



American Cities
Climate Challenge

TECHNICAL BRIEF

Balanced Ventilation

with Heat Recovery

for multifamily housing

A balanced ventilation system removes stale air and brings in clean, fresh outside air. A well-ventilated space will improve indoor air quality and can prevent mold and other contaminants that contribute to residents' health problems.

VALUE TO RESIDENTS

Provides healthy, filtered air in a cost-effective, efficient, and environmentally friendly manner.

Heat Recovery Ventilation (HRV) uses the heat from air being exhausted to warm the fresh air entering the building. This method preserves up to 90% of the heat from exhaust air; recycling this energy reduces heating and cooling costs throughout the year.



RECOVERS UP TO

90%

of heat

FROM EXHAUST AIR

MERV 8+

filtration removes common allergens and asthma triggers

BENEFITS



Energy savings

Captures heat from exhaust air, reducing the energy required to maintain a comfortable indoor climate and saving energy costs.



Control

Reduces the infiltration of air from other units and exterior walls to keep unwanted smells and dirty air out, and controls moisture to improve the building's durability.



Fresh air

Delivers fresh air to residents with advanced filtration to protect against particulate matter from fires, air pollution, busy roads, and more.



Health

Improves resident health and reduces healthcare visits and associated costs, especially for those with respiratory conditions.



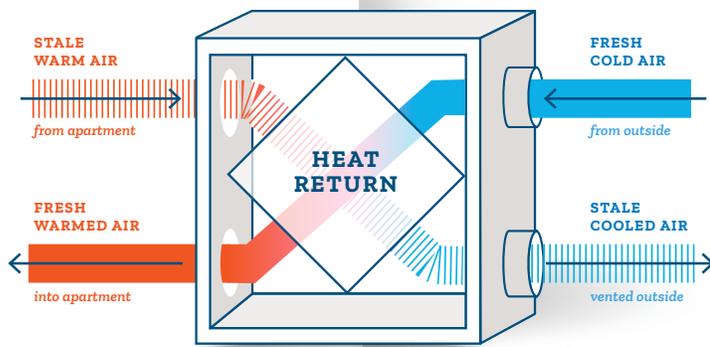
Improved comfort

Warms fresh air entering the home, keeping air temps stable and reducing the need to open windows for fresh air, thereby reducing heat loss.

Technology

Uses the heat in stale exhaust air to preheat incoming fresh air.

Heat Recovery Ventilation is a system that uses the heat in stale exhaust air to preheat incoming fresh air. HRV ducts bring air from outside into living spaces and bedrooms while exhausting stale air from kitchens and bathrooms. This heat exchange process is extremely efficient, recovering **70-90%** of the heat from exhaust air.



Investment

In recent affordable housing buildings, HRVs cost approximately \$3,000 or less per unit. This is expected to decrease as the 2018 WA State Energy Code is implemented. The energy and cost savings recovered typically pay for the operating costs of the system.

COST

\$3K
or less
PER UNIT

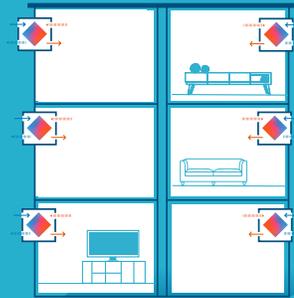
LIFESPAN

15
years
WITH REGULAR FILTER
MAINTENANCE

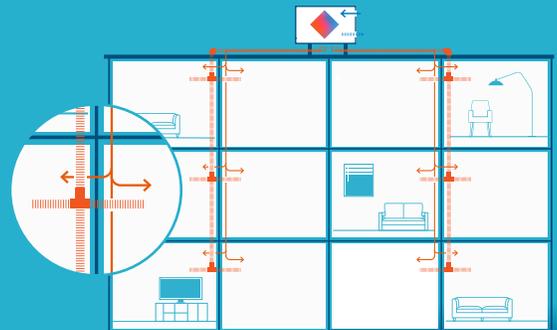
3 common strategies

- ✓ **Unitized systems**
The HRV and ducts are located within each residential unit.

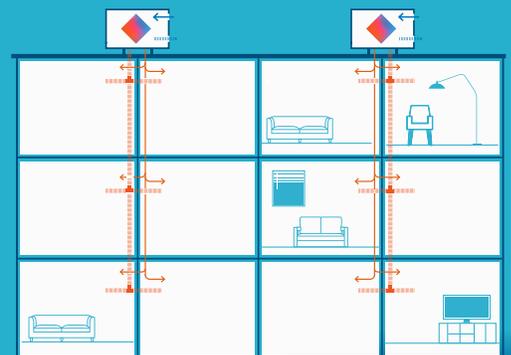
BEST SUITED FOR LARGER UNITS.



- ✓ **Central systems**
The HRV is located on the rooftop.
FOR SMALLER UNITS AND SIMPLIFIES MAINTENANCE.



- ✓ **Semi-centralized systems**
This option groups residential units by floor or vertical stacks to balance the advantages of each system.



LEARN MORE

Department of Energy Whole-House Ventilation
energy.gov

Exemplary Buildings Program
exemplarybuilding.housingconsortium.org