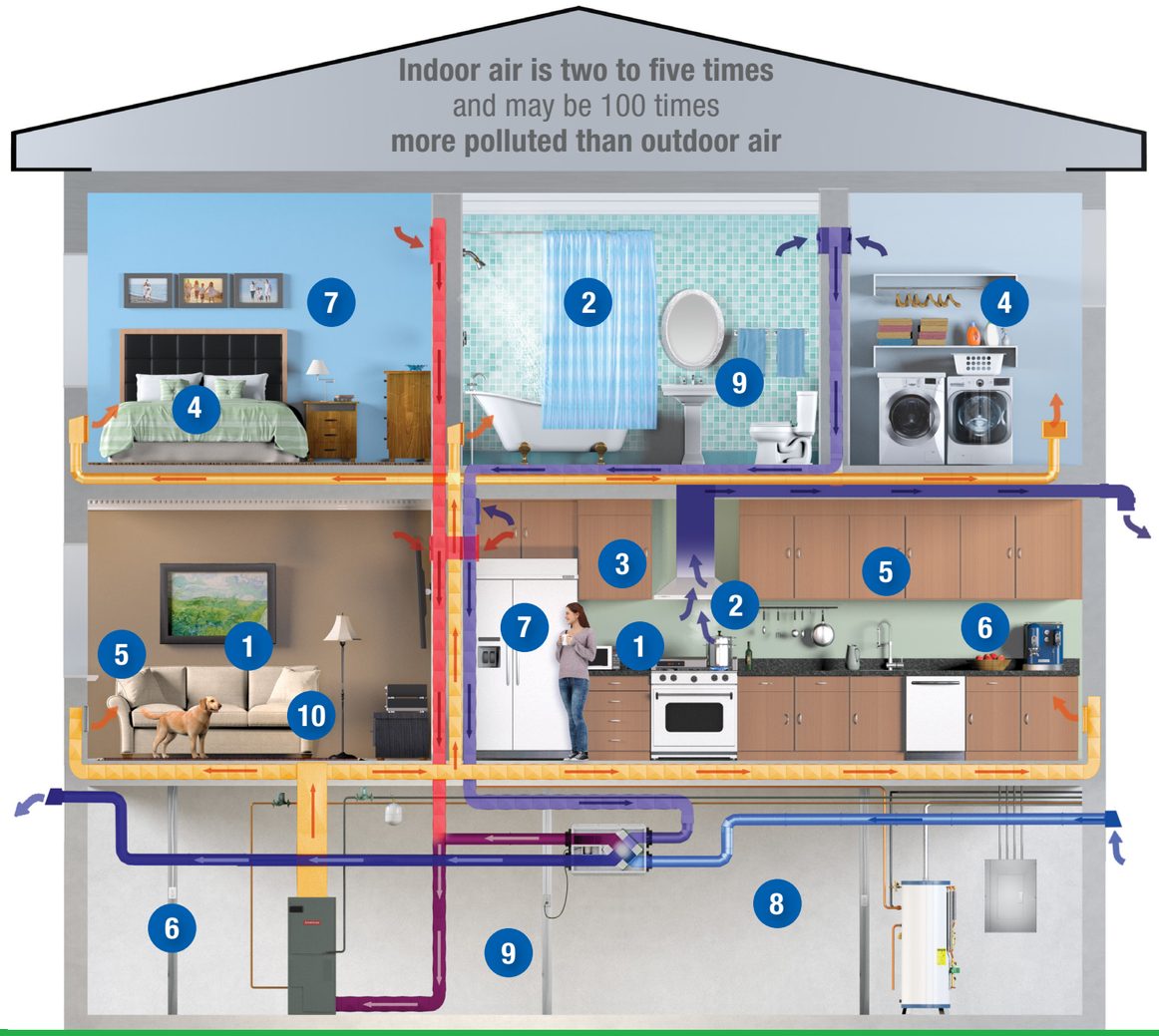
GUIDE TO HIGH-PERFORMING HOMES WITH

Exceptional

INDOOR AIR QUALITY

RenewAire®
Energy Recovery Ventilation

INDOOR **AIR QUALITY MATTERS**



HIDDEN AIR CONTAMINANTS IN YOUR HOME

1. **Contaminated Airborne Aerosols:** Aerosols generated by coughing, sneezing, talking and breathing can act as carriers for viruses and bacteria
2. **Humidity:** Exhaled breath, water sources
3. **Carbon Dioxide:** Exhaled breath
4. **Formaldehyde, VOCs, Toxic Gases:** Furniture and treatments, mattresses, carpets, adhesives, cleaners, paints
5. **Odors:** Bathrooms, kitchens, occupants, pets
6. **Phthalates:** Adhesives, vinyl, plastic pipes, building materials
7. **Bioeffluents:** Human metabolic process
8. **Radon:** Uranium decaying in soil
9. **Mold:** Stagnant water, drains, condensate pans, damp areas
10. **Dust Mites:** Carpets, fabrics, foam cushions

DEFICIENT INDOOR AIR QUALITY IS A THREAT

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, CO2, hair and fibers, to name a few.

Deficient IAQ is a threat since it can harm occupant health and cognitive function, damage structures and hurt the bottom line. It's especially concerning since people spend about 90% of their time indoors, and indoor air can be two to five times—and up to 100 times—more polluted than outdoor air. The EPA ranks indoor air pollution as a top-five health risk.[1]

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.

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.[2]

DISEASE TRANSMISSION

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

Ventilation can enhance IAQ and decrease the transmission of airborne infectious diseases, including COVID-19: **https://bit.ly/COVID19WP_RA**

REDUCED PRODUCTIVITY

Berkeley Lab found that deficient IAQ can cost $200 billion in debilitated worker performance and $58 billion in lost sick time.[3]

WHO'S AT RISK?

All people are at risk of suffering from deficient IAQ due to considerable time spent indoors. However, children and seniors are most vulnerable due to weaker immune systems. Children are especially susceptible because proportionally they inhale more pollutants than adults and have narrower airways (World Health Organization).

RENEWAIRE VENTILATION SOLUTIONS IMPROVE HEALTH AND WELLNESS

[1] "Why Indoor Air Quality is Important to Schools," U.S. Environmental Protection Agency (EPA), https://bit.ly/2SoyRJc.

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

[3] Alevantis, Berman, Mills, Perlman, "The Costs and Financial Benefits of Green Buildings," U.S. Green Building Council (USGBC), https://bit.ly/2KnP5Oc.

PEOPLE SPEND
90%
OF THEIR TIME
INDOORS

IMPROVE IAQ AT HOME

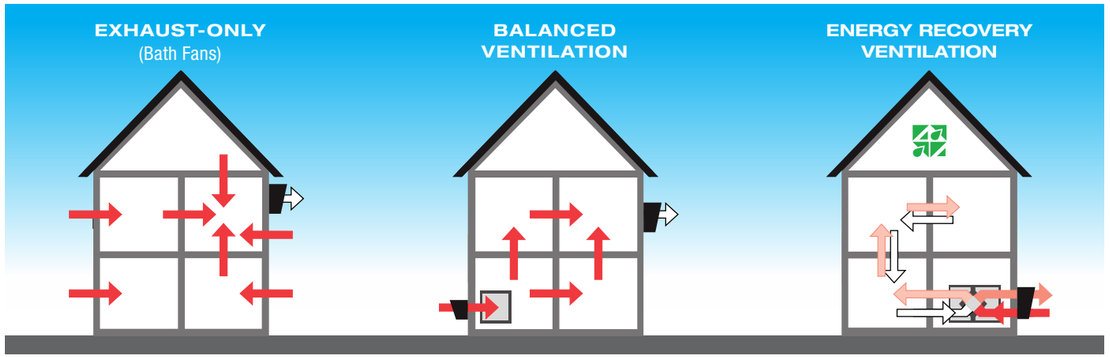
HIGHEST-QUALITY INDOOR AIR VIA VENTILATION

The solution to pollution is dilution achieved via **increased and balanced ventilation**, which is the most effective way to realize cleaner and healthier indoor air. 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 EXHAUST ONLY (bath fans)	GOOD BALANCED VENTILATION	BETTER HRV	BEST ERV
EXHAUSTS CONTAMINANTS FROM WHOLE HOUSE: 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.	✗	✓	✓	✓
PROVIDES FILTERED SUPPLY AIR: 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.	✗	✓	✓	✓
PERFORMS WELL IN ALL CLIMATES YEAR-ROUND: 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: ◆ 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) ◆ There are no condensate lines to freeze in an ERV (known issue with HRVs)	✗	✗	✗	✓
OPTIMIZES ENERGY AND SAVES MONEY: 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.	✗	✗	✗	✓
EASY TO INSTALL: 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 ?	✗	✓
EASY TO MAINTAIN: 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

The best solution is RenewAire's energy recovery ventilation technology, which provides **enhanced IAQ**, greater **ventilation efficiency** and major **energy cost savings**.



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 ✓

ASHRAE 62.2

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.

See the chart below to calculate the minimum ventilation required for your home: .03 x sq. ft. + 7.5(bedroom +1). For example, a 2,200 sq. ft. home with 4 bedrooms requires a minimum of 104 CFM.

MINIMUM VENTILATION AIRFLOW REQUIRED BY HOME SIZE*

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

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

RENEWAIRE SINGLE/MULTI-FAMILY ERV FRESH AIR SYSTEM

EV SERIES PREMIUM

- 30–280 CFM
- Residential ERV certified for commercial-grade applications
- Features: EC motors, variable speed with boost-mode, Dial-A-Flow easy balancing, plug-in power
- MERV 13 filter accessory

NOW AVAILABLE IN THREE SIZES!

NEW!
EV PREMIUM S

EV PREMIUM L

EV PREMIUM M

EV SERIES

- 30–540 CFM
- Four-duct design
- Indoor (EV450 also available as outdoor)

SL SERIES

- 51–76 CFM continuous mode, 76–94 CFM boost-mode
- Four-duct design
- Indoor

GR SERIES

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

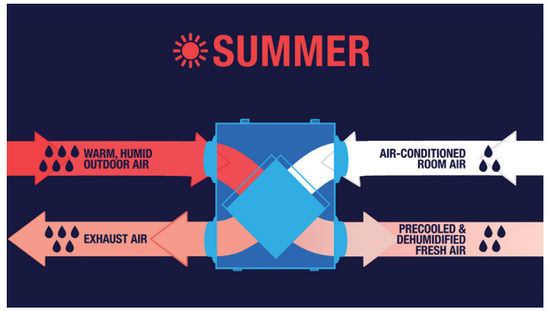
BR SERIES

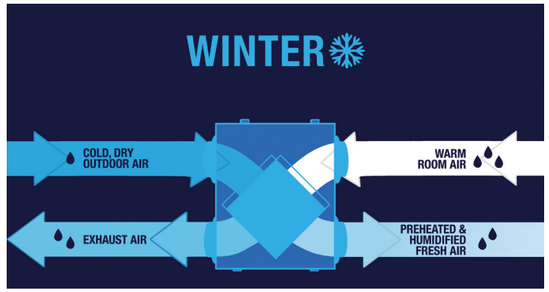
- 40–140 CFM
- Two-duct design
- Indoor

ERVs FOR EVERY HOME

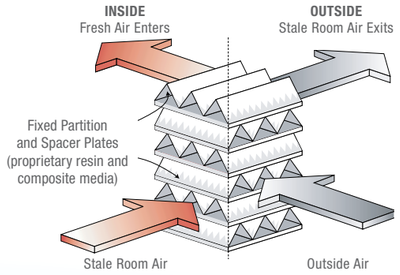
OPTIMIZING ENERGY EFFICIENCY IN EVERY GEOGRAPHIC REGION OR CLIMATE

RenewAire residential ERVs are a sustainable ventilation solution. **Our static-plate, cross-flow core separates the outgoing, polluted indoor airstream from the incoming fresh airstream—while simultaneously transferring total energy** (heat and water vapor) between the two. Airstreams do not mix and pollutants are not transferred across partition plates. In the winter, that means that the cold, dry outside air is preheated and humidified by the outgoing warm interior air. And in the summer, the warm, humid outside air is precooled and dehumidified by the outgoing air-conditioned interior air.

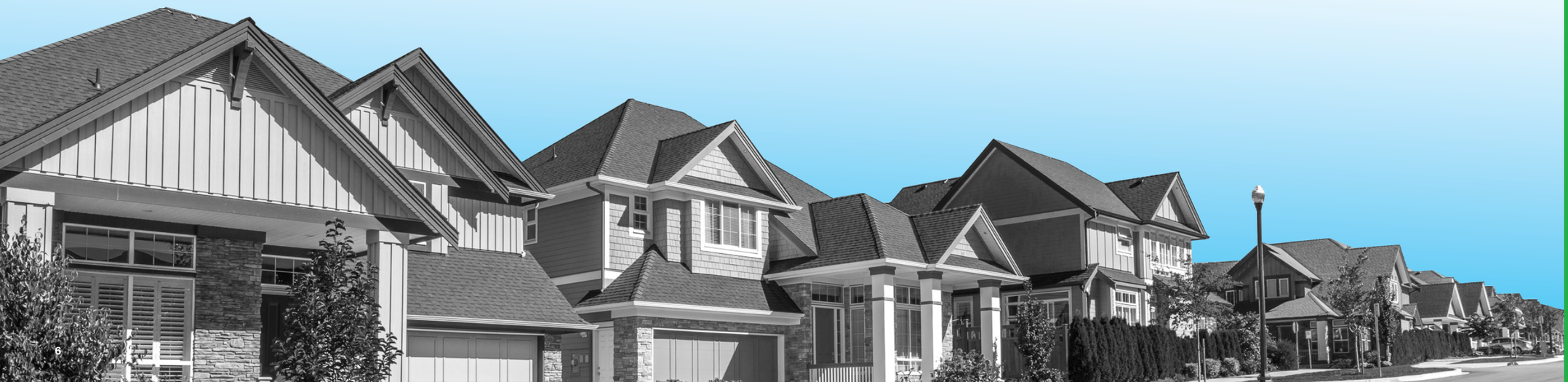




AIRSTREAMS DO NOT MIX & POLLUTANTS ARE NOT TRANSFERRED
ACROSS PARTITION PLATES



RENEWAIRE VENTILATION SOLUTIONS INCREASE MONETARY BENEFITS



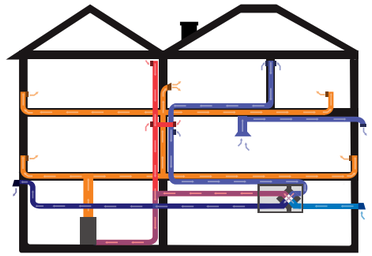
INSTALLATION STRATEGIES
FOR NEW OR RETROFIT CONSTRUCTION

CENTRAL EXHAUST

The preferred installation application for any **new construction**, as it is the most energy-efficient ventilation strategy.

Central Exhaust provides an ample supply of filtered outdoor air and replaces bathroom exhaust fans, capturing energy from bathrooms and kitchens (general air, not hood exhaust) that would otherwise be wasted.

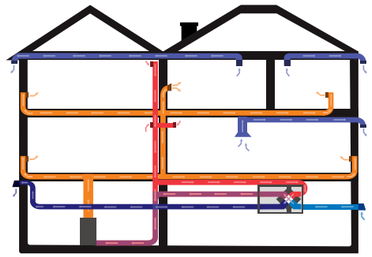
According to the Department of Energy (DOE), balanced ERV ventilation results in the lowest level of total volatile organic compounds (TVOCs).[4]



GENERAL EXHAUST

Installation option for **retrofitting an ERV into your established system**.

General Exhaust provides an ample supply of filtered outdoor air and is often a preferred option for use in a home that already has an HVAC system in place. This installation method utilizes exhaust fans (except kitchen hood) and ductwork that already exist. Fresh air may be supplied to the furnace/AC via return air duct connections. This is commonly referred to as partial bypass.



[4] Rudd, Bergey, "Ventilation System Effectiveness and Tested Indoor Air Quality Impacts," DOE, https://bit.ly/3er2fqjf.

RenewAire supports the

PILLARS OF SUSTAINABILITY

PEOPLE
Reduce acute and chronic health problems

Improve alertness and cognitive function

Boost productivity

PLANET
Committed to green manufacturing since 1982

Protect the environment with less energy use

Achieve a green home with greater energy efficiency

PROFIT
Can benefit from a short payback period

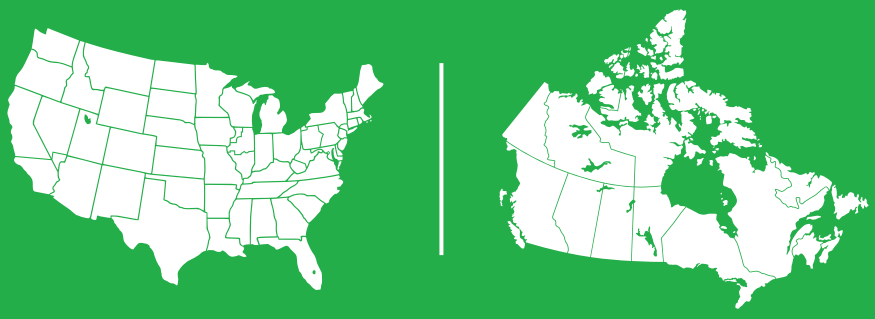
Realize annual energy savings

Trouble-free operations and maintenance

INSTALL A RENEWAIRE ERV

FOR EXCEPTIONAL IAQ IN YOUR HOME

To find a RenewAire representative in North America,
visit renewaire.com/how-to-buy/find-a-rep



For information on ERV rebates in your community, visit dsireusa.org

RENEWAIRE ERVs ARE THE SUSTAINABLE VENTILATION SOLUTION

Soler&Palau Ventilation Group
Member of the S&P Group Family of Brands

RenewAire® Energy Recovery Ventilation

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