

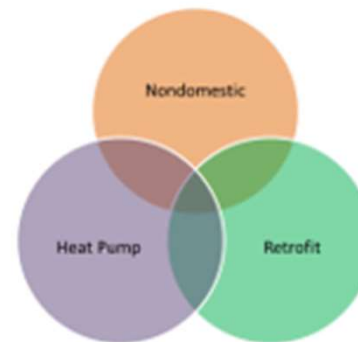


Decarbonisation of Heating

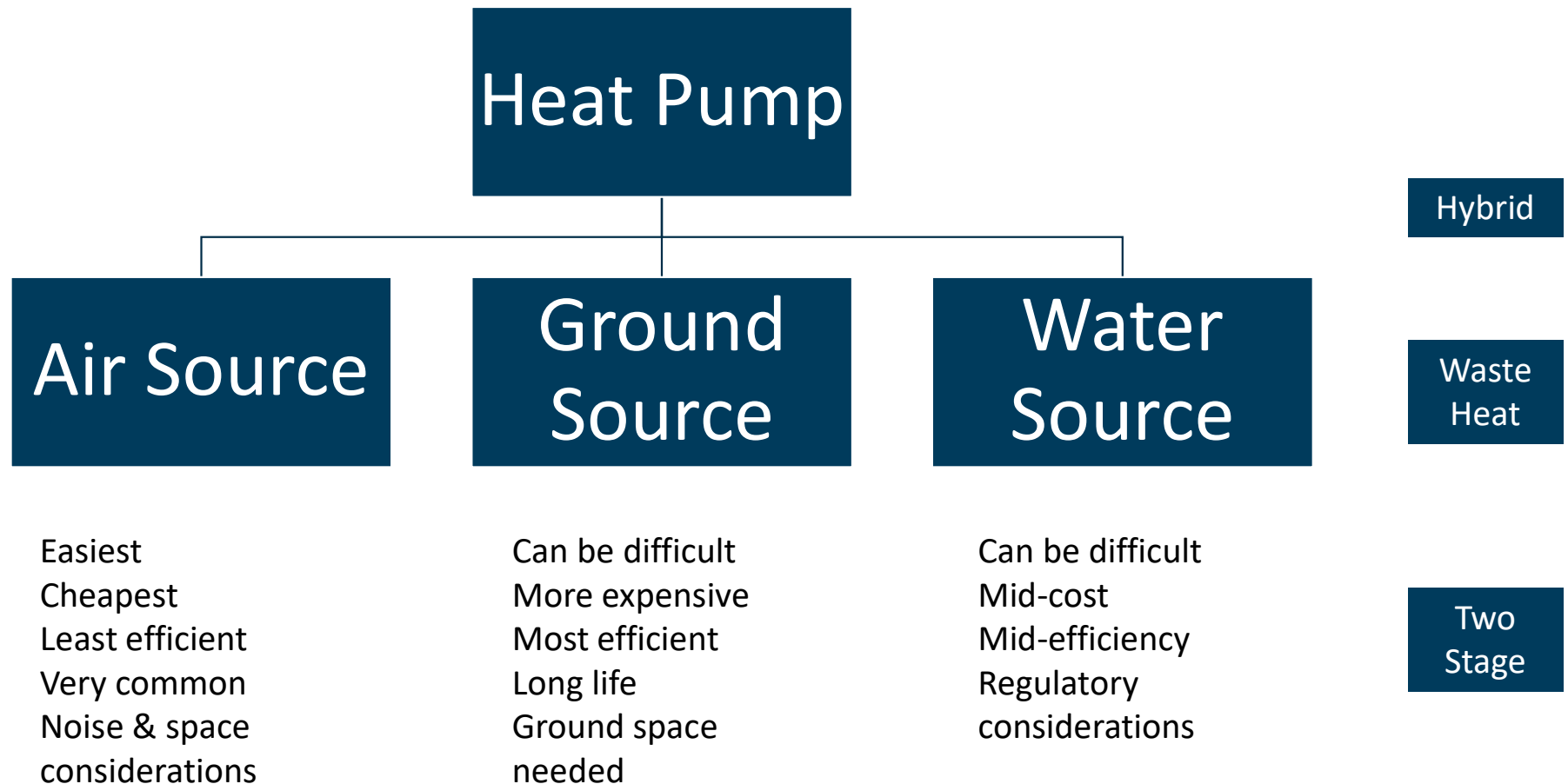
Non-Domestic Building Retrofit – the practicalities

Retrofitting heat pumps in nondomestic buildings is complicated

- Many different:
 - Types and sizes of buildings
 - Existing HVAC systems
 - Heat pump options
- “Retrofit” can be boiler replacement to deep refurbishment
- Client motivations differ
- Little specific guidance:
 - AM17, PAS2038, some overseas



Type



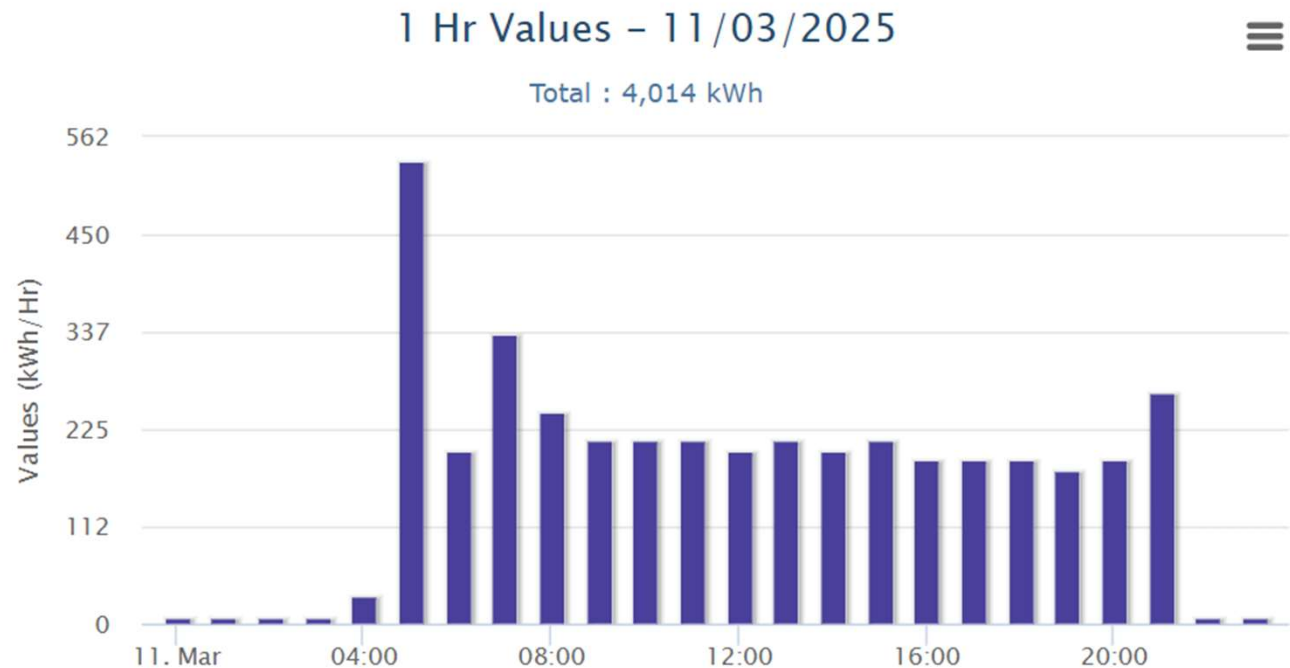


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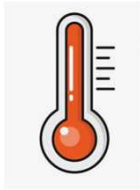


Don't use gas boiler size as heat pump size

- Heat loss calculation or the
• Take care with U value
- Historic bills or interval data
• Half hourly gas is best
• Apply boiler efficiency
- Heating degree days
- Use thermal storage or check demand 'spikes'



Temperature



80/60°C	60/40°C	50/30°C
Least risk (like for like)	Medium risk – cold buildings	Highest risk
Worst efficiency	Legionella	Legionella
Ammonia or CO ₂	Propane	Propane & std refrigerants
Two stage	Single stage	Off the shelf units
High install & running cost	Lower install and running cost	Lowest install and running costs

- Better to improve the fabric and emitters to use lower temps...
- Or leave as-is and have higher install and running costs
- £££££



Understand the Building

- Existing plant – location, size, condition
 - Existing emitters – air handlers, UFH, rads, radiant panels, ambi rads
 - Existing problems – sludge, corrosion, cold spots, controls, bypasses
 - Existing hot water – gas fired, indirect, electric
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- RISK REGISTER
-
- Everything can be done at cost
 - Work with the client on the risk items



Solutions

Hot Water

- Point of use
- Standalone heat pump
- Immersions

Air Handlers

- Replacement coils
- Replacement units

Radiators

- Bigger or more units

Radiant panels.....

Ambi rads

- Replace with unit heaters



Other Considerations



Heat pumps – expensive to run compared with gas

Couple with other tech...

- Solar PV
- Solar PVT
- Battery storage
- Thermal storage

Consider time of use tariffs and flexibility

- Cost reduction





THANK YOU

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