



District Heating Market Outlook - CEEs decarbonization potential and renewable heat growth

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INDUSTRIAL



DISTRICT HEATING



DATA CENTER



Strategic Overview

Why now ?

- **EU decarbonization tailwinds:** “Fit for 55” raises renewable/efficiency obligations and **accelerates heat-pump & DH decarbonization**, with an EU Heating & Cooling Strategy slated to push integrated planning, waste-heat recovery, and expansion of district energy.
- **Scale and urgency:** CEE has one of the EU’s **largest district-heating markets**, predominantly CHP-based. This creates the **most significant conversion opportunity** in Central and Eastern Europe for renewable heat integration, high-temperature heat pumps, and industrial waste-heat recovery.
- **Competitive consolidation:** Global industry leaders are shifting toward **Total Solution** and **service-led companies**. Trying to capture **AI** and **Data Center** as well as **District Heating** business opportunities.

Fit for 55

Overall Goal: Cut EU emissions **55% by 2030** on the path to 2050 climate neutrality.

Key Highlights:

- **Carbon cost** exposure will increase every year
- **Renewable heat** integration is **mandatory**
- **Electrification** (heat pump integration) accelerates
- **Waste heat** becomes a strategic **asset**
- **Low-temperature networks** gain advantage
- **Efficient DH classification** is critical for market access

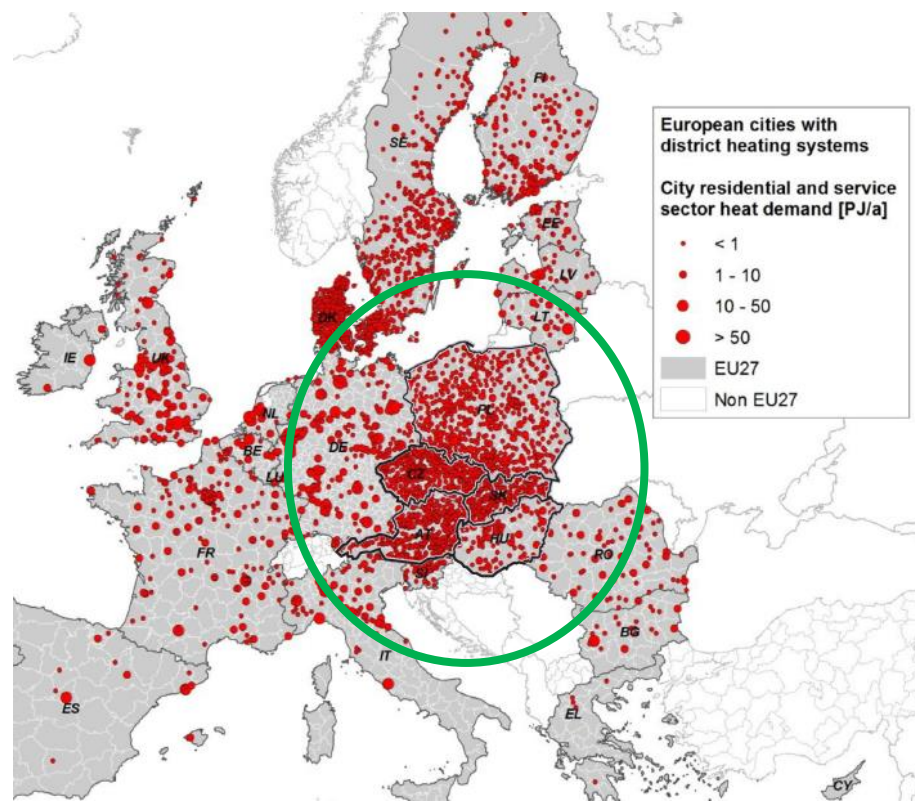


Market Outlook

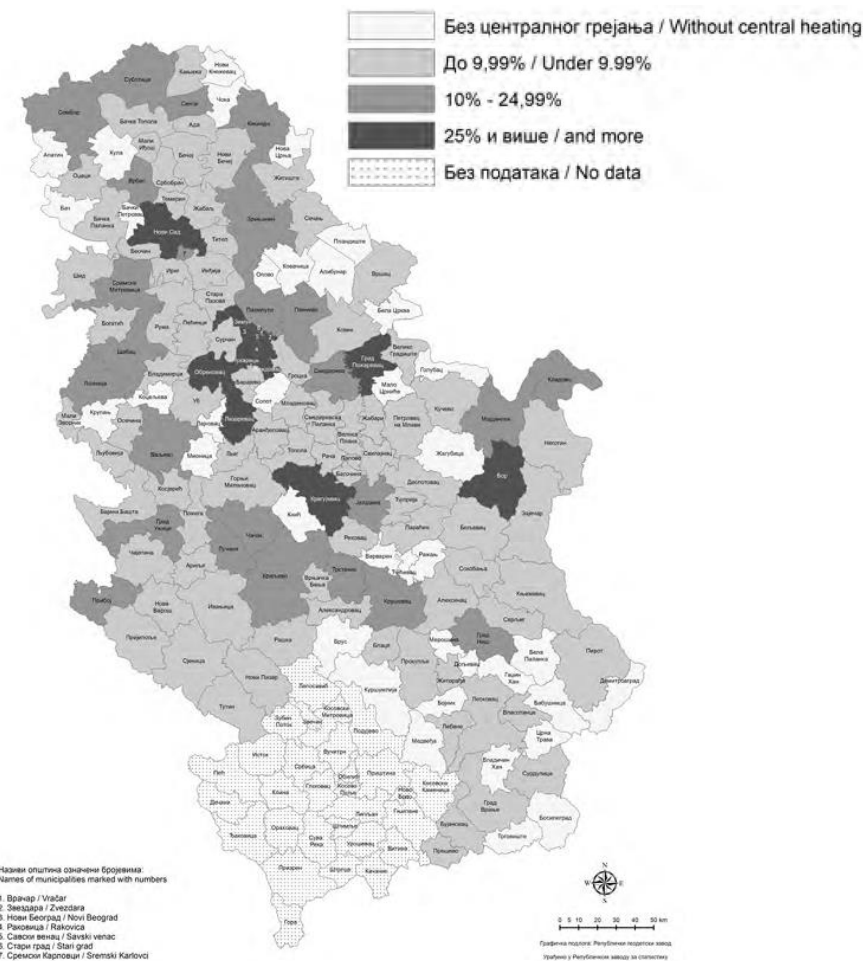
□ District Heating Market Outlook

- In Central and Eastern Europe, urban areas still **widely operate district heating infrastructure** built during the Soviet era, **mainly relying on fossil-fuel-based CHP plants**. CEE owns the **biggest existing district heating networks in Europe** and has a high CHP share, making it **the largest market for renewable heat, heat pump integration, and waste heat recovery**. The government plans to fully phase out coal-based heat sources by 2030.
- However, the EU “Fit for 55” initiative, with **tighter renewable energy obligations** and **stricter emissions regulations**, is **driving a transformation of traditional systems**.
- Highest **DH market potential** in the CEE region: Poland, Czech Republic, Slovakia, Austria, Serbia & Hungary.

[Tab.1] Distribution of District Heating Networks in Europe

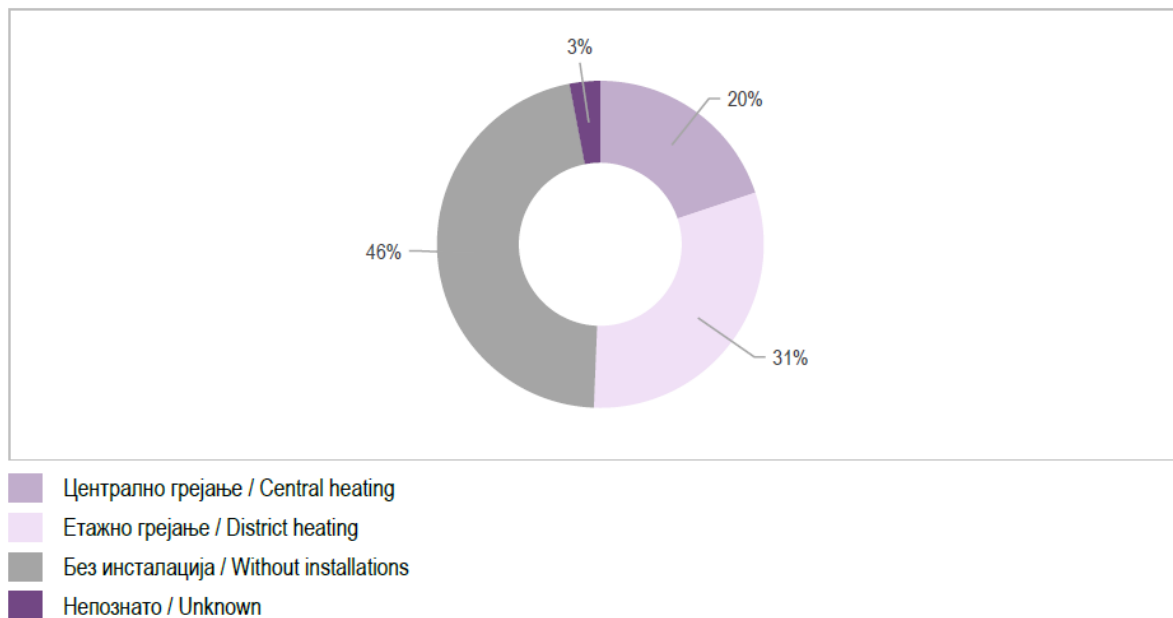


[Tab.2] Distribution of District Heating Networks in Europe

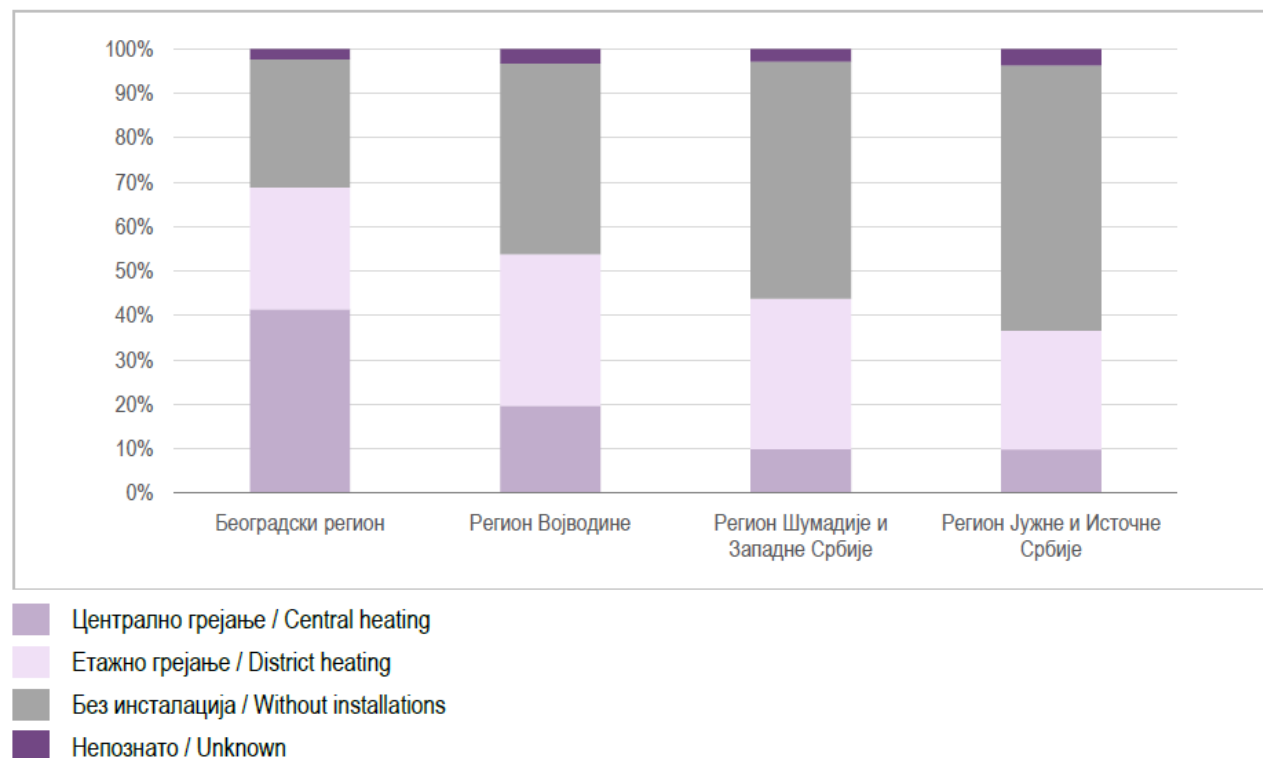


Market Outlook Serbia

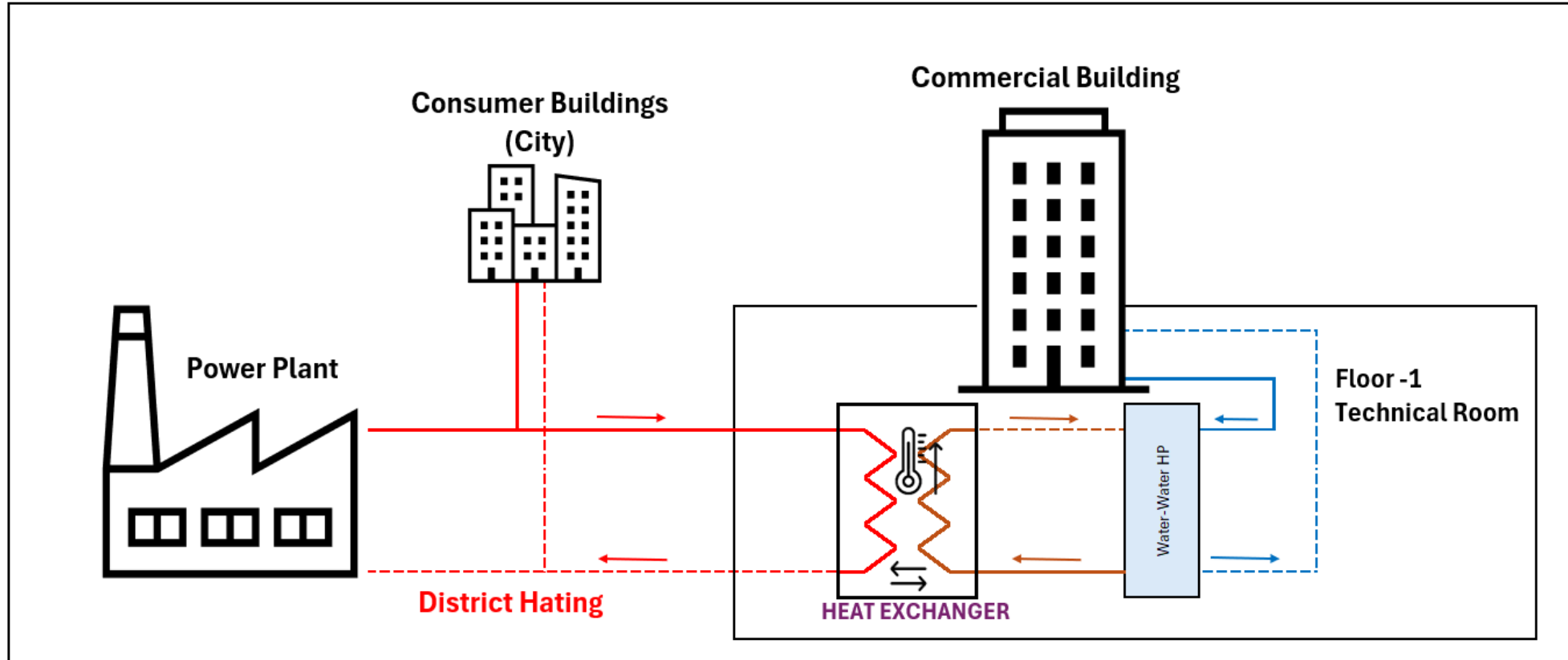
[Tab.1] Apartments/houses according to the availability of heating, Republic of Serbia



[Tab.2] Apartments/houses according to the availability of heating, by regions



High Level Concept – Utilizing waste heat and sell it for DH



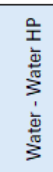
Legend:

— -district heating

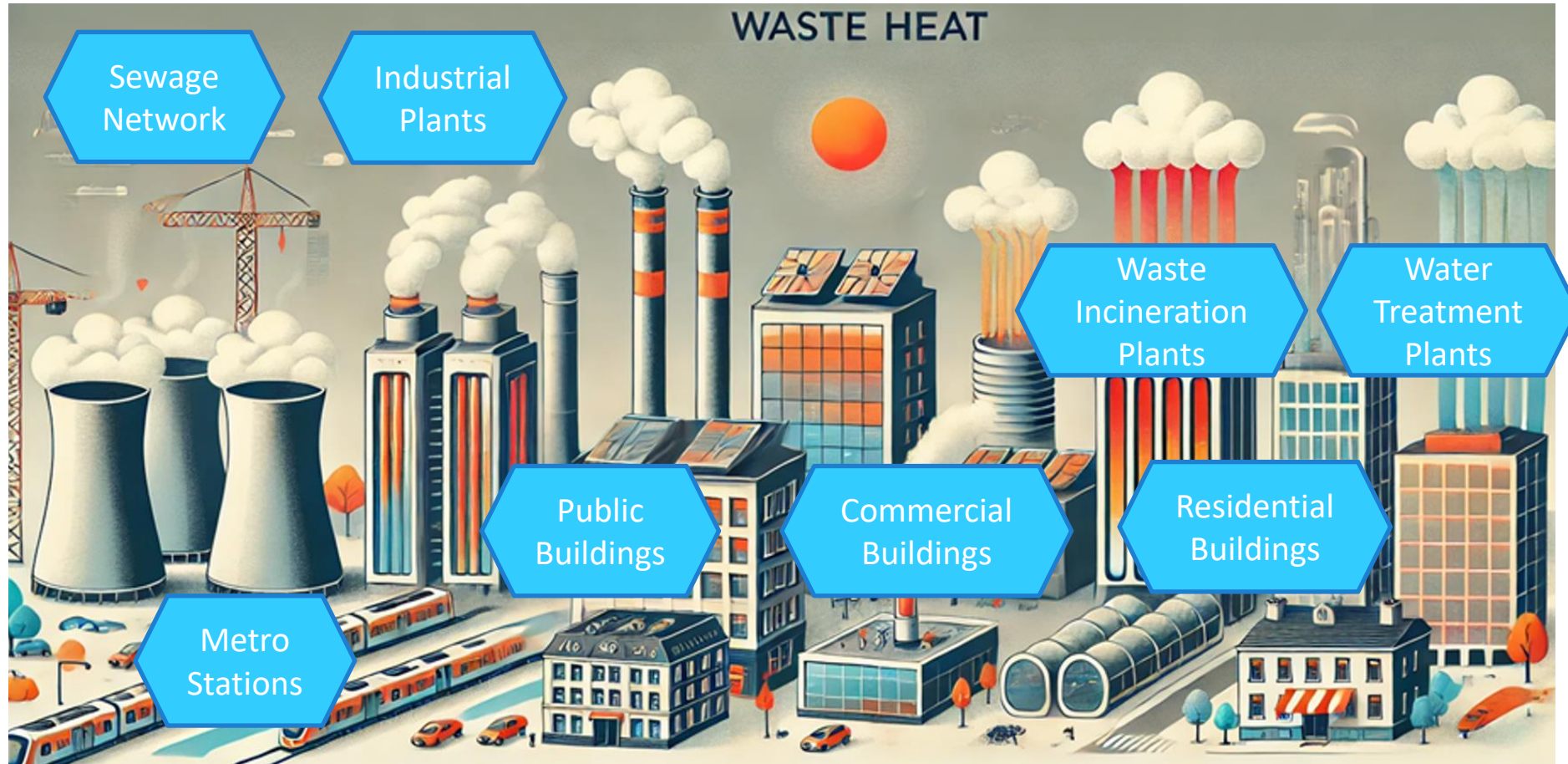
— -chiller water loop
(condenser side) - hot
water

— -chiller water loop
(evaporator side) - hot
water

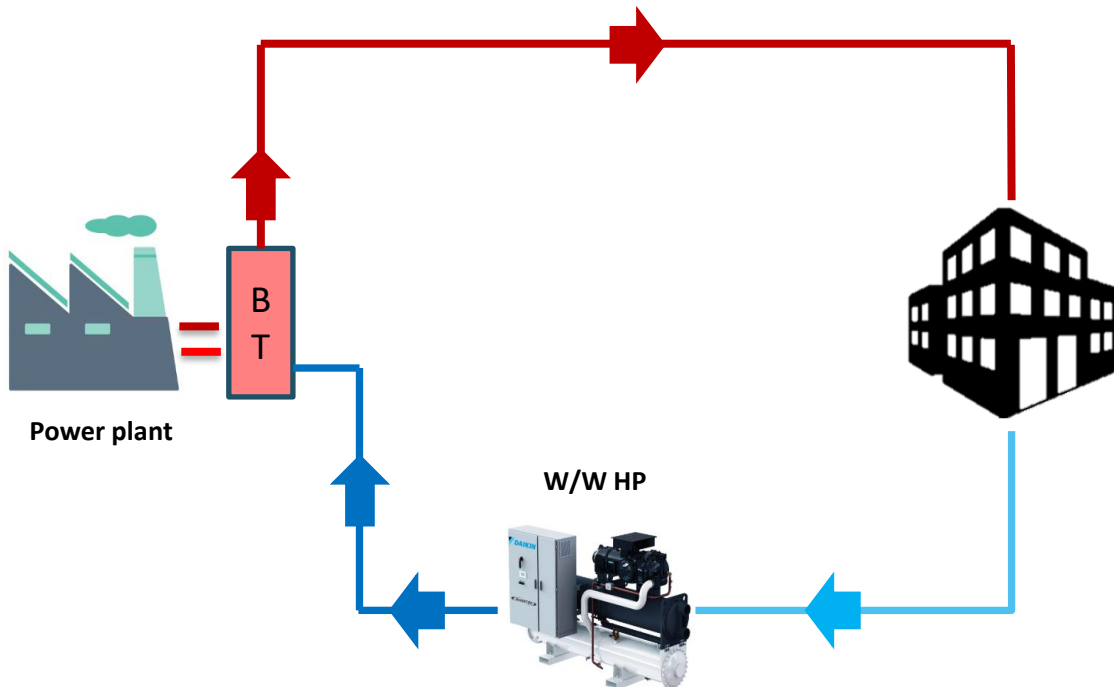
 Calorimeter - Measuring the
amount of Heat (Energy) transferred
[Kj/h]

 Daikin Water - Water Heat Pump -
Recuperating waste heat increasing
its temperature and exchanging
energy with District Heating
Network

Waste Heat Recovery - potential sources



Power Plants Owners



Daikin offered benefits

✓ 1. Improved Overall Efficiency (Higher Total Plant Efficiency)

Heat pumps capture low-grade waste heat (e.g. condenser cooling water) and lift it to higher temperatures.

- This recovered heat can be reused for:
 - District heating networks
 - Industrial process heating
 - Absorption chillers for cooling
- Raises the total efficiency of the plant beyond electricity-only operation (so-called CHP – Combined Heat and Power).

✓ 2. Reduced CO₂ Emissions

- By supplying useful heat without burning extra fuel, heat pumps lower the plant's total carbon footprint.
- Particularly impactful if replacing fossil-fueled boilers in district heating networks.

✓ 3. Revenue Streams from Heat Sales

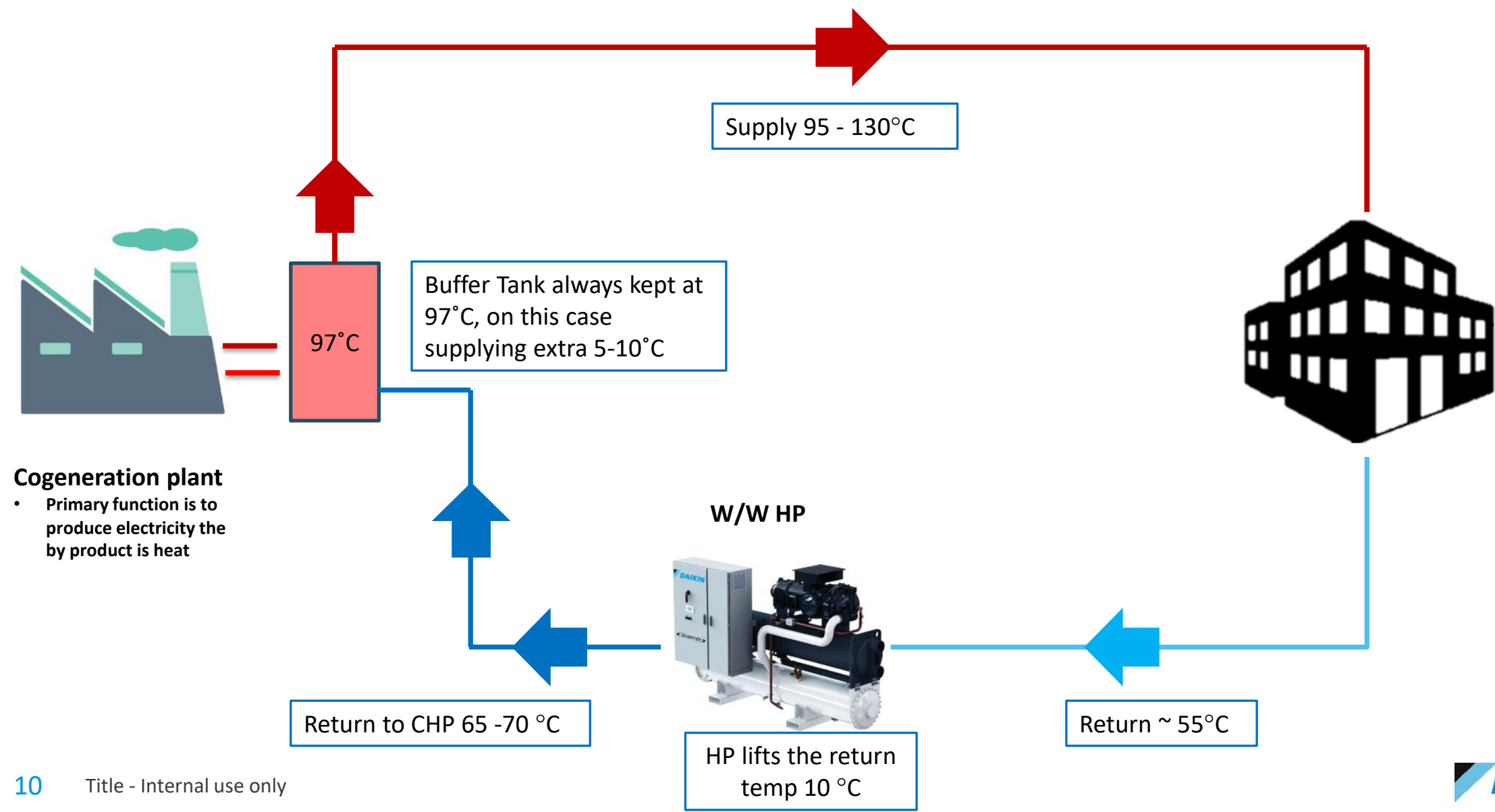
- Instead of dumping heat into rivers, lakes, or cooling towers, power plants can sell heat to:
 - District heating grids
 - Nearby industrial facilities
 - Greenhouses or commercial buildings
- Creates new business models and revenue diversification.

✓ 4. Reduction in Cooling Water Demand

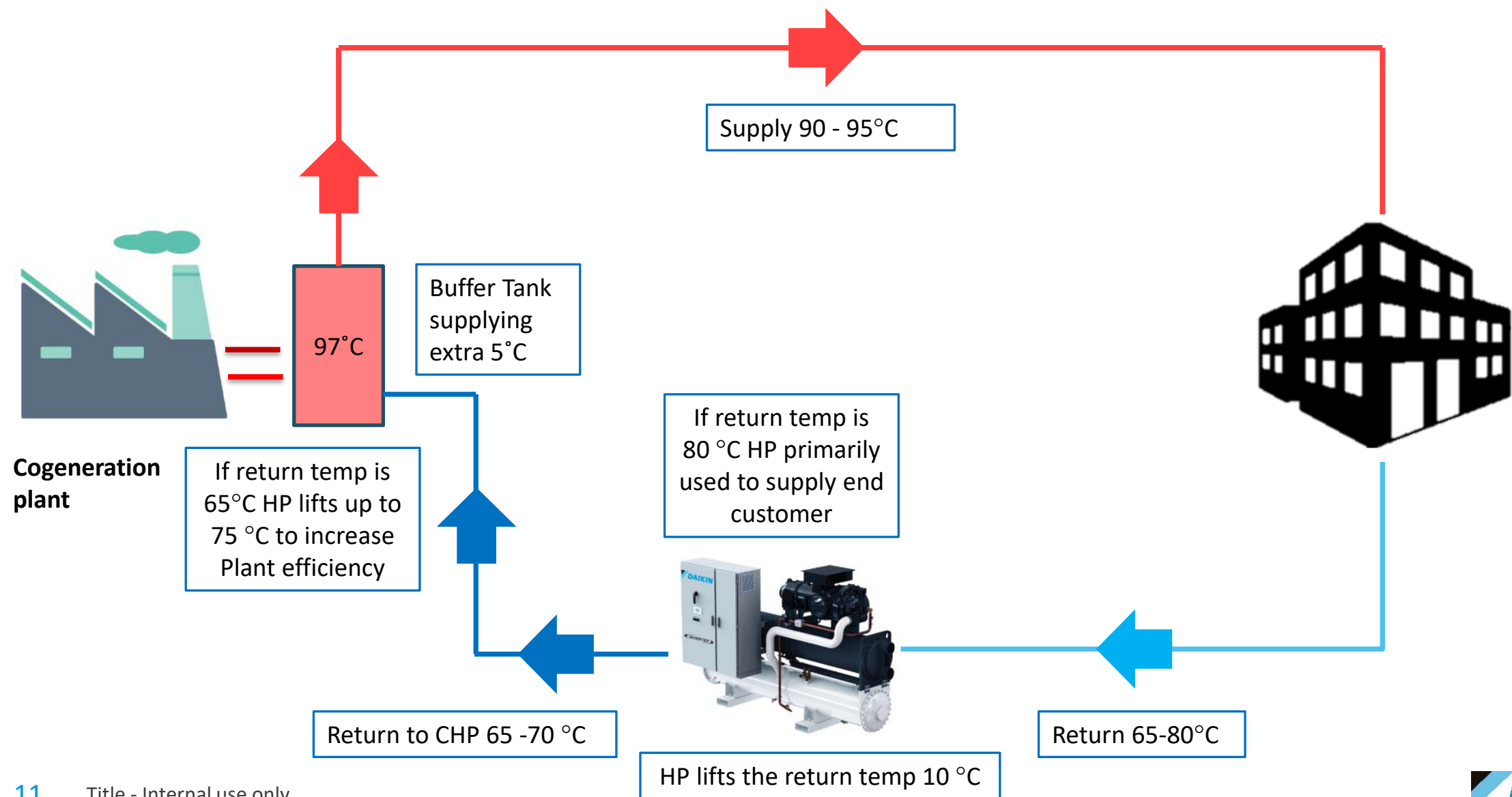
- Recovering heat with a heat pump reduces the thermal load rejected to cooling towers or rivers.
- Can help plants meet stricter environmental regulations on thermal pollution or water usage.

HP combination with CHP – Winter Operation

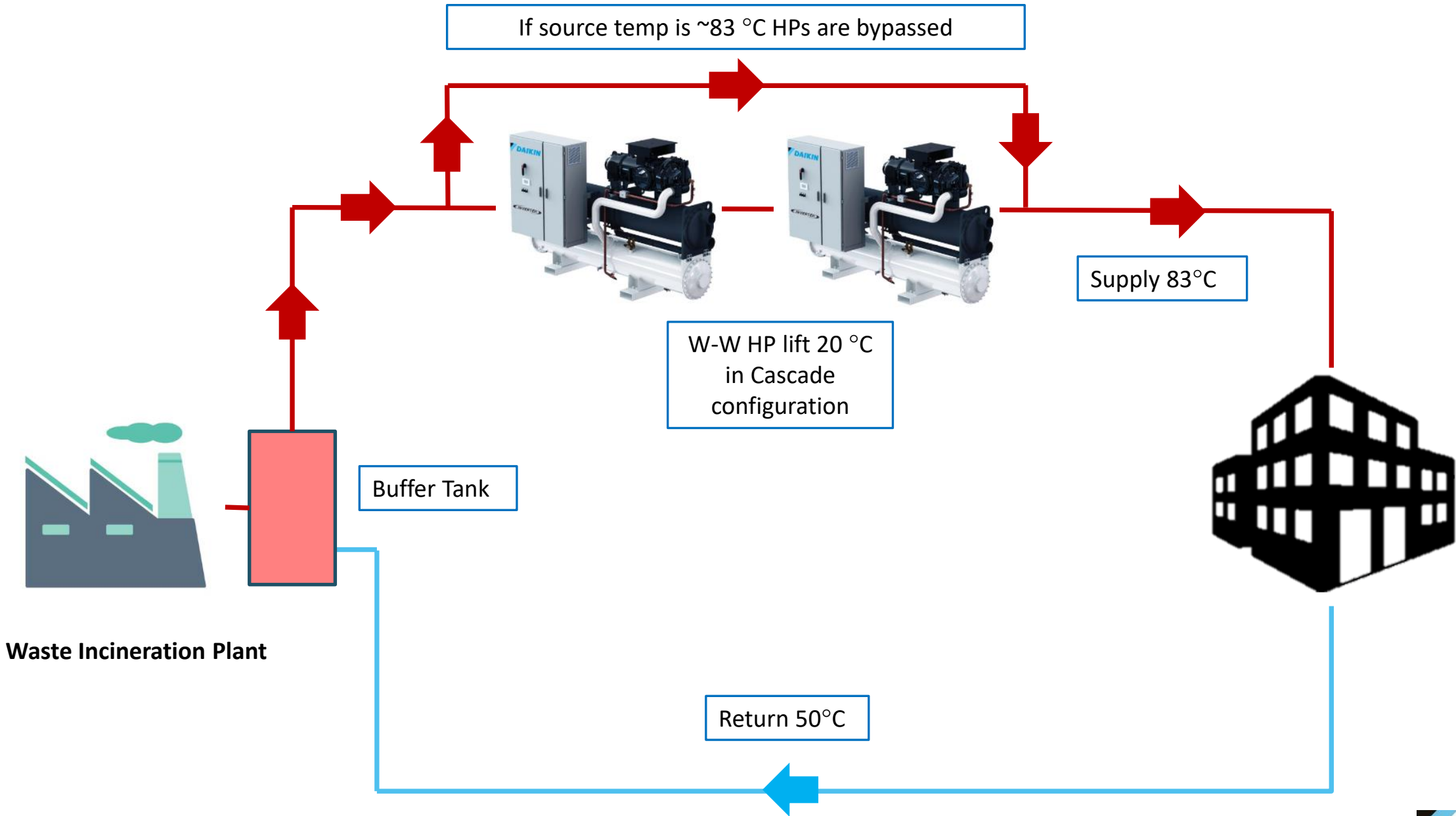
HP Placed on return line to increase return water temp.



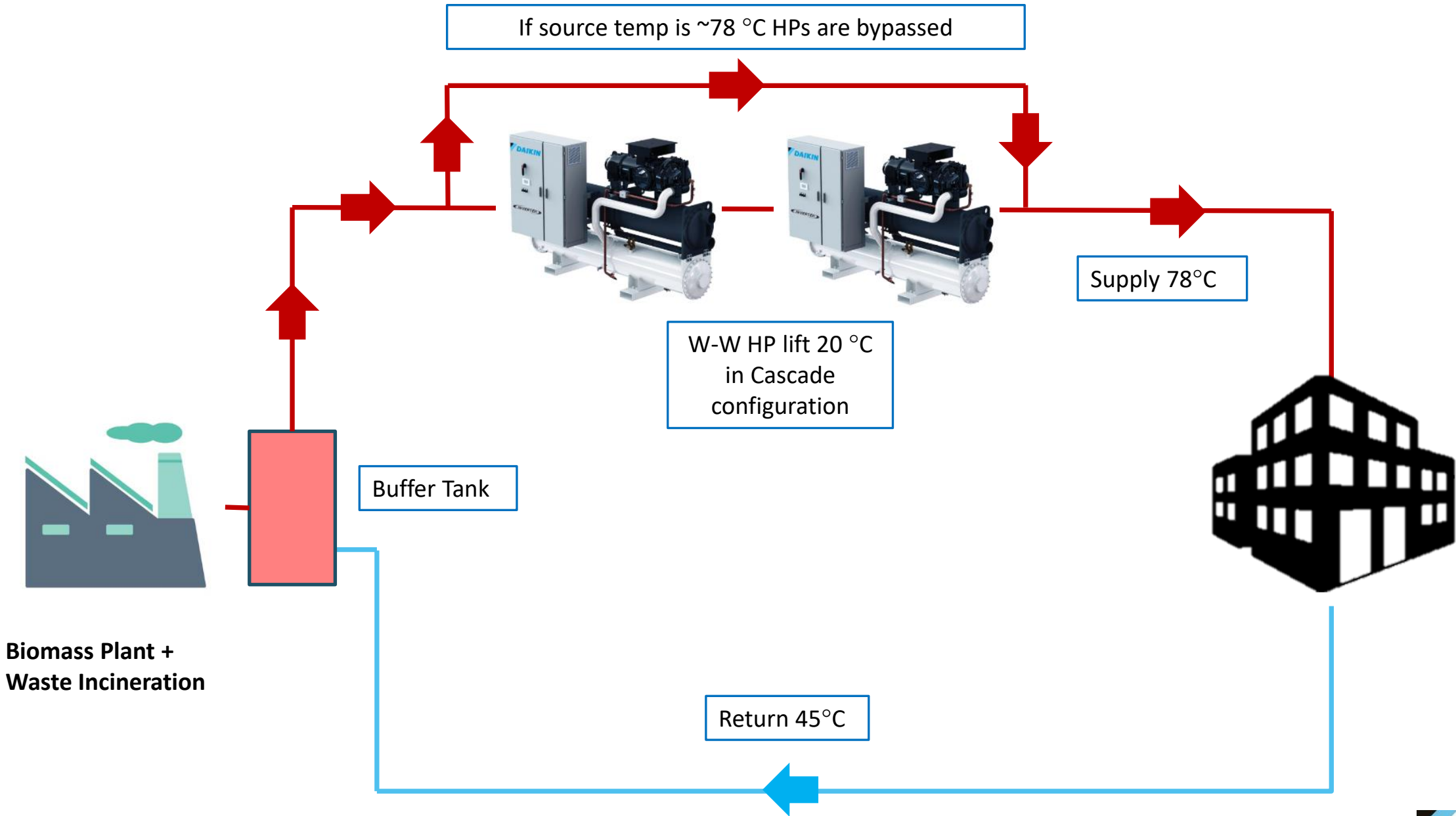
HP combination with CHP – Summer Operation



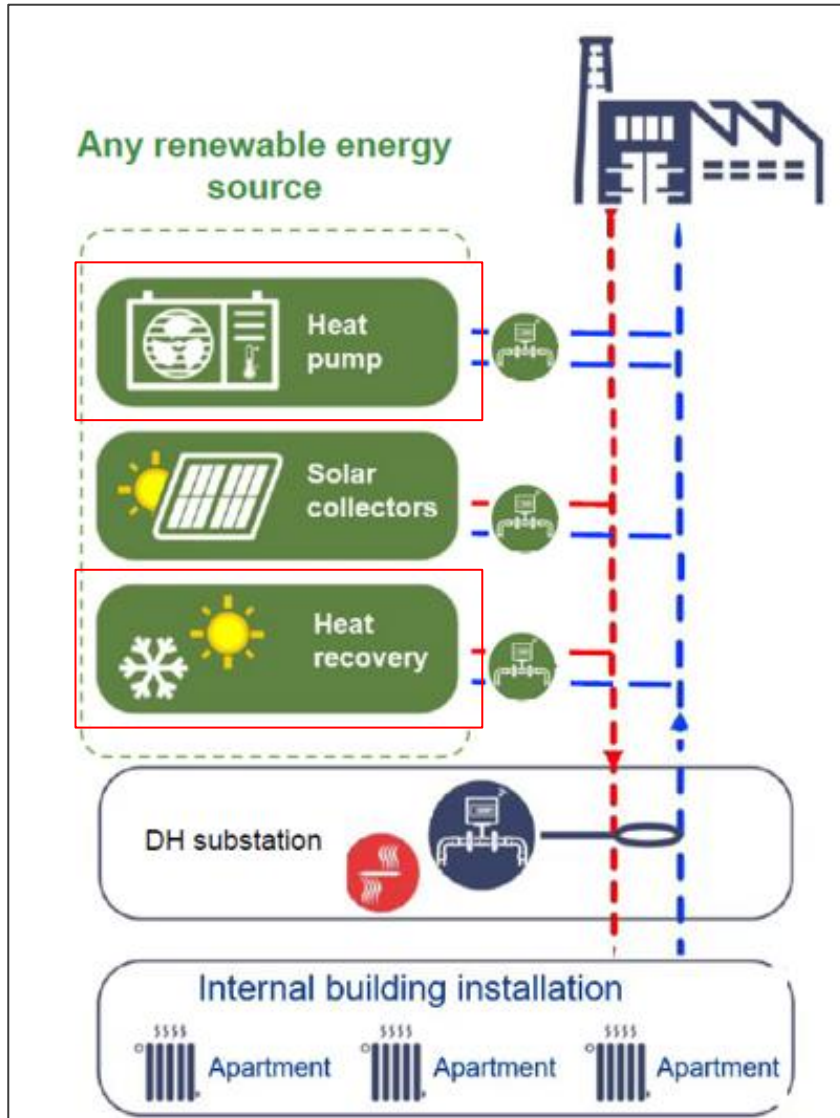
Waste Heat Recovery Waste Incineration Plants – Winter Operation



Waste Heat Recovery Waste Incineration Plants – Summer Operation



District Heating Owners / Operators



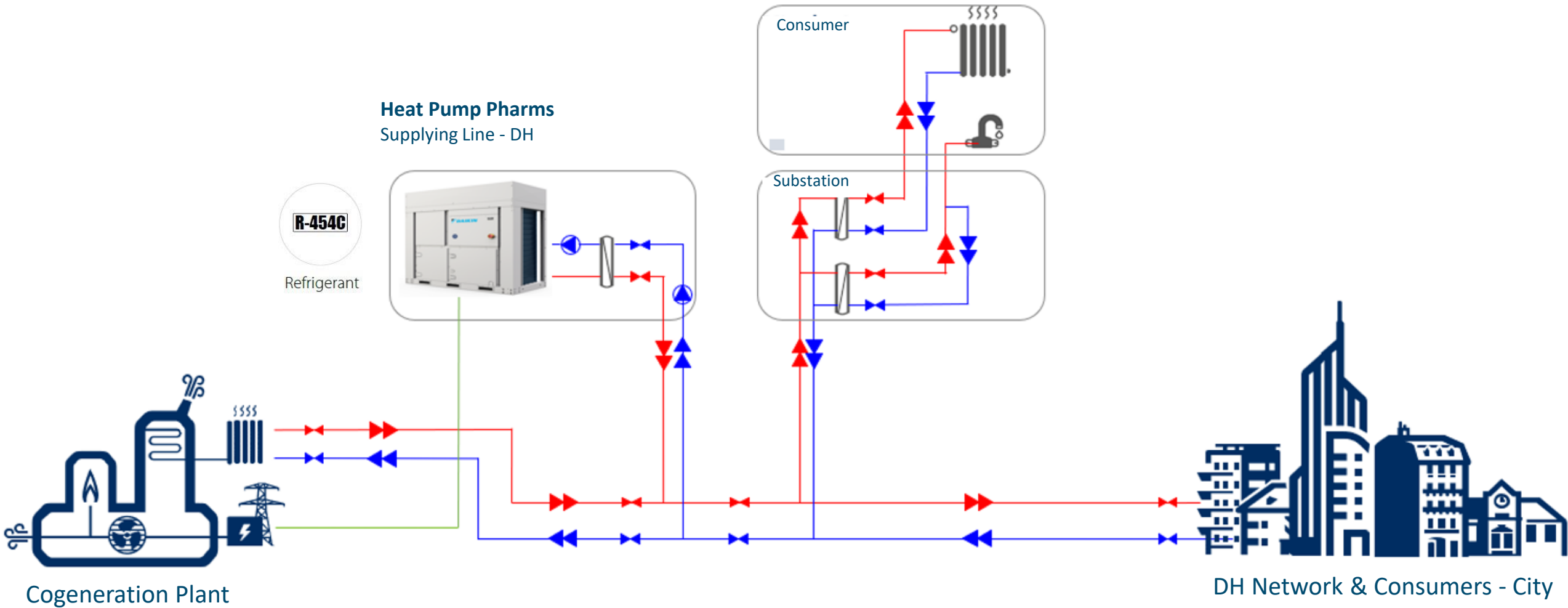
Smart Grids

The aim of DH network operators is to diversify and modernize the grid with the end goal being:

- ✓ **Decarbonization** — integrating higher levels of renewable energy to reduce carbon emissions and comply with ESG goals.
- ✓ **Decentralization** — enabling local production, storage, and consumption of energy – to reduce reliance on larger power plants where the network owners / operators do not have any influence or leverage.
- ✓ **Digitalization** — using big data, IoT, and AI to optimize grid operation and predict issues before they occur.
- ✓ **Flexibility & Resilience** — managing fluctuating renewable generation, maintaining grid stability, and quickly restoring power after disturbances.
- ✓ **Consumer Engagement** — giving consumers tools to manage and optimize their own energy use and costs.

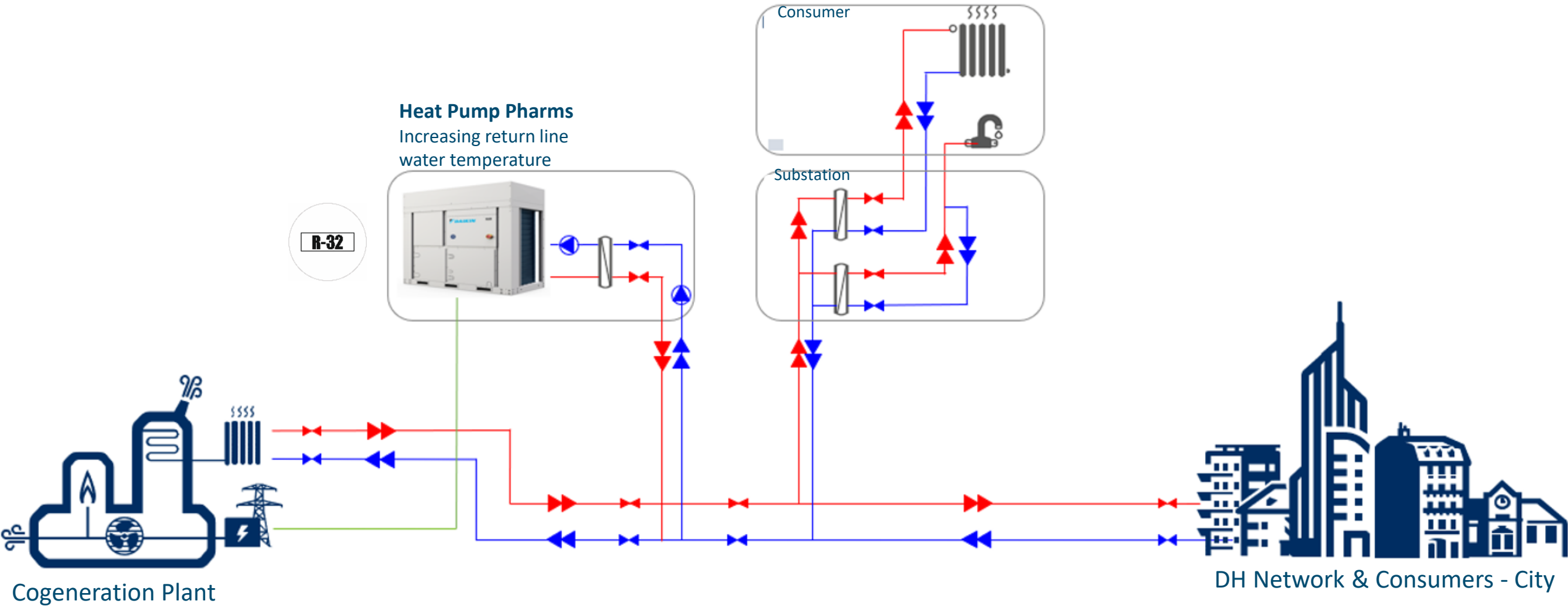
Grid Diversification – Heat Pumps

HP Pharm – DH Supply Concept

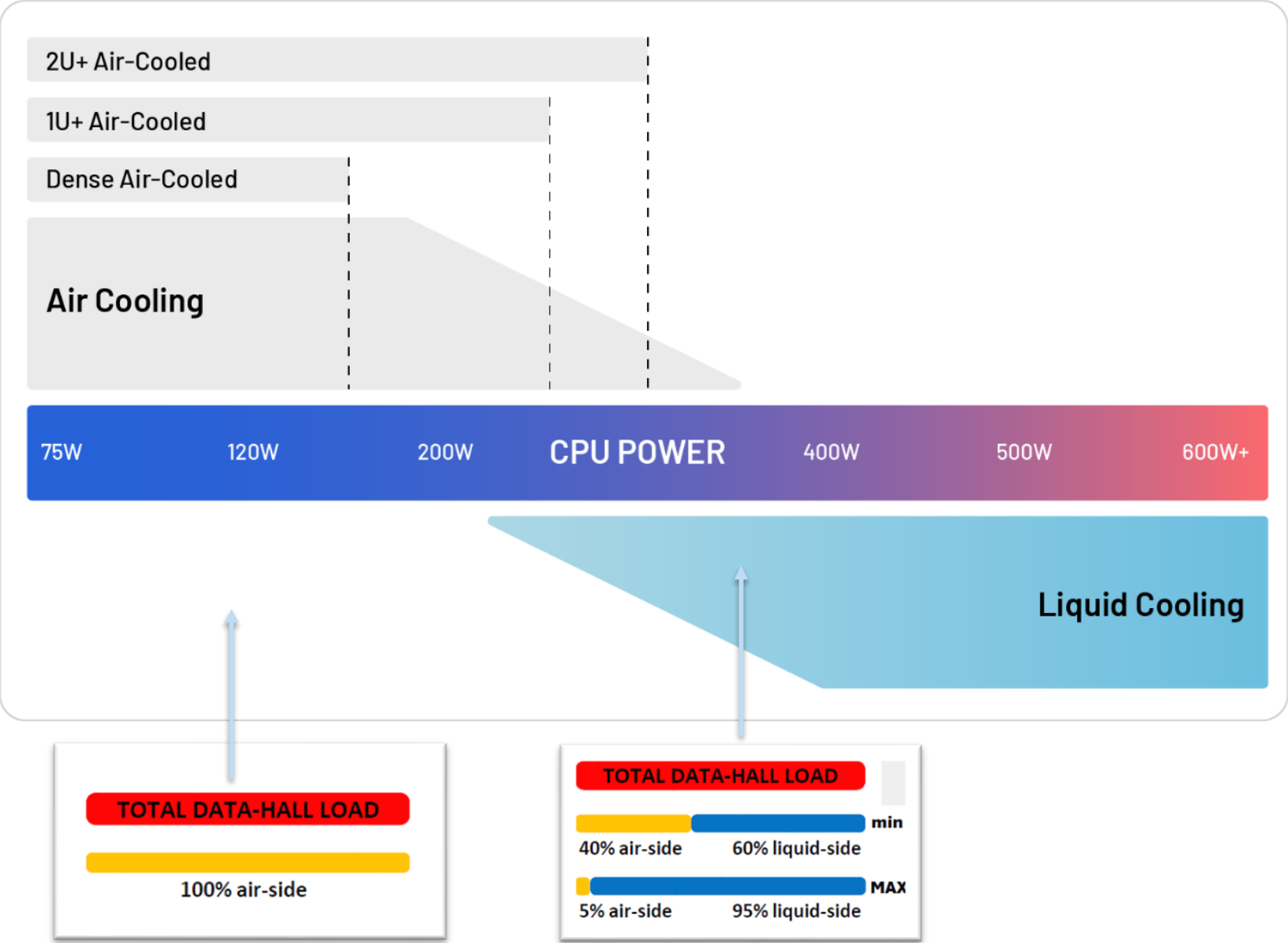


Grid Diversification – Heat Pumps

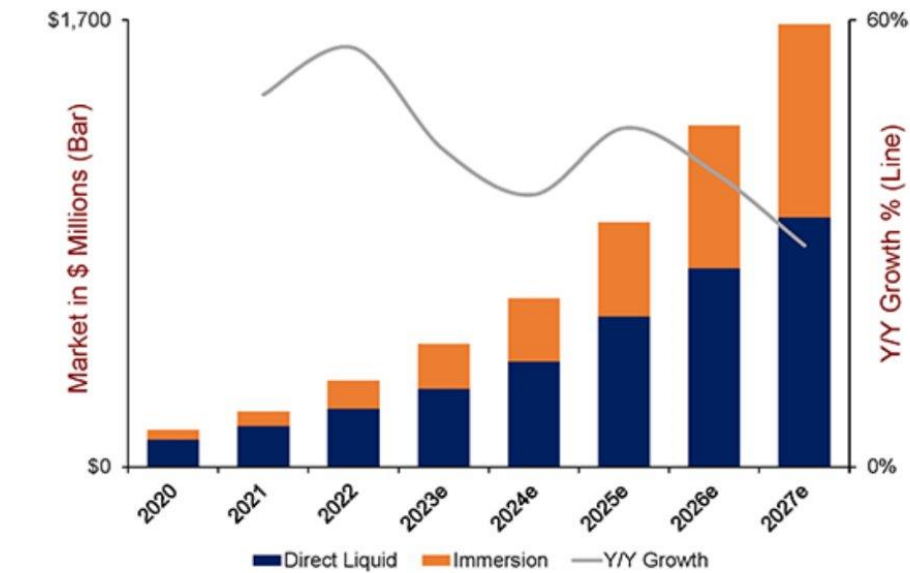
HP Pharm – Increase return line water temperature



Datacenter Business & District Heating



Data Center Liquid Cooling Market Overview

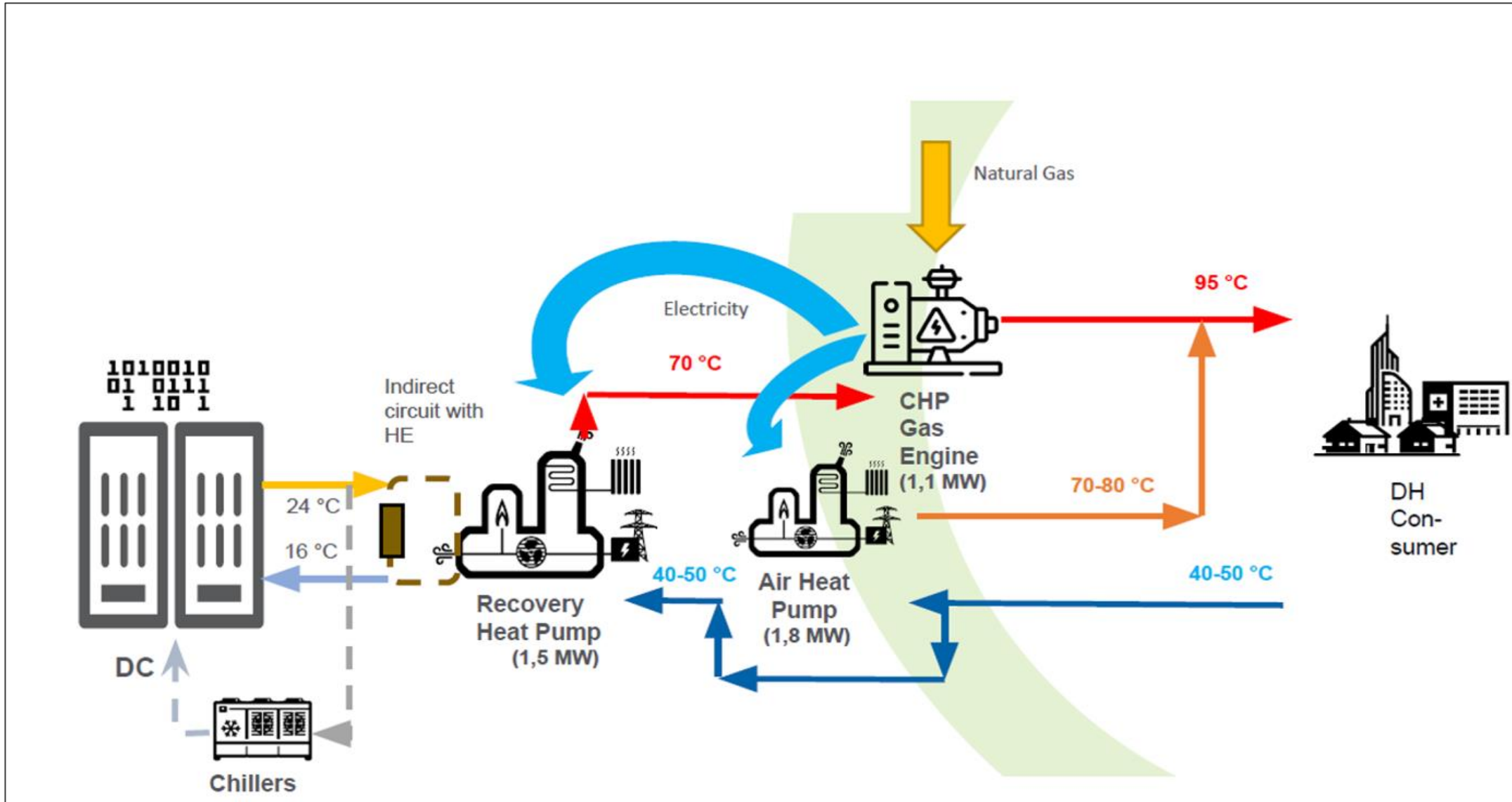


Source: Dell'Oro Group January 2023 5-Year Forecast



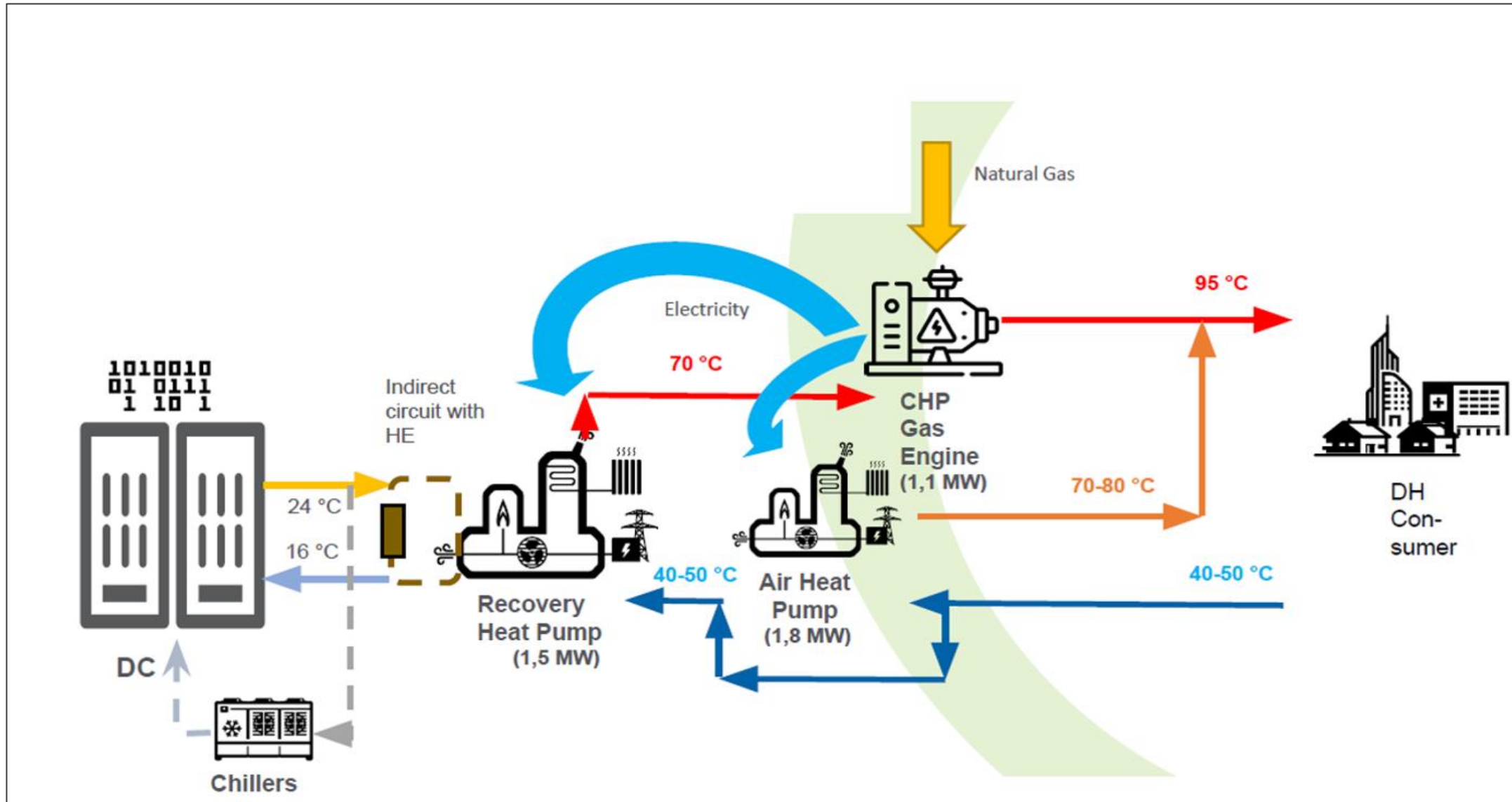
Grid Diversification – Heat Recovery

Heat recovery from DATA Centre projects

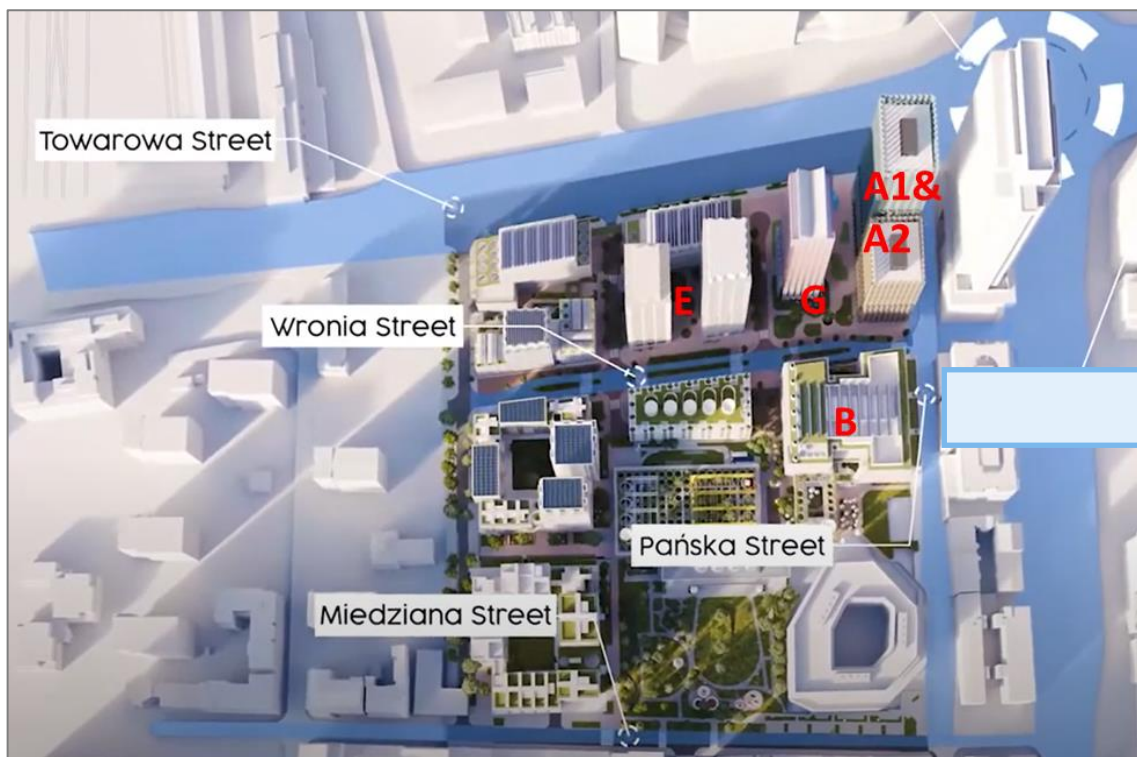


Grid Diversification – Heat Recovery

Heat recovery from Wastewater treatment plants



District Heating – Office House Towarowa 22, Warsaw Poland



District Heating – Successful Cooperation Model



Success Story - Office House Towarowa 22, Warsaw Poland

Project Overview :

- Location: **Warsaw, Poland** Value: **2M EUR**,
- Spec: 135 WC VRV, Dry Coolers (1,2 MW, 3 units) and **W2W HP chiller**

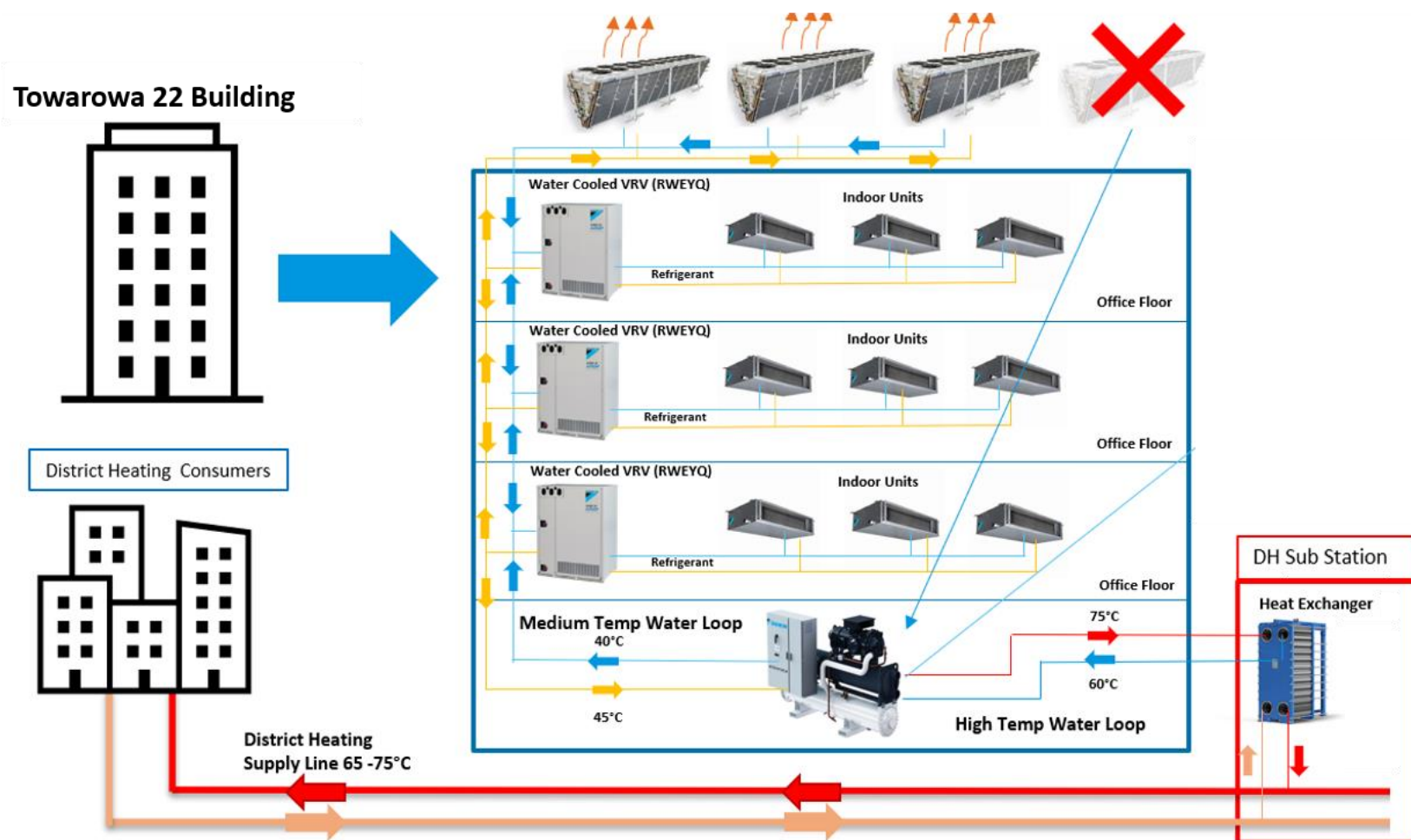
Business Model:

- **Waste heat** produced during the cooling season is **recovered** and **injected** into the **district heating network**.
- The recovered energy is **sold** to the **ESCO** company Veolia at an **agreed rate** of $0.8\times$ the standard heating price.
- Project approach : **design** (concept, final proj.), **equipment delivery**, sys. **integration**, **service and maintenance** .

Success Factors:

- **Close collaboration** Investor , consultant , **ESCO** company & **DAIKIN**
- **DACE + DAPO** organizational **knowledge and expertise**

[Tab. 1] Towarowa 22 project - Poland



Thank you

