

CO₂-neutral heat for Berlin – targets, projects, hurdles. The Berlin Coal Phase Out Program

Franco-German Energy Forum

3. November 2020

Vattenfall Wärme Berlin AG

The Berlin Heat – this is who we are:



1

European company for sustainably energy.

For more than

100 years

we supply the city with energy. We are a traditional company.

Around

2.000

kilometers of extensive heat grids are our strong basis.

More than

50 %

CO₂-reduction realized since 1990.

We supply

1,3 mn.

units with district heating.

25.000

new units are connected every year.

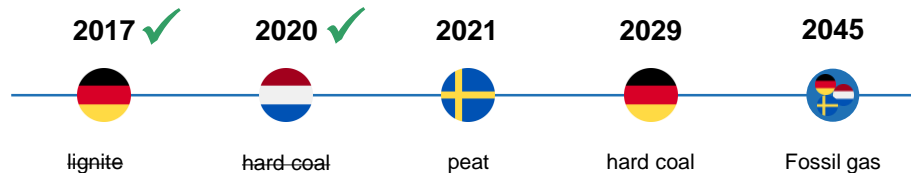
1.700

employees belong to Heat Berlin.

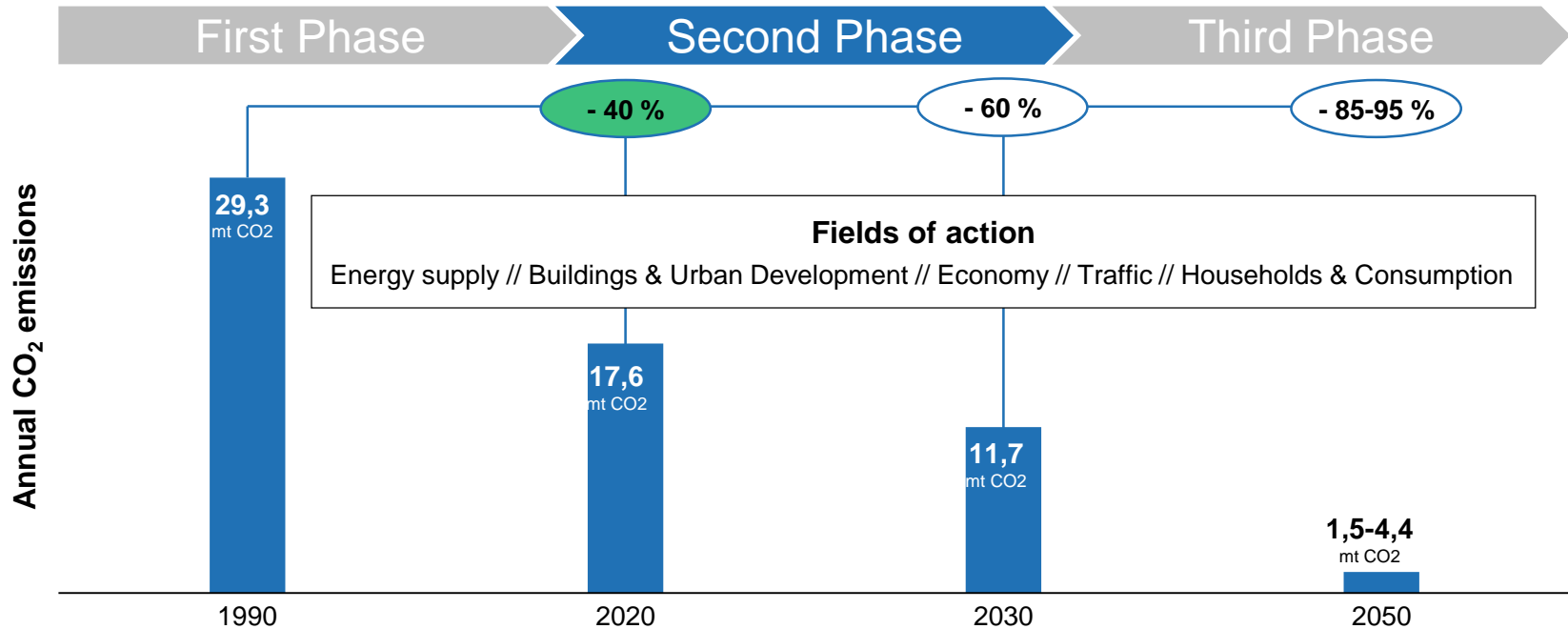
Vattenfall's strategic objective: Fossil-free living within one generation



- In 2016, Vattenfall's CEO Magnus Hall announced to aim for a complete coal-phase out in its heat portfolio
- Consequentially, BU Heat Berlin ended all lignite operations in 2017; terminating Berlin's hard coal operations is targeted for 2029
- On that basis, a joint political process with the City of Berlin was initiated



Berlin's goal: Climate neutral city until 2050



City of Berlin – Vattenfall: Joint feasibility study 2018-2019

MACHBARKEITSSTUDIE KOHLEAUSSTIEG UND NACHHALTIGE FERNWÄRME- VERSORGUNG BERLIN 2030

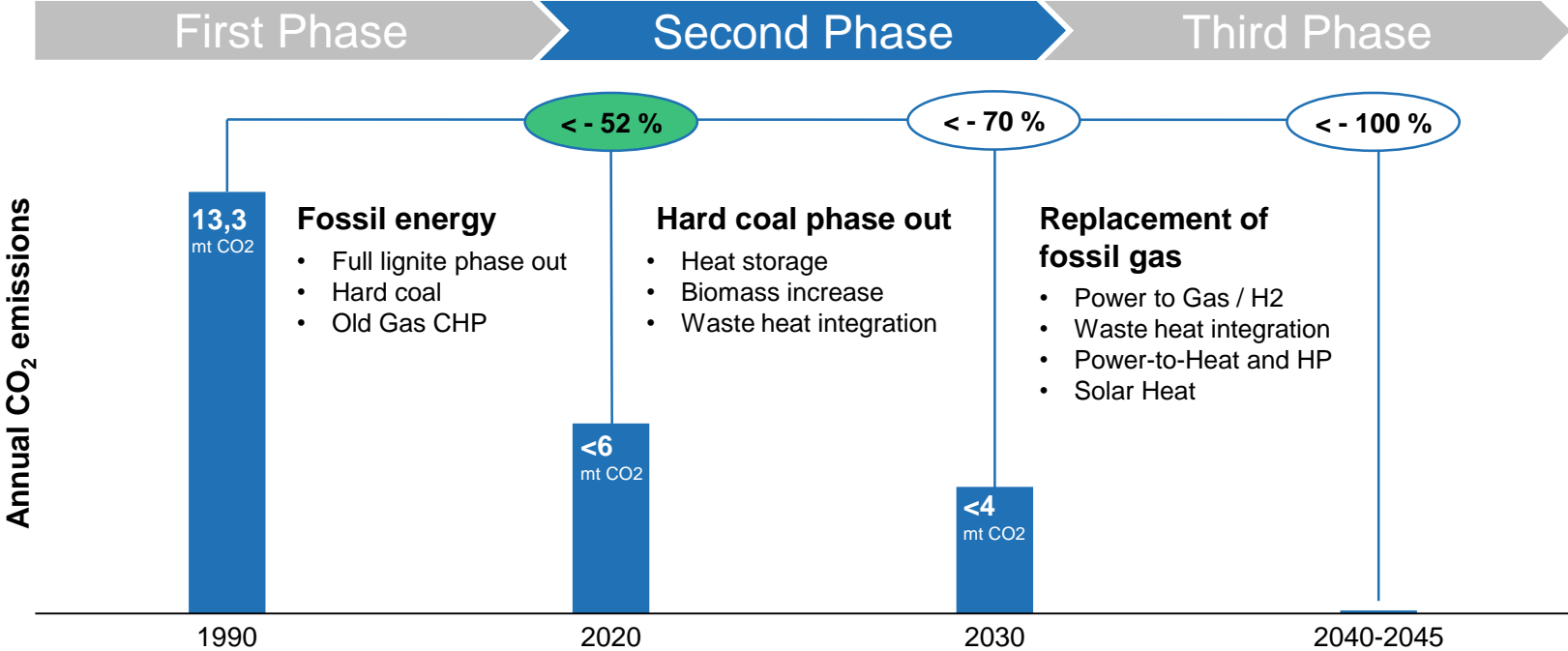
Eine Studie im Auftrag der
Vattenfall Wärme Berlin AG und des Landes Berlin, vertreten durch die
Senatsverwaltung für Umwelt, Verkehr und Klimaschutz



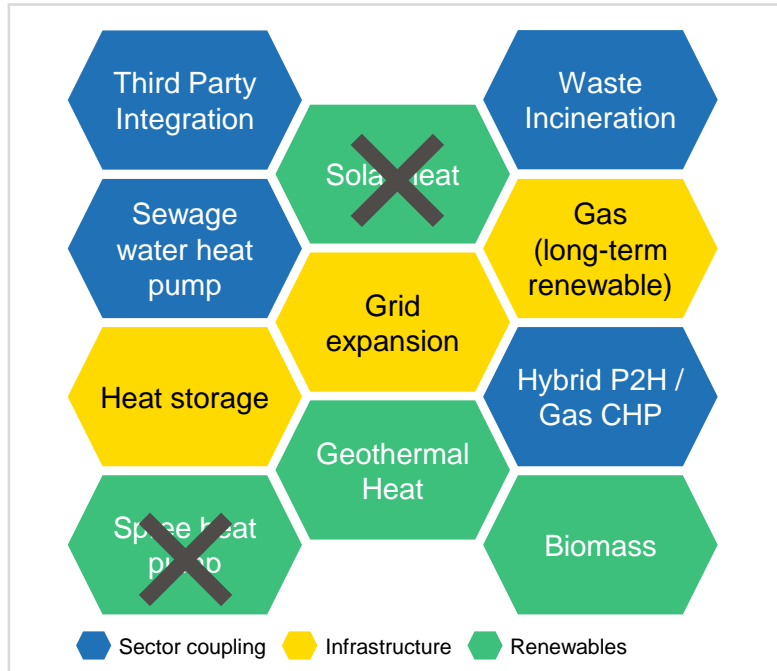
Berlin | 28. Oktober 2019

- Coal exit a key activity for both partners
- Feasibility study with
 - three transformation scenarios
 - under consideration of social and environmental compatibility, security of supply and economic efficiency
- District heating considered the most environmentally friendly and commercially viable option compared to alternative heating solutions
- Feasibility of coal exit confirmed in all three scenarios

Roadmap for Vattenfall's Heat Berlin



Technology options - not unlimited



- Comprehensive assessment of many technology variants
- Complete electrification not yet possible (price, availability, CO₂ balance)
- Decisive role of gas and gas infrastructure as bridge technology („H2 ready“)
- Maximum integration of industrial heat (third party integration)
- No suitable areas for large scale solar thermal systems within the city limits

Modern technology and innovation: realized and decided projects

Selection

Heat storage Reuter

- 5 MW_{th} pilot plant
- Based of salt
- Foundation for bigger storage

Biomass heating plant

- 18 MW_{th} & 5 MW_{el}
- Focus on regional Biomass
- 70,000 t/a of natural wood chips

European largest Power-to-Heat plant

- 120 MW_{th}
- Replacement of coal block Reuter C
- Heating of 36,000 households in winter

Thermal Power Plant Marzahn

- 232 MW_{th} & 268 MW_{el}
- Up to 90 percent fuel utilization
- One of the most efficient heating plants in Europe

KPM Third party integration

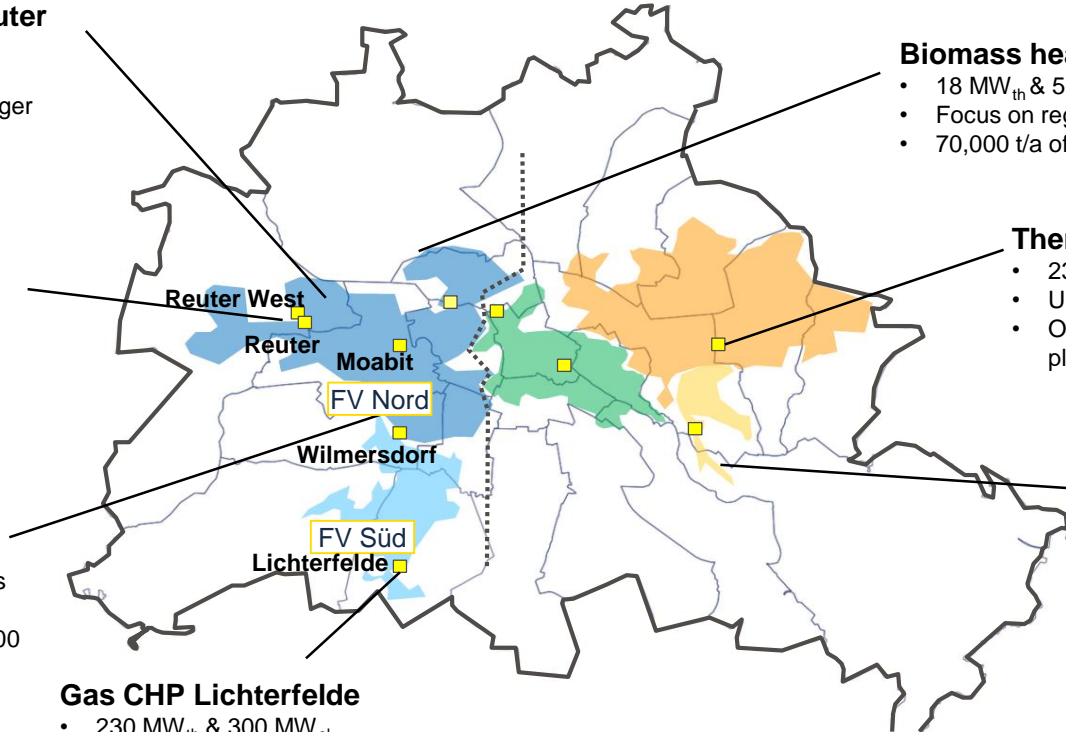
- KPM supplies excess heat from four kilns
- Heat potential of 1,000 kilowatts

Gas CHP Lichterfelde

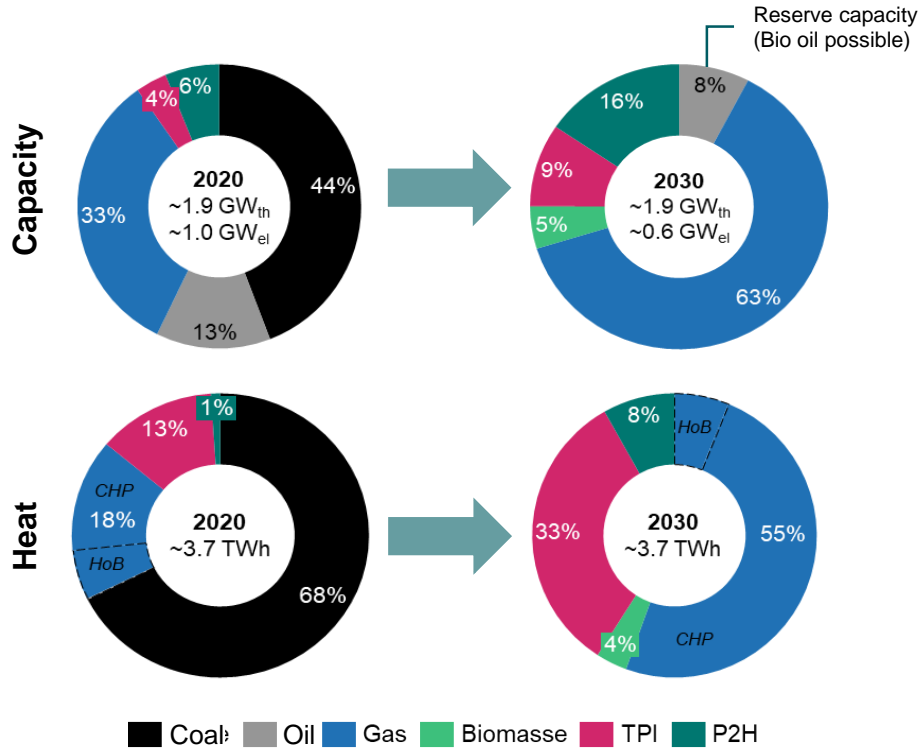
- 230 MW_{th} & 300 MW_{el}
- Reduction of 100,000 tCO₂/a

Solar thermal plant

- 1,058 m² collector area
- ~ 500 MWh_{th}
- Heating for 10,000 households



Portfolio-Transformation

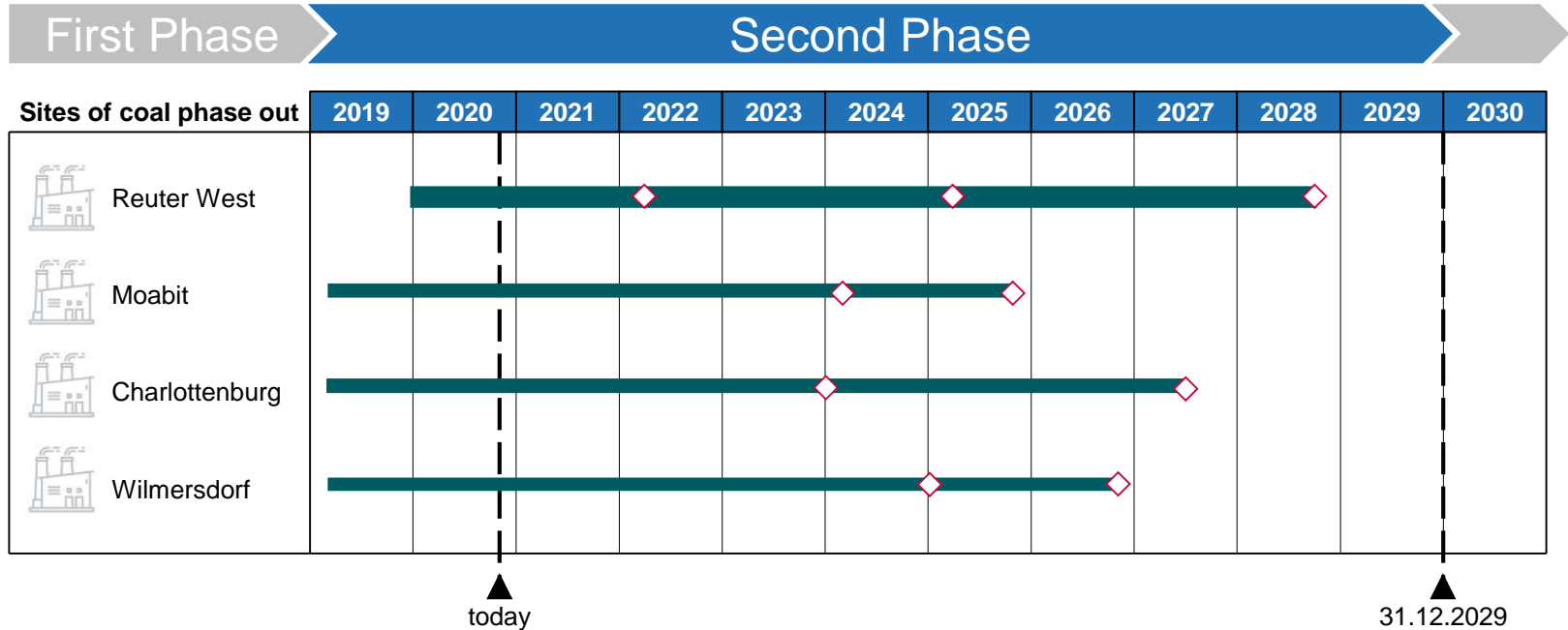


- 50% coal replaced (capacity) by renewables

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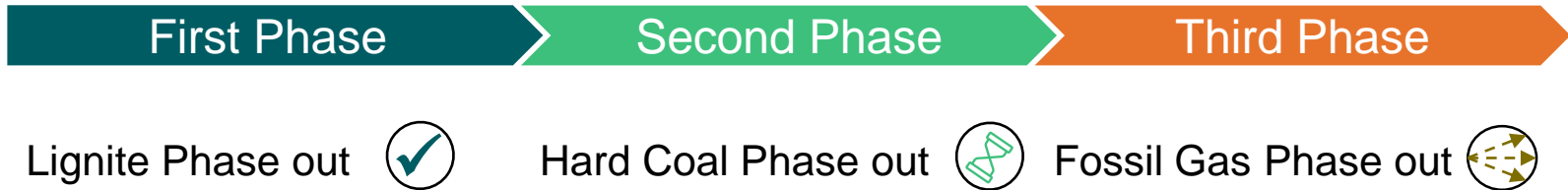
- 40% of coal replaced (heat) by renewables

Transformation timeline



◇ = Commercial Operation Date (COD) for individual projects

Clear targets - but route not fully visible...



Different Energy Scenarios possible: strategic answers:

- Avoid technical lock-in-effects
- Prepare for alternative/ new technologies
- Don't waste time (and CO₂)



Thanks for your attention!

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