SachsenEnergie – our contribution to Germany's energy transition

05/05/2023 | Dr. Axel Cunow

www.SachsenEnergie.de

Sachsen Energie

DR. AXEL CUNOW

43 years old (1979)
Grew up in Templin, Brandenburg
Business Administration, Finance
Married, one daughter (5), one son (2)

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CFO since 07/2021

UNIVERSITÄT GREIFSWALD
Wissen lockt. Seit 1456

Roland Berger
Strategy Consultants

Technische Universität Berlin

VATTENFALL

Harvard Business School

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SachsenEnergie at a glance

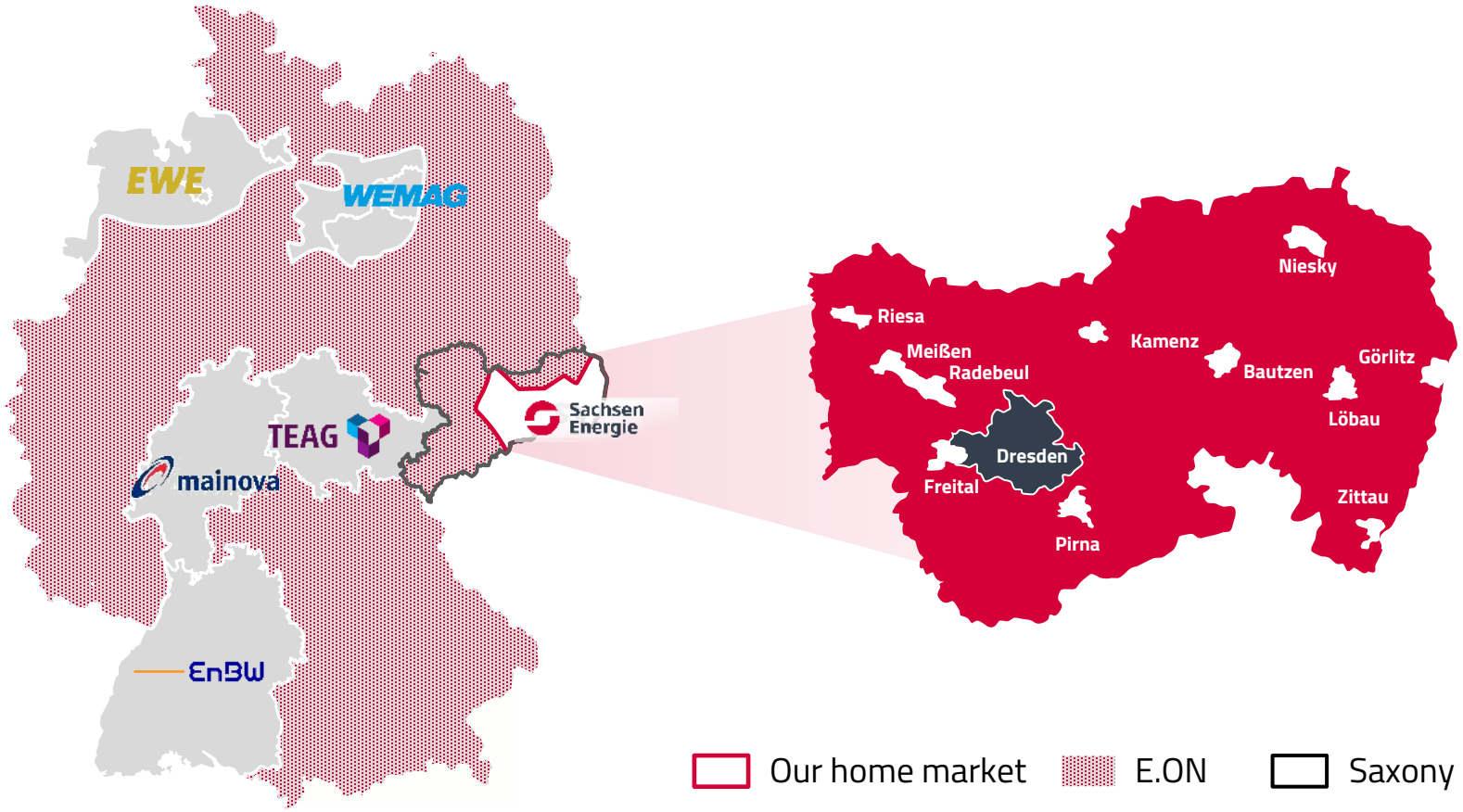
revenue
~ 5.0 billion €

employees
~ 3,300

EBITDA
~ 350 million €

investments
~ 300+ million €

SachsenEnergie Group



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Strategic business segments of SachsenEnergie Group

electricity sales/customers:
17,500 GWh/561,500

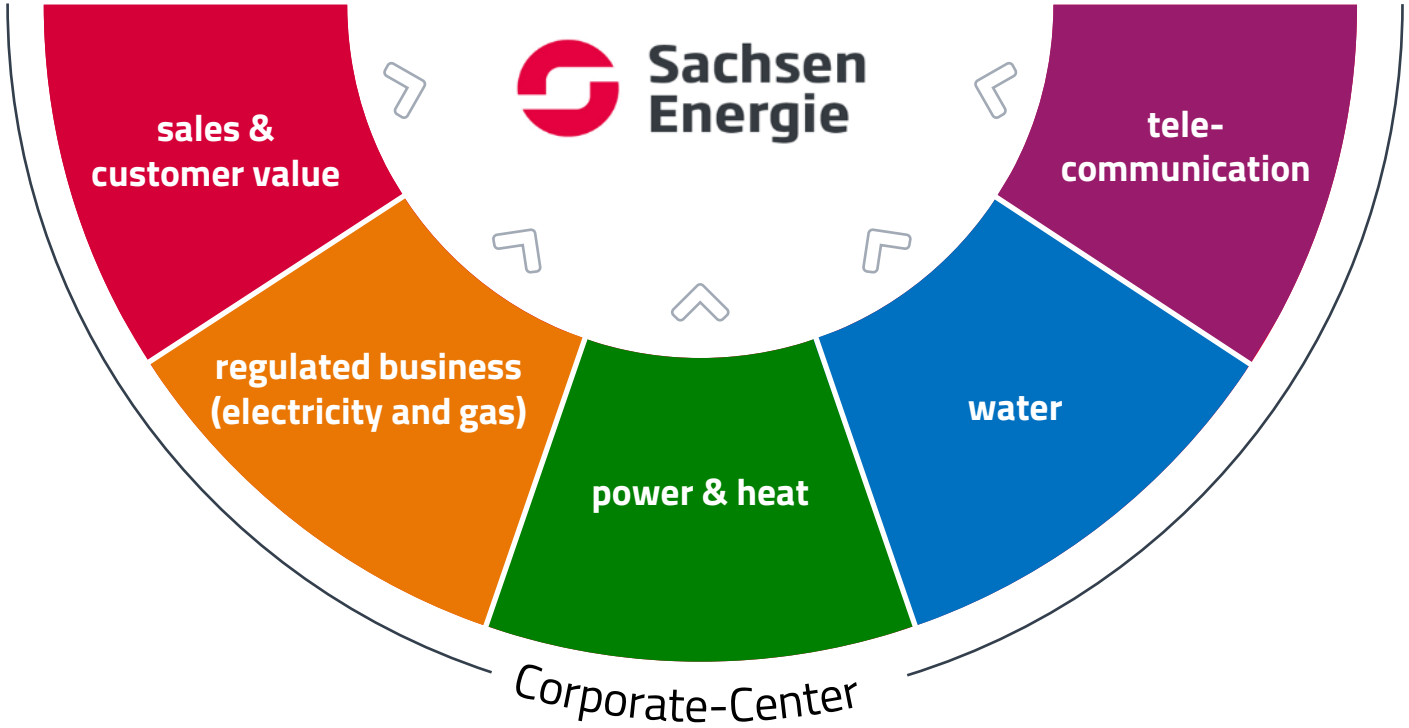
gas sales/customers:
25,000 GWh/107,400

electricity/ connection points:
24,600 km/945,700

gas/connection points:
6,900 km/182,000

district heating/ connection points:
617 km/ca. 7,800

power:
heat: 2,000 GWh / electricity: 1,500 GWh



HR, finance, facility management, corporate development, IT, corporate communication ...

optical fibre:
ca. 4,700 km

customers/ connection points:
ca. 13,900 / 62,000

water pipes/ connection points:
2,400 km / about 59,000

water sales:
42 million. m³

the state of data: 2022

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SachsenEnergie plans to invests about 13 billion € till 2045*

*incl. other investments (IT, properties, measuring points, etc.): **~ 3,650 million €**

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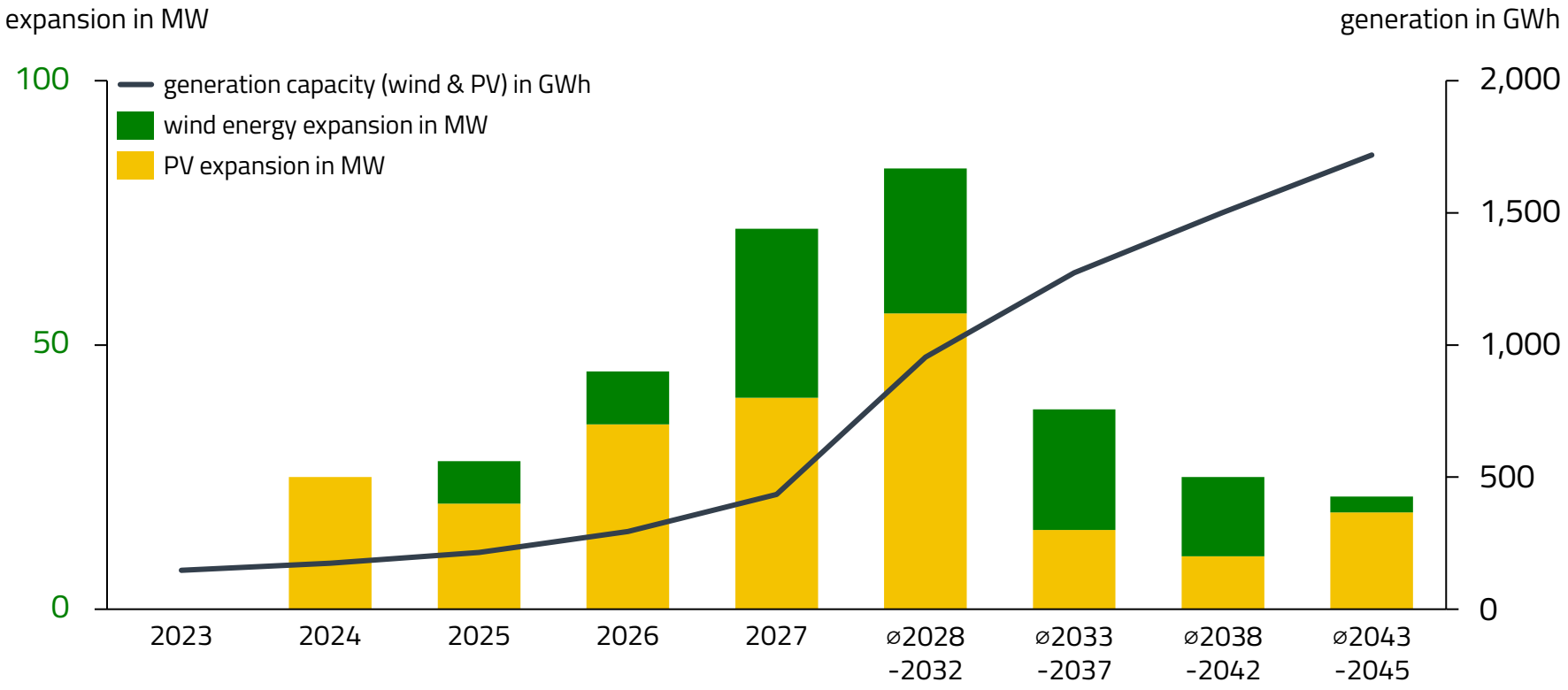
Wind and PV

Capacity expansion and generation of wind and PV



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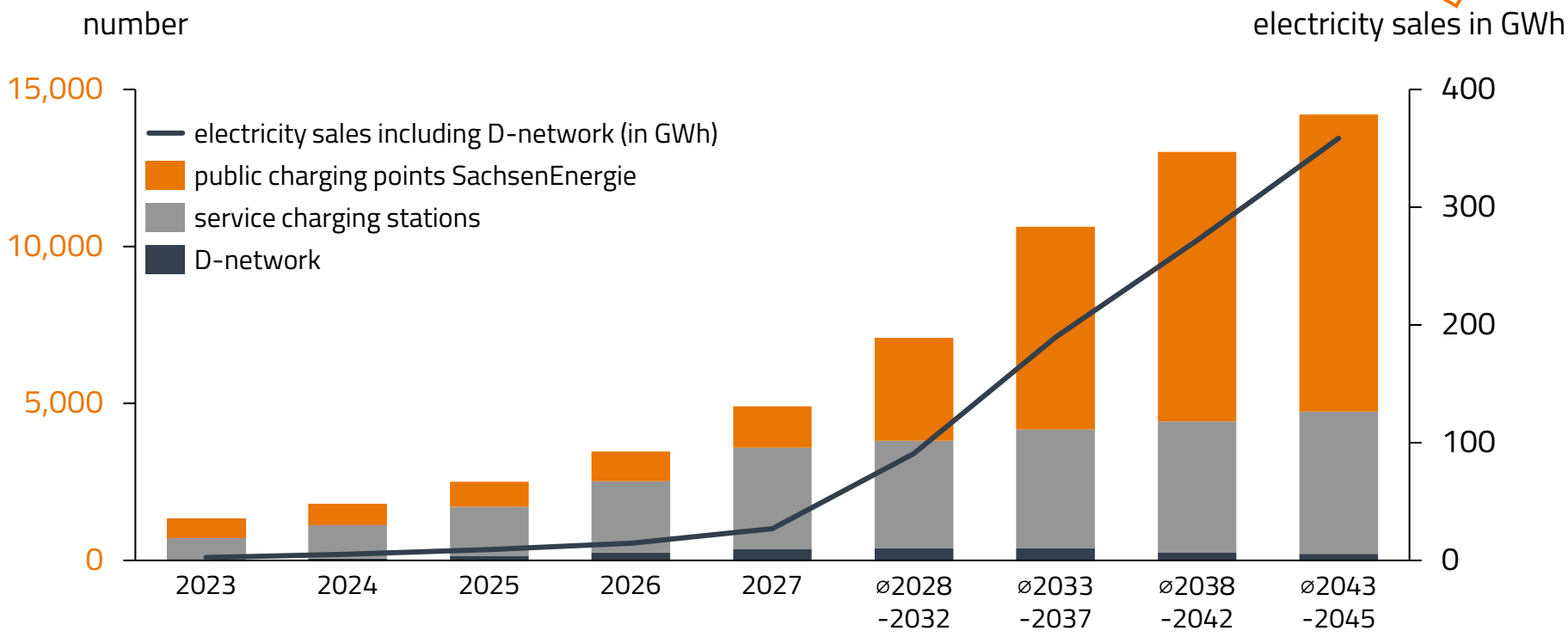
E-Mobility charging stations

upside szenario

Forecast of the number of electric charging stations of SachsenEnergie



Operation of approx. 1/3 of the public charging stations in Saxony

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Electricity distribution grid

Forecast of our grid expansion

	reinforcement, expansion and new construction of lines and number of substations	
high voltage	+1,200 km (current: 1,730 km)	+40 substations (current: 60)
medium voltage	+2,900 km (current: 7,853 km)	+2.600 local network stations (current: 5.826)
low voltage	+6,500 km (current: 14,987 km)	

The integration of renewable energies, heat pumps and e-mobility requires reinforcement of the distribution grid.

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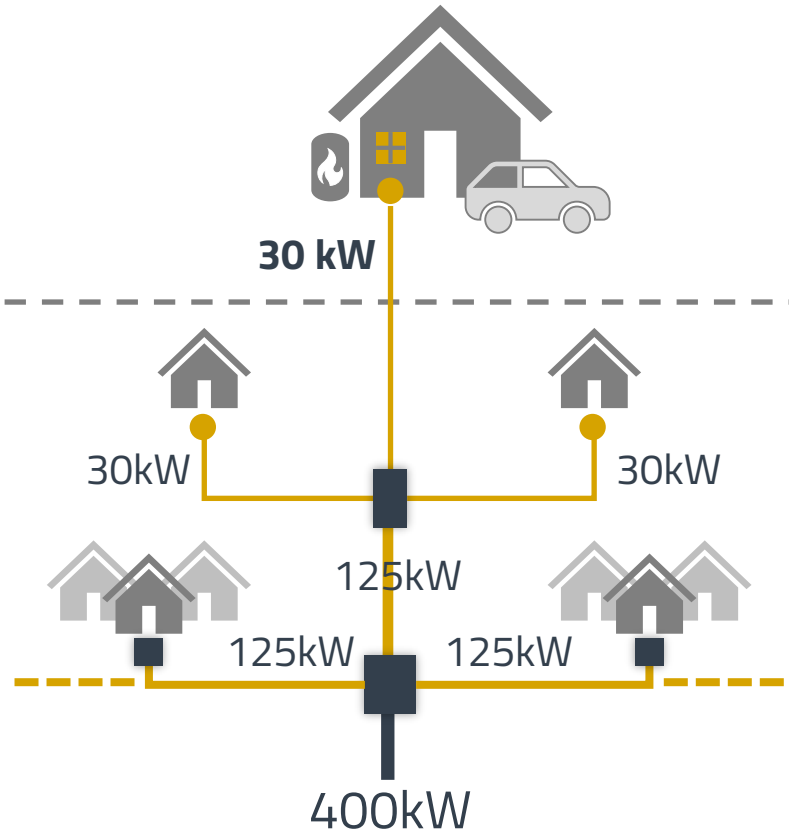
Grid expansion (medium and low voltage)

Today (50 housing units)

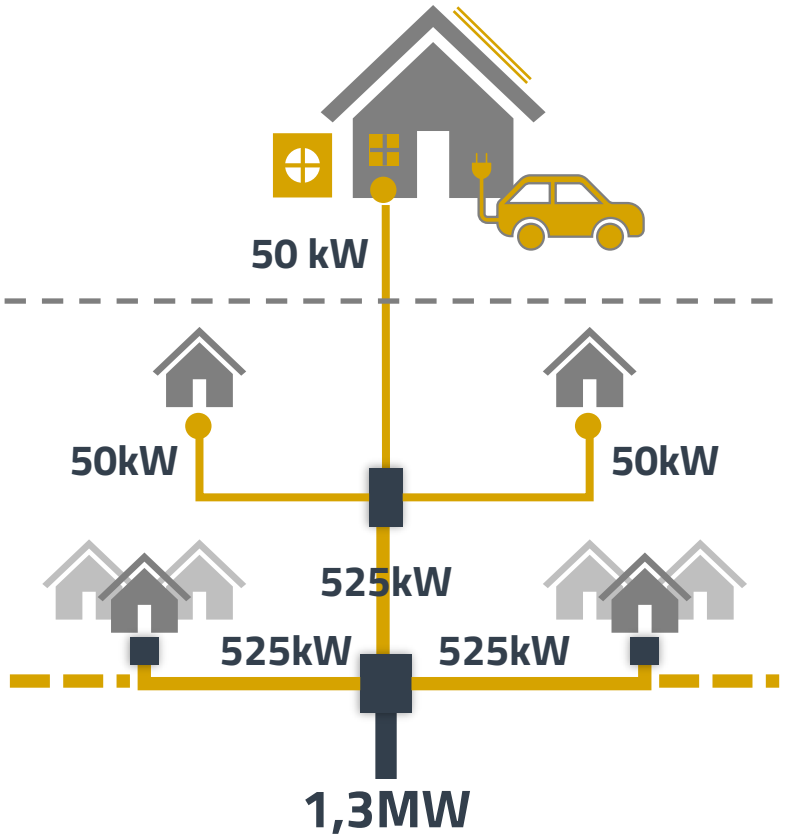


- detail level -

x4

The transition in the heat- and transport sector is taking place in the low-voltage-grid!

Tomorrow (50 housing units)



housing unit | gas-/oil heating | heat pump | cable
conventional car | electric car | photovoltaik system | transformer

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Natural gas distribution grid

Overview of our natural gas distribution grid

high pressure	1,051 km	53 gas transfer stations
medium pressure	1,472 km	621 gas pressure control systems
low pressure	2,286 km	

Only grid renewal and securing the ability to transform towards H2.

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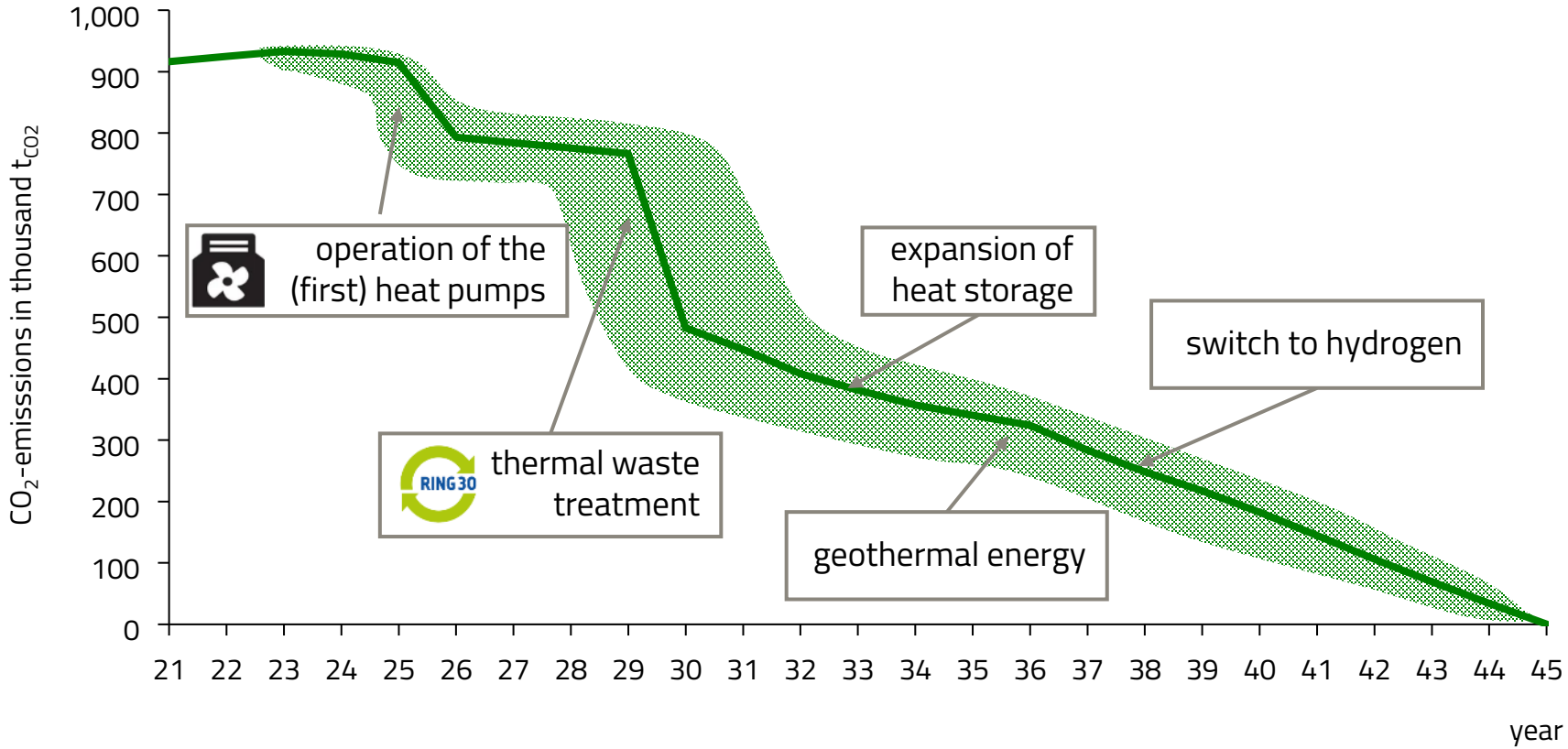
Decarbonisation of Dresden's district heat supply

CO_2-emissions by Dresden's district heat generation in thousand t_{CO2}



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High efficient energetic use of waste and sewage sludge to close regional material and energy cycles

	120.000 t 15.000 t_{TS}	quantities of processed fuel* p.a. sewage sludge p.a.
	44 GWh	p. a. green electricity for ~18 thousand households
	337 GWh	p. a. green heat for ~ 41 thousand households
	140,000 t	p. a. CO_2-savings ≙ effect of ~ 71 thousand PVA**
	17%	decarbonisation of district heating
	29 million t km	reduction of waste transports in t km
	40%	waste reduction potential through preprocessing

* substitute fuel (especially from residual waste and bulky waste)
** private PV-system with 5 kWp and 1.000 full load hours

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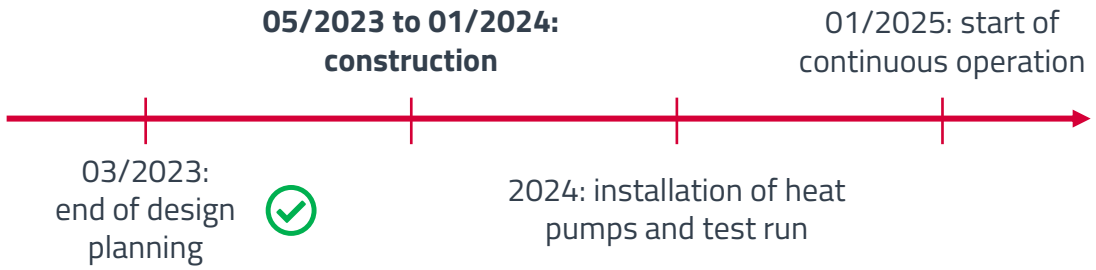
Waste heat utilisation of the TU data center

TECHNISCHE UNIVERSITÄT DRESDEN

complete feed-in of the waste heat from the refrigeration circuit:

- use of waste heat from the TU local heating network
- temperature increase by using a heat pump *(COP ~ 4)*
- **Invest:** ~ 3.2 million €
- up to **24 GWh/a** green heat
  (approx. **1.2%** of the heat demand in Dresden)



Source: https://www.medienservice.sachsen.de/medien/news/1065024

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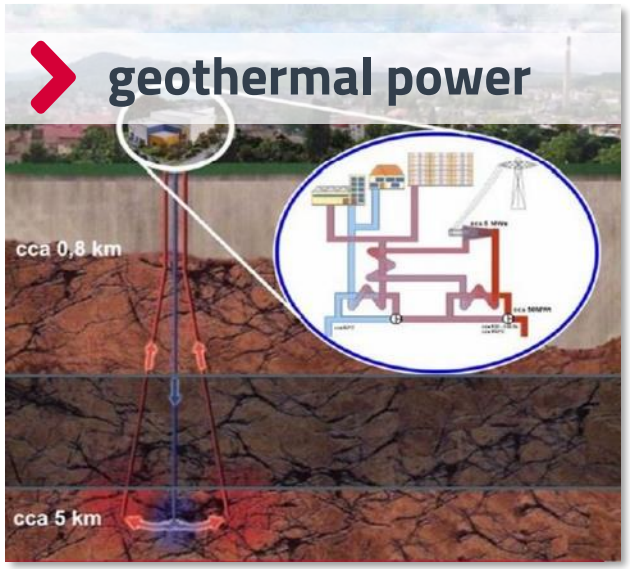
Further decarbonisation investments #1

Capacity: ca. 350 MW_{el}
Realization date: ~ 2040



Capacity: 40 MW_{th}
Realization date: ~ 2035

Capacity: 80 MW_{th}
Realization date: ~ 2035

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Further decarbonisation investments #2

electrode boiler

Capacity: 40 MW_{th}
Realization date: ~ 2025

electrolyser

Capacity: 15 MW_{th}
Realization date: ~ 2027

long-term heat storage

Capacity: 1,750 MWh_{th}
Realization date: ~ 2030

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Price increases compared to pre Ukraine war

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The Ukraine war at the same time increases and decreases the speed of the energy transformation

Key-Take-Aways

- Transformation is taking place in parallel in the electricity, heat, and transport sector as well as in fibre optics and water supply
- High investments enable growth, but are taking energy suppliers to their limits
- Special effort is needed for our district heat system which stands for 90% of SachsenEnergie's CO_2-emissions. However, also investments in grids and E-Mobility are essential enablers for others to reduce their carbon footprint
- Political support for the energy transition increased with the energy crisis
- However, prices increased and availability of resources decreased with the energy crisis

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Thank you for your attention!

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