

# Mechanical HVAC System Options

**ARCHETYPE HOME**

- 3,700 sq. ft.
- Single-family detached custom home
- Located in Climate Zone 4



**STANDARD PERFORMANCE**

BC Building Code Minimum/Energy Step Code Level 1 to Level 3

IF SELECTED CONTINUE BELOW

OR

**HIGH PERFORMANCE**

Energy Step Code 4 or 5

IF SELECTED SEE REVERSE SIDE

**RADIANT**

OR

**FORCED AIR**

**+ CONSIDERATIONS**

- More typical in Lower Mainland
- Fewer challenges with drops and furred walls
- Multiple independent zones
- Little potential for noise issues
- Ventilation independent

**- LIMITATIONS**

- Slower reaction to temperature setting changes
- Cooling requires addition of forced air system
- Mechanically complex – relative to forced air
- Less options to manage indoor air quality

**+ CONSIDERATIONS**

- Most typical outside of Lower Mainland
- Variety of indoor air quality options
- Quick reaction to temperature setting changes
- Less mechanically complex than radiant
- Easily adaptable to cooling
- Ventilation integrated

**- LIMITATIONS**

- Less zoning options
- More challenging to hide ducting
- Potential for air noise (if not well designed)

**GAS**

OR

**ELECTRIC**

Boiler  
(with radiant distribution)  
**\$36,000 - \$45,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$32,000 - \$45,000**

**TOTAL \$75,000 - \$100,000**

Air-to-Water Heat Pump  
(with radiant distribution)  
**\$46,000 - \$55,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$27,000 - \$40,000**

**TOTAL \$80,000 - \$105,000**



**LEVEL 1-3**

**GAS**

OR

**ELECTRIC**

Furnace  
(with ducting distribution)  
**\$32,000 - \$45,000**

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

Air Conditioning  
**\$6,000 - \$8,000**

**TOTAL \$44,000 - \$62,000**

Air Source Heat Pump  
(with ducting distribution)  
**\$46,000 - \$65,000**

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

**TOTAL \$52,000 - \$74,000**

**GENERAL NOTES ABOUT STANDARD AND HIGH PERFORMANCE**

Budget estimates will vary for both radiant and forced air depending on:

- Quality of equipment and components
- Amount of zoning
- Sophistication of controls
- Style of grilles and registers
- Level of ducting customization to accommodate aesthetics
- Size of heating and cooling loads based climate location
- Market competitiveness and financial margins of HVAC contractor
- Achieving BC Energy Step Code Level 4 and 5 can be done with a variety of mechanical HVAC systems available province-wide.

# Mechanical HVAC System Options

**STANDARD PERFORMANCE**  
 BC Building Code Minimum/Energy Step Code Level 1 to Level 3  
 IF SELECTED SEE REVERSE SIDE ➔

OR

**HIGH PERFORMANCE**  
 Energy Step Code 4 or 5  
 IF SELECTED CONTINUE BELOW ✓

**RADIANT**

OR

**FORCED AIR**

**+ CONSIDERATIONS**

- Not typical in high performance homes
- Fewer challenges with drops and furred walls
- Multiple independent zones
- Little potential for noise issues
- Ventilation independent

**- LIMITATIONS**

- Slower reaction to temperature setting changes
- Potential to overheat spaces with direct solar gain
- More likely to require cooling
- Cooling requires addition of forced air system
- Mechanically complex – relative to forced air
- Less options to manage indoor air quality

**+ CONSIDERATIONS**

- Most typical in high performance homes
- Variety of indoor air quality options
- Quick reaction to temperature setting changes
- Less mechanically complex than radiant
- Easily adaptable to cooling
- Ventilation integrated
- Greater variety of system options – multi-splits, combo systems (water heater and fan coils), HRV heating coils (electric or hydronic) and electric baseboards

**- LIMITATIONS**

- Less zoning options
- More challenging to hide ducting
- Potential for air noise (if not well designed)

**GAS**

OR

**ELECTRIC**

**GAS**

OR

**ELECTRIC**

Boiler (with radiant distribution)  
**\$35,000 - \$40,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$30,000 - \$40,000**

**TOTAL \$72,000 - \$90,000**

Air-to-Water Heat Pump (with radiant distribution)  
**\$43,000 - \$52,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$25,000 - \$35,000**

**TOTAL \$75,000 - \$97,000**

**LEVEL 4**

Furnace or Combo System (with ducting distribution)  
**\$30,000 - \$40,000**

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

Air Conditioning  
**\$6,000 - \$8,000**

**TOTAL \$42,000 - \$57,000**

Air Source Heat Pump (with ducting distribution)  
**\$38,000 - \$51,000**

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

**TOTAL \$44,000 - \$60,000**

Combo with Hydronic Baseboards  
**\$32,000 - \$38,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$25,000 - \$30,000**

**TOTAL \$64,000 - \$78,000**

**A** Electric Water Heater & Hydronic Baseboards  
**\$10,000 - \$12,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$25,000 - \$30,000**

**TOTAL \$42,000 - \$52,000**

**LEVEL 5**

Furnace or Combo System (with ducting distribution)  
**\$27,000 - \$33,000**

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

Air Conditioning  
**\$4,000 - \$6,000**

**TOTAL \$37,000 - \$48,000**

Air Source Heat Pump (with ducting distribution)  
**\$20,000 - \$25,000**

- For a cold climate heat pump, add \$6,000 to \$8,000 to air source heat pump cost.

Heat Recovery Ventilation  
**\$6,000 - \$9,000**

**TOTAL \$26,000 - \$34,000**

**B** Air-to-Water Heat Pump (with radiant distribution)  
**\$18,000 - \$24,000**

Heat Recovery Ventilation  
**\$7,000 - \$10,000**

Air Conditioning  
**\$20,000 - \$25,000**

**TOTAL \$45,000 - \$59,000**