performance Factor," and it is used to measure a heat pump's efficiency. It measures the total heating output as compared to the total amount of energy used during the same period to create that heat. The higher the HSPF, the more efficient the unit. An ENERGY STAR unit must have an HSPF of an 8 or higher.

**Home Performance with ENERGY STAR:** Similar to the ENERGY STAR program for new homes and appliances, Home Performance with ENERGY STAR is a federal program designed to help homeowners of existing homes save money on their utility bills. Administered by the national Department of Energy (DOE), it is run by DOE approved sponsors who pre-qualify contractors for participation, perform independent quality assurance inspections, and issue a certificate of completion at the conclusion of qualifying projects.

**Hydronic System:** You are probably familiar with hot water radiators often found in older buildings – these are examples of a hydronic heating system. Some newer homes incorporate these systems (which can be glycol, water or electric) into the slab foundation or under tile floors.

**LED:** A "Light Emitting Diode" or LED is a special semiconductor device which emits light when electricity is passed through it. LEDs have a fuller light spectrum than CFLs, can turn on immediately, and their costs have come down dramatically in the past three years. LEDs are very energy efficient, and depending on the manufacturer and application, they can last for decades.





**MERV:** The Minimum Efficiency Rating Value or MERV of an air filter tells you how effective that filter is at removing indoor air pollutants from a home's ventilation system. MERV filters can be almost as effective as a HEPA filter, and they can be installed in more applications.

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**MERV # Typical controlled contaminant**

1 - 4	Pollen, dust mites, cockroach debris, sanding dust, spray paint dust, textile fibers, carpet fibers
5 - 8	Mold, spores, dust mite debris, cat and dog dander, dusting aids
9 - 12	Legionella, Humidifier dust, Lead dust, Milled flour, Auto emission particulates, Nebulizer droplets
13 - 16	Bacteria, droplet nuclei (sneeze), cooking oil, most smoke and insecticide dust, most face powder, most paint pigments

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**Mini-Split:** Mini-splits are a kind of heat pump or air conditioner, and they are often used in remodels or retrofits where adding ducts is impractical or impossible. Mini-splits are small and can be zoned for individual rooms.

**Multistage Compressor:** A multistage compressor provides many benefits over a single-stage compressor in an air conditioning unit. With a single-stage compressor, the system is either on or off, and when it is on it is functioning at 100% of its capacity. A multistage compressor is on more often but functions at around 80% of its capacity, which actually save energy (and money) in the long run. It also means less temperature spikes and greater comfort for the home's occupants.

**Non-Programmable Thermostat:** A thermostat is used to sense the temperature of the room and will turn on and off the heating or cooling equipment to reach the desired temperature setting. Although they are the least costly thermostat, non-programmable thermostats are imprecise compared to programmable or wi-fi thermostats, and they provide the homeowner with only one option for controlling over their temperature setting – to manually change it.

**Photovoltaics:** This terms applies to solar power generation and solar panels. A photovoltaic converts solar energy from the sun into a stream of electrons that provides power for buildings and devices.

**Programmable Thermostat:** A thermostat is used to sense the temperature of the room, and based on how it is programmed, it will turn on and off the heating or cooling equipment to reach the desired temperature setting. Programmable thermostats can have many settings (set points): ones for weekday and weekends, ones for when the house is unoccupied due travel, and even daily settings timed according to when you're asleep, awake, away at work, etc. Programmable thermostats can save homeowners money by not running heating and cooling equipment at times or temperatures when not needed.

**R-Value:** R-value indicates how well an insulative material resists heat flow, and the higher the R-value, the better it insulates.

**RESNET Installation Grade:** This grading system applies to insulation installs, and it lowers the operative R-value for insulation installs which are poorly done. Missing areas, compressed insulation, and voids all lower the performance of insulation and lower the grading of it as well.

**Rim Joist:** This component of your home is critical to air leakage, and it is the perimeter joist often referred to as the sill plate when it lies between the foundation and the walls. It is one of the first places a contractor will go to apply insulating foam to reduce air leakage.

**Smart Thermostat:** This device functions like a regular thermostat in that it controls the home's heating and cooling equipment. However, it is also "learning" thermostat - the software "learns" the preferences of the occupants based upon adjustments occupants make over time, and it automatically adjusts the temperature for comfort and energy bills savings. In addition, they can be controlled remotely by phone apps and other desktop software.

**SEER:** This terms stands for "Seasonal Energy Efficiency Ratio," and it measures the efficiency of a central air conditioner. The higher the SEER number, the more efficiently the unit will operate all season long. It is similar to the HSPF but applies to cooling. An ENERGY STAR heat pump or air conditioner must have a SEER of 14 or higher.

**U-Factor:** U-factor is a rating of how well the window insulates. Generally the numbers range from .25 – 1.0. The lower the value the better it insulates.



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**Unconditioned Space:** This term refers to rooms you have in your home which are not insulated and/or heated or cooled. Most attics are unconditioned, as are garages, and some basements. If you have ductwork in an unconditioned space, it is important to seal and insulate it for maximum comfort and energy cost savings.

**Wi-Fi Thermostat:** A wi-fi thermostat controls when your heating and cooling equipment turns on just like any other thermostat; however, because it can connect to a home's internet router, the homeowner has the option of controlling it remotely through a phone or web application. Some models of wi-fi thermostats "learn" the patterns of the home's occupants and adjust their settings accordingly.