

SECTOR COUPLING - UTILITAS

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Member of the board
Utilitas Wind

Member of the board
Estonian Society for Electrical Power Engineering

UTILITAS AT A GLANCE



Utilitas is the largest renewable energy producer in Estonia and the largest wind energy producer in Latvia



20 mln m²
heated buildings

5 600
buildings

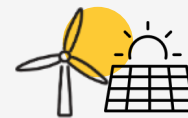
> 400 000
city residents supplied with environmentally sustainable district heating



2.4 TWh
energy produced
2023

1.6 TWh
renewable energy
produced

1.4 GW
installed heat and
power capacity



118 MW
of wind farms in operation in Estonia
and Latvia



All Utilitas district heating and cooling networks are efficient district heating systems within the meaning of Energy Efficiency Directive (2012/27/EU)

Sustainable energy solutions that enable to consume energy:

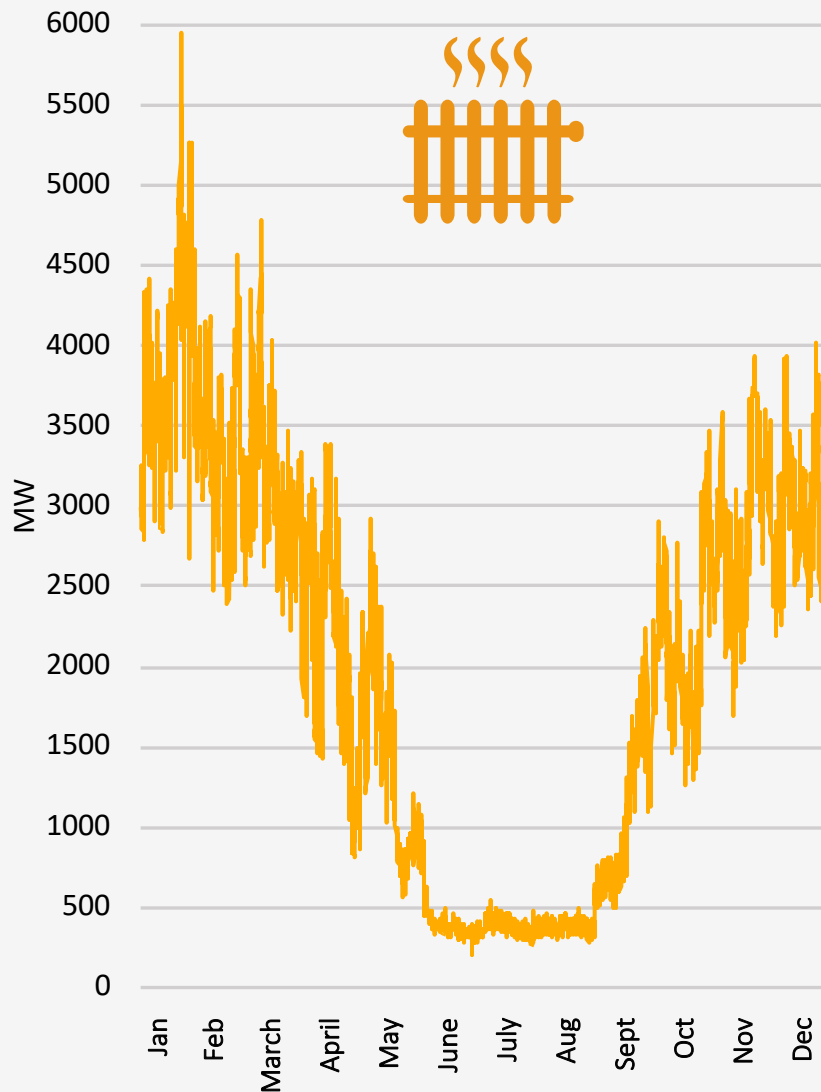
- at any time
- at reasonable price
- while preserving the environment



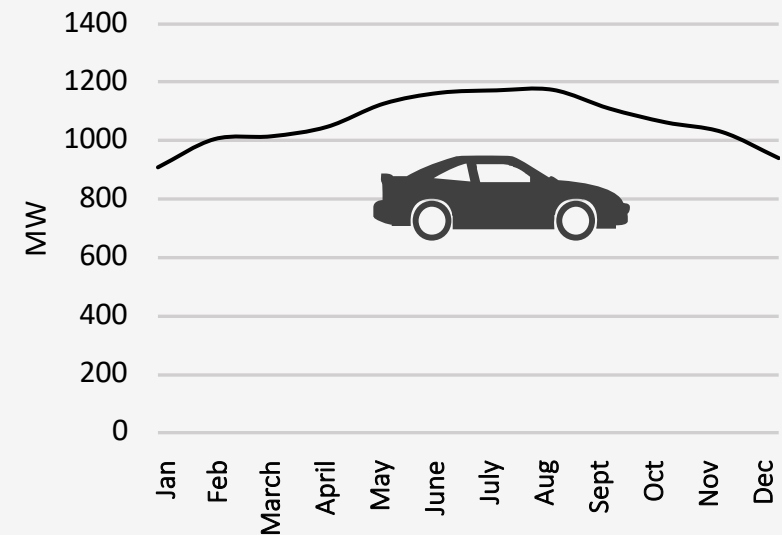
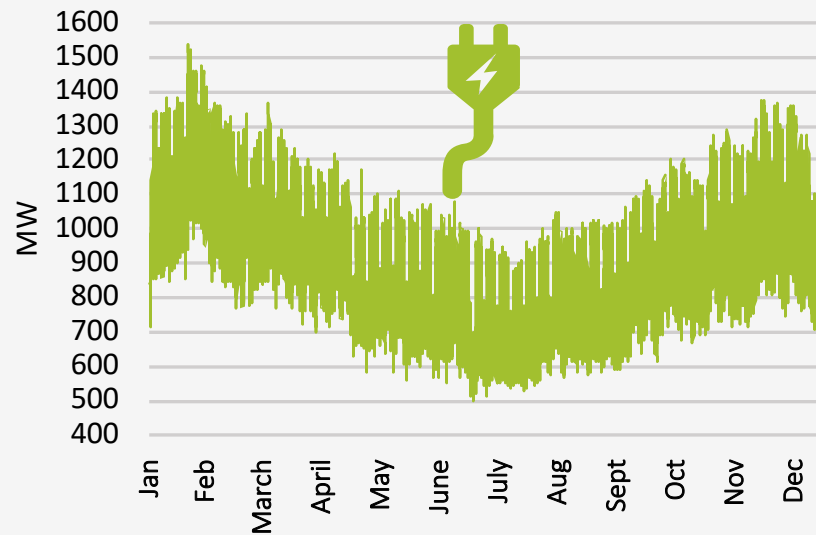
Sector coupling

is transfer of clean electricity into other sectors,
where it is used to reduce the amount of
required fossil energy

ENERGY DEMAND IN ESTONIA

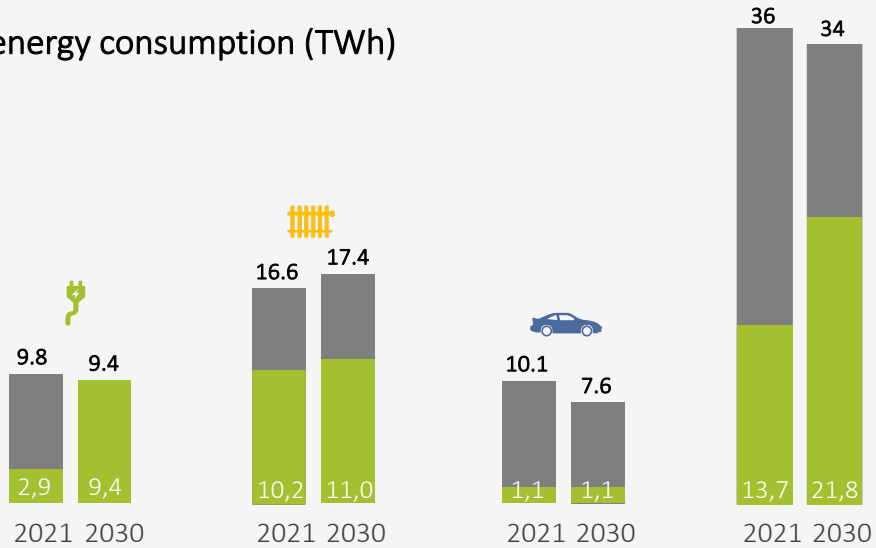


- ½ of the energy is consumed as heat
- ¼ as electricity
- ¼ in transportation
- Heat peak load approximately 10 times higher than low load
- Electricity peak load approximately 3 times higher



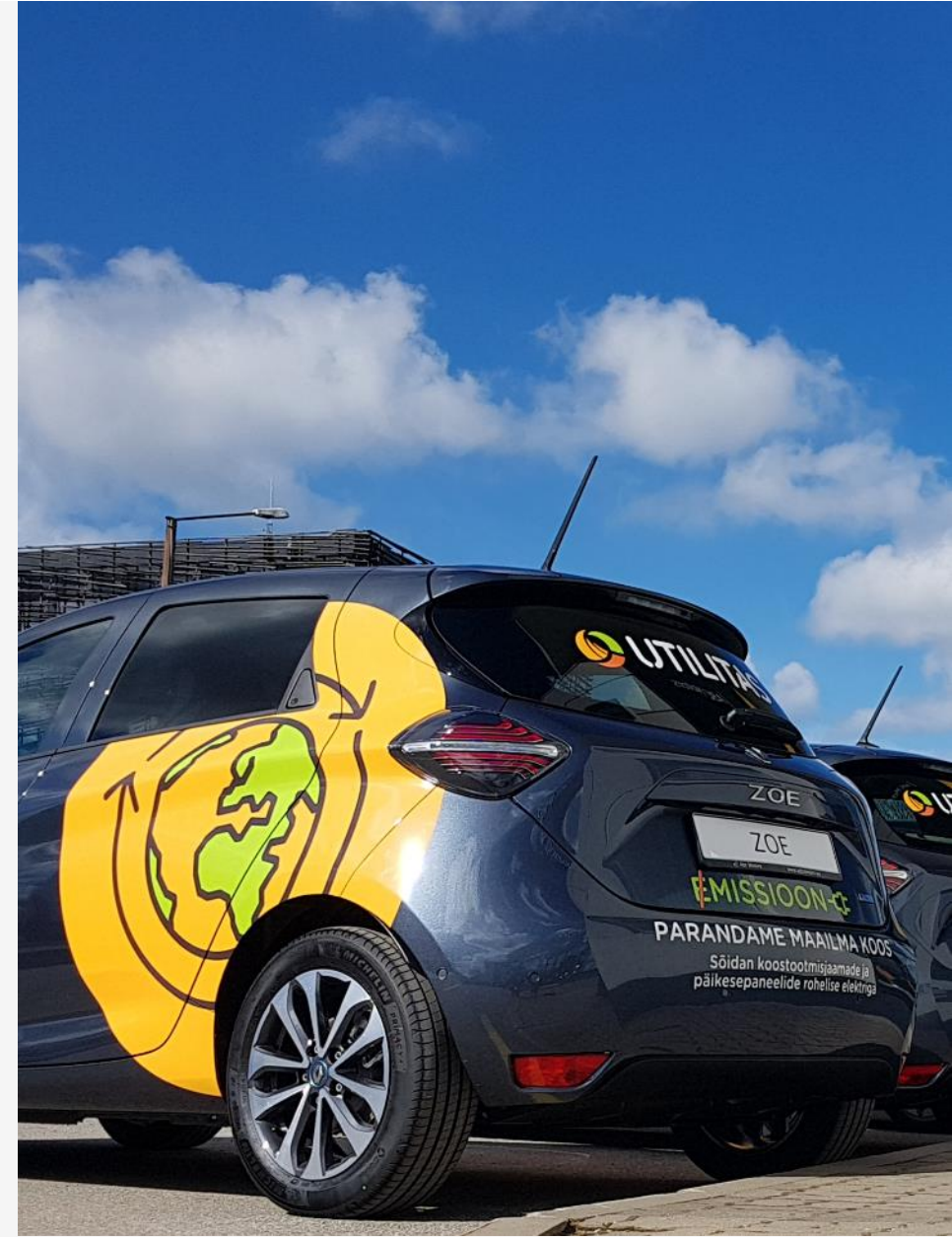
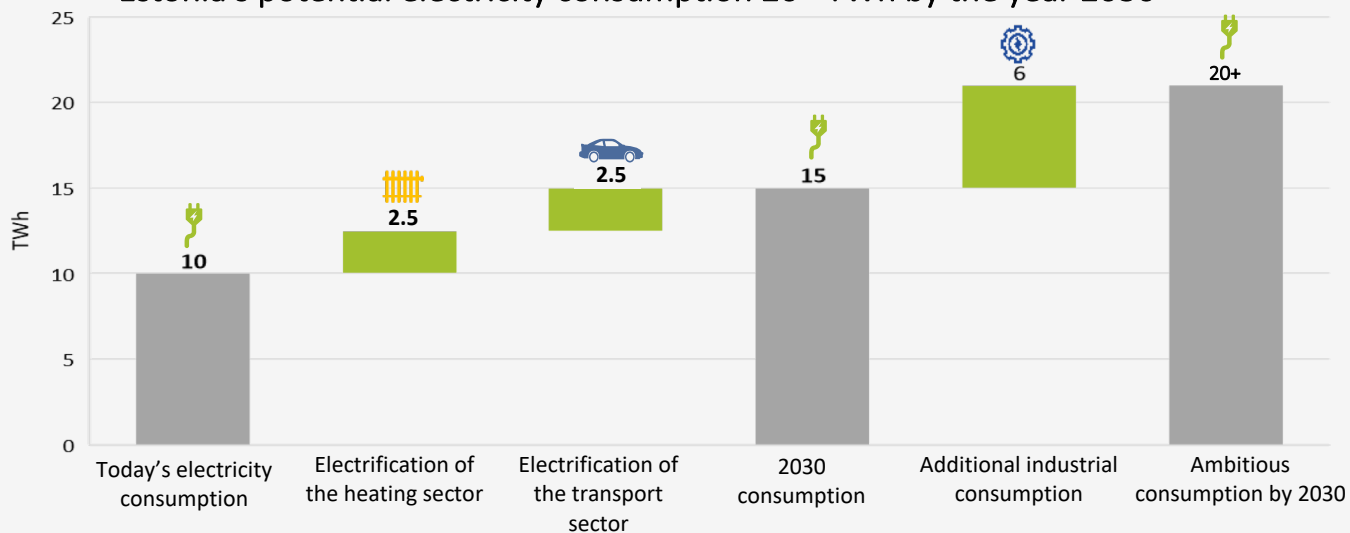
ELECTRICITY AS THE DRIVER FOR ECONOMY

Final energy consumption (TWh)



Source: Eurostat SHARES 2021
NECP 2030 (apr 2023 - workversion)

Estonia's potential electricity consumption 20+ TWh by the year 2030




ELECTRICITY AS THE DRIVER FOR ECONOMY

Electricity consumption forecasts

	Today	2030	Today's consumption per 1 million inhabitants
	9.8 TWh	9.4 TWh	6.9 TWh
CO ₂ footprint	656 gCO ₂ /kWh		


Today's Estonian consumption, if it were per 1 million inhabitants at the level of Finland

~20 TWh


	Today	2035	2030
	87 TWh	150 TWh	15.8 TWh
CO ₂ footprint	70 gCO ₂ /kWh	+ 72 %	

Additional need for electricity in Estonia

- Decarbonization of heat + ~ 2.5 TWh
- Electrification of transport + ~ 2.5 TWh
- New industrial consumers (EAS) + ~ 6 TWh

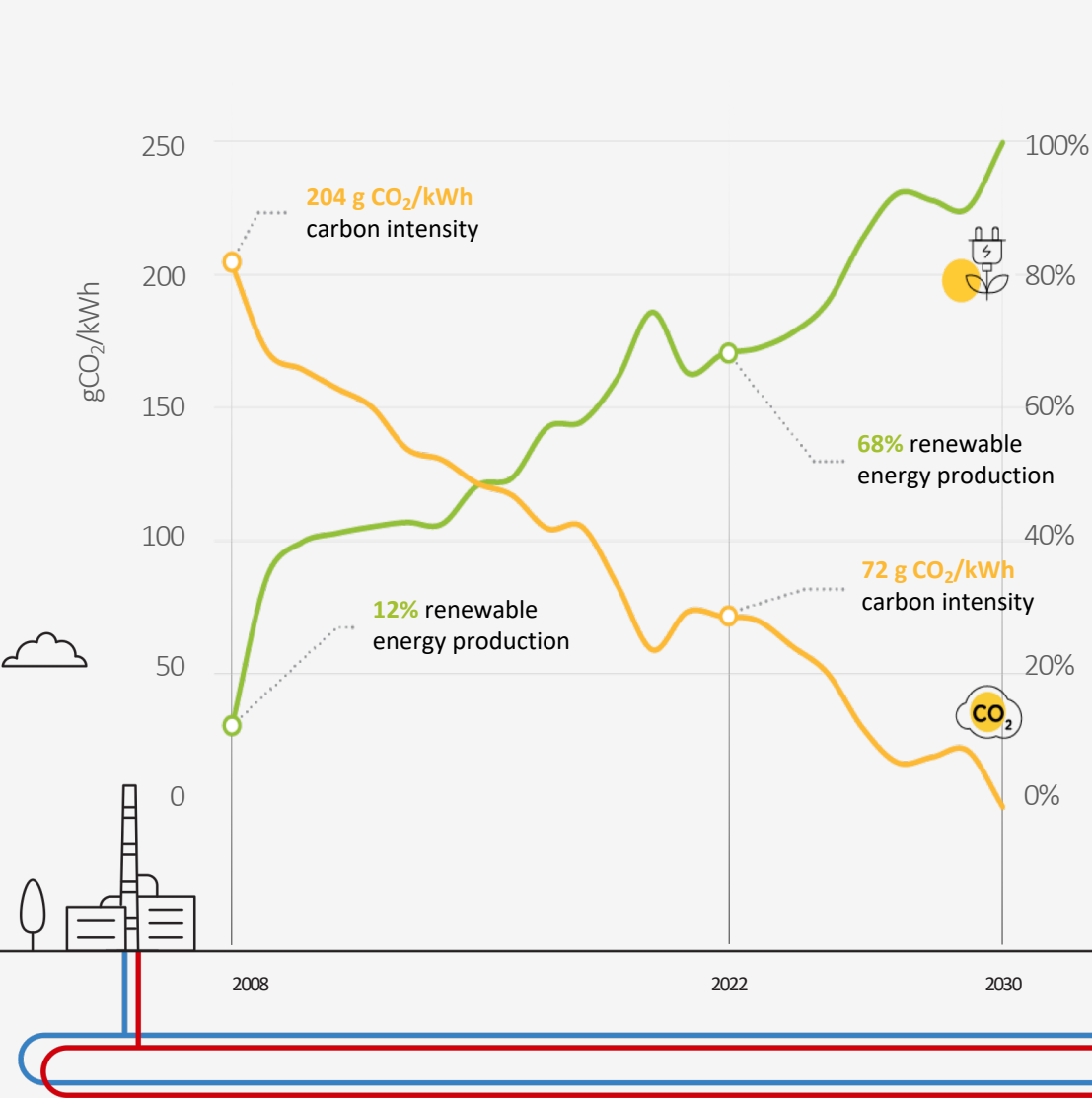
	Today	2030	2030
	142 TWh	197 TWh	13.7 TWh
CO ₂ footprint	9 gCO ₂ /kWh	+ 39 %	

Locally produced electricity from renewable sources can be the basis for economic competitiveness

	Today	2030	2030
	140 TWh	178 TWh	25.9 TWh
CO ₂ footprint	53 gCO ₂ /kWh	+ 27 %	

Sources:
 Finland – https://www.fingrid.fi/globalassets/dokumentit/en/news/electricity-market/2023/fingrid_electricity_system_vision_2023.pdf, the average of the forecast range 115-185TWh
 Sweden – <https://energimyndigheten.a-w2m.se/Home.mvc?ResourceId=213739>
 Norway – <https://www.statnett.no/globalassets/om-statnett/investor-relations/annual-reports/annual-and-sustainability-report-2022.pdf>

UTILITAS PATHWAY TO CARBON NEUTRALITY



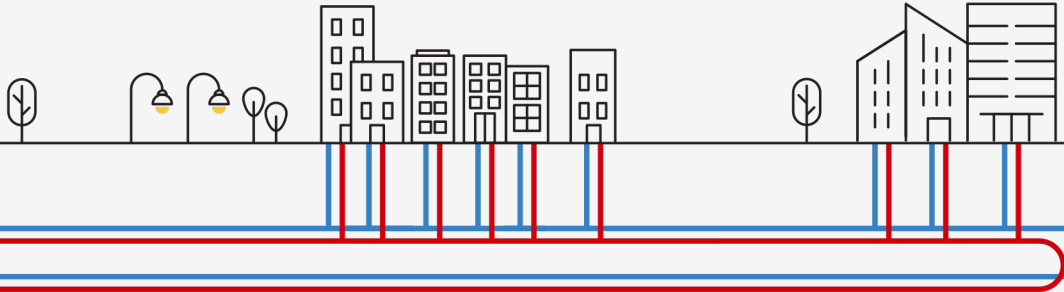
CARBON NEUTRALITY BY 2030



Today: Positive handprint – renewable electricity produced in woodchip fired CHP-s replaces fossil electricity

Utilitas 2030 goals

- 1 To deliver carbon neutral heating and cooling energy
- 2 To generate only renewable energy





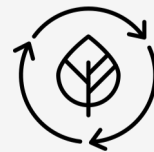
Energy solutions that are sustainable enable customers to consume:



at the desired moment



at a reasonable price



environmentally friendly energy



2009/2017
High efficiency renewable CHP-s
25 + 25 MW

2019
Solar park
950 kW



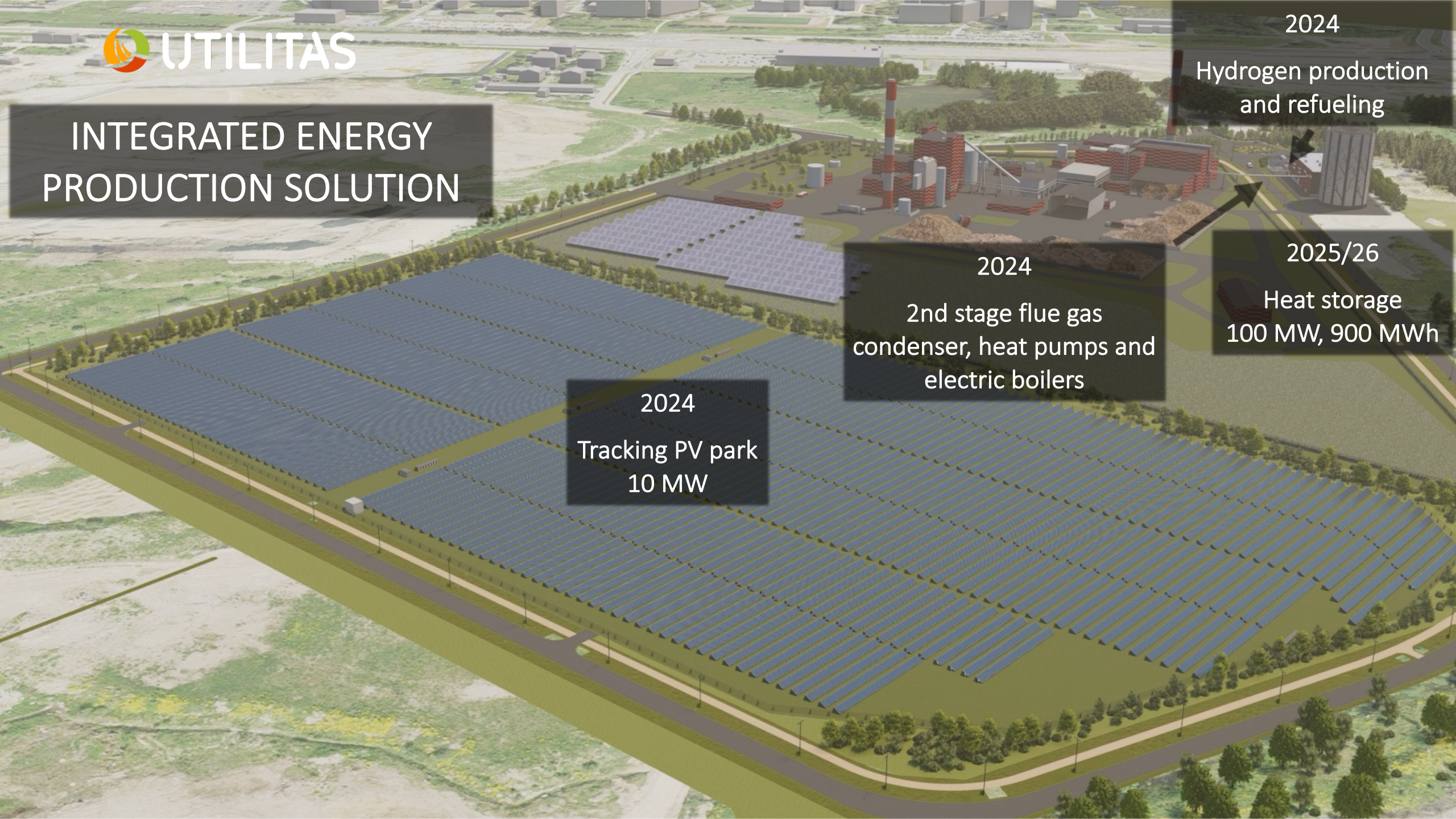
INTEGRATED ENERGY PRODUCTION SOLUTION

2024
Tracking PV park
10 MW

2024
2nd stage flue gas
condenser, heat pumps and
electric boilers

2024
Hydrogen production
and refueling

2025/26
Heat storage
100 MW, 900 MWh



GREEN HYDROGEN

Production
capacity
1+1 MW

Annual
production
< 130 tons of
green hydrogen

Green hydrogen
refueling stations
2

The complete green hydrogen value chain project managed by Utilitas is the first of its kind in the Baltic states

The waste heat produced during hydrogen manufacturing will be used for the district heating network



UTILITAS WIND DEVELOPMENTS

- Wastewater heat pump at Tallinn wastewater treatment plant
- Seawater heat pump will be installed by the sea close to Tallinn city center

Effect

- The use of heat pumps allows Utilitas to reduce the share of fossil fuels to less than 10% by 2027
- 500 GWh of fossil fuel per year to be avoided
- Reduction of CO₂ emissions by at least 100,000 tons every year



Central heating pump, sketch

TĀRGALE WIND FARM

Biggest wind farm in Latvia,
59 MW



14

Vestas V136
wind turbines

150 m

height of
wind turbine



155 GWh

expected annual
production



50 000

households annual
electricity consumption
covered

GROBIŅA WIND FARM

First wind farm in Latvia,
20 MW



33

Enercon E-40
wind turbines

100 m

height of
wind turbine



50 GWh

expected annual
production



16 000

households annual
electricity consumption
covered

SAARDE WIND FARM

Most efficient wind farm in
Estonia, 39 MW



9

Vestas V150
wind turbines

230 m

height of
wind turbine



135 GWh

expected annual
production



40 000

households annual
electricity consumption
covered

UTILITAS WIND DEVELOPMENTS

2023



118 MW

Onshore wind farms in operation

2026



600 MW

Onshore wind farms in operation

600 MW

Onshore wind farms with permits



1200 MW

Offshore wind farms with permits





CLEAN ENERGY
IN CLEAN NATURE