

A2A Smart Infrastructure Business Unit

Infrastructure are increasingly becoming crucial assets to enable the energy transition



E-mobility

30 mln | **320.000**

km traveled at 0 emissions | recharges made thanks to A2A infrastructure



Distribution networks

11,2 TWh | **2,7 mld**

Distributed energy | Scm gas



Integrated water cycle

80 mln m³ of water



Smart cities

200 municipalities



District heating

2,7 TWh Thermal energy delivered



325 k Streetlights

Milan fact sheet

Milan is one of the most densely populated city in the EU, having also one of the largest economy among EU cities



Population

1,4 M



Area

182 km²



City population density

7.500 ab/km²
(6th in EU¹)



Buildings

64.800



Gross Domestic Product of Milan ²

195 B€
(10% of Italian GDP)



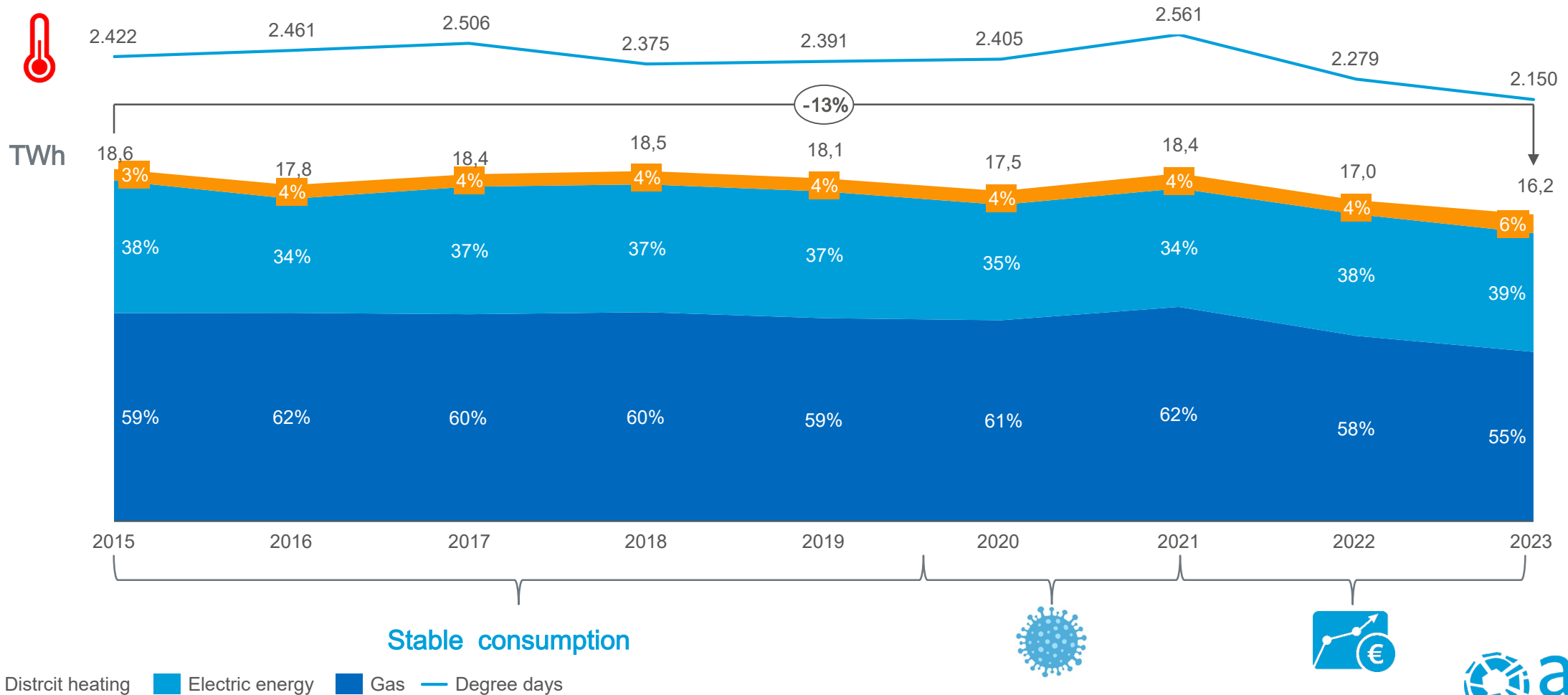
Climatic Zone

E

¹Eurostat 2020, considering only cities with more than 0,5 M population and the city perimeter. ² Assolombarda 2023 – association of companies operating in the Metropolitan City of Milan.

Historical data for Milan energy demand

In the last two years, high energy prices and high temperatures caused a slight decrease in consumptions

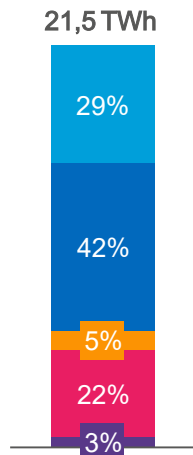


¹Final balance data for energy consumption available only for district heating, electric energy and gas.

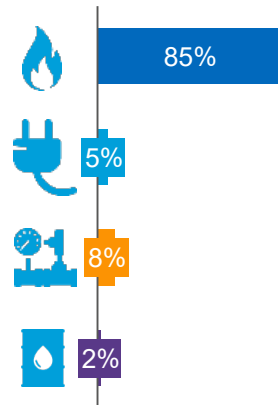
Milan baseline energy demand

Significant use of gas for heating, high usage of fossil fuel for transport, predominant medium and low energy -class buildings

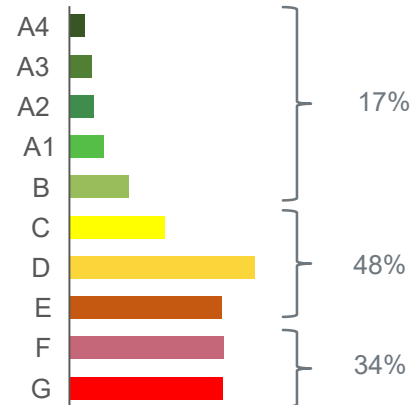

Energy demand
2024 ¹



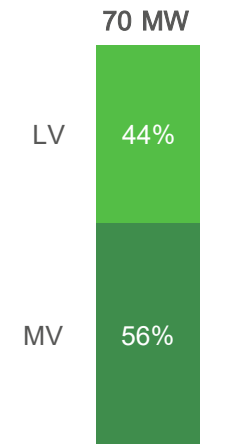

Heating
technologies mix ²
[number of buildings]



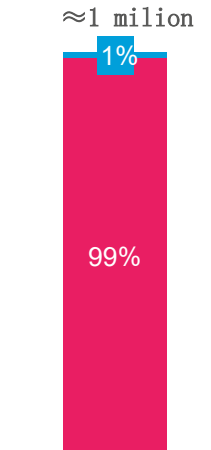

Energy
efficiency rating ³
[number of buildings]




Photovoltaic



Mobility ⁴
[number of vehicles]




















































■ Electric energy
 ■ Gas
 ■ District heating
 ■ Fossil fuel transport
 ■ Heating fuel oil

¹Combustion engine and fossil fuel transport consumption estimated. ²Distribution estimated by CURIT Milano. ³Distribution of energy classes estimated by CENED Milano. ⁴Data estimated from ACI considering only vehicles registered in Milan.

Energy demand evolution

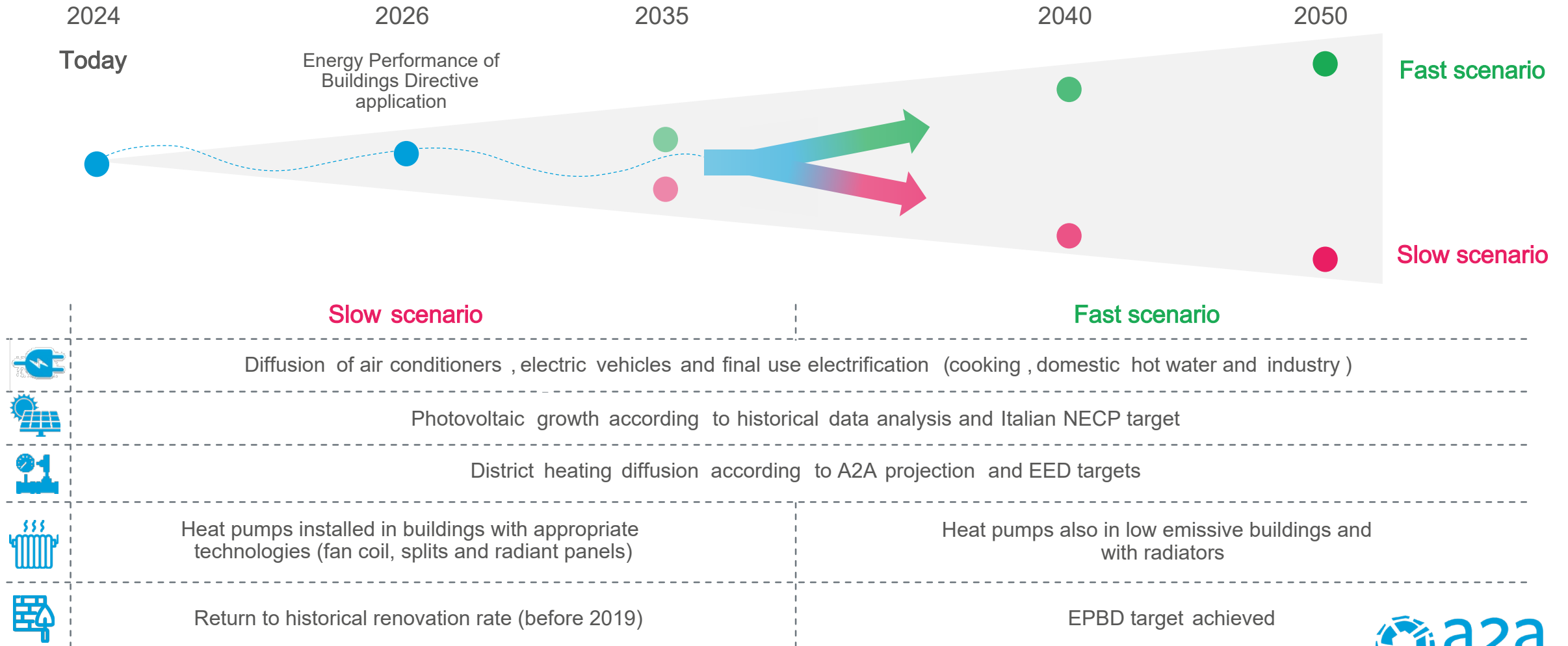
Change in energy demand up to 2050 is led by several drivers, impacting the way each energy vector meets the need for each final use

		Final uses				
		Residential and non-residential heating	Hot water	Appliances (cooling and cooking)	Mobility	Industry
Drivers	Energy efficiency 	   	   	   		  
	Population and urban development 	   	   		 	
	Technology shift 	   	   		 	  
	Photovoltaic 					

Approach to scenarios modelisation

Two different scenarios have been developed based on different assumptions based on and Italian policies (NECP, EPBD and EED) ¹

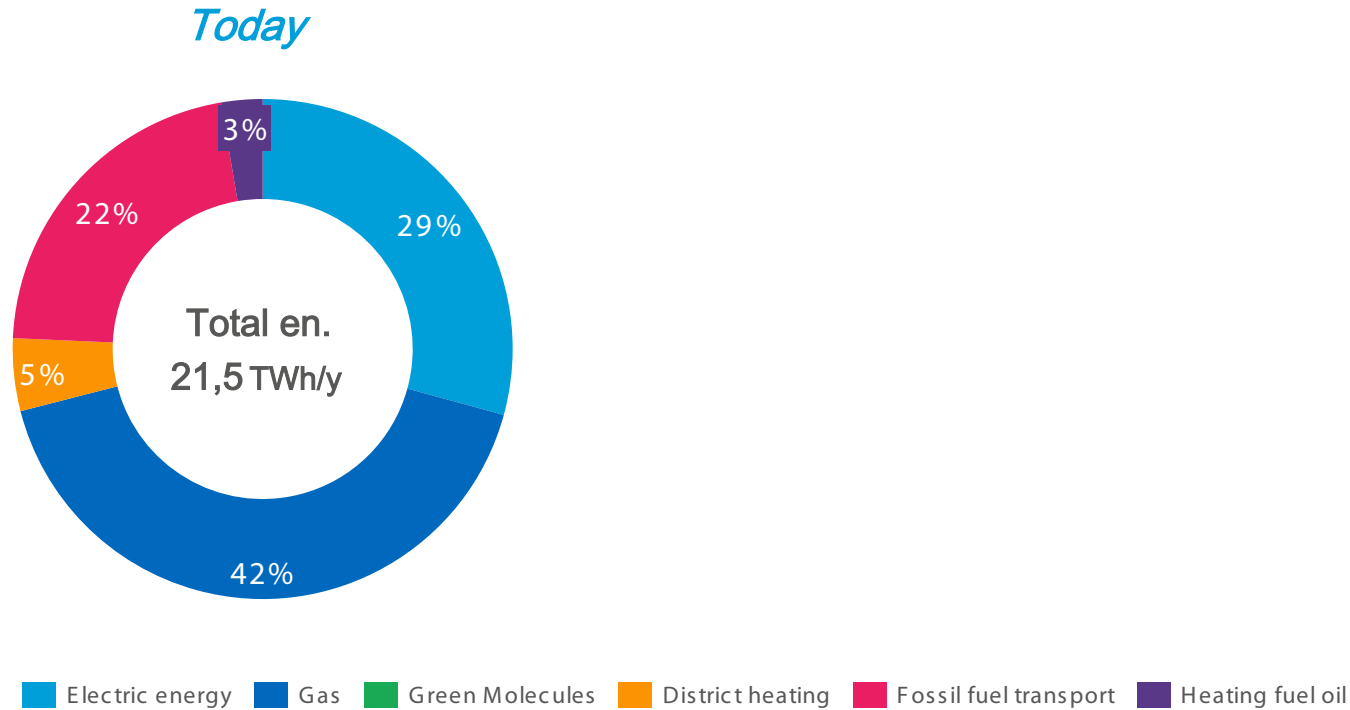
European



¹Italian «National Energy and Climate Plan» and «Energy Performance of Buildings Directive»

Energy demand evolution

Fast scenario evolution shows a global reduction in energy demand and growth of the electricity share



11,4MWh/ household

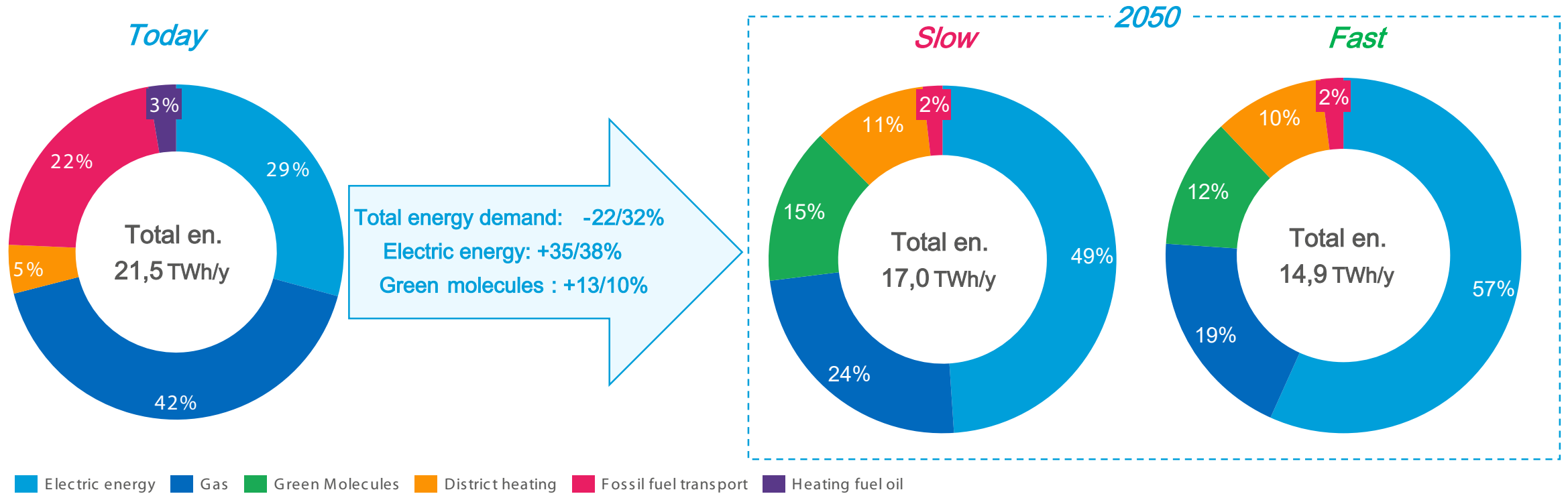
8,8 MWh (78%) Heating & DHW

0,3 MWh (2%) Cooling

2,3 MWh (20%) Appliances

Energy demand evolution

Fast scenario evolution shows a global reduction in energy demand and growth of the electricity share



11,4MWh/ household

8,8 MWh (78%) Heating & DHW

0,3 MWh (2%) Cooling

2,3 MWh (20%) Appliances



9,6 MWh/ household

7,3 MWh (76%) Heating & DHW

0,5 MWh (4%) Cooling

1,8 MWh (20%) Appliances



7,4 MWh/ household

5,0 MWh (69%) Heating & DHW

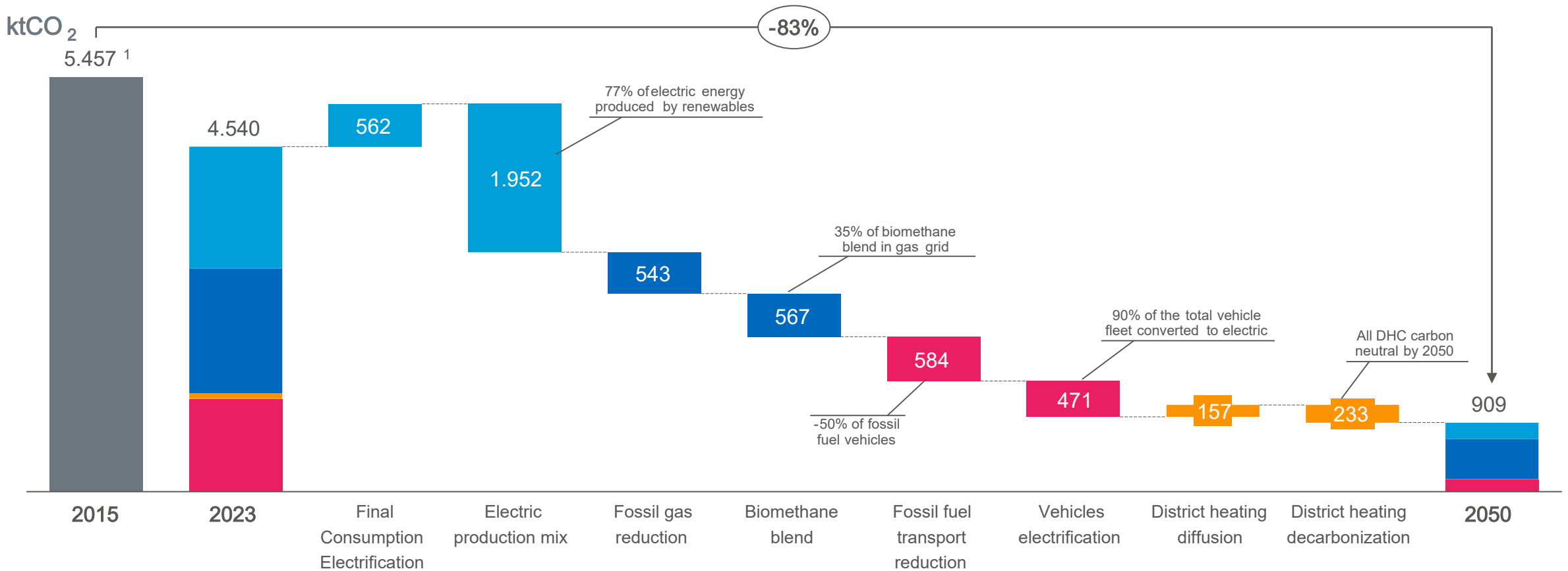
0,5 MWh (6%) Cooling

1,8 MWh (25%) Appliances

CO₂ direct emission evolution



Reduction in CO₂ emissions supported by electric production decarbonization and gradual abandonment of fossil fuel technologies

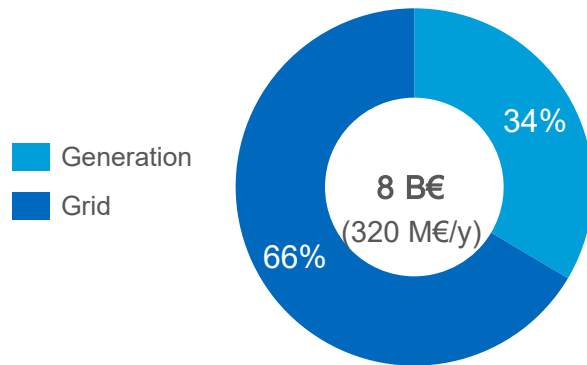


¹Based on aggregated data at regional level.

Investments to reach scenario target for Milan residential users

More than 31 B€ required at 2050, driven by renovation of buildings

Infrastructure ¹



+147% DHC customer increase



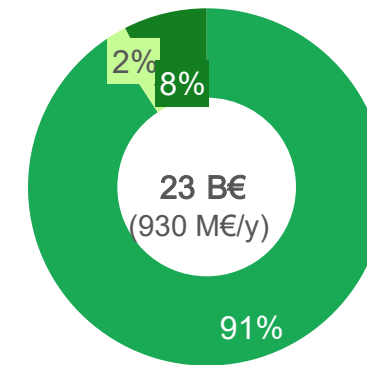
+41% Distribution grid electrical power peak

Householders ²



Assuming new generation DHC will contribute reducing primary energy for EPBD target

Additional expenditure to achieve EPBD target through building renovation only



- Building energy efficiency
- Photovoltaic (+storage)
- DHC and HP

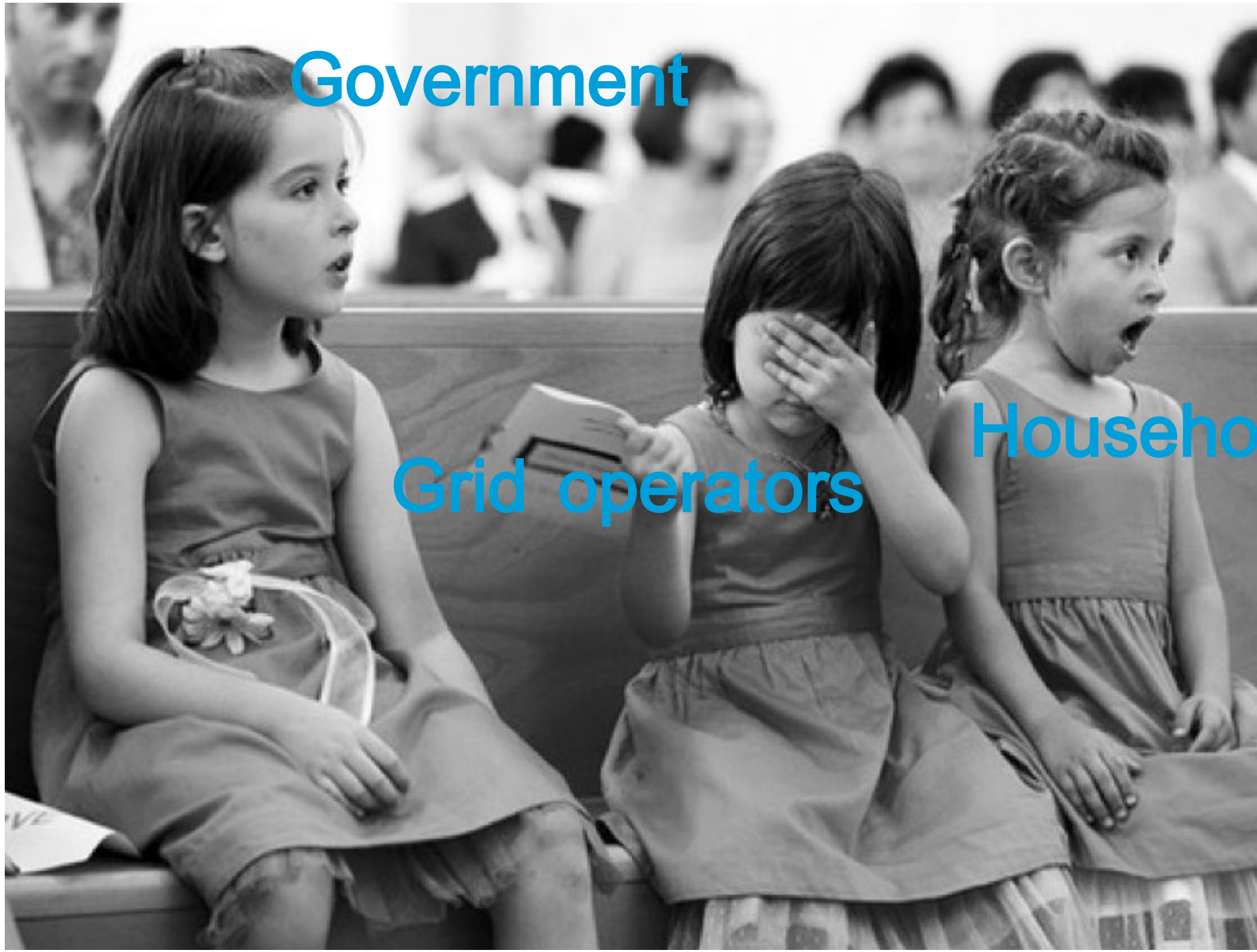


53% Renovated apartments



Renovation cost just for Milan is equivalent to Recovery Fund for energy efficiency for Italy³

¹ Include DHC extension and power plant growth, electric grid upgrade, PV, Wind and electrochemical storage utility scale and biomethane share for Milan usages and e-mobility charging points. CAPEX related to business-as-usual activities not included; OPEX not considered. ² Include DHC connection, HP and PV installation, buildings renovation. Not included private and public mobility vehicles costs. ³ Allocated fund for energy efficiency in the Italian Recovery Plan equal to 20.5 B€ at national level.



Government

Grid operators

Householders

Thank you