
Education Credit

In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

“This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors code /1 hour energy** continuing education requirements.”

For additional continuing education approvals, please see your credit tracking card.



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Aprilaire®

**Leverage the Marketability of High
Performance Homes:**

Capitalize on consumer demand for
healthy air while meeting building codes
and energy goals

Who is Aprilaire?

Our Vision

Healthy air
in every home.



Our Mission

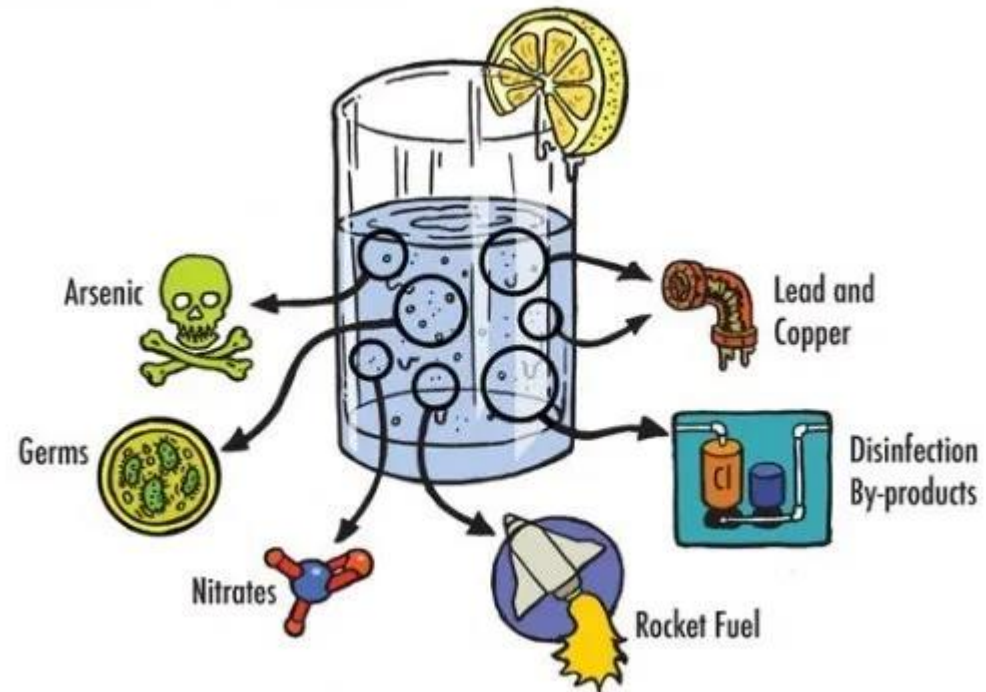
To enhance people's
health by improving the
air in their homes.



**We believe everyone
deserves healthy air.**

- We create, design, build, and educate on seamless and affordable solutions for healthy air.
- Our products and systems manage air purity, humidity, temperature, and fresh air supply for all types of homes in all locations and environments.
- This is both a responsibility and a market opportunity that will grow along with the health, social, and environmental benefits of making homes more livable.

Who wants \$100?





What is Healthy Air? It's attributes and impact.



● Temperature

- The attribute we are all most familiar with in regards to comfort in the home.
- It's primary impact - comfort - is subjective
- Available in every home and managed through a thermostat.



● Purity

- Most easily thought of as the amount of particulate in the air.
- From pollen to cook smoke, particulate plays one of the largest roles in indoor quality and homeowner health.
- Purifying the air is done by trapping these particulates, usually in a disposable filter.



● Freshness (Ventilation)

- Refreshing the air in home is achieved through the introduction of outside air via natural or mechanical ventilation.
- Without ventilation indoor air becomes stale and potentially dangerous as concentrations of VOCs build in the house.
- Mechanical ventilation can help protect health and comfort while preserving energy efficiency.

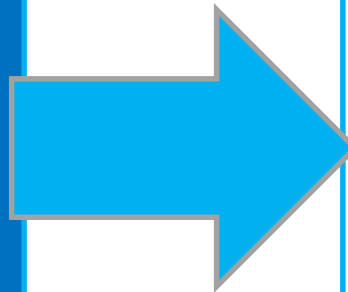


● Humidity

- The amount of water vapor in the air.
- Relative Humidity is that amount expressed in a percent and how we measure it in the home.
- Like temperature it has an optimal range for comfort, as well as health and home preservation.

Air Quality studies

According to the EPA, however, the levels of indoor air pollutants are often 2 to 5 times higher than outdoor levels, and in some cases these levels can exceed 100 times that of outdoor levels of the same pollutants. In other words, sometimes the air inside can be more harmful than the air outside.



Studies have linked a number of health problems to particle pollution, including

- Premature death in people with heart or lung disease
- Nonfatal heart attacks
- Irregular heartbeat
- Asthma
- Decreased lung function
- Respiratory problems

What's the problem?



The cost of a green home doesn't have to be your health...



Air Purity

Just like dirty water, dirty air poses a significant health risk. Whole-home air purification protects your family's health (as well as your HVAC system) from harmful particulates like allergens, mold spores, dust mites and viruses.



The solution for pollution is dilution

Refreshing the air in your home is crucial for maintaining a healthy environment. Stale air leads to odors, increased humidity and a high concentration of volatile organic compounds (VOCs). Without proper ventilation, comfort and health are at risk.

Exposures to VOCs can result in:



Asthma Attacks



Itchy Eyes



Sneezing and Runny Nose



Headache

Long-term exposure to VOCs can cause:



Kidney Damage



Elevated Blood Pressure

“...He states how the blower loses significant air flow capacity trying to move air with even small amounts of dirt buildup on the blower blades.

He estimates that even 1/8 of an inch of buildup on a blower blade can reduce fan capacity by 30%!! That means 360 CFM loss on a 1200 CFM (3 Ton) system!! That means 180 CFM loss with merely 1/16 of an inch build up on a blower wheel!”



David Richardson ...from the National Comfort Institute (NCI) 2018

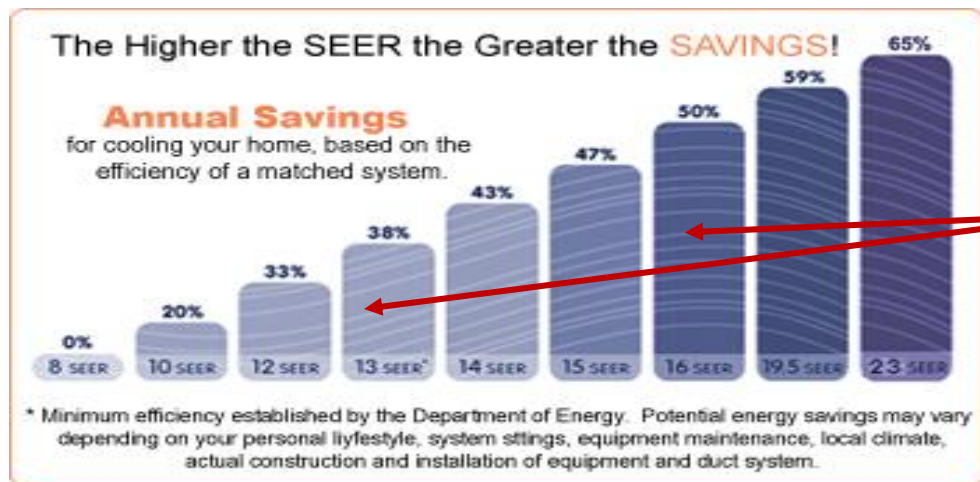


Better for the HVAC system – less energy consumed



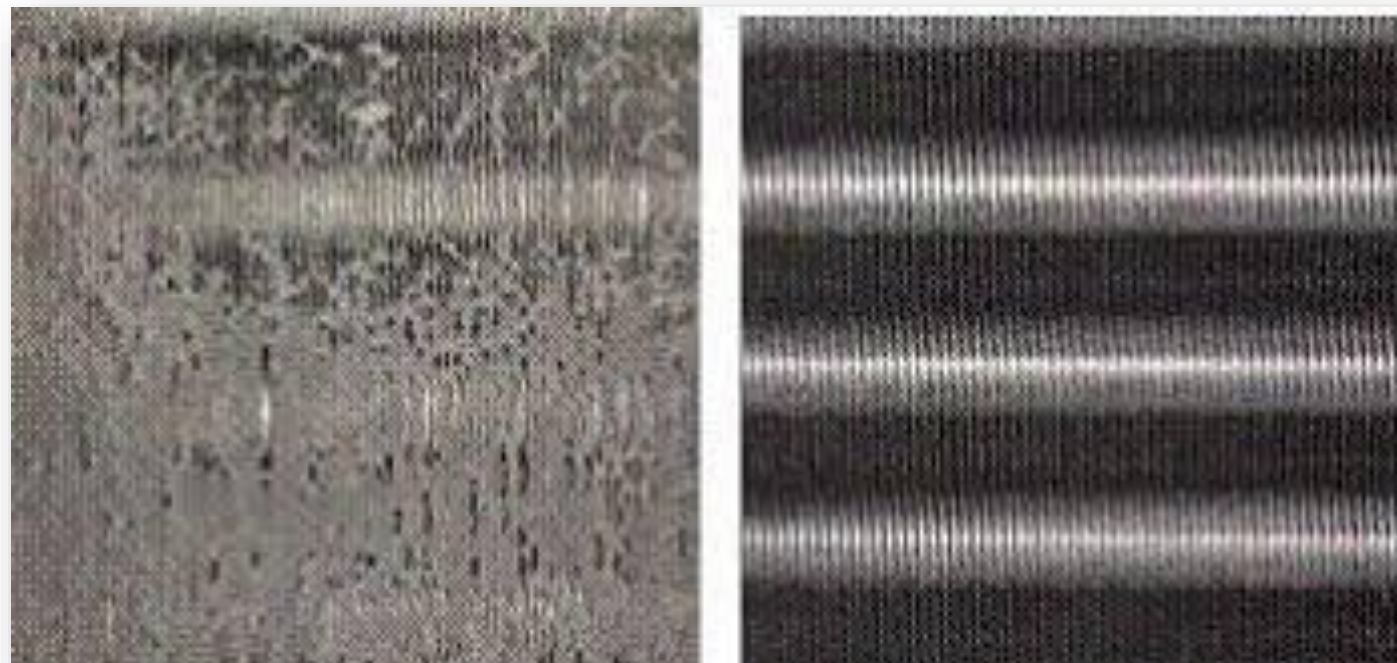
Better for the HVAC... Less energy consumed





A 10%-20% **that's almost the difference in energy consumption between a SEER 16 a SEER 13**

“According to the U.S. Department of Energy, you will **increase** your AC’s energy consumption by 10 to 20 percent just by replacing a dirty, clogged filter AND keeping the evaporative coil clean”*



Protecting the home's integrity

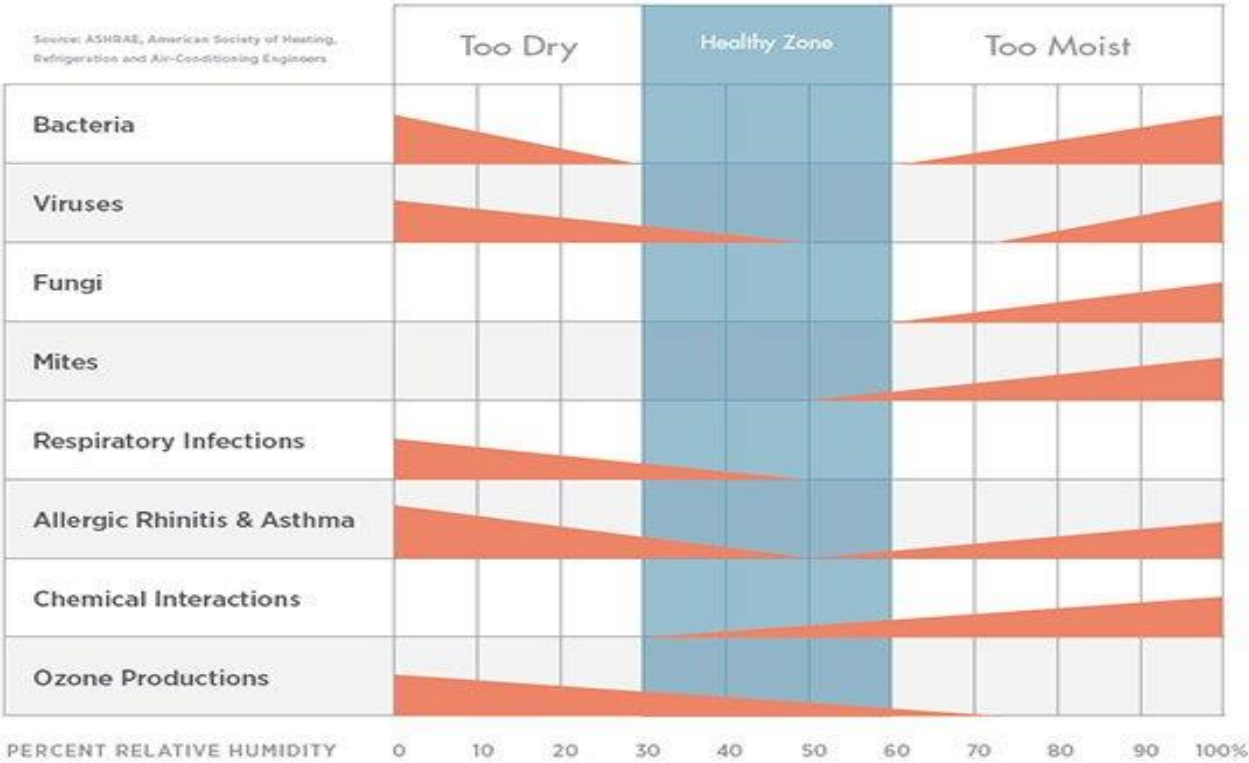
Everything in the home, from the construction materials to the people is hygroscopic. That means humidity must be balanced.



Relative Humidity

Optimum relative humidity range for human comfort and health

(a decrease in bar height indicates a decrease in effect for each of the items)



The relative humidity in the home can impact asthma, allergies, skin conditions and increase incidence of cold and flu. Control of humidity also protects against mold growth, smelly odors and damage to the home.

Temperature

Temperature plays an essential role in comfort and health. With improved programmability, Wi-Fi and zoned controls, comfort can be improved while preserving energy efficiency.

Control



What's the driest place on earth?

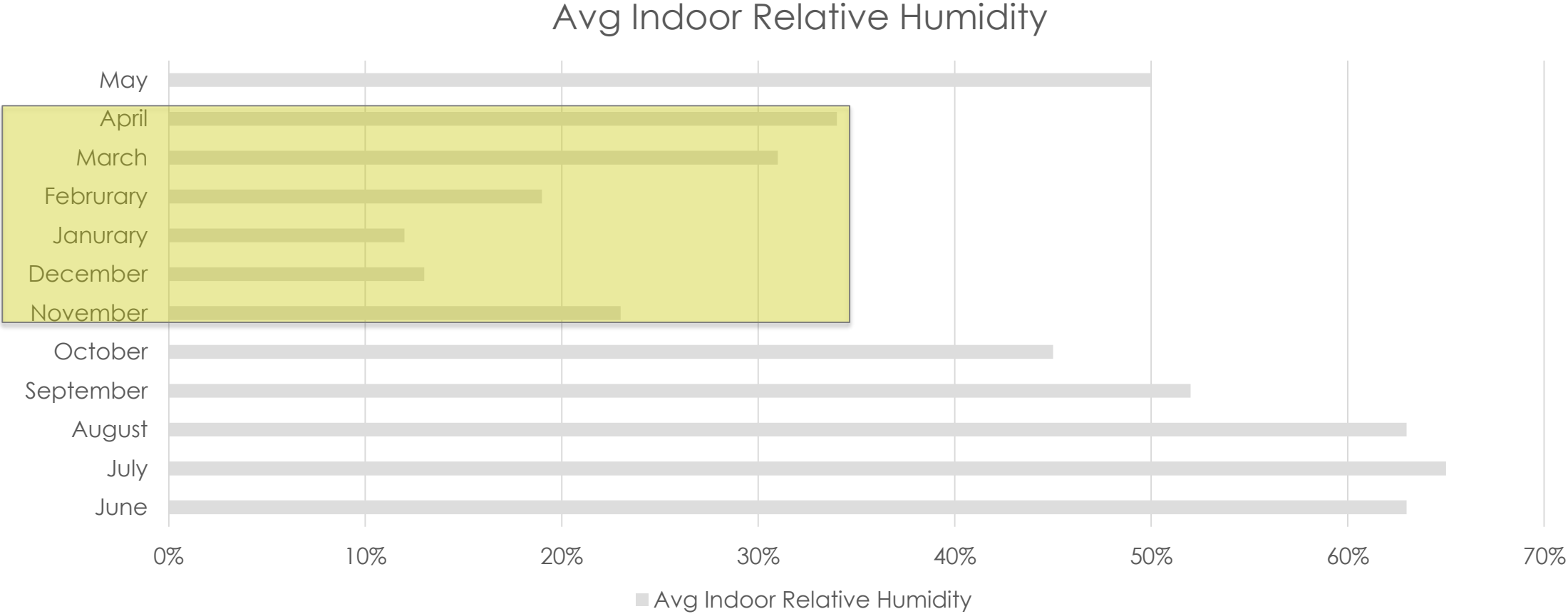
The relative humidity of Death Valley, California, is 22%.

The relative humidity of the Sahara Desert is 21%.

The relative humidity of a home in Minneapolis MN on a 20F day, with the forced-air furnace blowing, is usually 14-16%



This is life in Minneapolis in the winter



Warm up with No Heat!

At 70°, for every 5% you increase the indoor relative humidity, you increase the “apparent temperature” approximately 1°.

For every 1° that you reduce your thermostat setting, you save approximately 4% on your heating consumption.

This means that if customers raise the Rh by 20% (from 15% to 35%) they can save 16% or more on their heating costs while being way more comfortable and healthier.

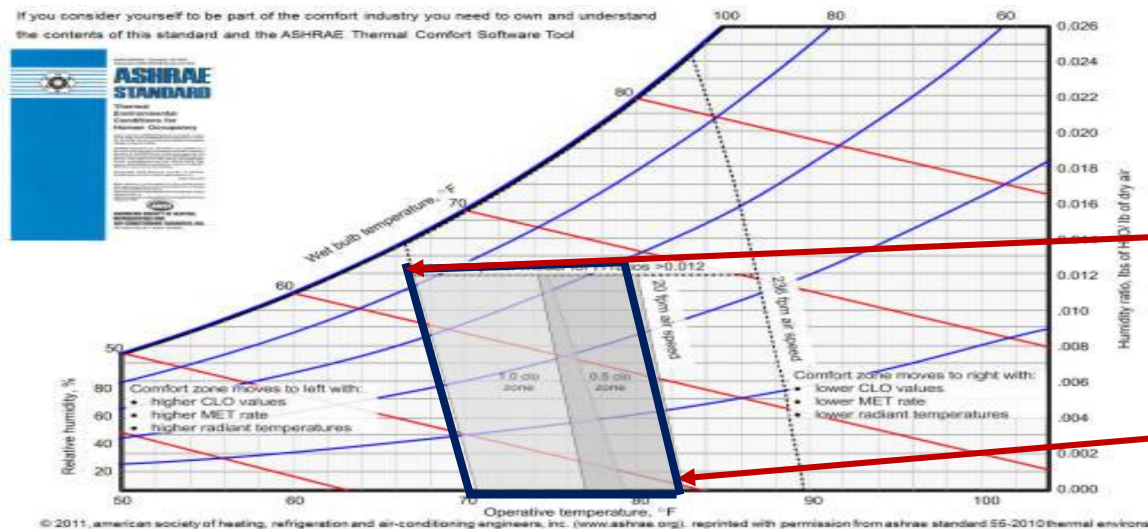
**\$150.00 (Gas) x 6 Months = \$900.00 per heating season
x 16% = \$144.00 per year
x 5 Winters = \$720.00.....**



How Relative Humidity Makes Us Feel

The percentage of moisture in the air, as compared to the amount of moisture which the air can hold.

The amount of moisture which air can hold INCREASES ↑ as air temperature rises and DECREASES ↓ as air temperature cools.



ASHRAE "Comfort Window" Says:

68 Degrees & 70% Rh

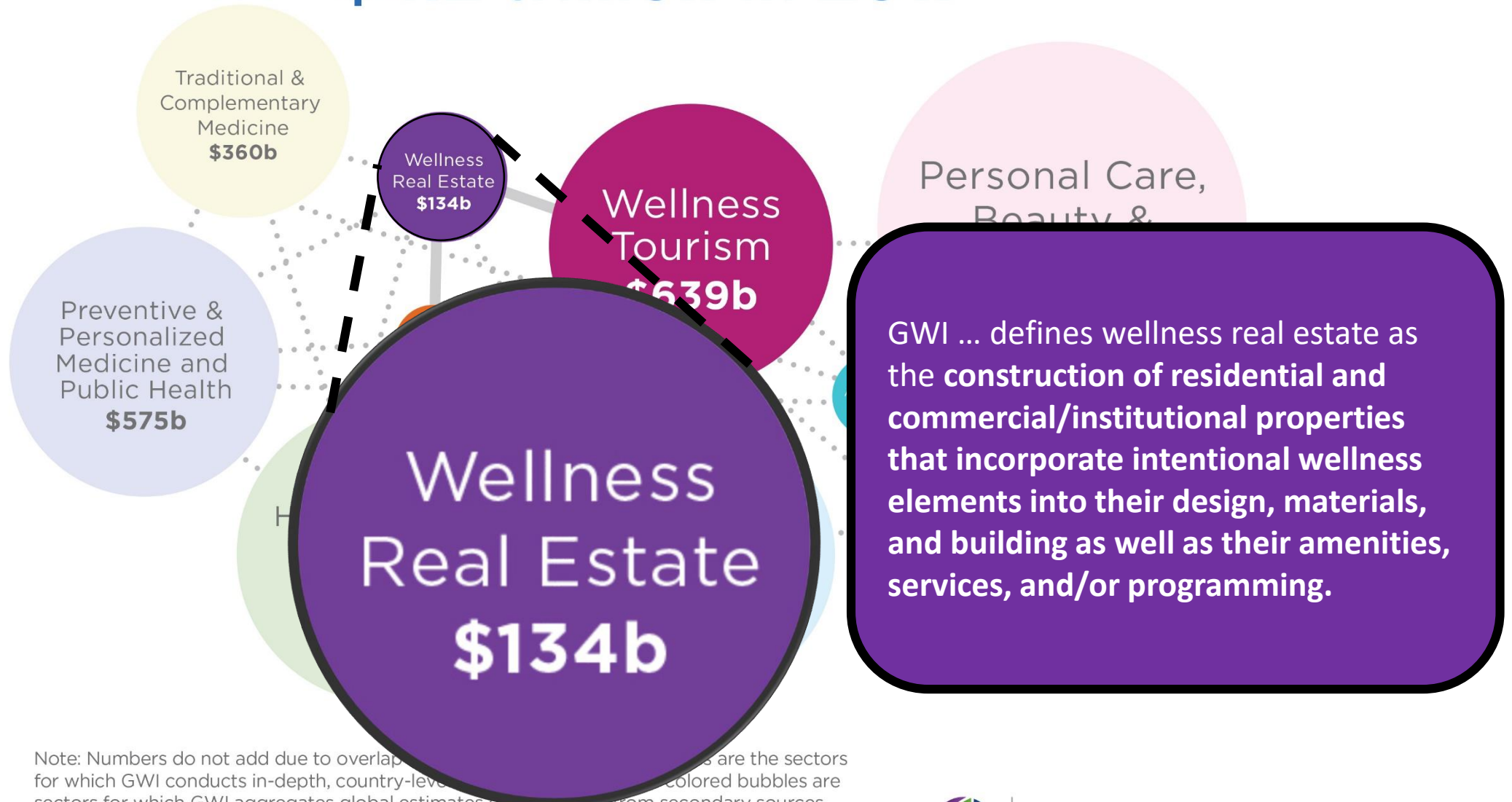
Feels The Same To Human Skin As

82 Degrees & 19% Rh

Consumer Awareness



GLOBAL WELLNESS ECONOMY: \$4.2 trillion in 2017



Note: Numbers do not add due to overlap. The colored bubbles are the sectors for which GWI conducts in-depth, country-level research. The gray bubbles are sectors for which GWI aggregates global estimates only, drawing from secondary sources.

Source: Global Wellness Institute, Global Wellness Economy Monitor, October 2018




GLOBAL WELLNESS
INSTITUTE™


The intersection of Energy Efficiency and Healthy Air



Modern building practices and the impact on IAQ

- Meeting today's building codes
 - Above code programs such as Energy Star, LEED, etc.
- 

Does building code address health?

1. Simply meeting building code requirements is not always good for the home or IAQ.
 2. This is compounded by the fact that the systems are often set up incorrectly.
 3. There is a lack of education and motivation to readjust the installed equipment when construction is complete.
- 

Simply meeting codes is not good for the home or IAQ

In some areas, simply installing a bath fan will meet ventilation code. But exhausting air out of the house with no supply creates a negative pressure situation. Balanced or Supply systems are preferred for the health of the homeowner.



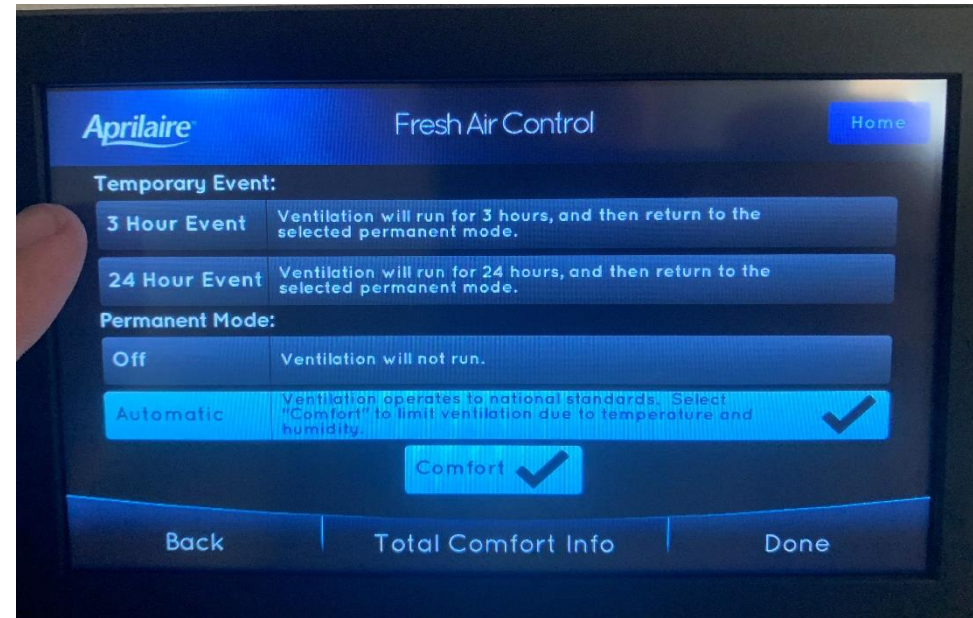
Simply meeting codes is not good for the home or IAQ



Supply ventilation also sends the fresh air through the HVAC system to condition the air before reaching the living space. Controls temperature and humidity of incoming air.

Post-sale education

Education is key. A homeowner that does not know how to operate the system, will not operate the system.



Shout it from the rooftop!

**You're building tight.
You're ventilating right.
You're addressing IAQ
issues.**

What next?



Families make many decisions throughout the day in an effort to be healthier...



Our homes should be a healthy haven – and IAQ is an integral component.

The environment *around* our body is as important as what we put into it...

we spend
93%
of our time
indoors

**HEALTHY
AIR**

FOR A HEALTHY HOME

Homebuyers are aware of the issues

When asked about priorities on “spending money on my home,” homebuyers and owners list “making my home healthier” as one of the **TOP 2** responses.

68% believe their house has an impact on health.

65% are concerned about indoor air quality. **

*2016 Shelton Group EcoPulse Survey

**2018 Shelton Group EcoPulse Survey

Talk the homebuyer's language



POLLEN



PETS



ASTHMA



ALLERGY



DIRT



DUST



Maintain Wellness

Humidifiers give your family's immune system a fighting chance against dry air.



Save Energy

Keep your family happy at lower temperatures this winter.



Protect Your Home

Proper humidity protects wood floors and furniture from dry-air damage.



Experts Agree

Maintain proper humidity levels; enjoy a healthier home.

Cite 3rd party studies

Indoor air contains pollutants that can affect human health... The most effective ways to improve your indoor air are to reduce or remove the sources of pollutants and to ventilate with clean outdoor air. In addition, research shows that filtration can be an effective supplement to source control and ventilation

- **United States EPA, Guide to Air Cleaners in the Home, 2nd edition**

If you're allergic to indoor allergens and can't control the source of the problem ... it may help to use an air purifier.

- ***Easy ways to improve indoor air quality*, Harvard Health Publishing, March 2018**

PM2.5 and certain volatile organic compounds (VOCs) are the most health damaging air pollutants in homes. Air cleaning and filtration can remove these pollutants and reduce exposures.

- **“Reducing in-home exposure to air pollution,” Lawrence Berkeley National Laboratory**



Earn 3rd Part Validation



Connecting with the homeowner

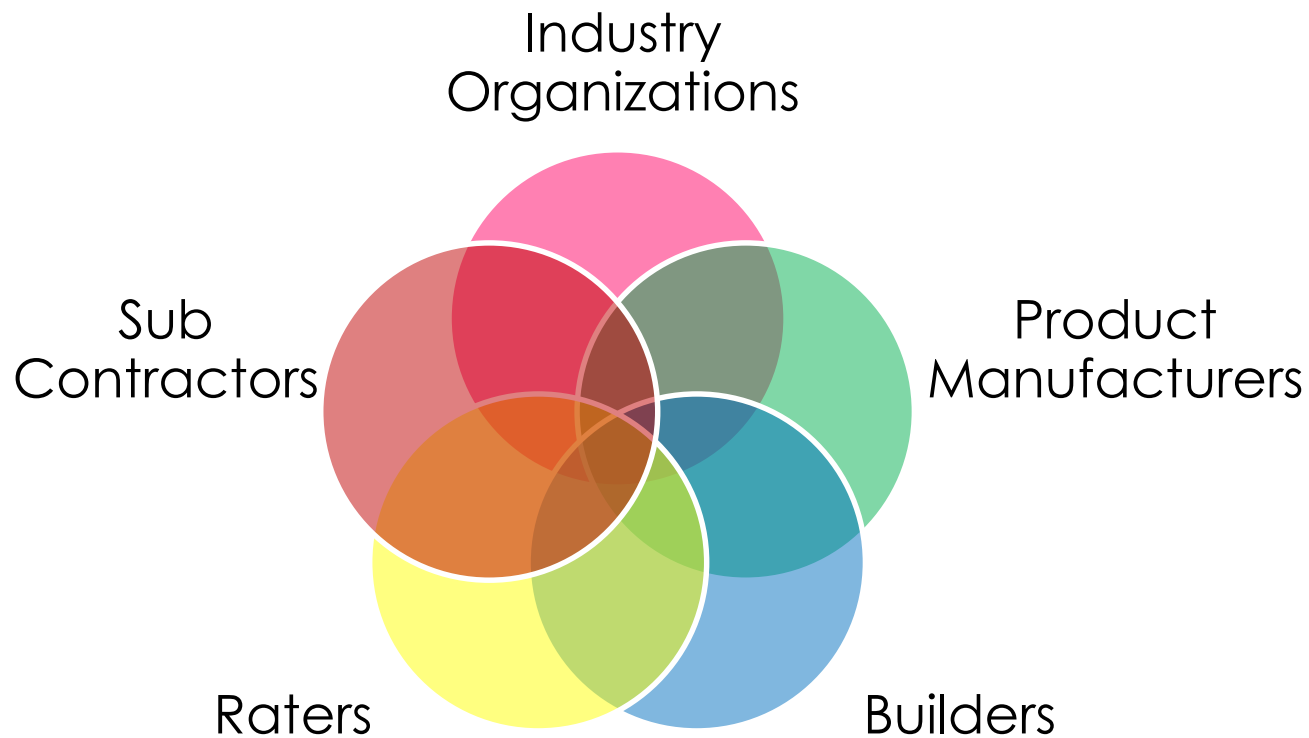


Complete control
from the wall or
Wi-Fi App



LIVING SPACE
MECHANICAL
SUB-SYSTEM

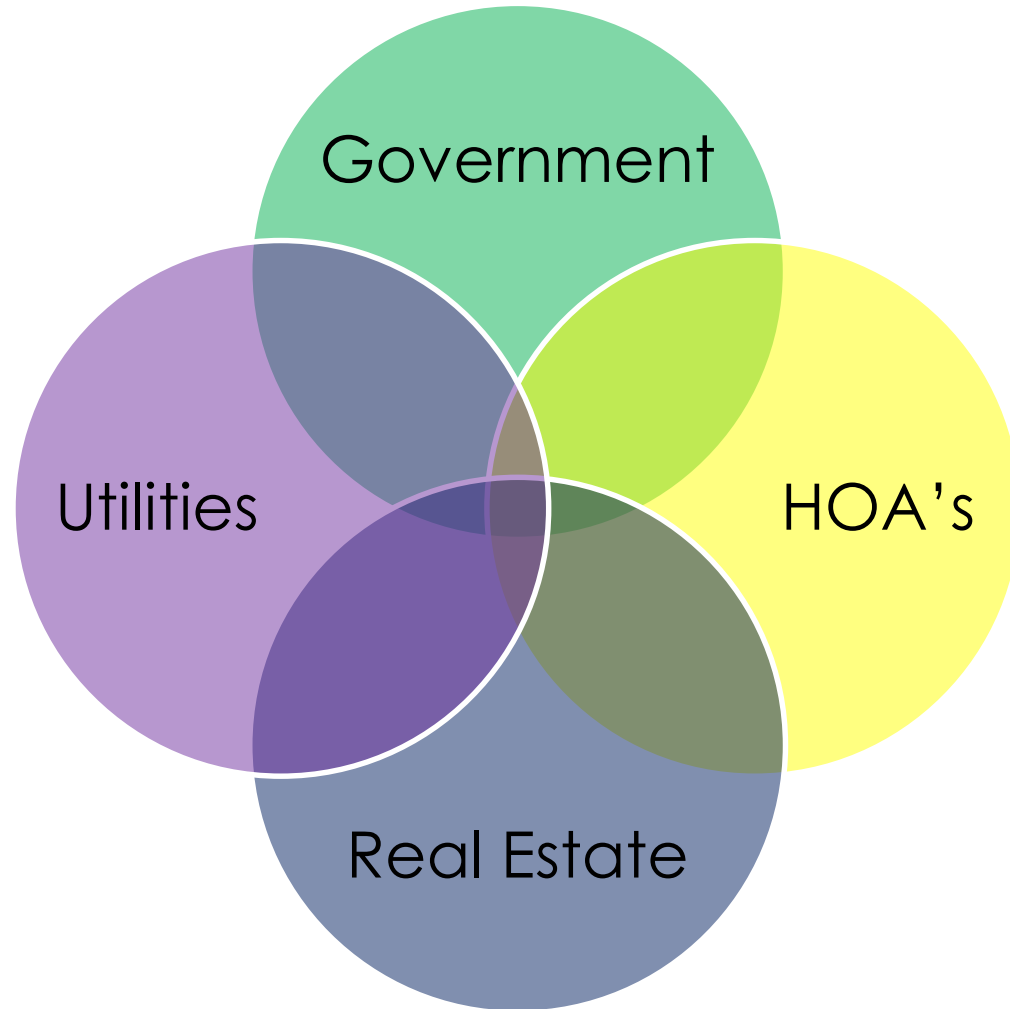
How do we all standardize on healthy air?



Successfully delivering on the promise of healthy homes will require that everyone involved in the home construction industry work together.

No one group will drive this change on their own – **but the unique benefits abound for everyone involved.**

How do we all standardize on healthy air?



The organizations that impact how we live in our homes and how that home is sold for its lifetime will also be important.

The value of health in the home should be expressed by all groups that touch the housing industry.