# District heating in Frederiksberg and Denmark

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# Frederiksberg – in the middle of Copenhagen

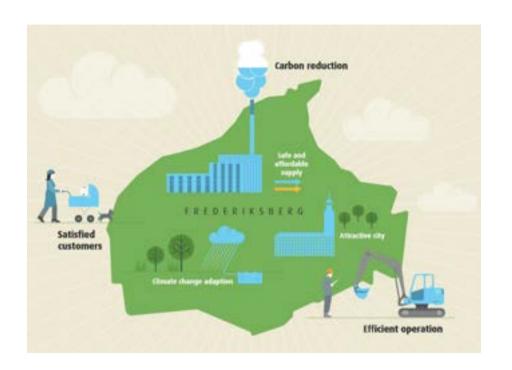




### **Demographics**

### Frederiksberg Municipality:

- 105,000 inhabitants
- 53,000 households
- Highest population density in Denmark
- 97 % live in flats, 51 % live alone
- 4,800 businesses
- Covers an area of 8.7 km<sup>2</sup>







# History

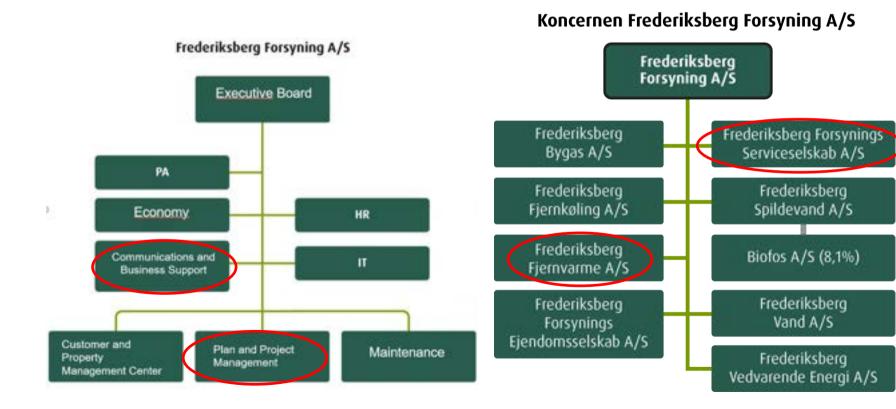
1860	Gas (started as a private company)
1865	Sewage
1869	Water (started as a private company)
1899	Electricity (started as a private company)
1903	District heating
1921	All five supplies are run by the municipality
 2000	Frederiksberg Forsyning (Utility) is established
2005	DONG Energy buys the electricity business
2012	Frederiksberg District Cooling is established
2014	Frederiksberg Wind A/S established
2016	Frederiksberg renewable energy is established







### Organisation





#### **Vision**





### Mission





### The Greater Copenhagen DH system

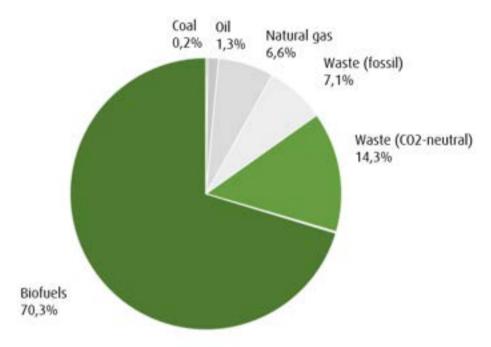
- CTR runs the transmission system
- CTR is owned by 5 municipalities;
  Frederiksberg, Copenhagen,
  Gentofte, Gladsaxe, Copenhagen
  and Tårnby
- 250,000 end users
- 54 km of grid network
- 3 pump stations
- 14 peak load stations
- 27 heat exchange stations







# Greater Copenhagen – district heating fuel sources 2021



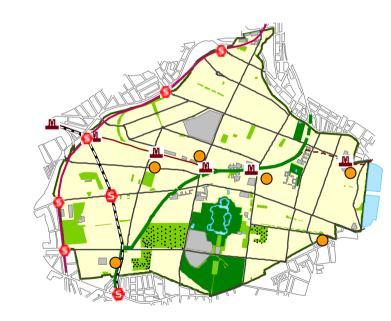


# District heating – Frederiksberg

CTR runs the transmission system from the production utilities (CHP/WtE) to Frederiksberg

#### At Frederiksberg:

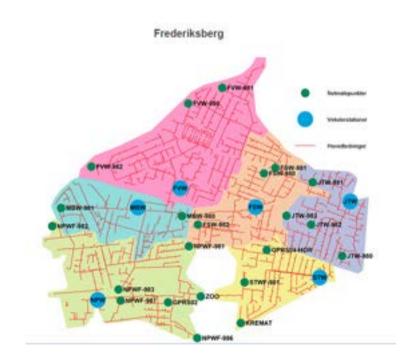
- Local peak load unit (4 x 50 MW heat only boilers)
- 6 heat exchanger stations
- 1 booster pump station





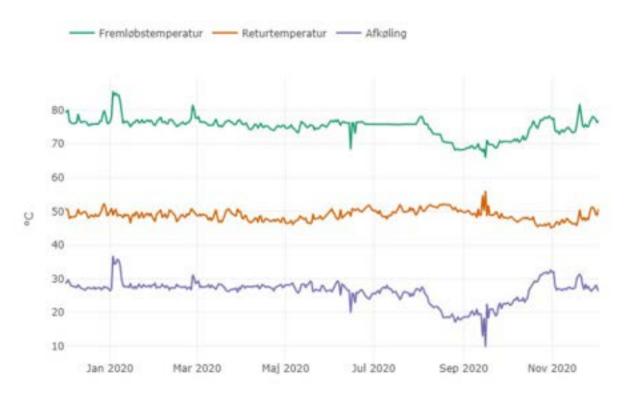
# **Planning**

- Original planning of heating 1984 – district heating to supply up to 90 % of heat demand
- Main part of network constructed 1985-1995
- Conversion from steam to water based system completed 1991
- Today > 99 % is district heating





## Temperature levels – district heating





# Planning



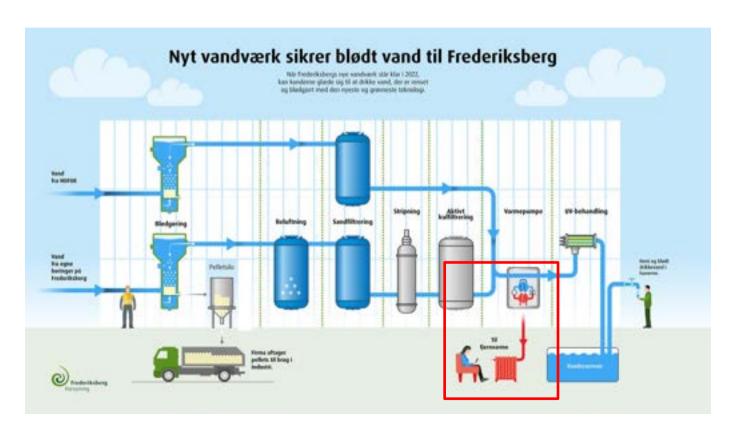
Strategic energy plan

Renovation of a pipe system that covers the entire municipality

Lowering the temperature further

More local energy production

# New water plant - Heat pump



# Thank you for your attention

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