

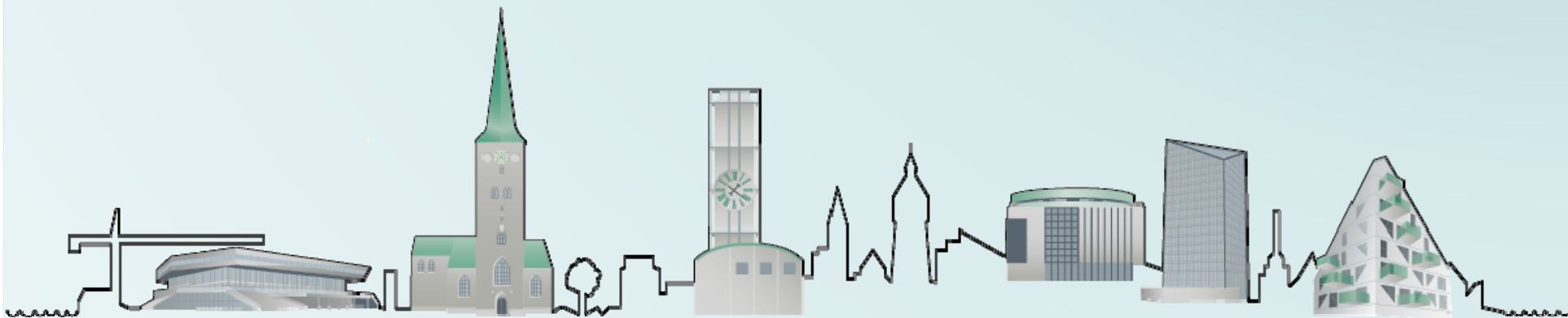


Changes needed in the framework conditions of the Danish energy supply sector to meet the transition targets of 2050

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Aarhus and the DH company



Aarhus

- 330,000 inhabitants
- Denmark's 2nd largest and fastest growing city

AffaldVarme Aarhus

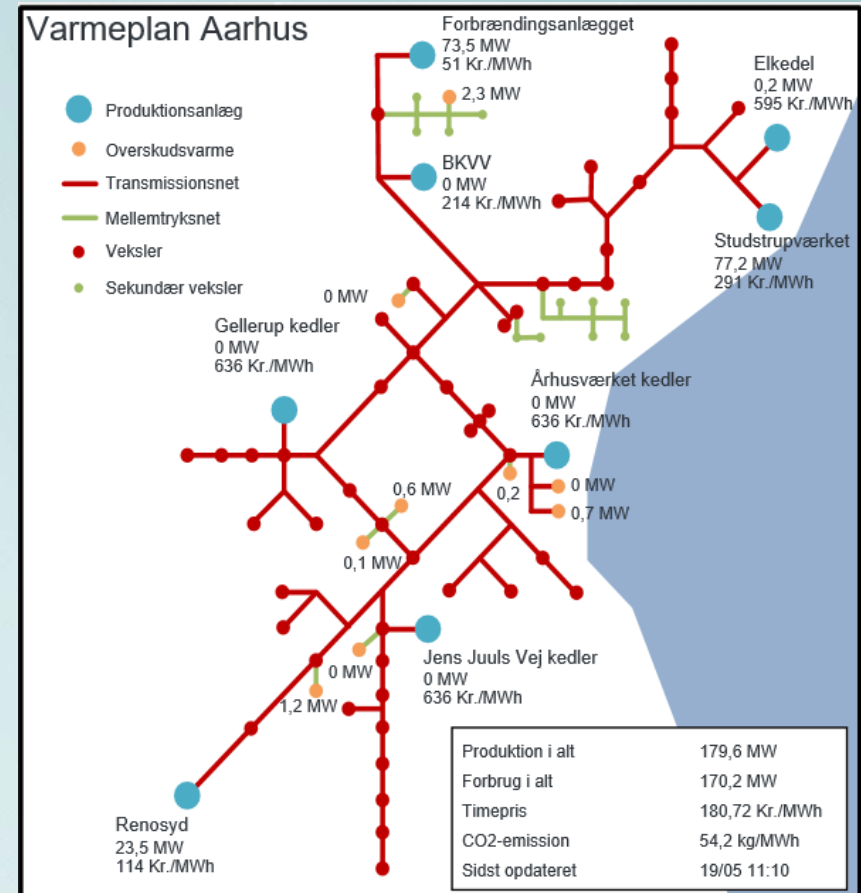
- The waste and district heating department in Aarhus
- Supplying 95 % of the citizens in Aarhus with district heating both space heating and domestic hot water
- Non-profit company, Tariff financed
- Politically controlled, owned by the City of Aarhus
- Annual turnover approx. 3.0 billion DKK (400 mill. €)
- 350 employees
- 88 years tradition with district heating in Aarhus



Aarhus DH system



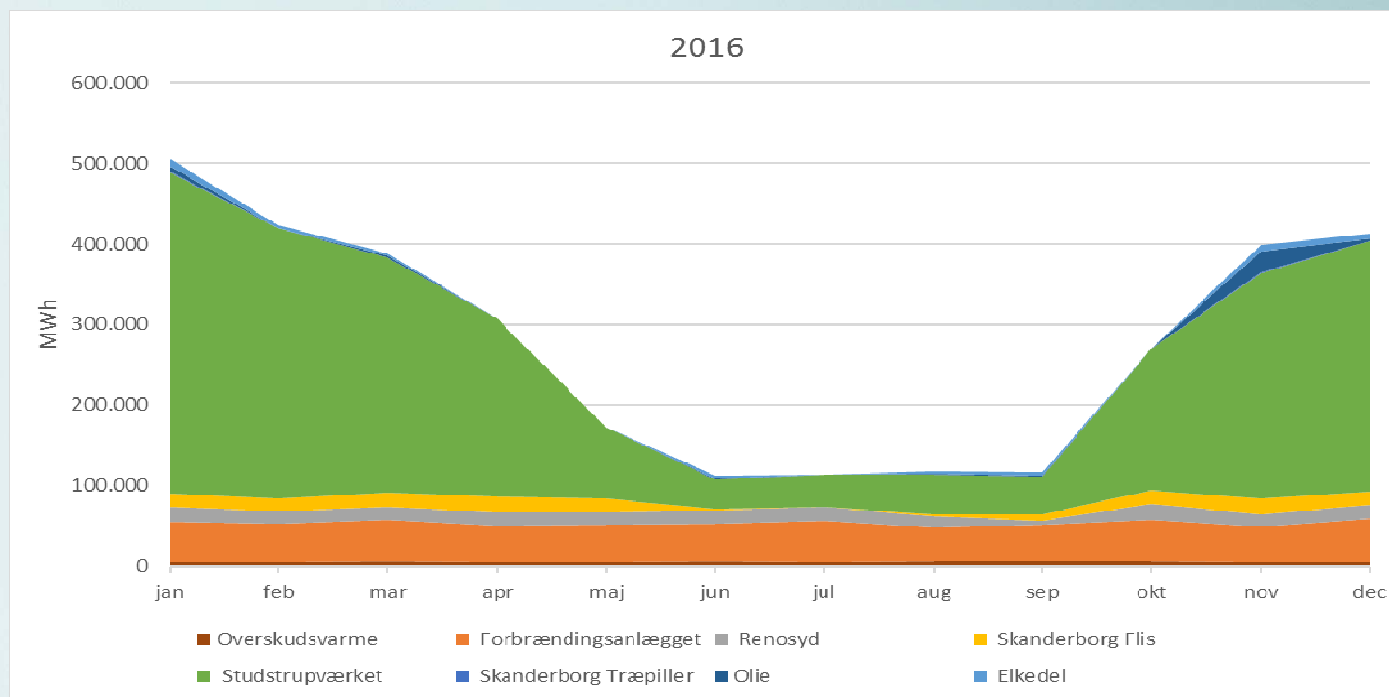
- Handle and supply 3,100 GWh heat from 8 heat producers
- Waste incineration, biomass, and oil (for peak loads)
- 2 pipe system (transmission & distribution)
- 50 substations
- 55,000 heat meters (315,000 customers and 21,500,000 heated m²)
- 11 local district heating companies



<http://transmissionsnet.varmeplanaarhusapps.dk/>



Heat Production – 2016



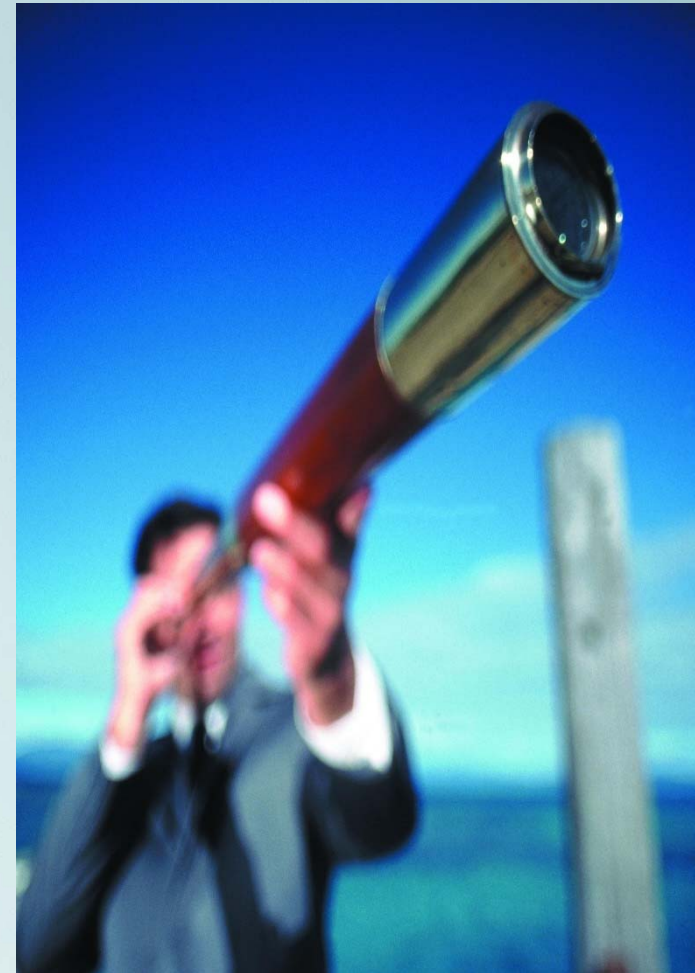
Heat production, varies over the year. Average production in 2016:

- 60 % from Studstrupværket (biomass, wood pellets)
- 20 % from waste incineration
- 13 % from other biomass plants (wood chips and straw)
- 4 % from boilers (oil and electricity)
- 2 % from surplus heat
- 1 % from biogas



Vision for Aarhus

- Ambitious targets in Aarhus -> In 2007 the city council announced a goal of Aarhus becoming CO₂ neutral in 2030
- In AffaldVarme Aarhus – CO₂ neutrality was reached in 2016
- The ambitions don't stop here – we want to be even more sustainable, thus solar and heat pump demonstrations projects are going on



Challenges to meet the transition targets



- **CHP requirement**
 - Plants > 1 MW must be Combined Heat and Power
 - Complicates possibilities for more renewables into the DH system
- **Macro economic requirements**
 - Fossil fuels often cheapest
- **Taxes converted to support the "green transition"**
 - But how would they support ?



To make the district heating in Aarhus able to use electricity in a flexible way



- **CHP requirement**
 - Plants > 1 MW must be Combined Heat and Power or use electricity for heat production
- **Macro economic requirements**
 - New way of regulating
 - More national planning
- **A target in 2050 and a way to get there**
 - 2020-2050 flexible use of electricity
 - 2050 use of electricity in a smart way

