Pathway to Potential HVAC Technologies that Meet VBBL 2022*

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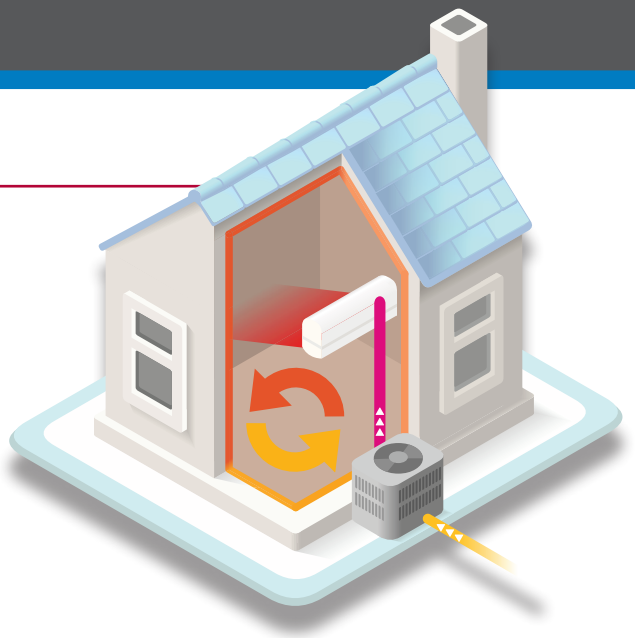
AIR HEATING

Available technologies:

1) Geothermal heat pumps *(ground source)*
2) Air-to-air heat pumps *(air source)*



FLOOR HEATING (electric or hydronic)

Available technologies:

1) Geothermal heat pumps *(ground source)*
2) Air-to-water heat pumps *(air source)*
3) Electric boilers

BASEBOARD HEATING (electric or hydronic)

Available technologies:

1) Electric baseboard panels
   (powered by house electrical system)
2) Hydronic radiator panels
   (powered by electric boiler, geothermal heat pumps or air to water heat pumps)

*For new low-rise residential construction

How these technologies work *- a brief overview*

HEAT PUMPS

Geothermal Heat Pumps
A **ground source heat pump** is a heating/cooling system for buildings that transfers heat to or from the ground, taking advantage of the relative constancy of temperatures of the earth through the seasons. Ground source heat pumps are among the most energy-efficient technologies for providing HVAC and water heating.

Setup costs are higher than for other heating systems due to the requirement to install ground loops over large areas or drill bore holes, and for this reason air source heat pumps are often used instead.

Air Source Heat Pumps
An **air source heat pump** (ASHP) uses the outside air as a heat source when in heating mode, or as a heat sink when in cooling mode. When correctly specified, an ASHP can offer a full central heating solution and domestic hot water up to 80 °C. There are two styles: **Air-to-Air** and **Air-to-Water**

Air-to-Air Heat Pumps
Air-to-air heat pumps provide hot or cold air directly to internal spaces.

Air-to-Water Heat Pumps
Air-to-water heat pumps use radiators and / or underfloor heating to heat or cool a whole house and can also be used to provide domestic hot water (DHW).

ELECTRIC HEATING

Electric Baseboard
Baseboard is the traditional form of electric heating installations. Appropriate lengths of baseboard are installed in each room (zone). Zoned temperature (heating only) is available.

Electric Boilers
Electric Boilers heat water to be circulated through a series of in-floor loops and/or heat emitters such as baseboard and wall-hung radiators. Zoned temperature (heating only) is available. Electric boilers can also be used to heat domestic hot water (DHW).

Things to consider when designing residential dwelling comfort-heating systems

System Sizing: Heat loss/heat gain calculations are necessary for building plans with the city.

Equipment Positioning:

1) Some mechanical products emit low-level sounds so proximity to bedrooms and other quiet places should be considered.

2) Heat pumps require equipment component placement outside of the house. Neighbour sound levels must be considered.

3) Heat pumps require a larger interior footprint than certain other equipment.

Electric boiler and electric baseboard systems will increase the electrical load vs heat pumps and natural gas, propane or oil-fired equipment.

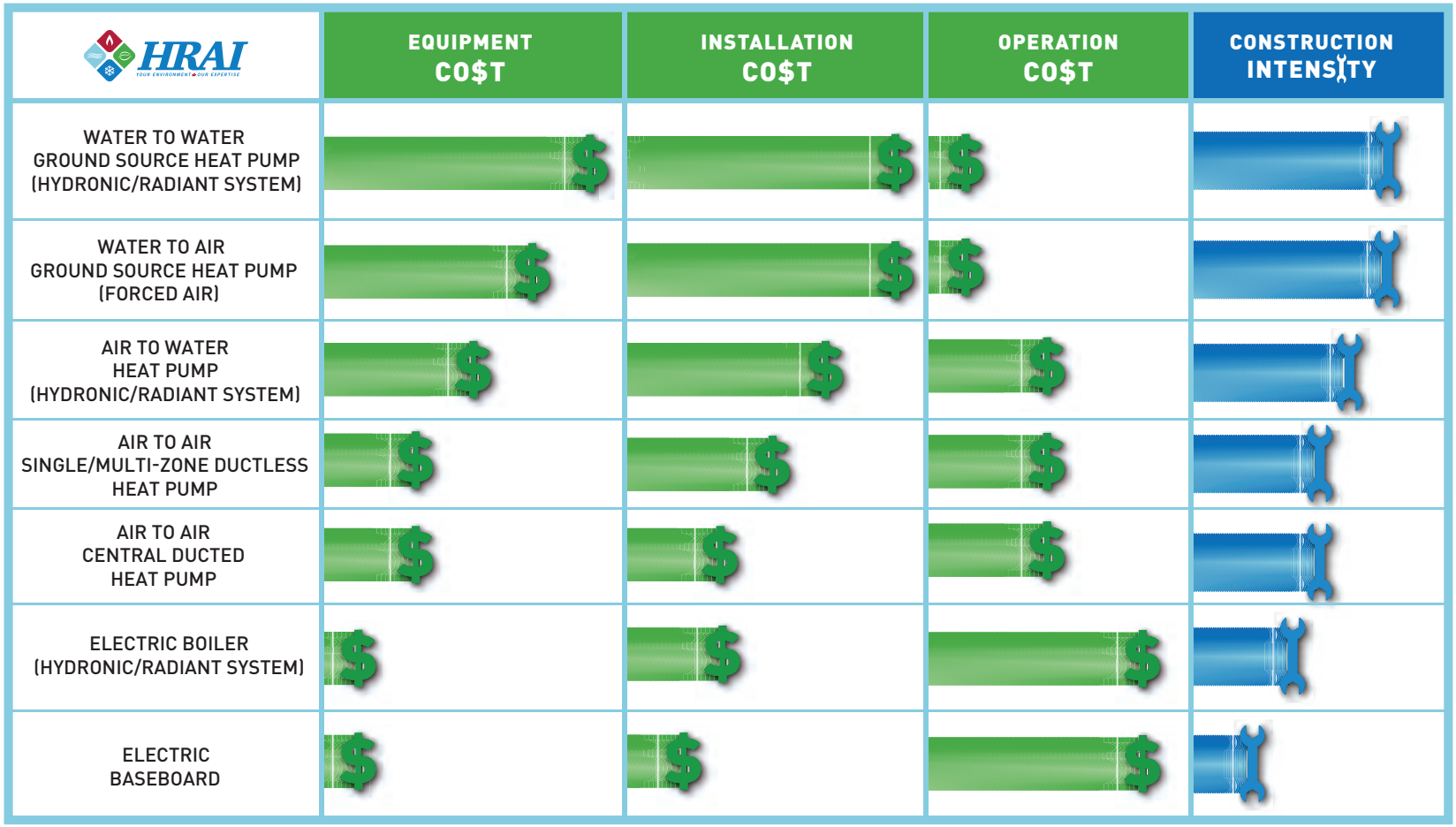
Performance ratings: Check manufacturer websites or local equipment distributers for specific product specifications such as energy consumption, efficiency, sound levels, etc.

The technologies noted in this guide are the most direct way to meet prescriptive VBBL 2022 compliancy pathways for new low-rise residential construction. There are additional opportunities to consider for performance compliancy. Please contact the City of Vancouver for more details.

vancouver.ca/heat-pumps

Pathway to Potential HVAC Technologies that Meet VBBL 2022

Panoramic View of Potential **HVAC** Technologies Meeting **VBBL** 2022



Note: these rankings are based on high level figures. There are many factors to take into consideration when implementing any of these technologies into a home's mechanical system. Learn more from a qualified HRAI Member Contractor. All Contractors are pre-screened for their qualification and insurance coverage. Find a local qualified contractor from HRAI's Contractor Locator to assist in a home HVAC technology discussion. www.HRAI.ca

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