City of Bilbao – ATELIER Project

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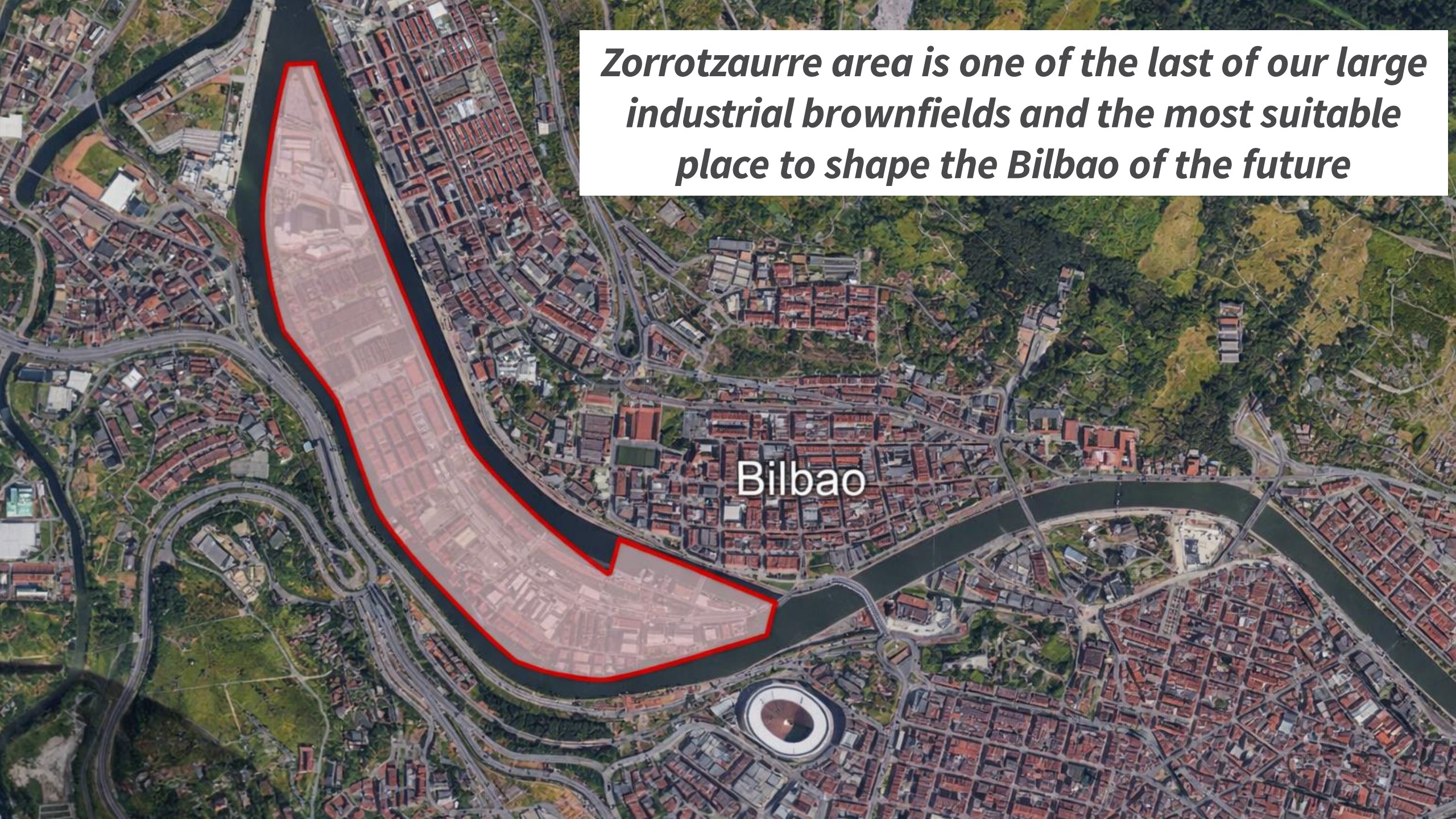
Bilbao City Council

AmsTErdam BiLbao cItizen drivEn smaRt cities

atelier
Positive Energy Districts

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No.864374


ANT5EN GAS



Zorrotzaurre area is one of the last of our large industrial brownfields and the most suitable place to shape the Bilbao of the future

ZORROZAURRE DEVELOPMENT

- **Heritage:** *Refurbishment of 320 homes and 20 old industrial buildings*
- **Decontamination:** *Recovering 285,000m^2 of polluted soils*
- **Infraestructure:** *Opening of Deusto Canal, bridges, transport connection..*
- **Mix of uses:** *5,500 new homes, 150,000m2 of office spaces for Urban Technological Parks, sport centres, training centres…*
- **Low carbon emission area:** *Non combustion strategies for heating and cooling…*

The first District Heating & Cooling for the city

And now ATELIER

Positive Energy District (PED):
“ urban district with anual local surplus production of renewable energies “

PED concept : 3 areas

- Why these three sites?
- A wide variety of buildings (30.000 m2) :
  - Old and new
  - Public and private
  - Residences and offices
- Variations due to COVID impact

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PED concept : 3 areas

- PED resources:
  - Distributed RES as PV pannels
  - EV recharging infrastructures
- 5th Generation DHC is not operating during the timeline of the project but specific geothermal actions have been undertaken for the PED.
- Monitoring of the systems and KPIs calculations.

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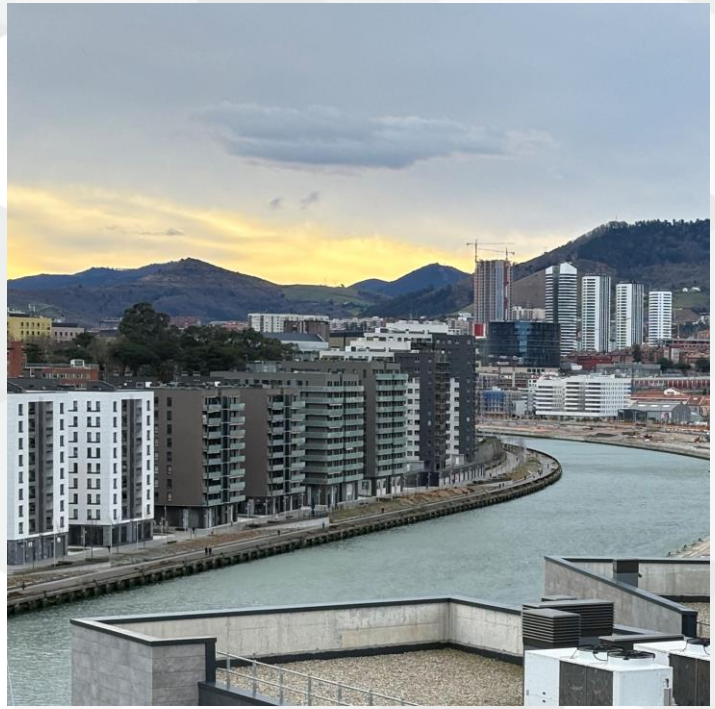
North Area: 3 new social housing blocks of 172 dwellings

- Construction completed by a private developer and finalised in December 2024.
- Residents formed a cooperative board
- Residents moved in summer 2025.
- 33 kWp PV production installation.



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North Area: Private company partnership for heating & cooling

300 kW base load closed loop geothermal circuit

38 boreholes x 150m

- Need of a public concession for the use of the green area.
- Residents signed an ESCO contract with TELUR for geothermal installation, supply , operation and maintenance.

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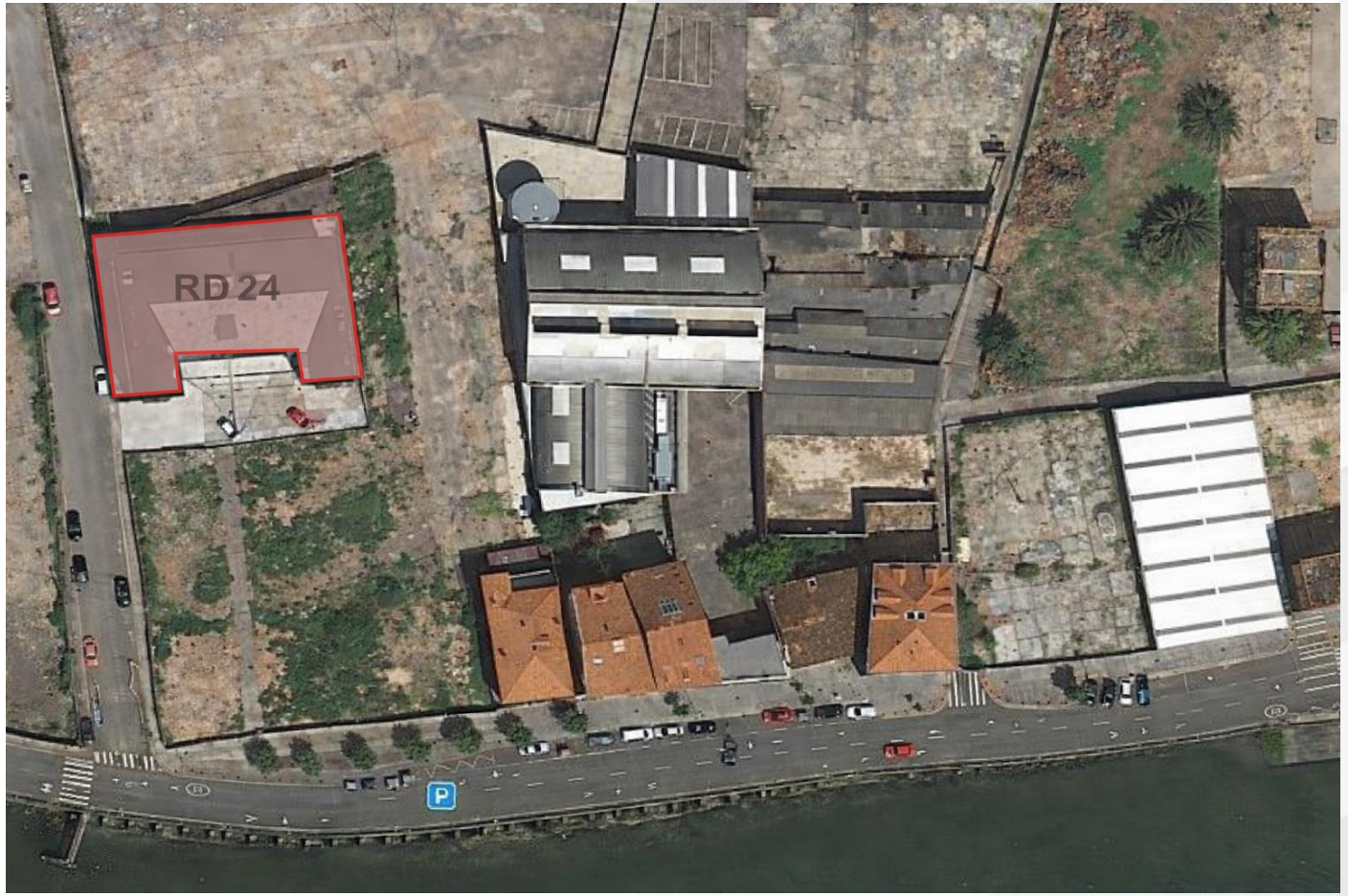
South Area: ancient papermill used by a design centre



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UTURE
DESIGN

South Area: Solar heating storage

- Connection to a geothermal system (11 boreholes x 150 m)
  - 1st stage: Implementation of a new 100kW GSHP and retrofitting of an old existing HP
  - 2nd stage: Removal of the 200kW NG Boiler

- Installation of 70 kW solar thermal pannels that could be used in summer for heating storage.

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Centre Area: universities and a research centre

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BETA I

BETA II

Centre Area: Municipal investment for the borehole field

- 11 boreholes x 150 m
  - 1st stage: Connection of Beta II building in 2022
  - 2nd stage: Retrofitting of Beta I building for a new tenant and connection in 2023.
- 20 kWp PV installatio
- Smart lighting system

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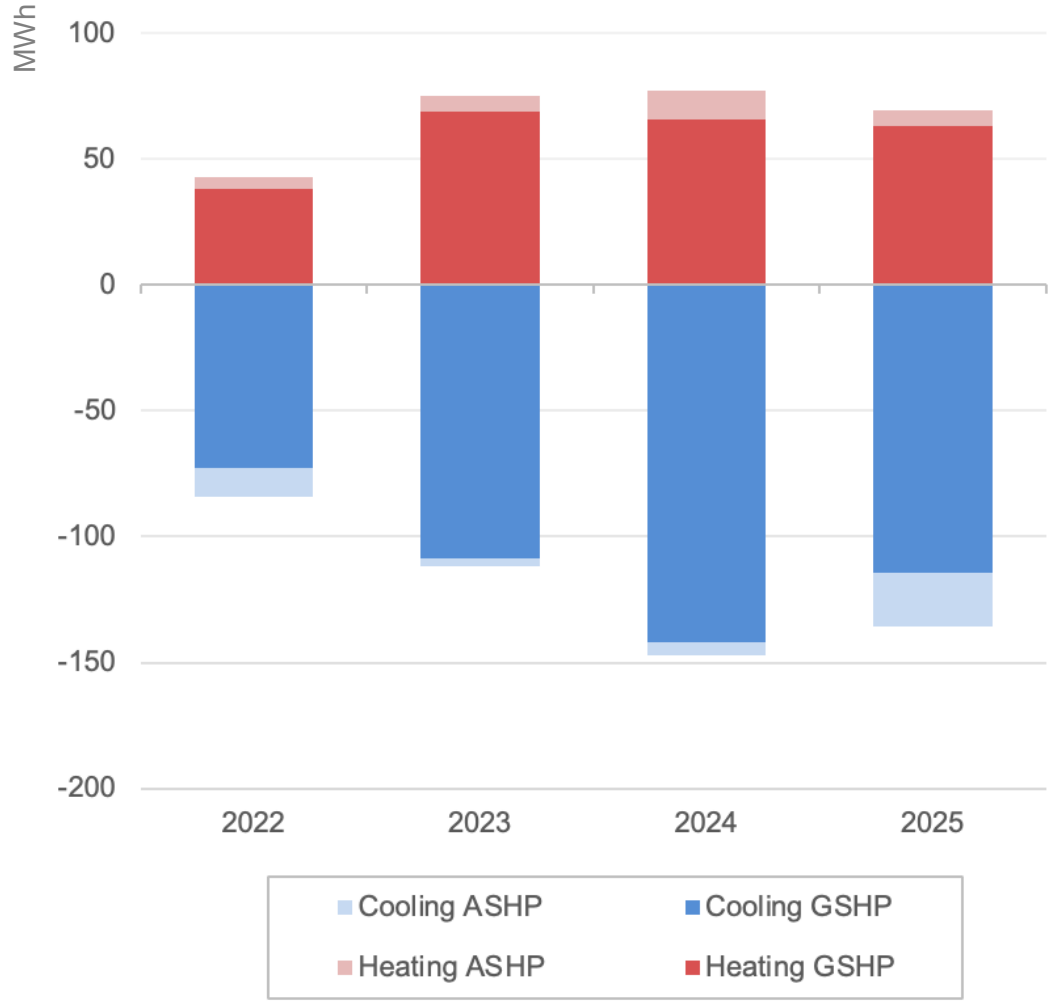
BETA 2: CURRENT SITUATION WITH GSHP



MARCH 2022 – DECEMBER 2025

GROUND-SOURCE HEAT PUMP	AIR-SOURCE HEAT PUMP
Heating 236 MWh	Heating 29 MWh
Cooling 437 MWh	Cooling 42 MWh
90,5 %	9,5 %

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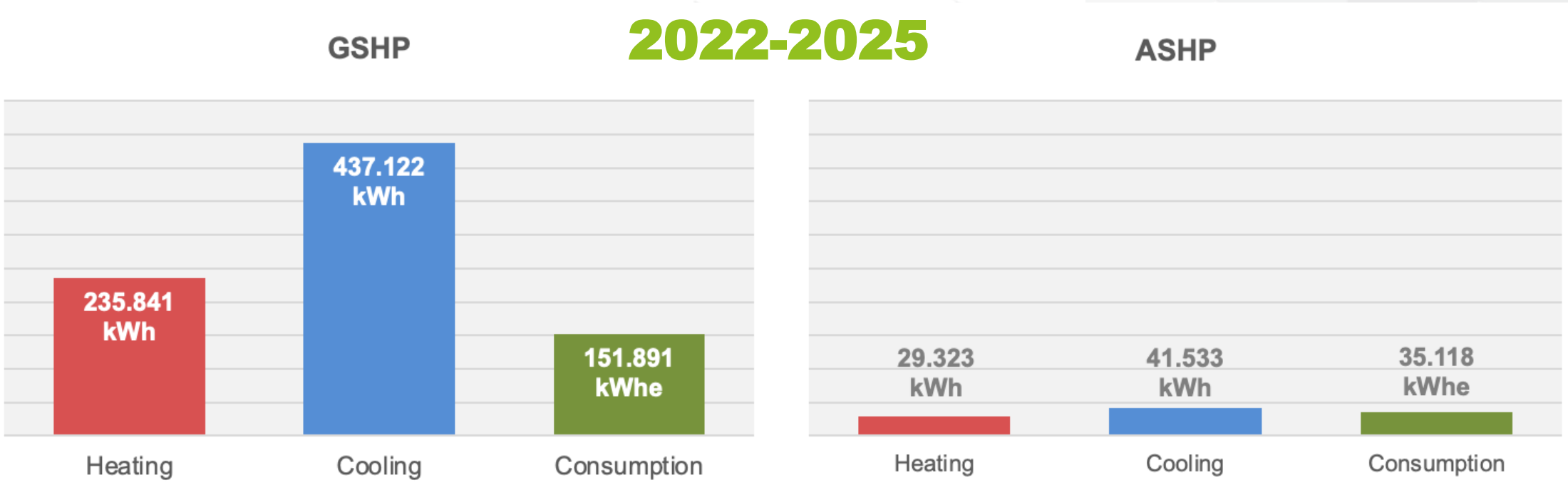
ßETA 2: SEASONAL PERFORMANCE FACTOR

2022-2025



SEASONAL PERFORMANCE
SPF = 4,4

SEASONAL PERFORMANCE
SPF = 2,0

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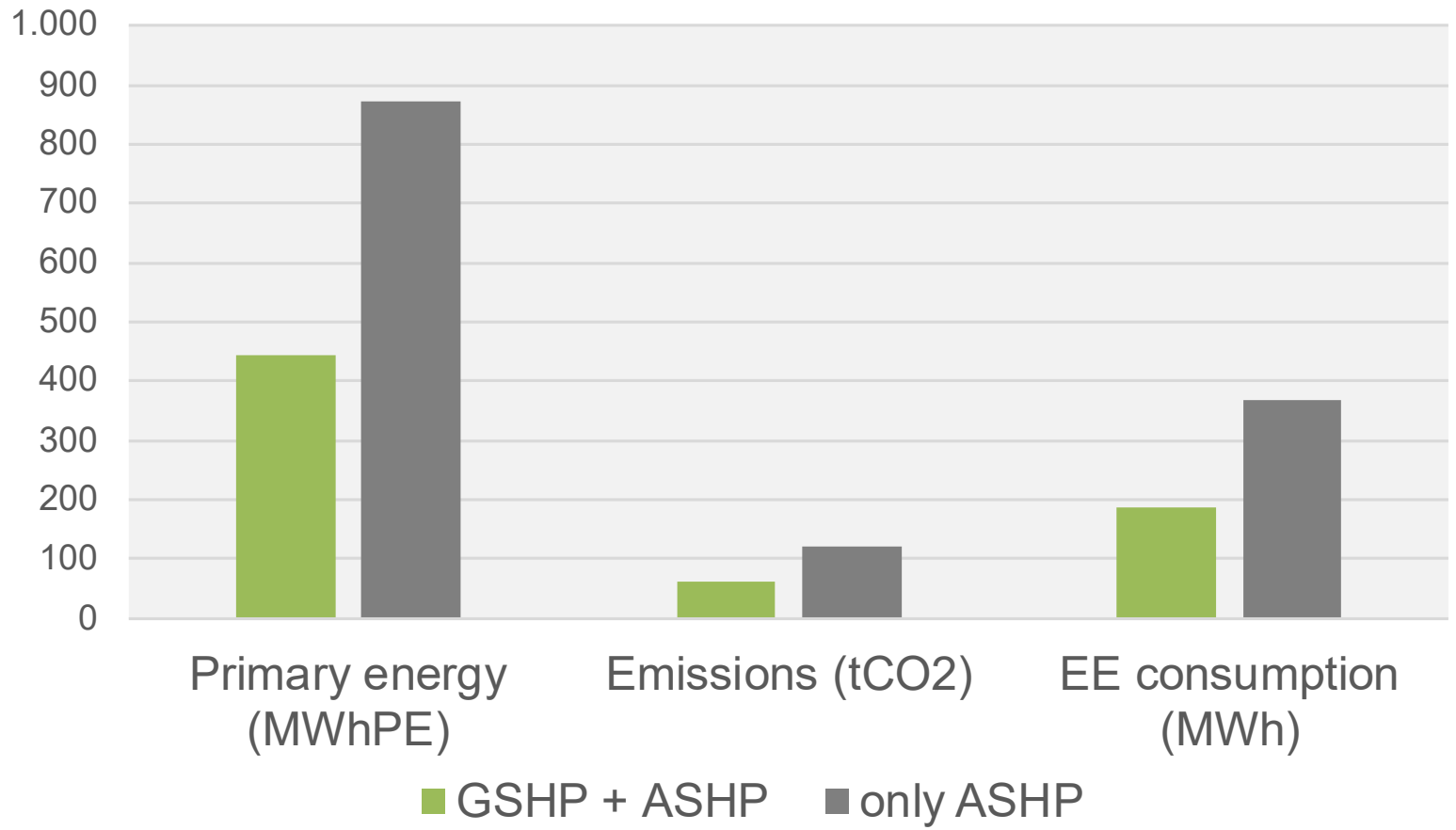
ßETA 2: ENERGY INDICATORS

2022-2025



PRIMARY ENERGY SAVINGS
430 MWh (-49%)

AVOIDED EMISSIONS
60 tCO_2 (-49%)

ELECTRICITY CONSUMPTION SAVINGS
182 MWh (-49%)

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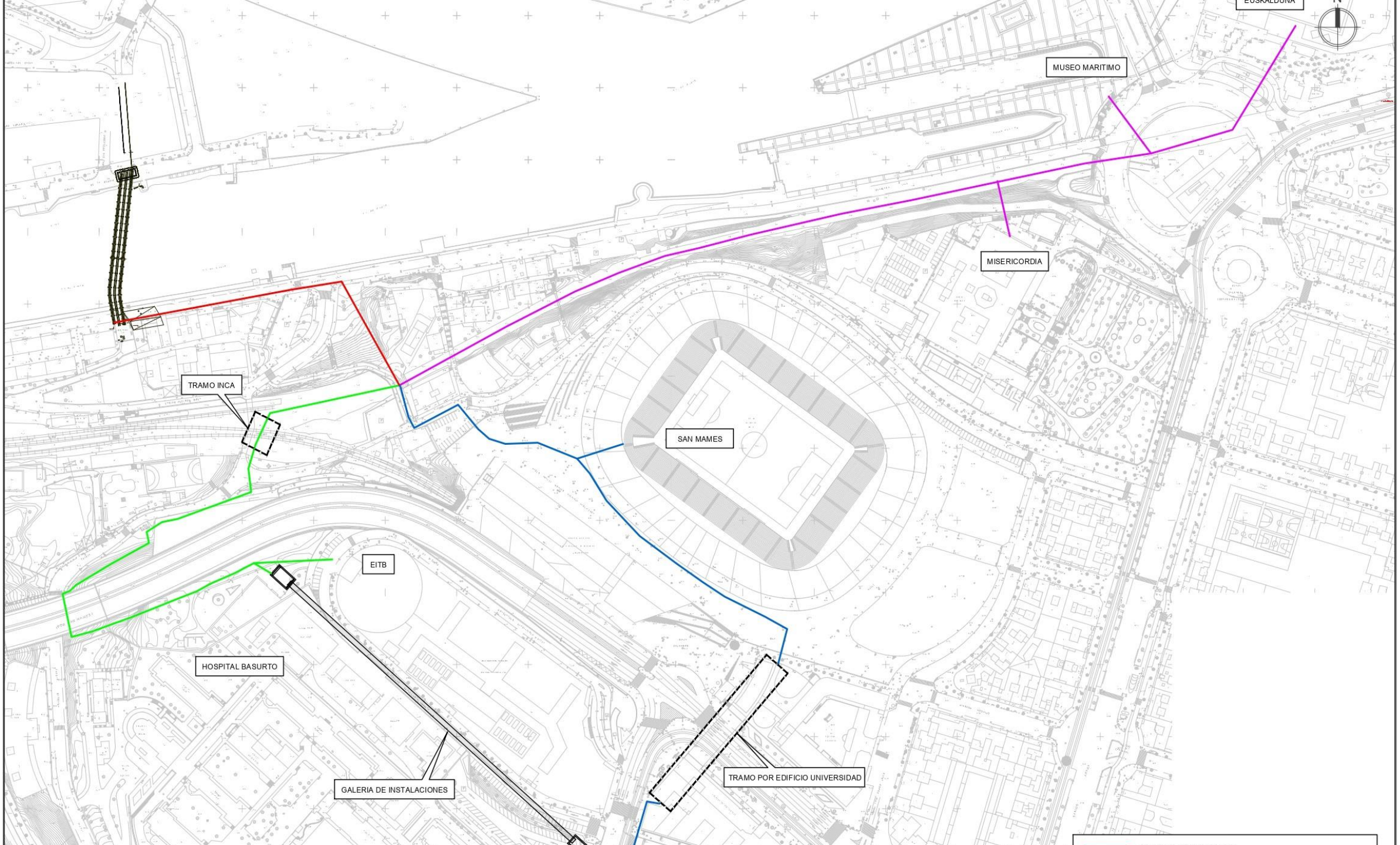
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TRAMO POR EDIFICIO UNIVERSIDAD

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