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# IMPROVE INDOOR AIR QUALITY

WITH A RENEWAIRE ERV

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- ◆ Deficient indoor air quality (IAQ) is an EPA **top-five health risk**
- ◆ People spend **90%** of their time **indoors**
- ◆ Indoor air can be **2–5 times**, and up to 100 times, **more polluted than outdoor air**
- ◆ ERVs **improve IAQ** and **reduce** energy costs



# INDOOR AIR QUALITY MATTERS

As buildings get tighter to seal weather out, they seal in contaminants, causing deficient indoor air quality (IAQ). Typical contaminants include off-gassing from carpeting, furniture and building materials, excess humidity and mold, odors, cooking and cleaning fumes and CO2.

## ADVERSE EFFECTS OF DEFICIENT IAQ



### HEALTH PROBLEMS

Deficient IAQ can cause allergies, headaches, coughs, asthma, skin irritations and breathing difficulties, as well as cancer, liver disease, kidney damage and nervous-system failure.



### DISEASE TRANSMISSION

Ventilation with outdoor air is vital to diluting airborne contaminants and decreasing disease transmission rates.



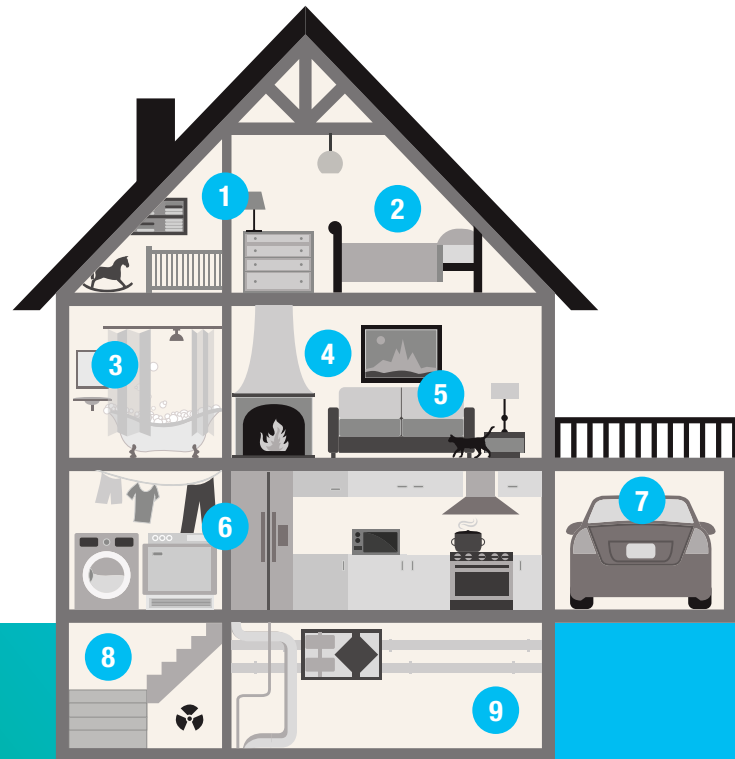
### COGNITIVE IMPAIRMENT

Harvard and Berkeley Lab found that CO2—a constituent of exhaled breath—negatively impacts thinking and decision-making at levels commonly found indoors.<sup>1</sup>



### REDUCED PRODUCTIVITY

Berkeley Lab found that deficient IAQ can cost \$200 billion in debilitated worker performance and \$58 billion in lost sick time.<sup>2</sup>



## HIDDEN CONTAMINANTS AT HOME

- 1 Contaminated Airborne Aerosols:** Aerosols generated by coughing, sneezing, talking and breathing can act as carriers for viruses and bacteria
- 2 Carbon Dioxide:** Exhaled breath
- 3 Humidity:** Exhaled breath, water sources
- 4 Formaldehyde, VOCs, Toxic Gases:** Furniture, mattresses, carpets, cleaners, paints
- 5 Dust Mites:** Carpets, fabrics, foam cushions
- 6 Odors:** Bathrooms, kitchens, occupants, pets
- 7 Carbon Monoxide:** Gas stoves, gas heating systems, garages
- 8 Phthalates:** Adhesives, vinyl, plastic pipes, building materials
- 9 Mold:** Stagnant water, drains, condensate pans, damp areas



Ventilation can enhance IAQ and decrease the transmission of airborne infectious diseases, including COVID-19: [https://bit.ly/COVID19WP\\_22](https://bit.ly/COVID19WP_22)

<sup>1</sup> Romm, "Exclusive: Elevated CO2 Levels Directly Affect Human Cognition, New Harvard Study Shows," Climate Progress, <https://bit.ly/2Vp6AE2>.

<sup>2</sup> Alevantis, Berman, Mills, Perlman, "The Costs and Financial Benefits of Green Buildings," U.S. Green Building Council (USGBC), <https://bit.ly/2KnP50c>.

**RENEWAIRE ERVs  
ARE THE SOLUTION TO  
INDOOR AIR POLLUTION!**



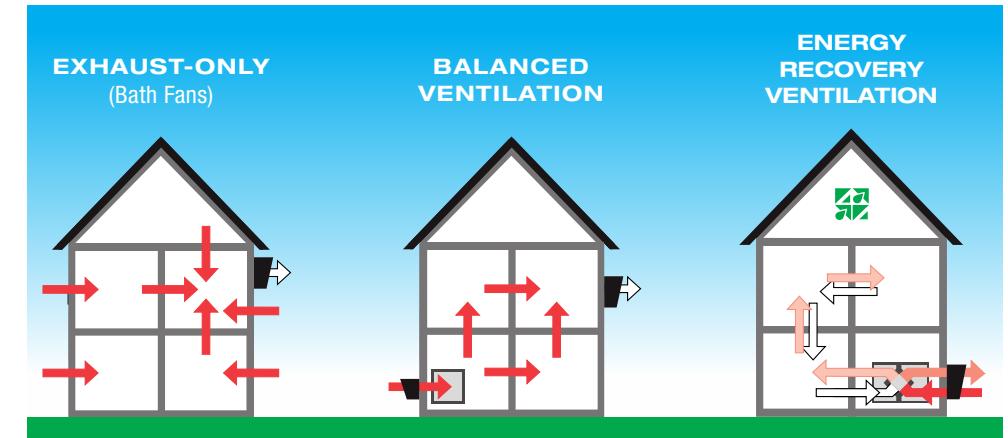
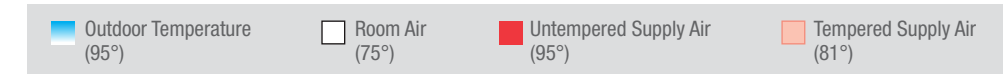
The solution to pollution is dilution achieved via **increased and balanced ventilation**. With enough controlled fresh and filtered outdoor air coming in to replace equal parts of stale indoor air via balanced design, **IAQ will be enhanced**.

### TYPES OF HOME VENTILATION

	FAIR	GOOD	BETTER	BEST
	EXHAUST ONLY (bath fans)	BALANCED VENTILATION	HRV	ERV
<b>EXHAUSTS CONTAMINANTS FROM WHOLE HOUSE:</b> Generally, exhaust-only ventilation, such as bath fans and oven hoods, only expel contaminants from a localized single source. The optimal solution will provide whole-house ventilation.	✗	✓	✓	✓
<b>PROVIDES FILTERED SUPPLY AIR:</b> Exhaust-only units bring in uncontrolled outdoor air that has seeped through cracks and openings. Uncontrolled air is not filtered air. Controlled supply air is preferable as contaminants are filtered out.	✗	✓	✓	✓
<b>PERFORMS WELL IN ALL CLIMATES YEAR-ROUND:</b> Hot, humid or sub-zero extreme environments add a heavy load onto home heating and cooling systems. Because RenewAire ERVs temper the air (temperature and humidity) via energy recovery, they work well in all climates. Additionally, RenewAire ERVs do NOT have issues with freezing in winter conditions, which can be problematic for HRVs: <ul style="list-style-type: none"> <li>◆ Since humidity is transferred via core material in an ERV, the core itself will not freeze so there is no need for defrost (known issue with HRVs)</li> <li>◆ There are no condensate lines to freeze in an ERV (known issue with HRVs)</li> </ul>	✗	✗	✗	✓
<b>OPTIMIZES ENERGY, SAVES MONEY:</b> Energy recovery recycles energy by reusing the otherwise-wasted energy and humidity from exhaust air to temper incoming outdoor air, which saves money year after year by lowering demand/load on your mechanical AC/heating equipment.	✗	✗	✗	✓
<b>EASY TO INSTALL:</b> RenewAire ERVs can be mounted in multiple orientations and they do not require drain pans, which makes them a breeze to install. By comparison, HRVs require drain pans, which can complicate installation. Also, ERVs provide a single exhaust point, which means less equipment to purchase and install (no need for individual bath fans).	✗	Maybe ?	✗	✓
<b>EASY TO MAINTAIN:</b> Since RenewAire ERVs do not require drain pans (like HRVs), issues with frozen drain lines in cold-weather applications are avoided. Additionally, since ERVs provide a single exhaust point, this means less maintenance and cleaning. Our ERVs are effortless to maintain—simply check and replace disposable filters as needed and vacuum the ERV core face once a year.	✗	Maybe ?	✓	✓

### THE BEST SOLUTION

Other methods to improve IAQ usually increase energy cost, but the best solution to improve IAQ while decreasing energy cost is RenewAire's energy recovery ventilation technology, which provides **enhanced IAQ and greater ventilation efficiency**.



**Whole Home Ventilation:** No ☹, Single Space Exhaust  
**Filtered Supply Air:** No ✗  
**Tempered Supply Air:** No ✗

**Whole Home Ventilation:** Yes ☺, push/pull provides optimized ventilation effectiveness to all spaces  
**Filtered Supply Air:** Maybe ☹  
**Tempered Supply Air:** No ✗

**Whole Home Ventilation:** Yes ☺, push/pull provides optimized ventilation effectiveness to all spaces  
**Filtered Supply Air:** Yes ☺  
**Tempered Supply Air:** Yes ☺

## RENEWAIRE SINGLE/MULTI-FAMILY ERV FRESH AIR SYSTEM



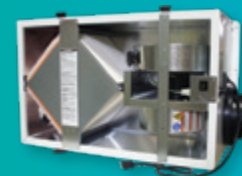
### SL SERIES

- ◆ 30–130 CFM
- ◆ Low-profile, commercial-grade appliance, often used for multi-family units
- ◆ EC motors, variable speed with boost-mode, Dial-A-Flow easy balancing, plug-in and hard wired power available
- ◆ MERV 13 filter accessory



### AWARD WINNING EV PREMIUM SERIES

- ◆ 30–390 CFM
- ◆ Residential ERV certified for commercial-grade applications
- ◆ EC motors, variable speed with boost-mode, Dial-A-Flow easy balancing, plug-in and hard wired power available
- ◆ MERV 13 filter accessory
- ◆ EV Premium SH, MH, LH awarded TechHome Builder's 2023 Brilliance Award



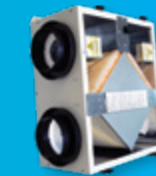
### BR SERIES

- ◆ 40–140 CFM
- ◆ Two-duct design
- ◆ Indoor



### GR SERIES

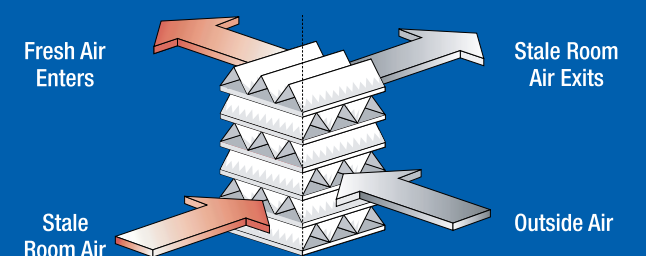
- ◆ 40–110 CFM
- ◆ Contractor grade—four-duct design
- ◆ Indoor



### EV SERIES

- ◆ 30–540 CFM
- ◆ Four-duct design
- ◆ Indoor

### RENEWAIRE CORE TECHNOLOGY OPTIMIZES ENERGY & SAVES MONEY



**Airstreams do not mix** and pollutants are not transferred across partition plates



## BETTER HEALTH + LOWER BILLS = INCREASED VENTILATION VIA ERVs

The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 62.2 committee has established a residential ventilation standard, known as *Ventilation and Acceptable Indoor Air Quality in Residential Buildings*. The goal of this standard and its continuous revisions are to not only **evaluate and recommend every building's minimum ventilation needs**, but also emphasize indoor air quality and its relationship with occupant health. **ERVs reduce energy costs while meeting the standard.**

### MIN. VENTILATION AIRFLOW REQUIRED BY SQ. FT.\*

BD	<500'	501'-1000'	1001'-1500'	1501'-2000'	2001'-2500'	2501'-3000'	3001'-3500'	3501'-4000'
1	30	45	60	75	90	105	120	135
2	38	53	68	83	98	113	128	143
3	45	60	75	90	105	120	135	150
4	53	68	83	98	113	128	143	158
5	60	75	90	105	120	135	150	165

See the chart above to calculate the minimum ventilation required for your home:  $.03 \times \text{sq. ft.} + 7.5(\text{bedroom} + 1)$ . For example, a 2,200 sq. ft. home with 4 bedrooms requires a minimum of 104 CFM.

\* Infiltration credit not considered, please contact RenewAire to assist in selecting a unit that is best suited for your home.

**PLEASE CONTACT**



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