2026-04-21

LEED - EAc3 - Enhanced Commissioning		
Requirement	**Information provided by the DES company**	**Related documents**
A summary of on-going programs (or similar) for coordination and monitoring of district energy network performance in terms of energy efficiency and environmental performance	1) Describe briefly how energy input, heat output and heat delivered are measured and how data are gathered.	
	Energy input is measured in different ways depending on type of fuel used and type of plant. In most cases data is measured using different instruments, gathered through the use of applications and stored. In some cases when data can´t be measured, manual sampling and laboratory tests are used. These data are then combined with other measurements in the monthly closing process. Wood chips are delivered by ships, train and truck and energy content is measured based on dry mass multiplied with the heat capacity. Wood pellets are delivered by ship and trucks and energy content is measured based on mass multiplied with the heat capacity. Liquid bio oils are delivered using trucks and ships and are standard products with a predefined energy content. Fossil oils are delivered using trucks and ships and are standard products with a predefined energy content. Heat pumps energy input is electricity which is measured using online sensors. Data are gathered through a combination of control system and history data managers (software applications) as well as external parties (due to legislative requirements). All energy estimates are reconciled at different positions during transformation to ensure correct values. Heat or energy output is measured using online instruments. Data is gathered through the control system and history data managers (software applications). All applications involved in data gathering are supported by regularly executed backup and restore controls as well as regular maintenance programs. Application access approval is according to ITIL processes. Delivered energy is measured continuously by an external partner and once per month sent to our invoicing/customer support system.	
	2) Describe briefly how emissions from the chimney are measured and how the ashes are treated?	

	Ashes are handled according to regulations. Treatment is depending on the kind of ashes. Bio ashes are usually used as stabilization or covering material on landfills. Emissions from the chimneys are monitored continuously or intermittently in accordance with law and environmental permits. For more details, link to our environmental reports: Hållbarhetsrapporter - Stockholm Exergi	
Present a plan that summarizes the operation and maintenance is done in the district heating system (not older than two years). It should be clear how much of the maintenance plan that has been implemented (for example per cent of total budget last year)	1) Attach documents that display measures taken the last 2 years [e.g. renovations of plants, km of exchanged pipes, etc.]	
	Stockholm Exergi has an extensive maintenance program where measures taken are preventive and corrective maintenance in boilers, turbines and pipelines. Se the latest annual report for details: Hållbarhetsrapporter - Stockholm Exergi	
	2) Describe how much resources that has been spent on operation and maintenance the last 2 years [for example: per cent of turnover, millions SEK, etc]	
	Maintenance and operation amounts that have been spent in the production system and distribution network the last two years are described in the latest annual report, se “Koncernens resultaträkning”: Hållbarhetsrapporter - Stockholm Exergi	
Show that the District Energy Company has an investment plan for renovations and upgrades of the district energy system (not older than two years).	1) Describe what actions that are planned for the future, for example investments in new plants, upgrades, etc. Give information on installation year, fuel type, installed heat and electricity capacity, yearly production, etc.]	
	Stockholm Exergi is the largest supplier of district heating in Sweden with close to 10 TWh in yearly energy sales (heat, cooling and electricity combined). In early 2020, the company phased out the last coal plant and now bases its heat sales on renewable and recovered energy sources. In late 2019, Stockholm Exergi launched an R&D bio-energy carbon capture and storage (BECCS) installation directly connected to the company’s, and Europe’s, largest biomass Combined Heat and Power plant, the KVV8. The KVV8 has a total capacity of 375 MW, including a maximum of 140 MW for electricity. Stockholm Exergi is now preparing to build a full-scale BECCS-plant connected to the KVV8, to be operational in 2029. Se all plans and actions here: Hållbarhetsrapporter - Stockholm Exergi	
	2) Describe what measures that are planned regarding facilities/plants that are going to be phased out. Information should include year, fuel, installed heat and electricity capacity, yearly production, etc.	

Coal in Värtaverket, KVV6 has been phased out during 2020.

Other projects including decommissioning and new investments will contribute to phase out fossil fuels from the system. Separate decisions will be taken for each individual project.

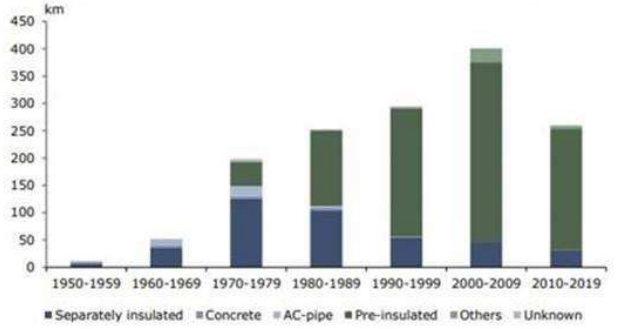
3) Describe what effect the planned measures will have on the climate, such as possible CO_2 reduction, etc.

See the description of the projects above.

4) Give information about the age of the district energy pipe network (% of the pipe network built during different decades), the situation today and planned measures for the future (no longer than 10 years ahead).

Stockholm Exergi's district heating (DH) system is one of the largest and oldest in the world. It comprises 1,480 km of DH network and 130 km of district cooling (DC) network in culvert length, and for steel pipe length these lengths can be doubled. The pipeline length in tunnels is 60 km for DH and 30 km for DC.

Figure 8 – Age profile of the existing DH pipeline in culvert length



Show what improvements in energy and environmental performance implemented investments have resulted in (no further back than two years).

1) Give figures for carbon dioxide emissions, primary energy factor and per cent fossil fuels for the past 2 years [g/kWh, kWh/kWh, %].

Figures for heat production:

CO2 g/Kwh (VMK) (residual)

2022	**2023**	**2024**	**2025**
54	46	51	57

PEF kwh/kwh

2022	**2023**	**2024**	**2025**
0,1	0,45	0,39	0,3

Fossil fuel %

2022	**2023**	**2024**	**2025**
3	2	3	1,5

More data and information: Miljonyckeltal-2025.pdf

	2) Describe the changes in environmental performance from year to year. What are the reasons for the improvements or deterioration? Describe the underlying factors such as upgrades, different temperature from year to year, etc.	
	Coal in Värtaverket, KVV6, has been phased out during 2020. The new biomass power plant in Värtaverket (KVV8) has contributed to improved environmental performances from spring 2016.	
Show that the operation and maintenance personnel receive adequate training to maintain and improve the district energy system performance.	1) Describe what requirements the company have on the personnel [Level of education for different labor categories]	
	SE require bachelor or master's degree when hiring most of the personnel in the O and M category. In addition to that, work experience in adequate areas are required.	
	2) Describe how continuous training of the personnel is performed [type of education, days per year, etc.].	
	SE internal trainings are divided into three different categories; technical, health-safety and management. Different labor categories require different set of trainings. In average trainings are carried out about 4 days/year.	