

Multi-Residential HVAC System Comparison

SYSTEM	System Description	Capital Cost (\$-\$\$\$\$\$)	Occupant Impact: Comfort & Control	Maintenance Costs (1-3)	Energy Efficiency (1-3)	Carbon Emission Impact (1-3)	Unit Power Requirements (1-3)	Occupant Impact: Noise (1-3)
VERTICAL PACKAGED THROUGH THE WALL UNIT (heat pump with electric aux. heat)	Standalone vertical air to air heat pump unit with auxiliary heat and built-in ERV. Requires no piping, boiler/heat rejection plant. Truly standalone.	\$	System can provide heating or cooling all year long	X	Ē	N/A	<u></u>	444
VERTICAL HEAT PUMP	Centralized system with fluid cooler and boilers to maintain water loop temperatures. Heat pump located as a vertical unit in suite near outside wall. Also can be had with built-in ERV.	\$\$	System can provide heating or cooling all year long	***	<u></u> <u> </u>	Level Level	⇔	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
TWO-PIPE FAN COIL	Centralized system with central chiller, cooling tower and boilers. Fan coils with changeover heating or cooling system. Also can be had with built-in ERV. Fan coil in suite, central chiller, cooling tower, boilers.	\$\$	System can provide seasonal heating / cooling only. Measures can be taken to provide comfort in the shoulder seasons.	××	Ê		Ϋ́	Ð
HYBRID HEAT PUMP	Centralized system with fluid cooler and boilers. The unit contains a DX cooling coil and operates as a traditional HP in cooling and has a separate hydronic heating coil and operates as a fan coil in heating. The system has one set of pipes and operates with elevated condenser water temperatures in the heating season to allow for simultaneous heating and cooling. Heat pump located as a vertical unit in suite near outside wall. HRV can be integrated with heat pump to reduce bulkheads.	\$\$\$	System can provide heating or cooling all year long	***	Ê	Pur Pur	Ϋ Ϋ	57 F.
AIR-COOLED VRF	Centralized system with large condenser banks located in an outdoor area, changeover branch boxes connecting multiple indoor cassettes (many different styles) allowing for heating or cooling all year round.	\$\$\$	System can provide heating or cooling all year long	XX	ÊÊ	N/A	Ϋ́	¶. ₽
FOUR-PIPE FAN COIL	Centralized system with central chiller, cooling tower and boilers. Fan coils with 4 pipes (heating and cooling) allow for full heating or cooling. Also can be had with built-in ERV. Fan coil in suite, central chiller, cooling tower, boilers.	\$\$\$\$	System can provide heating or cooling all year long	XX	Ê		Ϋ́	
WATER COOLED VRF	Centralized system with water (water to refrigerant) cooled condenser banks located in an indoor area, changeover branch boxes connecting multiple indoor cassettes (many different styles) allowing for heating or cooling all year round. Boilers and cooling rejection devices are required to maintain proper water loop temperatures	\$\$\$\$\$	System can provide heating or cooling all year long	***	ÊÊÊ		Ÿ	Ş

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