

HVAC FACT SHEET

A proven approach to high-performance HVAC improves efficiency, health, and comfort



The next step in the evolution of HVAC.

An advanced performance dedicated outside air system (DOAS) approach pairs the highest performance HVAC equipment with key design principles to provide cleaner and safer indoor air, enhance indoor comfort, and reduce commercial building HVAC energy use. This approach has been demonstrated to reduce HVAC energy use by an average of 69% when compared to a code-minimum version of the existing equipment (often a packaged rooftop unit).¹

High-efficiency equipment meets thoughtful HVAC design.

Advanced performance DOAS is proven to deliver a variety of benefits to building owners, operators, designers, and occupants alike, including:

- Significantly reduces energy costs and lowers overall building energy use by an average of 48% and HVAC energy use by an average of 69%.¹
- Improves indoor air quality and reduces viral risk by using fresh and filtered air with little-to-no circulation – all while using up to 37% less energy than a similar high-ventilation variable air volume (VAV) system.²
- Allows for the downsizing of heating and cooling equipment to reduce maintenance costs and the lifetime cost of the system.
- Increases occupant comfort by improving temperature stability and allowing for zones with unique temperature controls.
- Offers design flexibility with several manufacturers offering a variety of readily available qualifying heat/energy recovery ventilators (HRVs/ERVs).
- Meets or exceeds the Washington State Energy Code requirements for new construction or major HVAC system replacements, which requires DOAS in many applications.

THE FOUR KEY ELEMENTS OF ADVANCED PERFORMANCE DOAS

- 1/ High-performance electric heat pump system
- 2/ High efficiency heat or energy recovery ventilator with $\geq 82\%$ sensible effectiveness
- 3/ Right-sized heating and cooling equipment
- 4/ Fully decoupled ventilation from heating and cooling



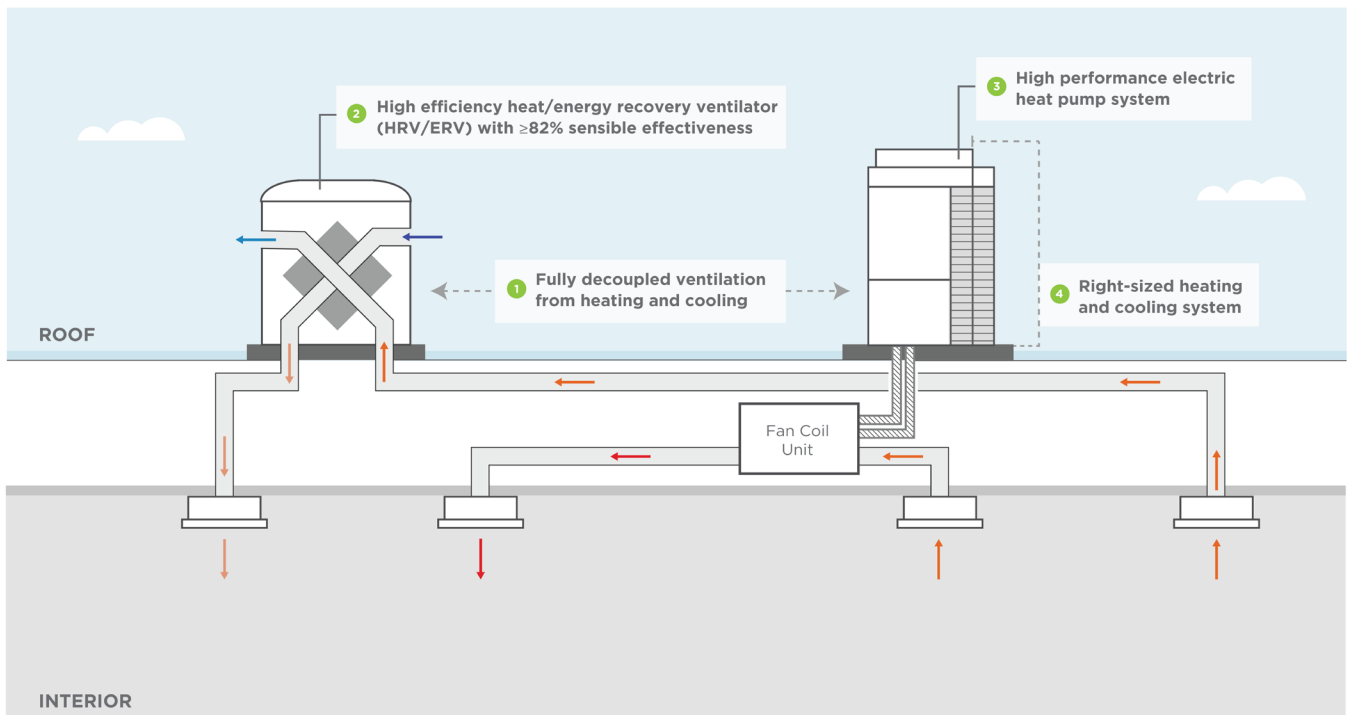
How advanced performance DOAS works.

Advanced performance DOAS combines high-performance HVAC equipment with the DOAS approach that separates heating and cooling from the ventilation system. This design minimizes energy by combining a high-efficiency HRV/ERV (82% or greater sensible effectiveness) with a high-efficiency, ENERGY STAR®-rated heating and cooling system. And with many available system options on the market, the advanced performance DOAS approach offers built-in flexibility at the HVAC design phase.

The decoupling of ventilation air from primary heating and cooling allows for optimal and efficient control of each critical building function while circulating 100%

fresh and filtered outdoor air throughout the building, with little-to-no recirculation. The advanced performance DOAS approach further maximizes performance by allowing building designers to right-size their heating and cooling equipment and ductwork. This right-sizing increases system performance, saves space on the roof, and offers building designers more design flexibility.

Northwest installations have revealed some ideal project types that can benefit from this approach, including small-to-medium-sized buildings (less than 50,000 sq. ft.), both new construction and major renovations, and several buildings types, including schools, retail, government, and office buildings.



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¹ When compared to a code-minimum version of the existing equipment (often a packaged rooftop unit); Data based on 12 demonstration projects in small-to-medium commercial buildings throughout the Northwest.

² Study performed by the Northwest Energy Efficiency Alliance (NEEA), Red Car Analytics and the University of Oregon, 2022.

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