DATA CENTRE HEAT RECOVERY

A Win-Win Strategy for Data Centres, Consumers & the Environment

RESHAPE STRATEGIES

Our modern economy is dependent on processing, storing, and sharing massive amounts of data. These tasks represent a surprisingly large and rapidly growing share of global energy consumption and greenhouse gas (GHG) emissions. The Information and Communications Technology sector as a whole accounts for about ~2-3% of global GHG emissions.

Electricity consumption by data centres is currently projected to double roughly every 4 years. To date, efforts to green data centres have focused on making IT equipment / cooling systems more efficient and purchasing green electricity. **Heat recovery represents the next big step for greening data centres.**

Even with improved efficiency, data centres require massive amounts of electricity. And all of that electricity eventually ends up as heat which can be recovered and used to displace fossil fuels required for heating buildings. Even if all of the electricity used in data centres were from green sources (which is not the case in many jurisdictions), heat recovery represents an opportunity to ensure every electron of green electricity does double duty – first to process data and then to heat buildings. This is a key tenet of the circular economy.

Data centres can benefit by turning a waste (heat) into a revenue source. Nearby buildings can benefit from access to a low-cost source of low-carbon heat, and the environment can benefit from lower GHG emissions.

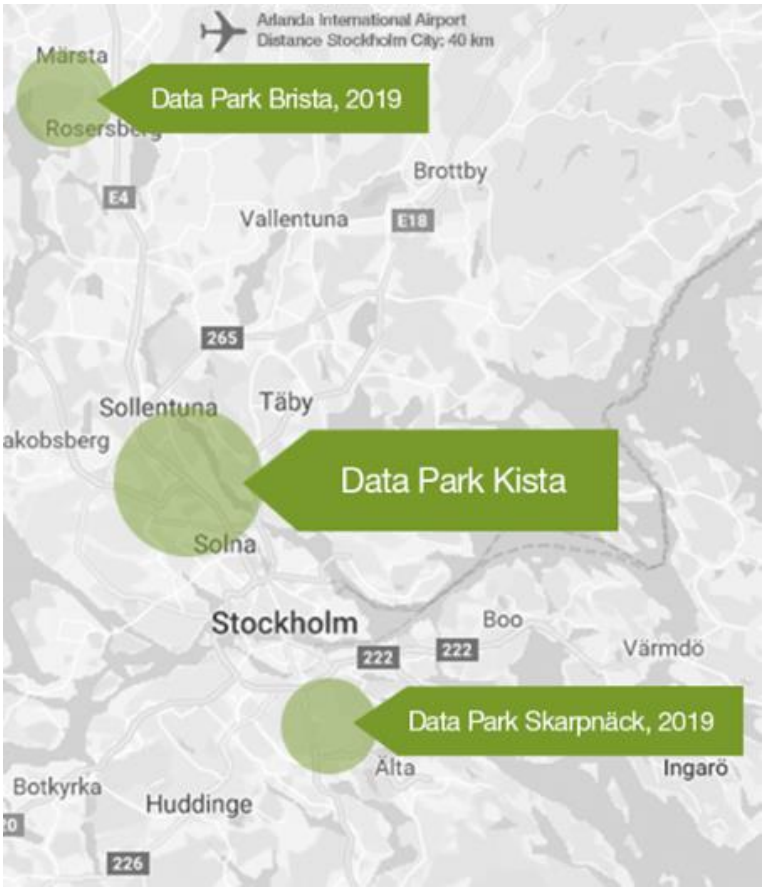
INTERNATIONAL CASE STUDY

Stockholm Data Parks: A Proven Concept

Stockholm has a commitment to become fossil-fuel free by 2040. They have already made substantial progress towards that goal. Stockholm is covered by an extensive district heating and cooling network owned and managed by Stockholm Exergi, a joint venture between the City and Fortum from Finland.

Stockholm Data Parks is a collaboration between the City of Stockholm, Stockholm Exergi, Ellevio (power grid operator) and Stokab (fibre provider) to recover waste heat from data centres in the Stockholm area.

Heat recovery from data centres already makes up about 3.5% of the City's total heating needs, and Stockholm aims to reach 10%.



Over 30 data centres are already connected for heat recovery including Multigrid, Bahnhof, Borderlight, Ericsson, and H&M. With a cooling load of 10 MW, the Ericsson Data Centre in Roserberg is one of the largest green data centres in the world.

Data centres located in Stockholm have two service options.

In one option, the data centre can purchase cooling services directly from Stockholm Exergi, eliminating the need for an on-site cooling plant (unless the operator wants an even higher level of redundancy).

Alternatively, data centres can build and maintain their own on-site cooling plant and sell waste heat to Stockholm Exergi.

Under both service models, data centres located in Stockholm benefit from lower cooling costs and greener credentials. The community benefits from lower heating costs and lower GHG emissions.

THE RESHAPE ADVANTAGE

Experienced, Multi-disicplinary Team

Reshape has extensive experience in assessing and developing low-carbon energy in urban areas, including waste heat recovery. We have seen projects through initial concept to final execution and ongoing operation. Our diverse team has worked with cities, utilities, land developers, building owners, and data centres.

We are economists and engineers, and we understand the business and technical needs of data centres. We know the value of waste heat under both existing and emerging green building policies, carbon pricing systems, and low carbon fuel standards.

OUR SERVICES

Independent Expert Advisors and Project Catalyzers

Reshape provides a range of advisory and development services. We work under a variety of compensation models, including fee for service and success payments. We can help data centre owners realize economic and environmental value from their waste heat, as well as support cities or utilities in attracting data centres and lowering GHG emissions through waste heat recovery. We can also help land developers and building owners secure cost-effective sources of low-carbon heat. Regardless of the ultimate client, our mission is to we cultivate strong relationships and develop **win-win solutions** for data centres, cities, utilities, and building developers/owners.

ADVISORY SERVICES

- Concept development
- Screening studies
- Full feasibility / business cases
- Market studies / policy analysis
- Business models / strategy
- Market development
- Revenue / financing plans

DEVELOPMENT SERVICES

- Regulatory support
- Contract design / negotiation
- Stakeholder engagement
- Securing grants and financing
- Procurement
- Partnership agreements
- Customer acquisition

OUR PROJECTS

Reshape data centre heat recovery projects

Top Left: Zero Carbon Mile (Toronto, ON)
Bottom Left: Zero Carbon Loop (Toronto, ON)
Top right: Telus Garden (Vancouver, BC)
Middle right: Westin Exchange - Amazon HQ (Seattle, WA)
Bottom right: BC Institute of Technology (Burnaby, BC)