Vilniaus šilumos tinklai

CLEAN AND EFFICIENT ENERGY

VILNIUS DISTRICT HEATING COMPANY IN NUMBERS

21 891
Buildings connected to DHN, area, thousand m^2

760
Length of heating network, km

7 811
Number of heated buildings

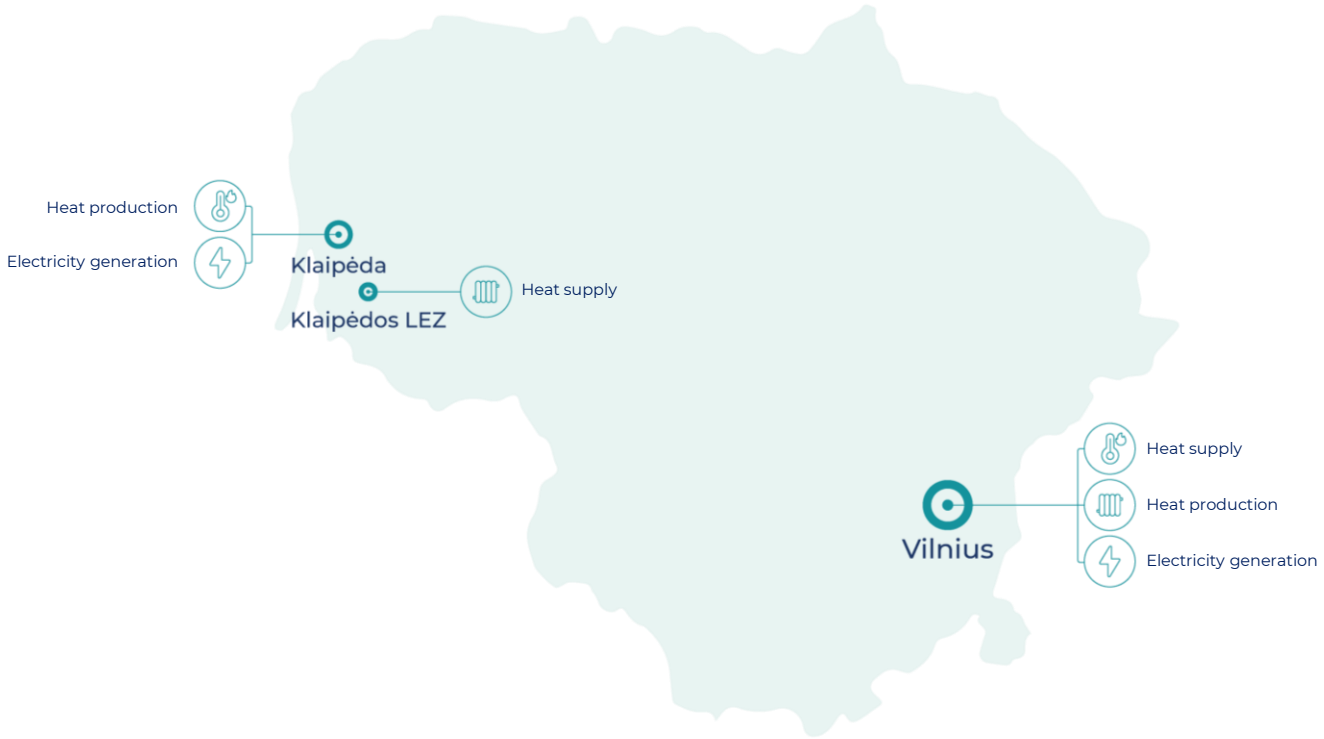
3 172
Heat supplied, GWh per year

1 816
Heat produced by own sources, GWh per year

228 706
Number of customers

1 816
Number of hot water meters

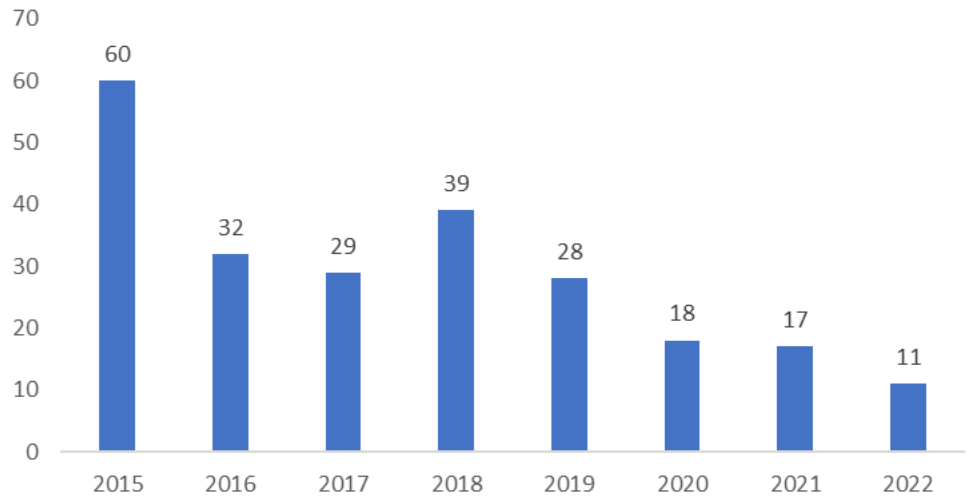
85
Electricity generated from renewable sources, GWh per year

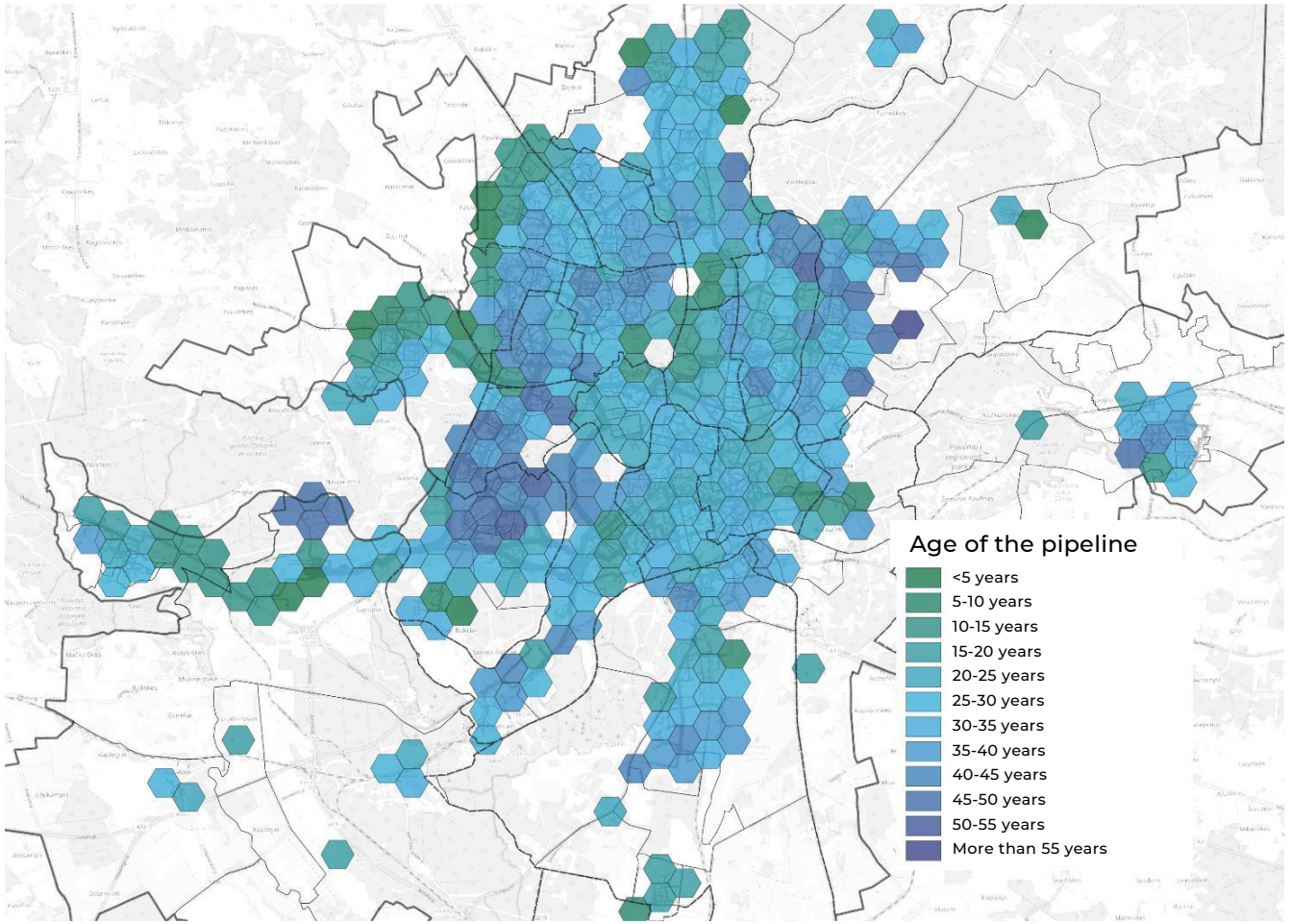


OUR NETWORK

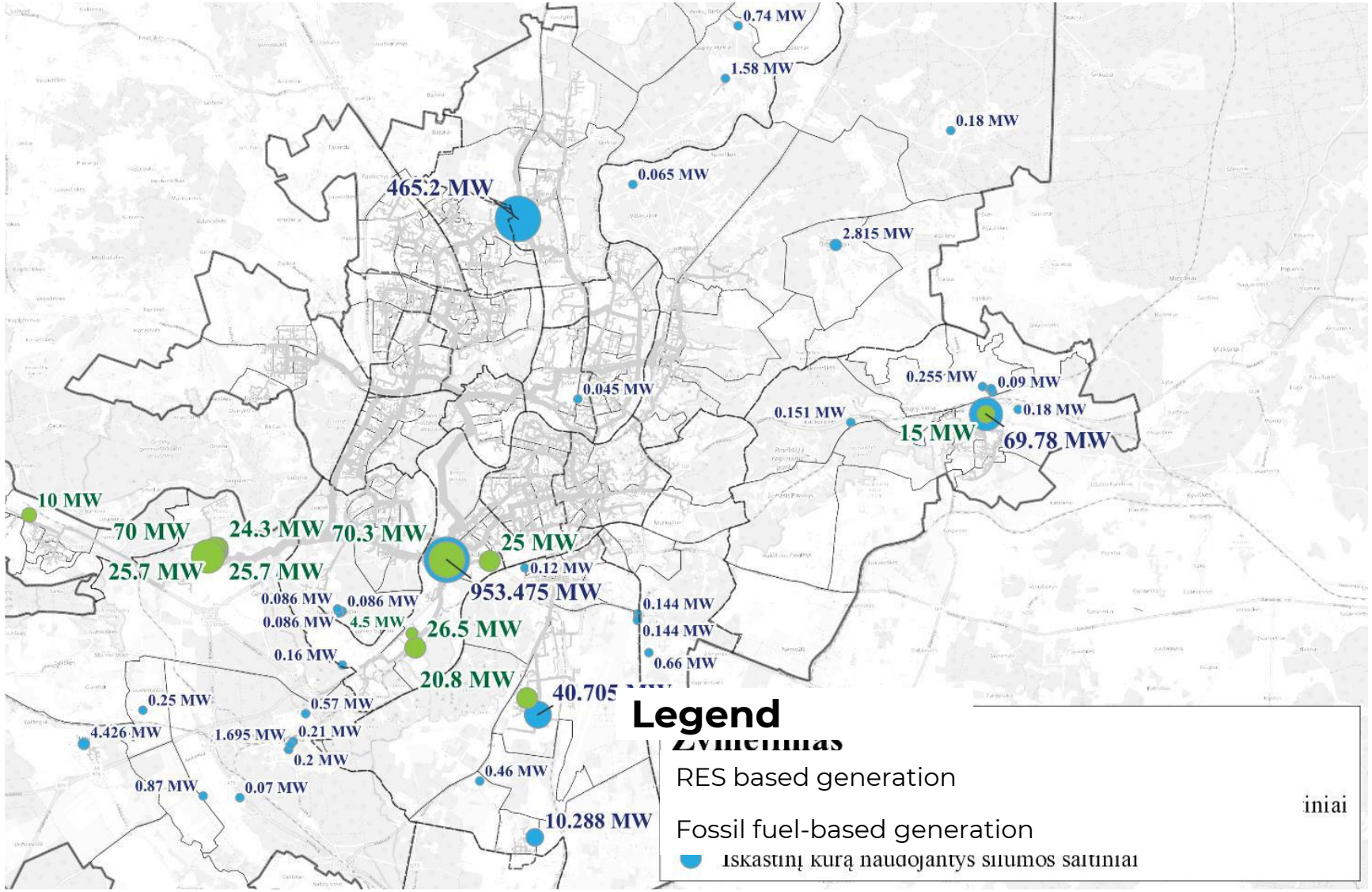
- The average age of the network is 33 years
- Number of technological failures are steadily decreasing
- Hydraulic testing times are decreasing and are currently less than 1 day
- Starting from 2025 hydraulic tests will not have to be carried out to all customers

Number of faults during the heating season





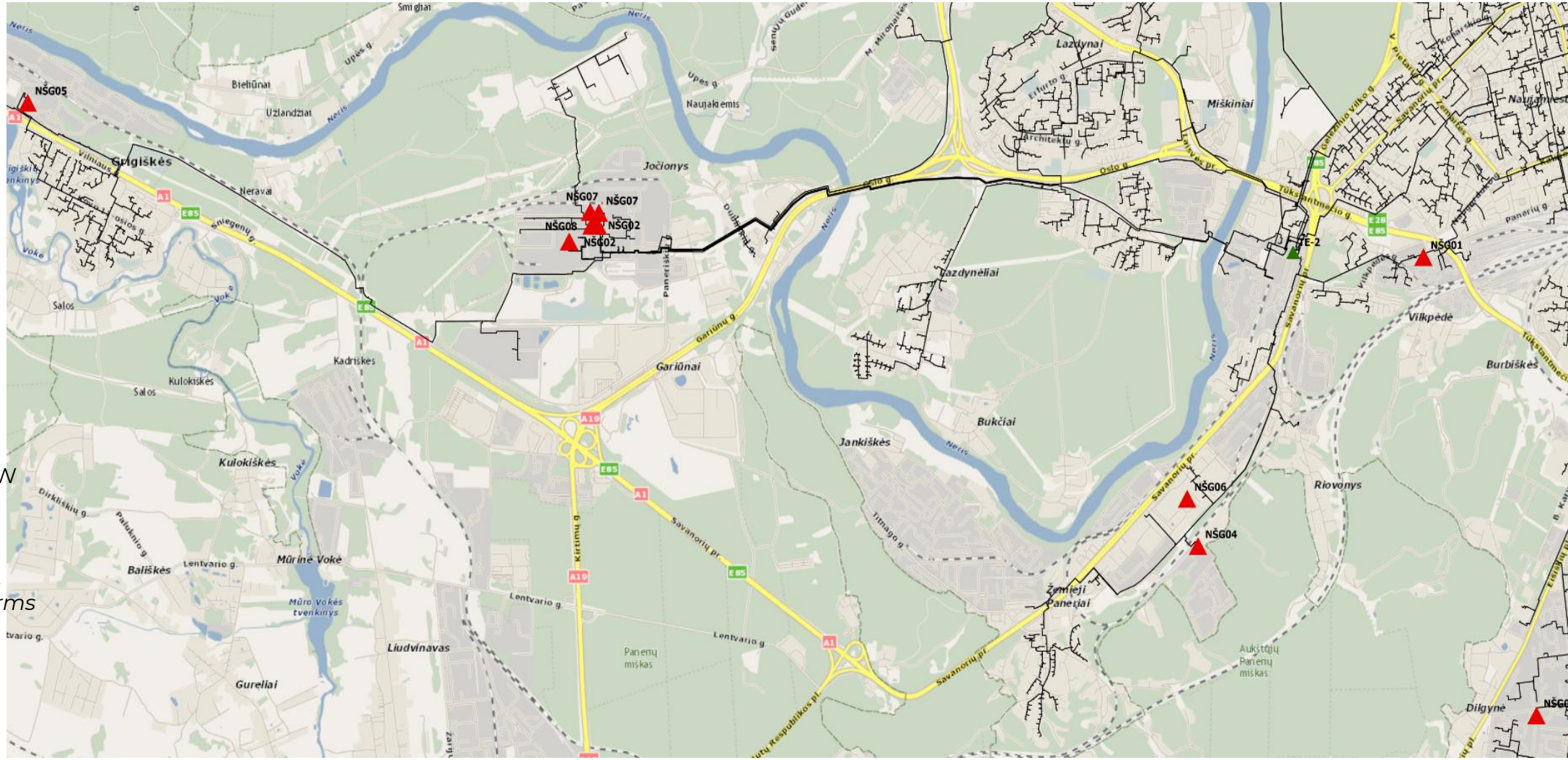
HEAT GENERATION CAPACITY



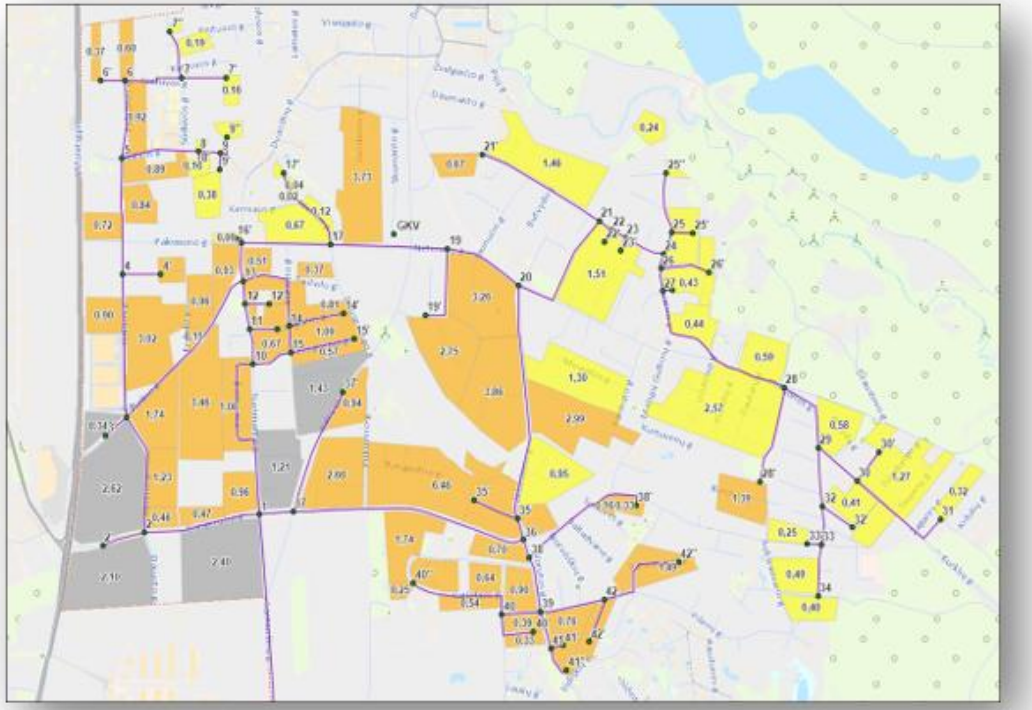
BIOMASS AND WASTE INCINERATION HEAT SOURCES

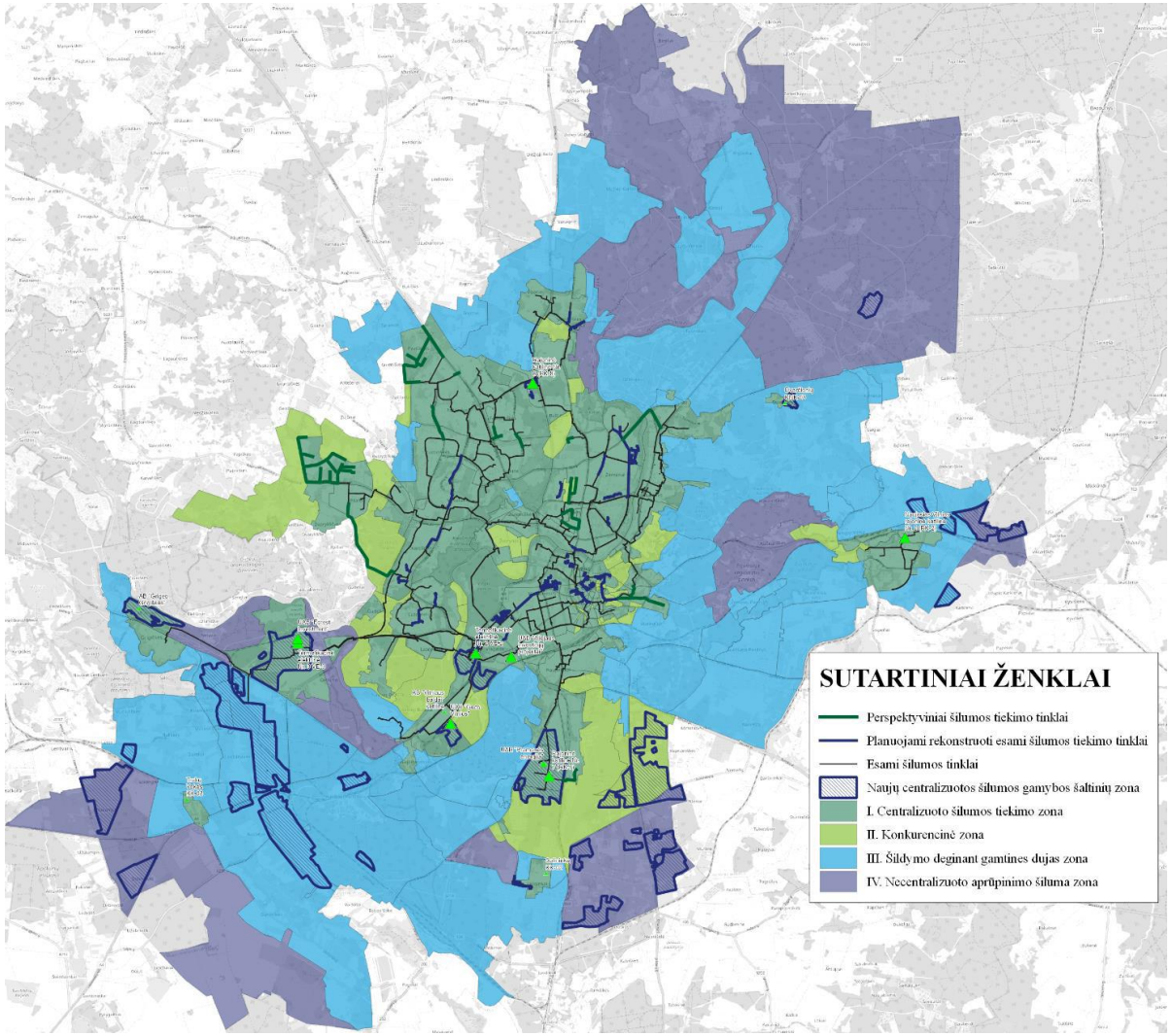
- NŠG 1 – 23,8 MW
- NŠG 2 – 47,6 MW
- NŠG 3 – 19,2 MW
- NŠG 4 – 25 MW
- NŠG 5 – 10 MW
- NŠG 6 – 4,5 MW
- NŠG 7 – 47,6 MW
- NŠG 8 – 240 MW
- VŠT bio – 66 MW
- Total – 483,7 MW
- VŠT average – 519 MW
- VŠT gas balancing – 1000 MW

**NŠG = independent (not regulated) heat producer, participating on equal terms in the monthly auction*



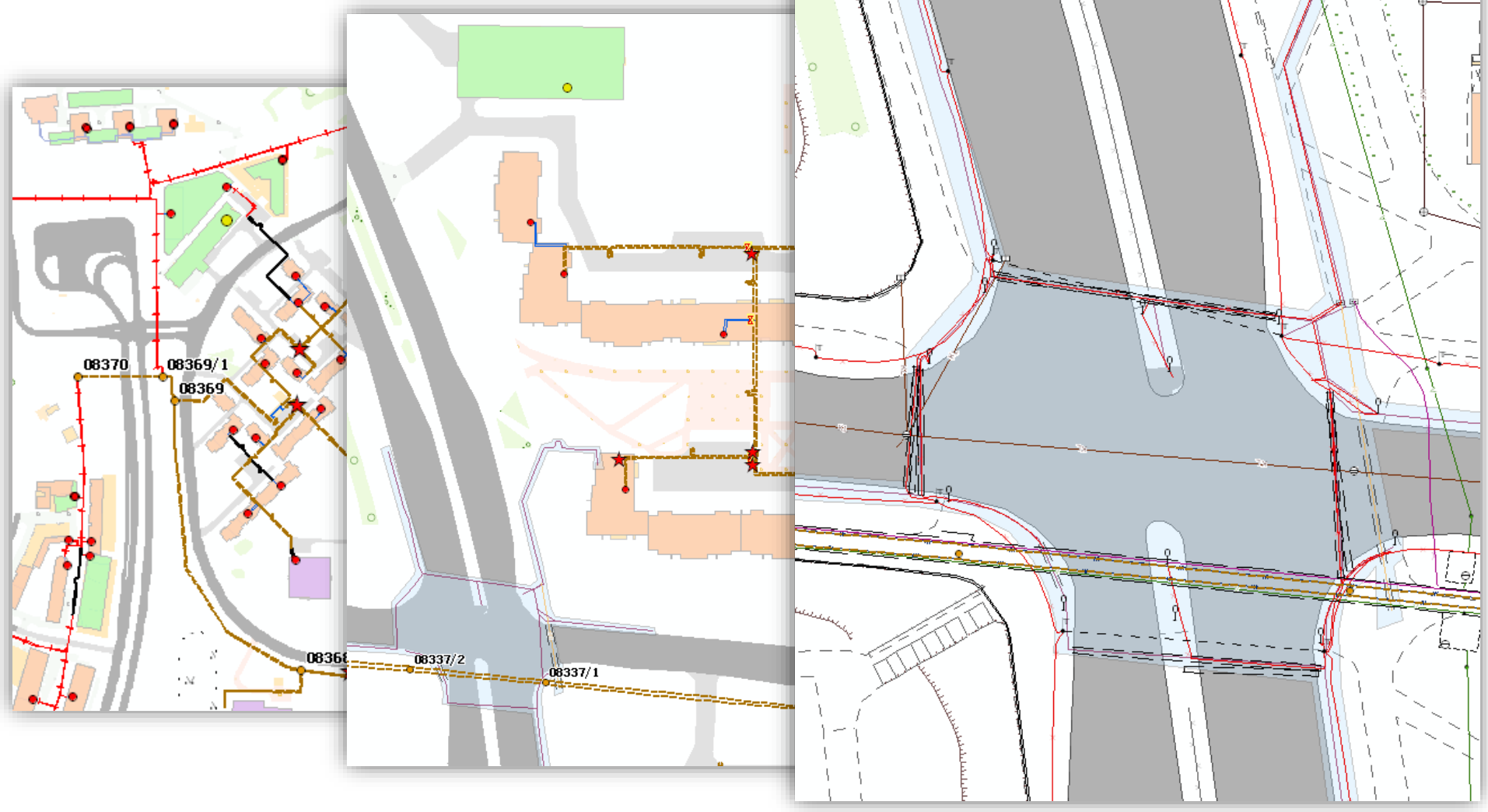
PLANNED NETWORK EXPANSION



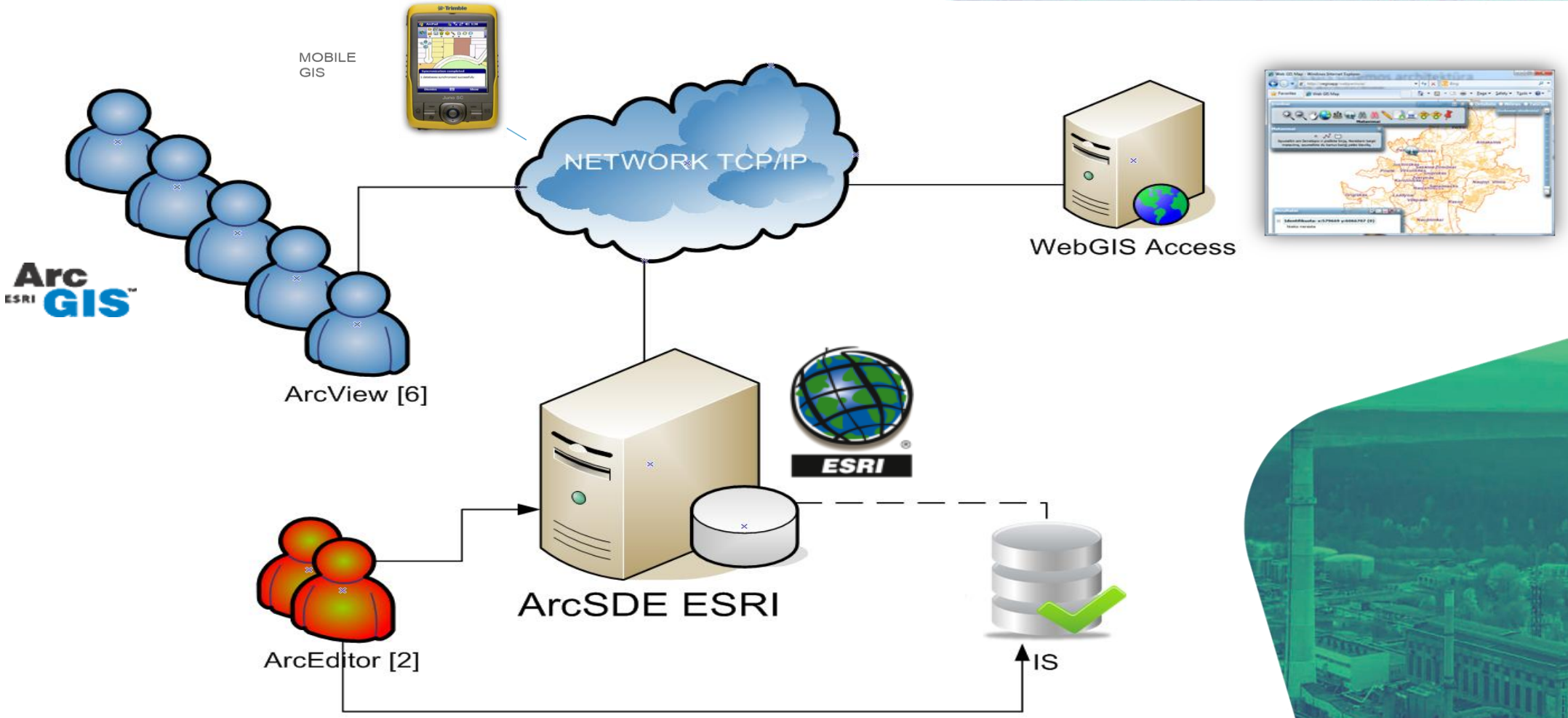


GEOGRAPHIC INFORMATION SYSTEM (GIS)

- Management of statistical data (pipes, substations, production plants, chambers, valves, pump stations);
- Analysis of existing situation
- Future development of district heating network
- Planning of repair and reconstruction works



GIS ARCHITECTURE



HEAT PRODUCTION PLANNING

Monthly auctions

↓

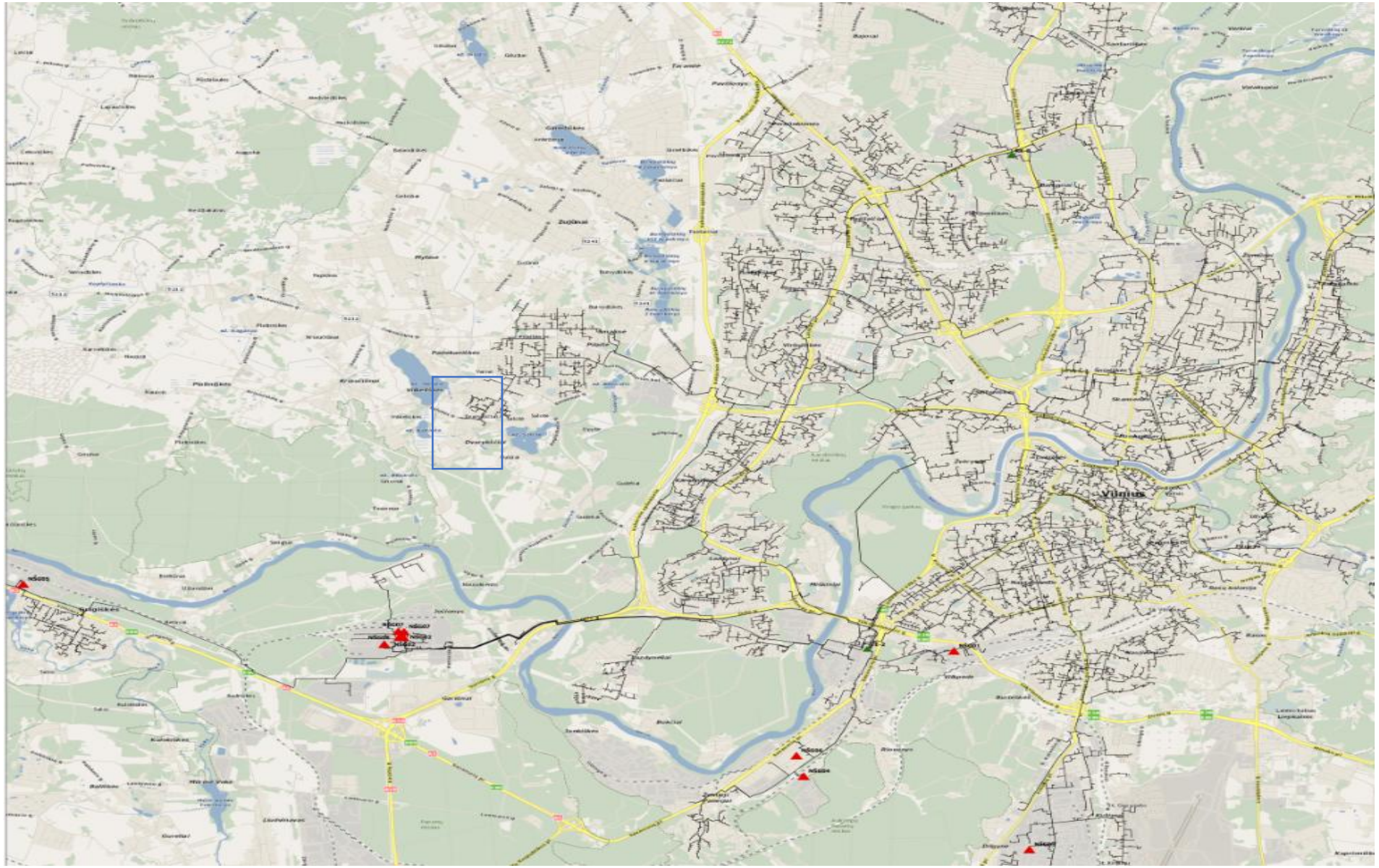
Ranking producers by the lowest price

↓

Creation of least cost production long-term schedule

↓

Creation of short-term hourly least cost production plan based on actual heat demand




Vilniaus šilumos tinklai
Long term strategy

OUR STRATEGIC PRIORITIES

Expansion and transformation of DH operations

Developing innovative and sustainable services

Geographical expansion

EXPANSION AND TRANSFORMATION OF DH OPERATIONS

Network reconstruction

Network expansion

Smart metering

Low temperature networks

Smart IT systems

DEVELOPING INNOVATIVE AND SUSTAINABLE SERVICES

- Waste heat recovery
- Maintenance of heat interface units
- Thermal storage
- District cooling
- Power to heat
- Energy efficiency services

GEOGRAPHICAL EXPANSION

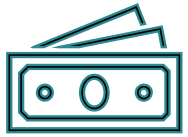
Access to digital services

Joint ventures

M&A

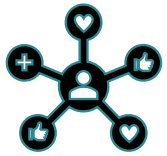
OUR GOALS FOR 2040

Fossil-free (by 2030)



Double EBITDA

Sector leader in customer satisfaction

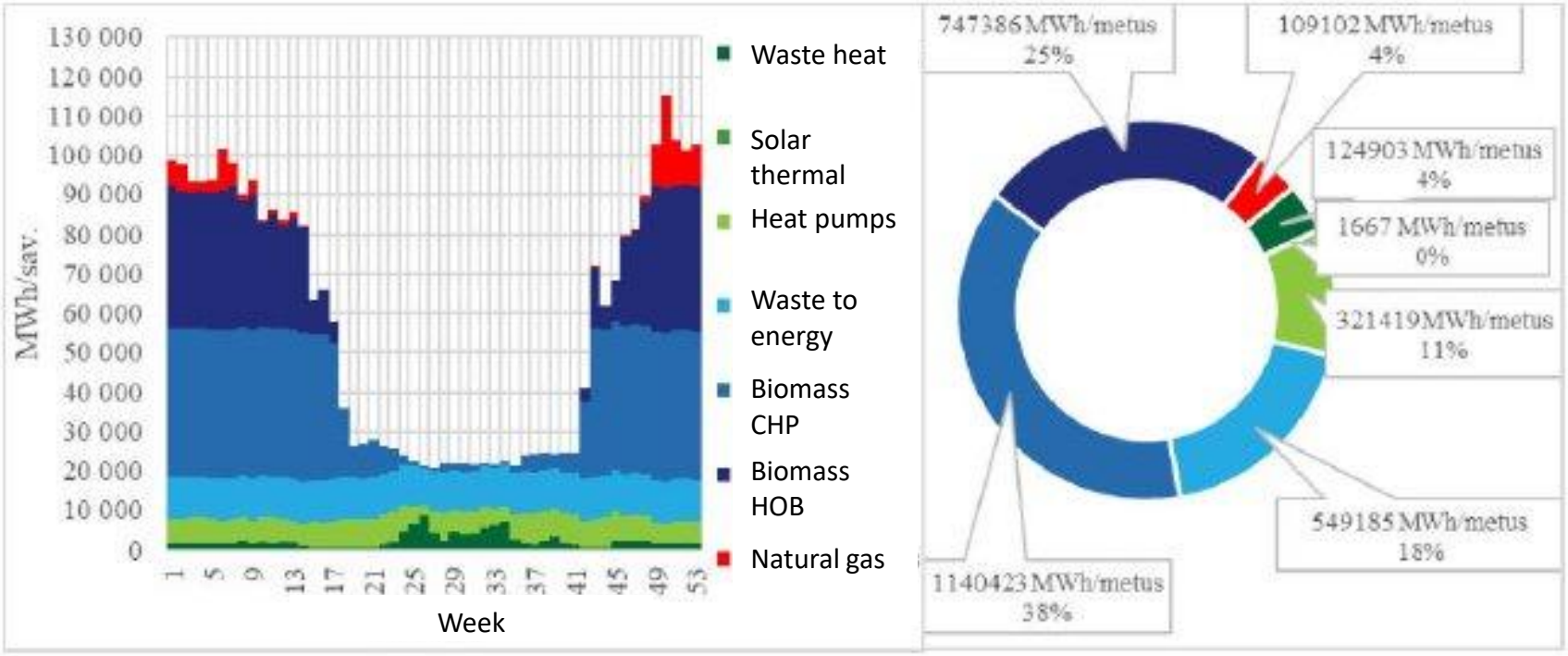


Half of the profit comes from non-regulated activities or geographical expansion

Leader in employee engagement

Resilient infrastructure

PLANNED HEAT SOURCE COMPOSITION IN 2030



Vilniaus šilumos tinklai

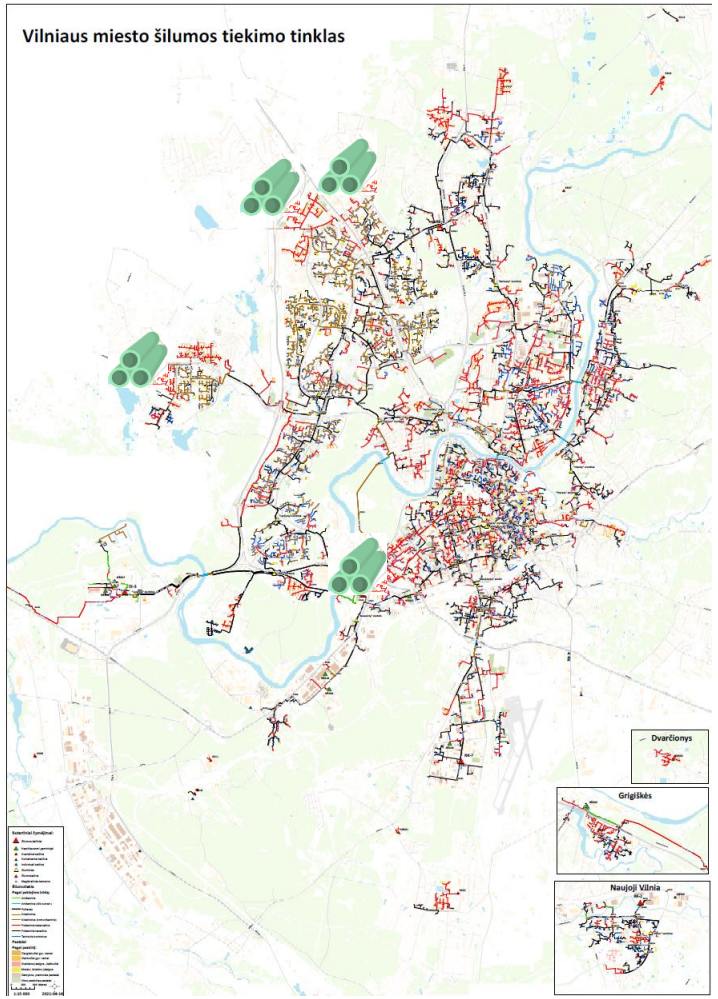
Key projects

LOW TEMPERATURE DISTRICT HEATING IN VILNIUS

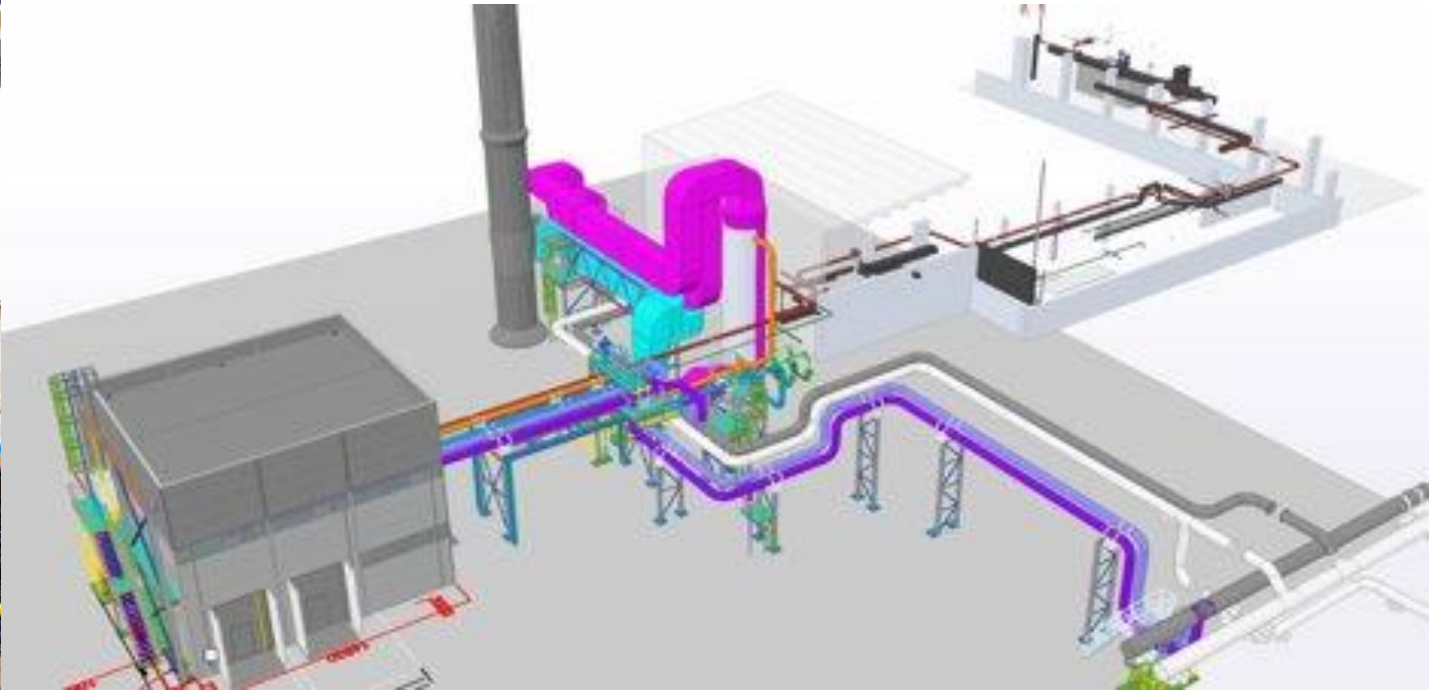
Network expansion is designed as LTDH

New clients in new areas are connected to LTDH

Reconstructions and new clients in high temperature areas are required to prepare internal system for LTDH



ABSORPTION HEAT PUMP FOR BIOMASS CHP EFFICIENCY IMPROVEMENT (COMPLETED)



PILOTING DIGITAL TWIN

Network length- **22** km

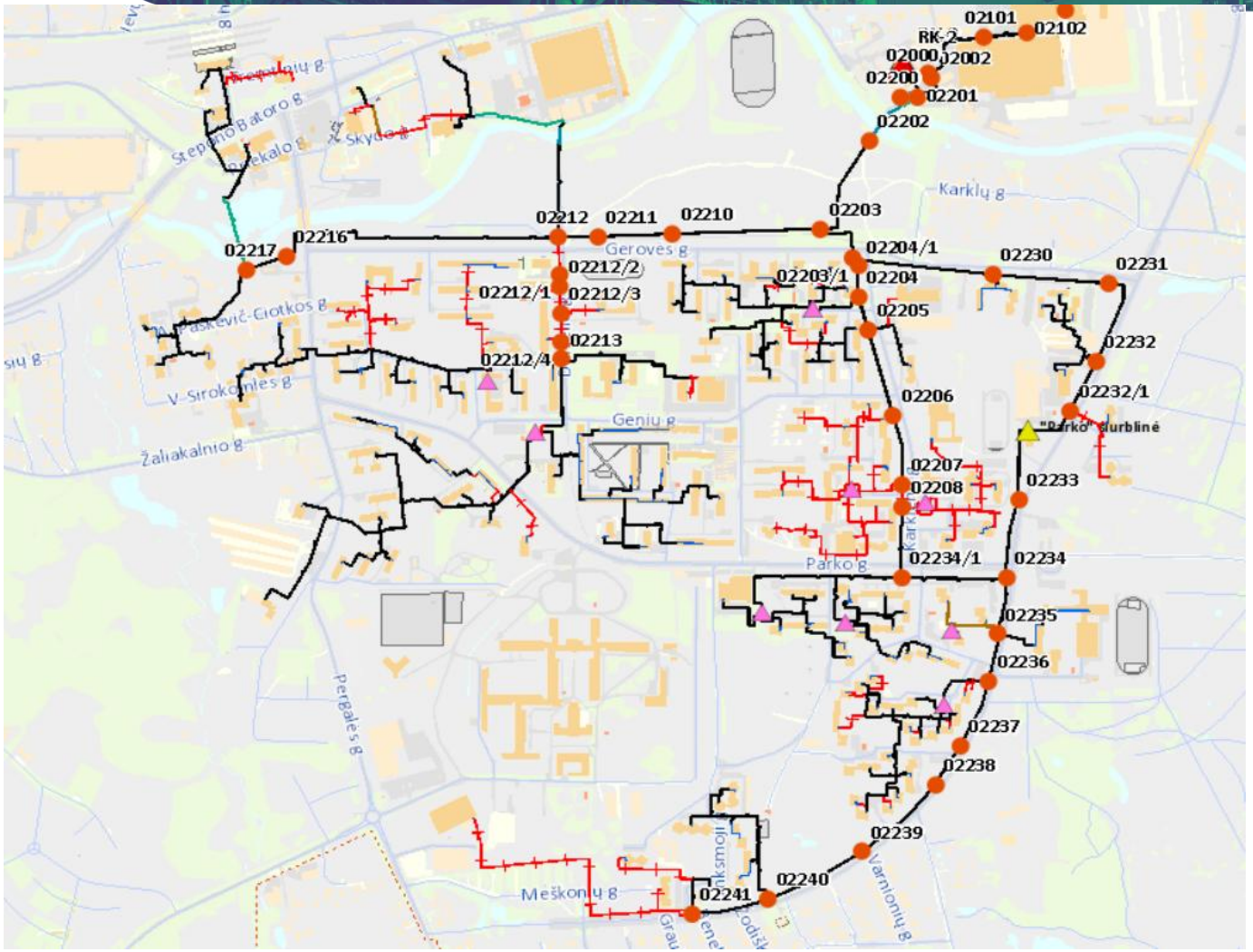
Maximum demand – **24** MW

A digital model of the real network

Hydraulic modelling

Temperature optimization

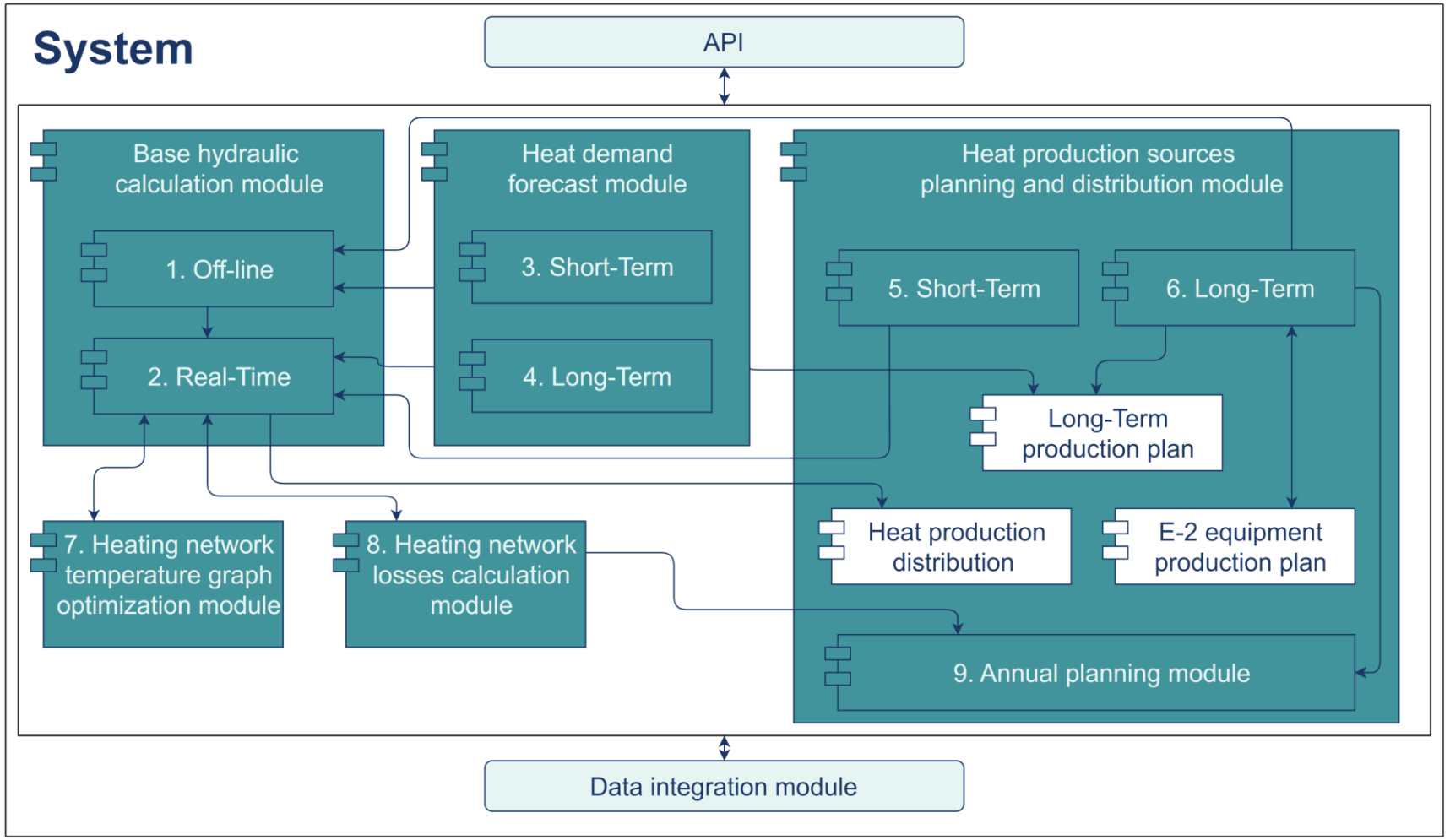
Production planning



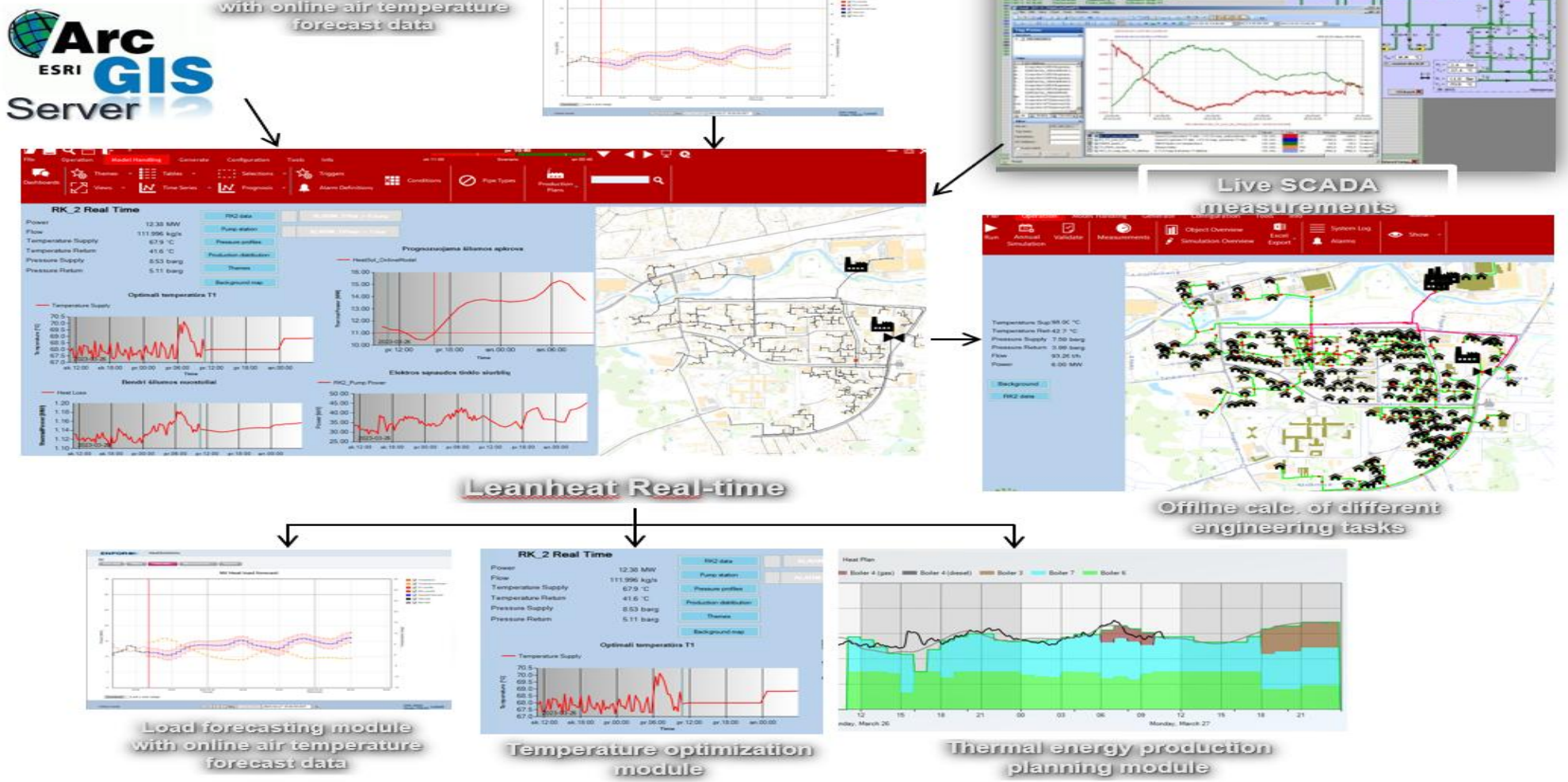
PILOTING DIGITAL TWIN

Project Purpose

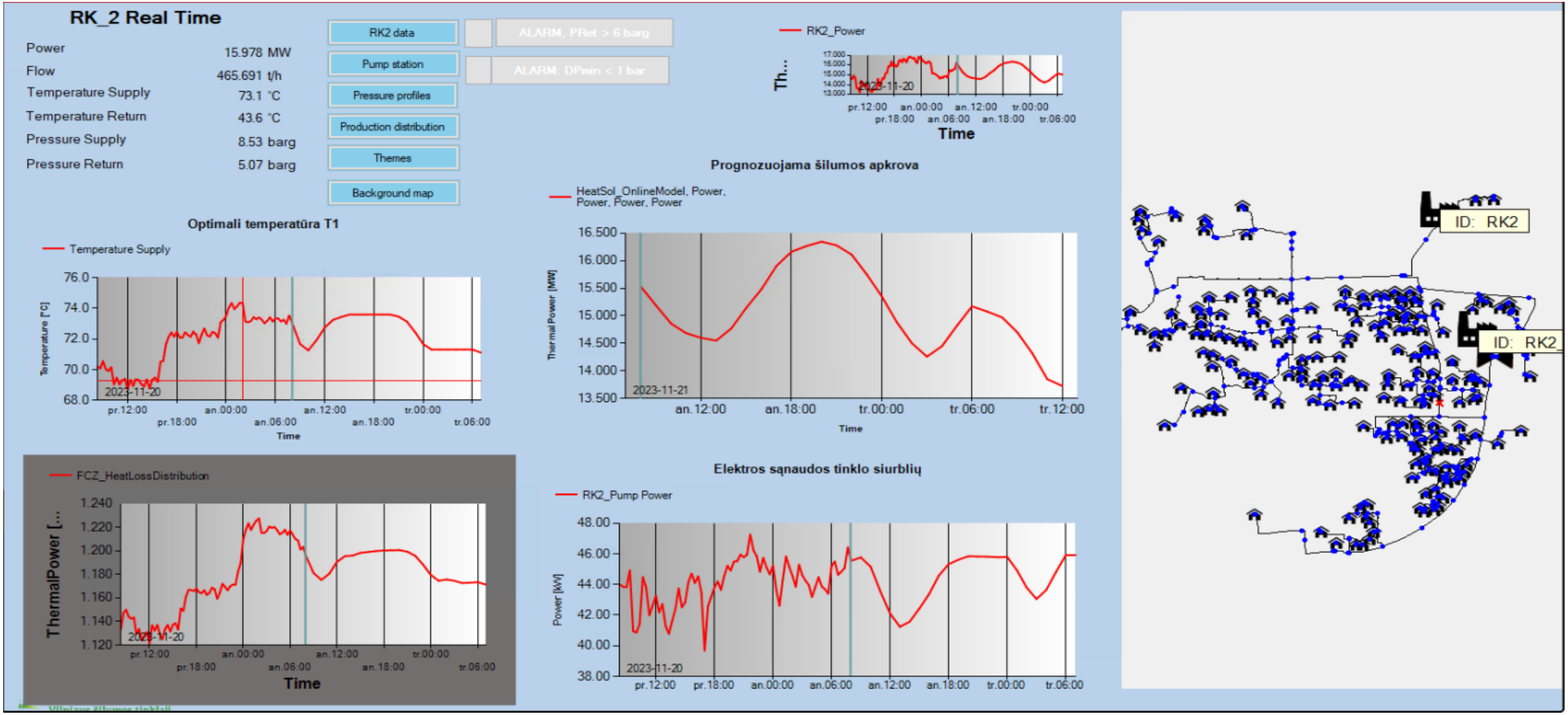
is to develop a new heat network modeling and management tool that will automate calculations, avoid "human factor" errors, will analyze and optimize heat production and supply water temperature



LongHeat ARCHITECTURE



PILOTING DIGITAL TWIN



WASTE HEAT FROM A DATACENTER

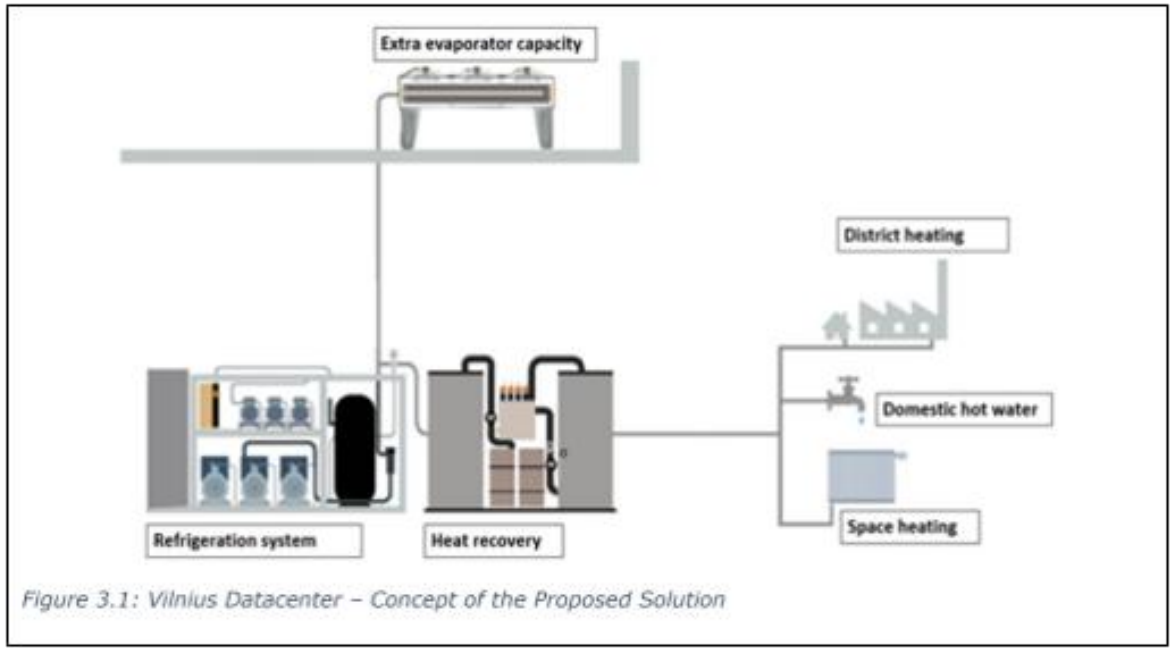
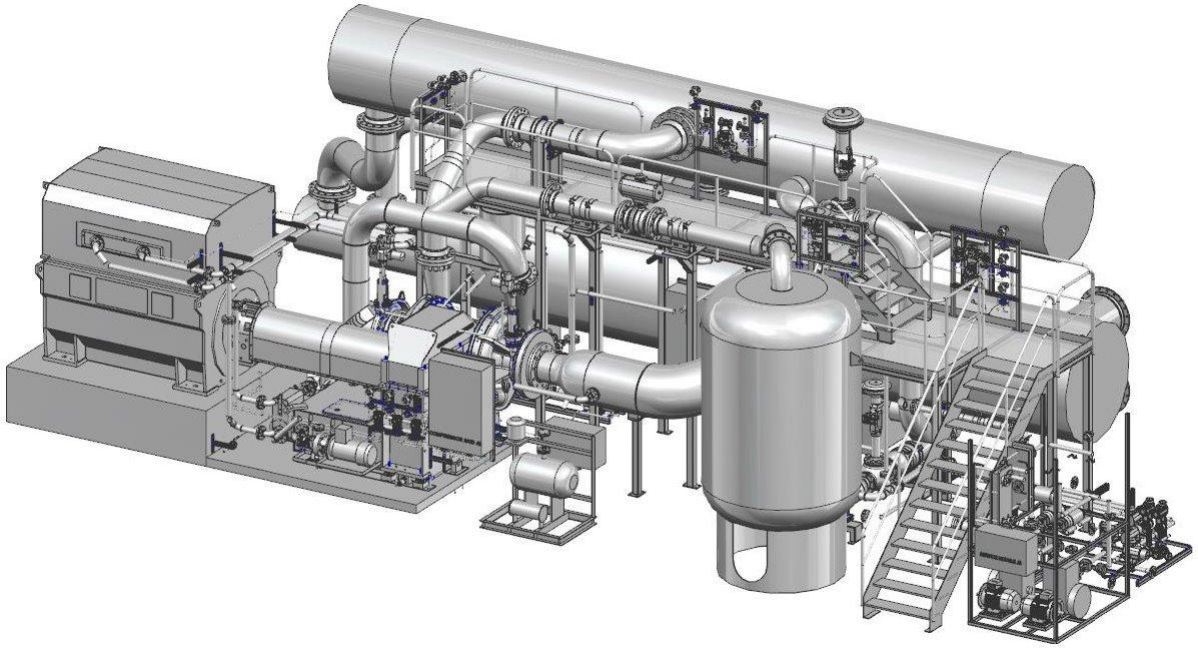


Figure 3.1: Vilnius Datacenter – Concept of the Proposed Solution

WASTE HEAT FROM WASTEWATER

- Use of treated wastewater before the outlet to the river
- Wastewater temperature 17.7C
- Estimate heat recovery 23MW
- Reduces the use of fossil fuels, generating 5-9% of the city's heat demand per year



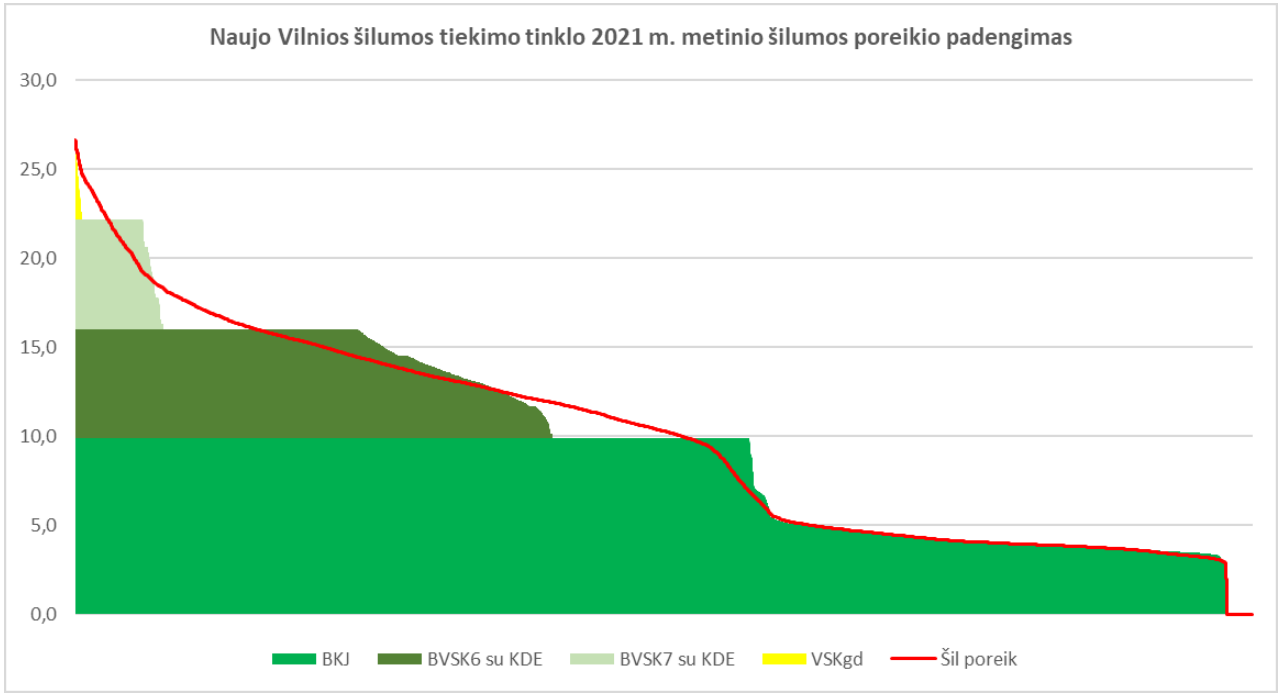
ADDITIONAL BIOMASS CHPs UNDER CONSIDERATION

RK-8 biomass CHP:

- Power: 60,7 MW_{th}, 14,5 Mw_e

Naujoji Vilnia (RK-2) CHP:

- Power 10.3 MW_{th}, 2.5 MW_e
- The CHP project is planned to be implemented together with a heat storage tank (2 000 m3)

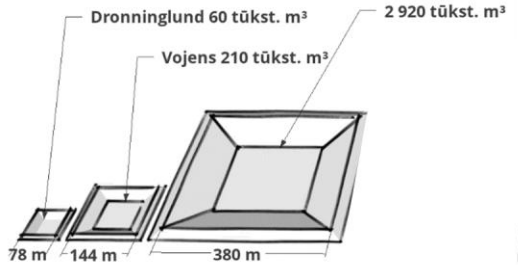


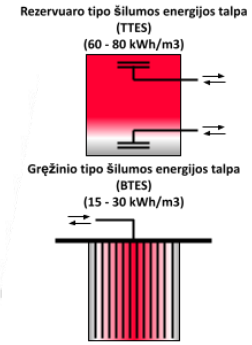
THERMAL ENERGY STORAGE

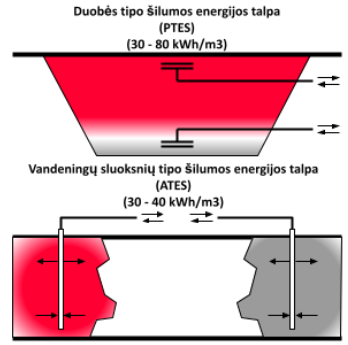
Seasonal pit-type (PTES) storage:
- Capacity: 200 000 m3 with 7 MW heat pump
- Danish model proposed, with the public utility as manager and the heat producers as financiers

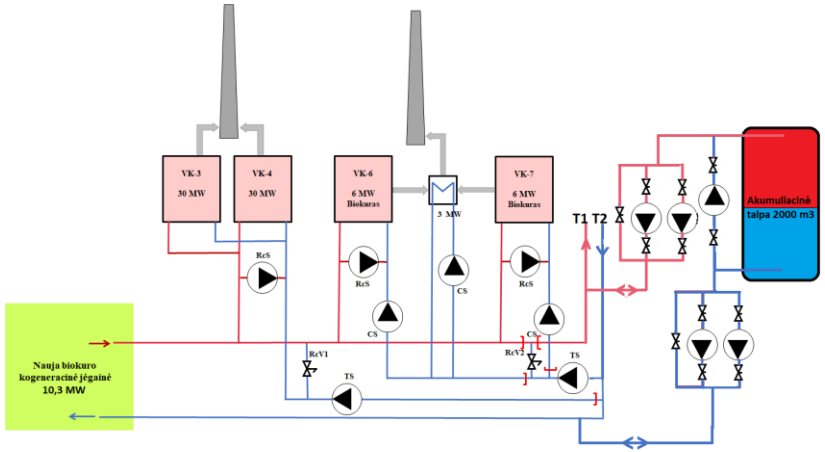
Tank (TTES) type storage in an integrated network:
- Capacity 24 000 m3

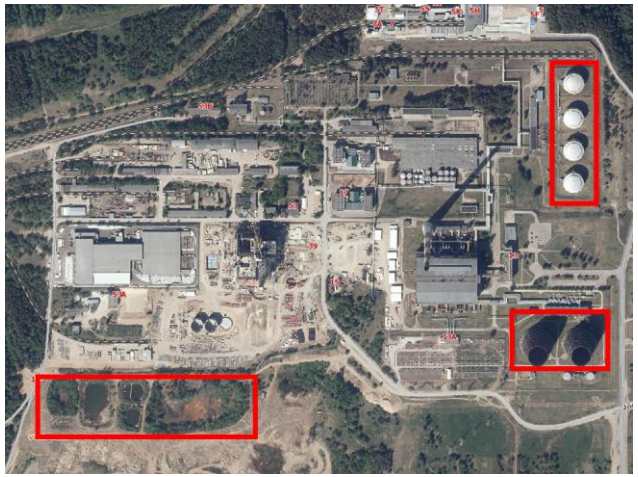
Tank (TTES) type storage in Naujoji Vilnia:
- Capacity 2 000 m3



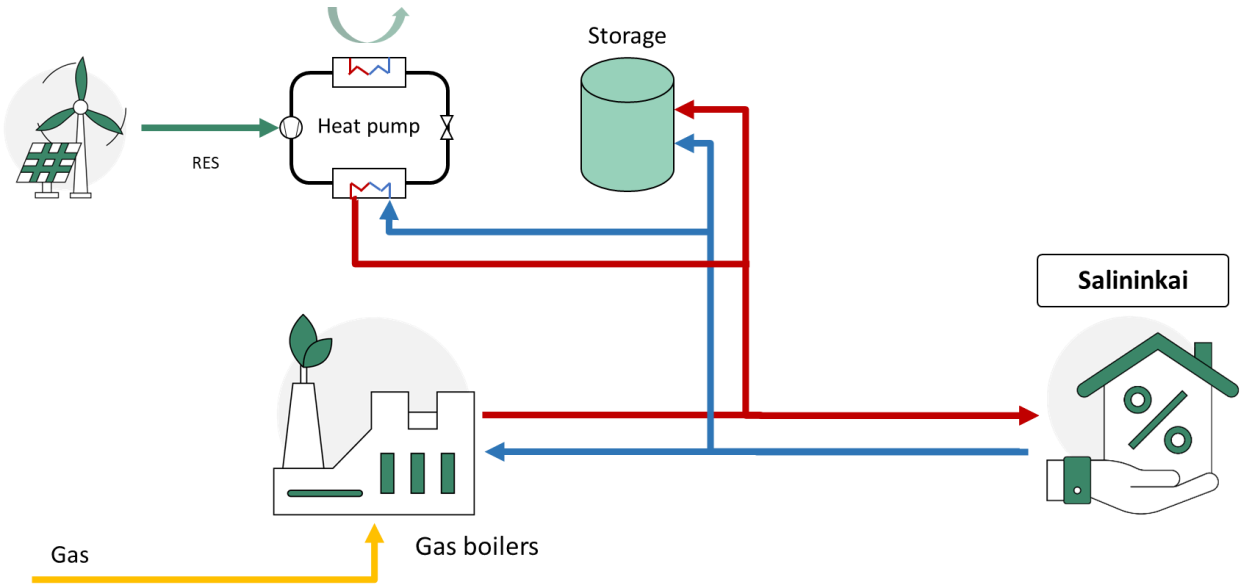


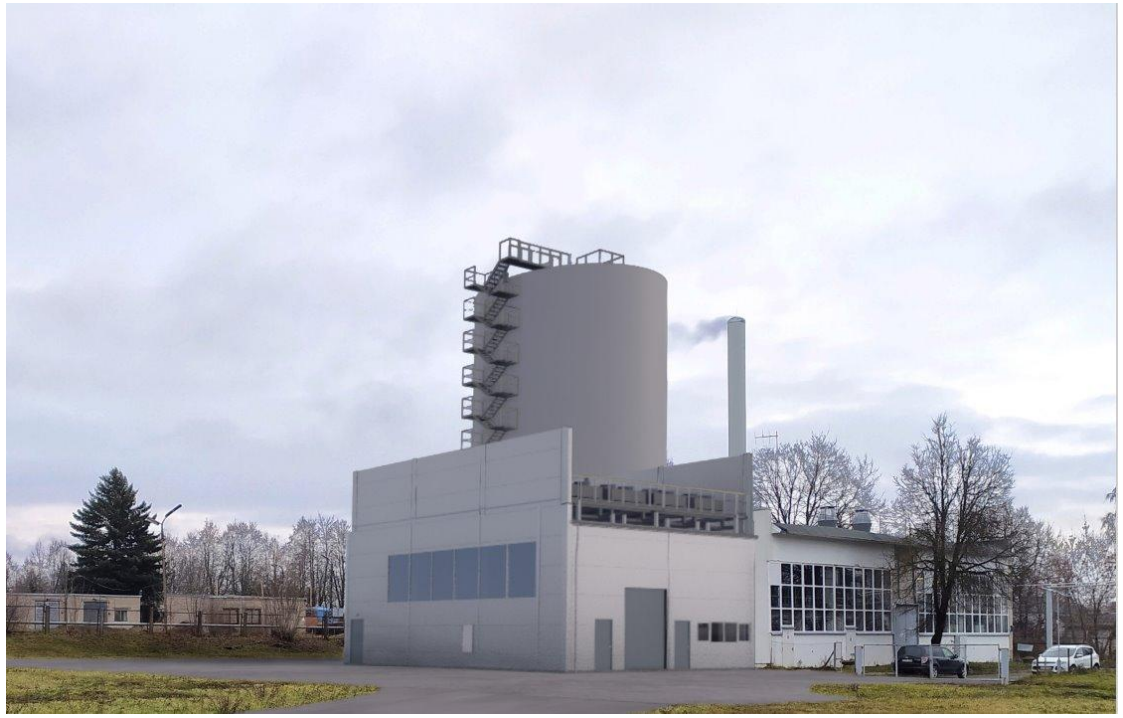




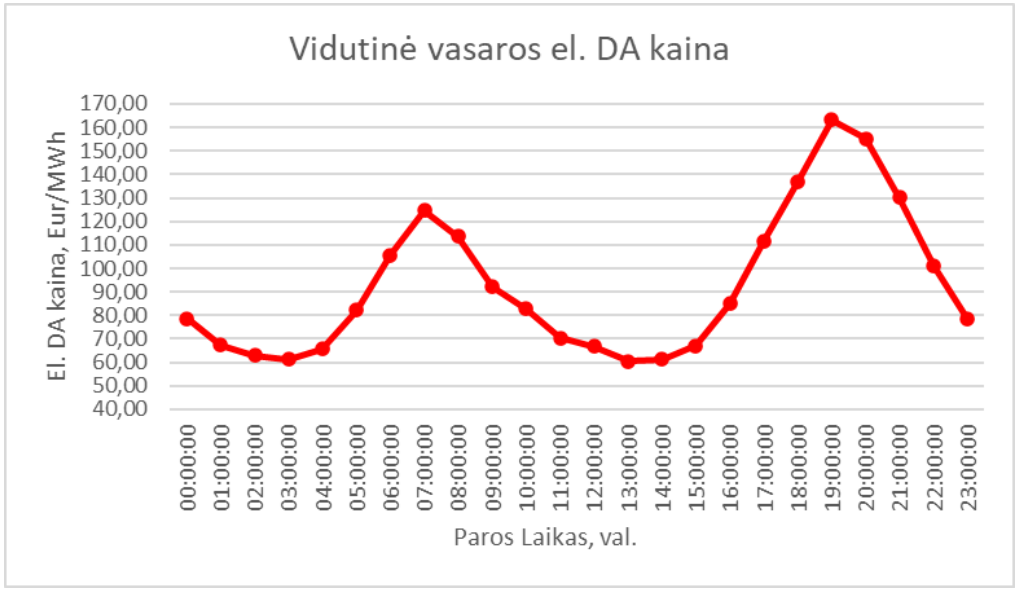


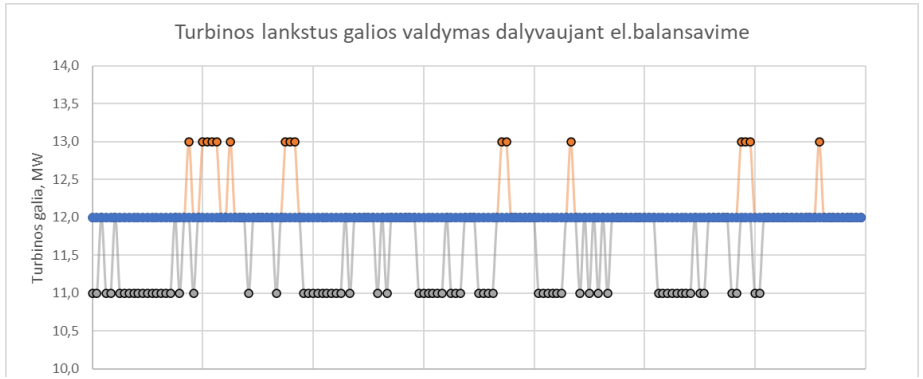
POWER TO HEAT AND ELECTRODE BOILERS

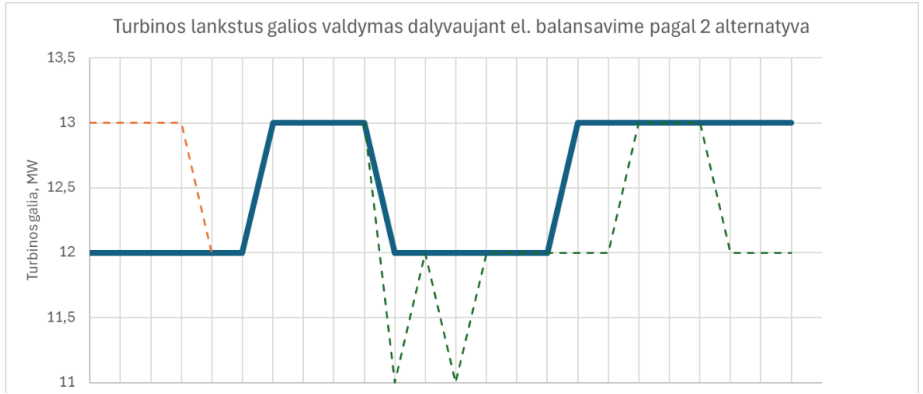




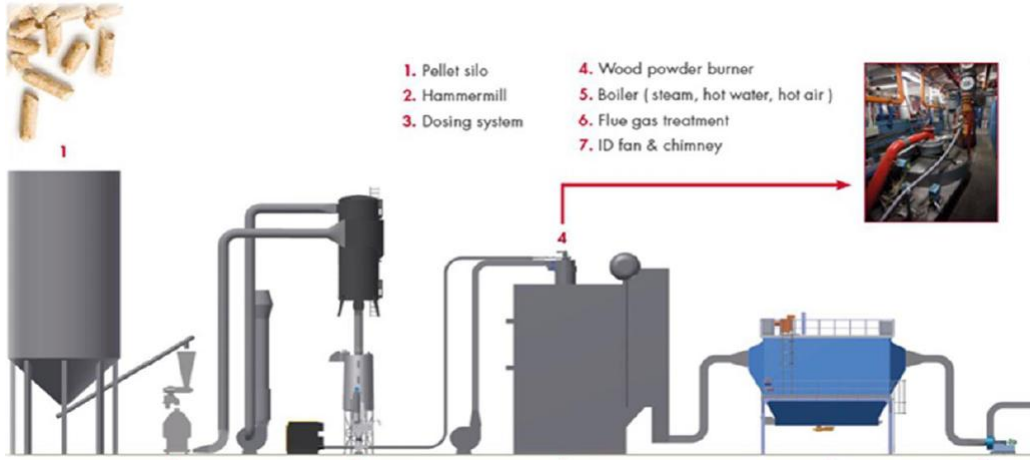
ELECTRICTY GRID BALANCING

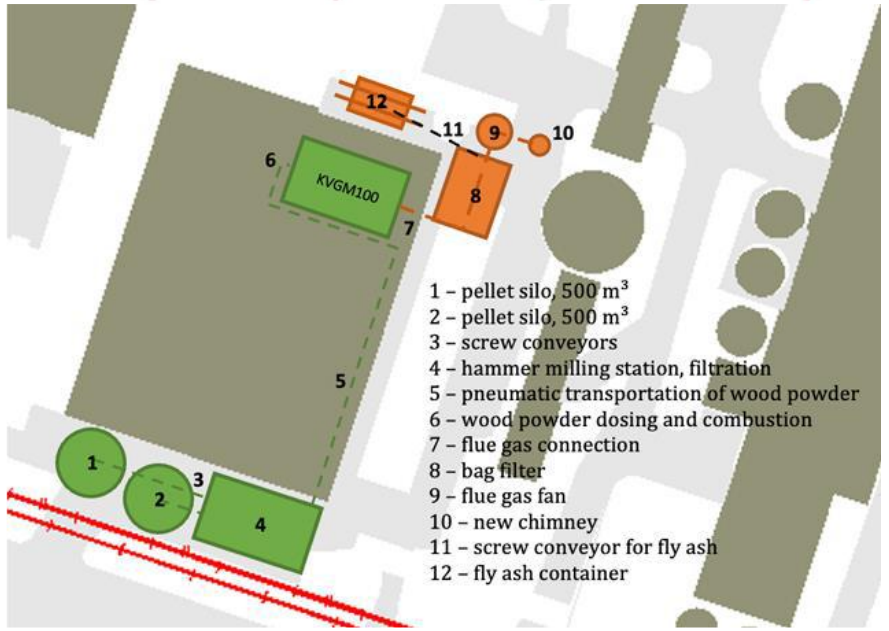




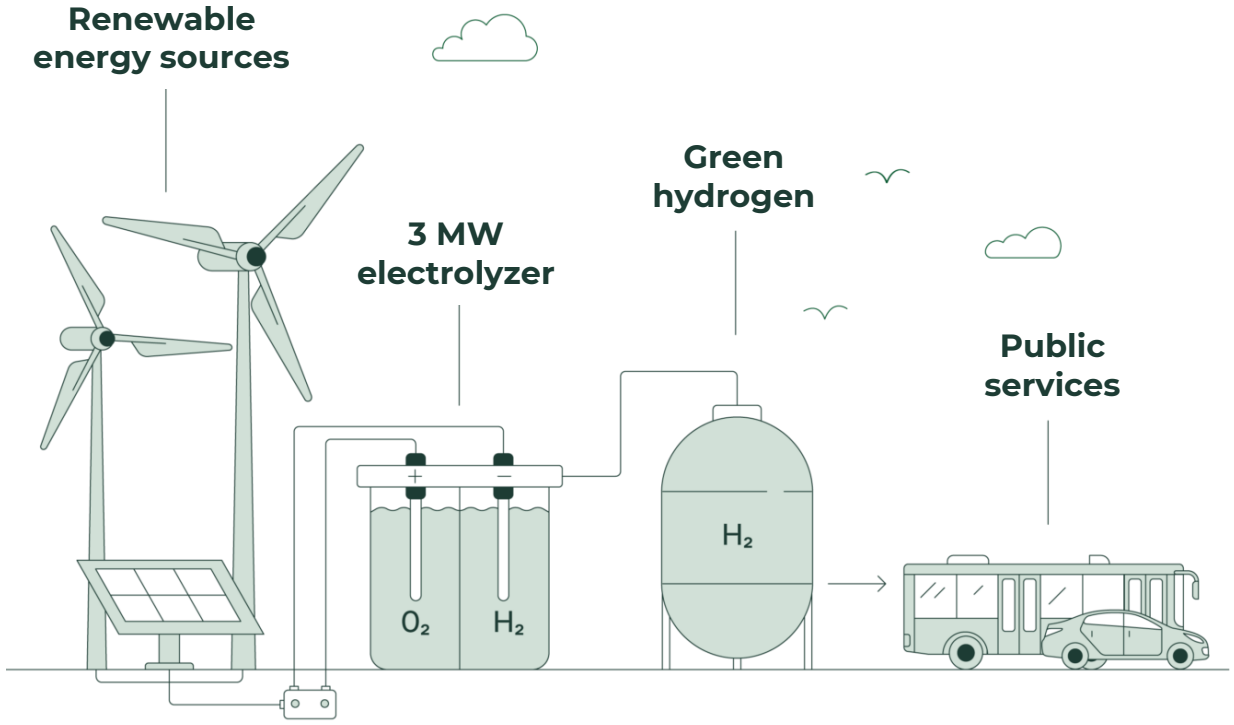


RECONSTRUCTION OF PEAK AND RESERVE HEAT CAPACITY: FROM GAS TO WOOD POWDER





HYDROGEN PRODUCTION

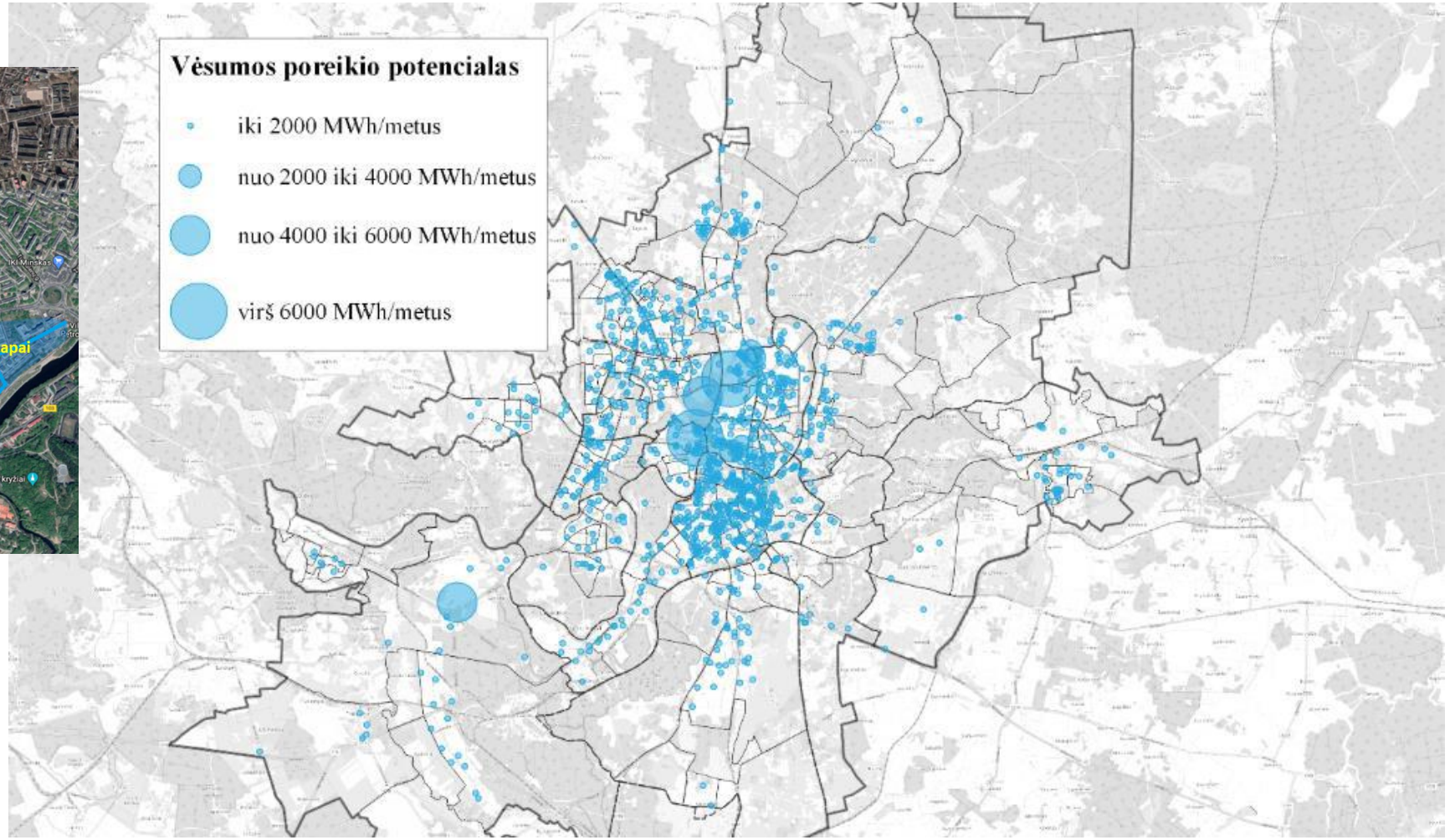


Hydrogen production synergyzes well with electricity grid balancing and cheap (but intermittent) electricity from RES

Half of produced hydrogen will be used to power buses in Vilnius

Residual heat will be used in the city‘s heat supply

DISTRICT COOLING



District cooling potential in Vilnius
443,6 GWh

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WE CARE

Sustainable, clean and responsible

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