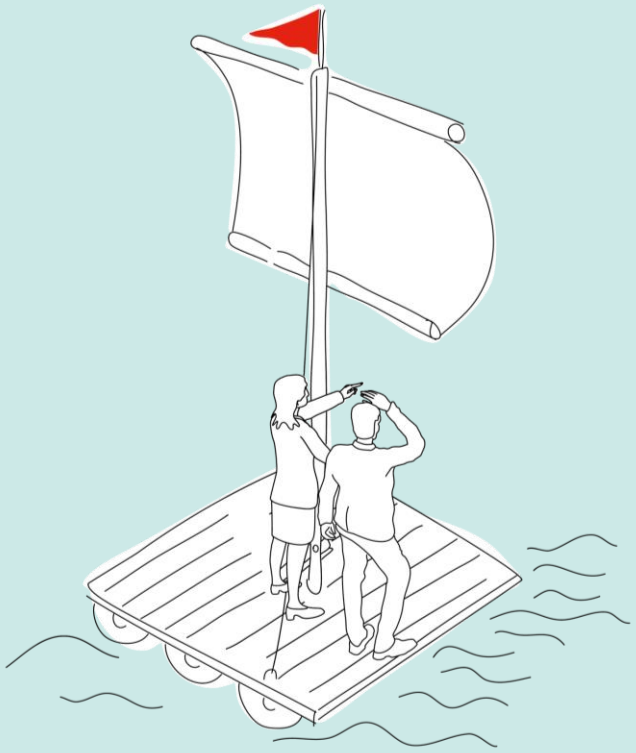
tbfpartner

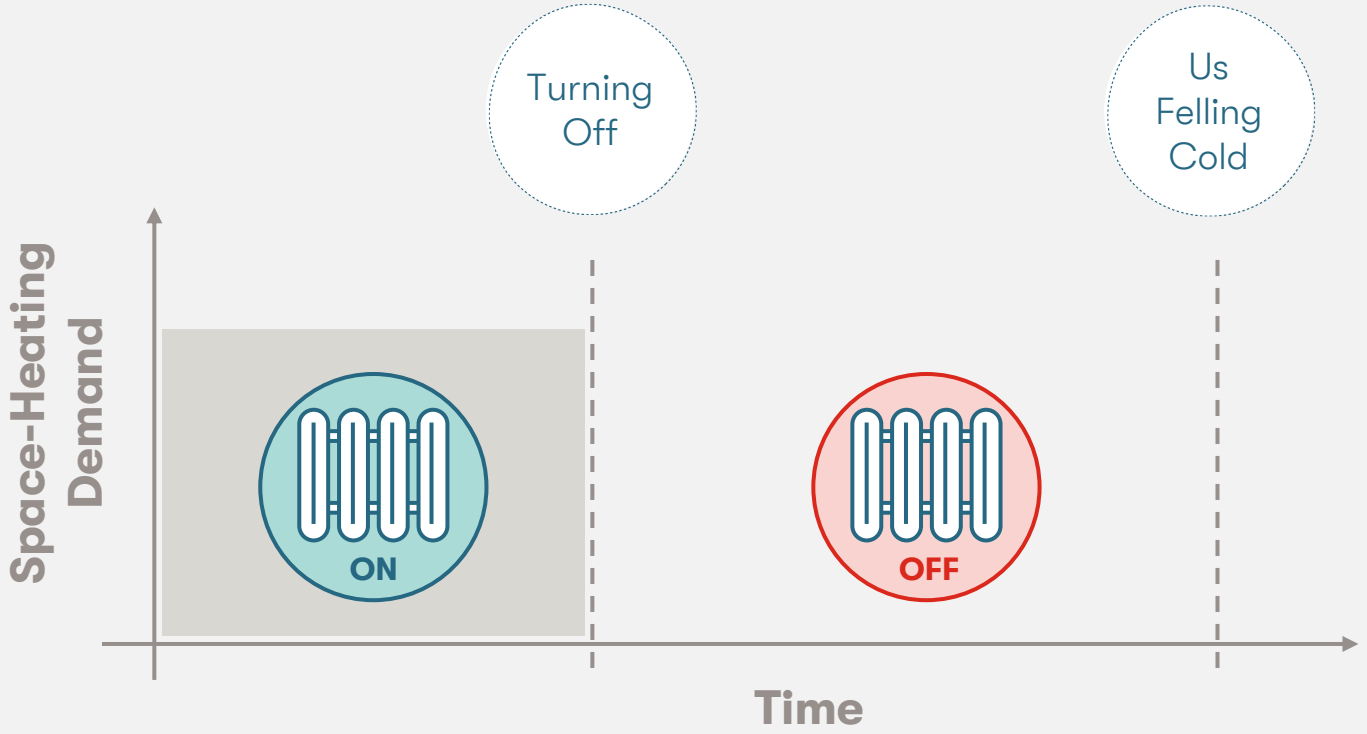
How to Access the Flexibility of Buildings to Optimize Operation of Thermal Grids

Dr. Sergio Mazzotti | DeCarbCH Symposium | 03.03.2026

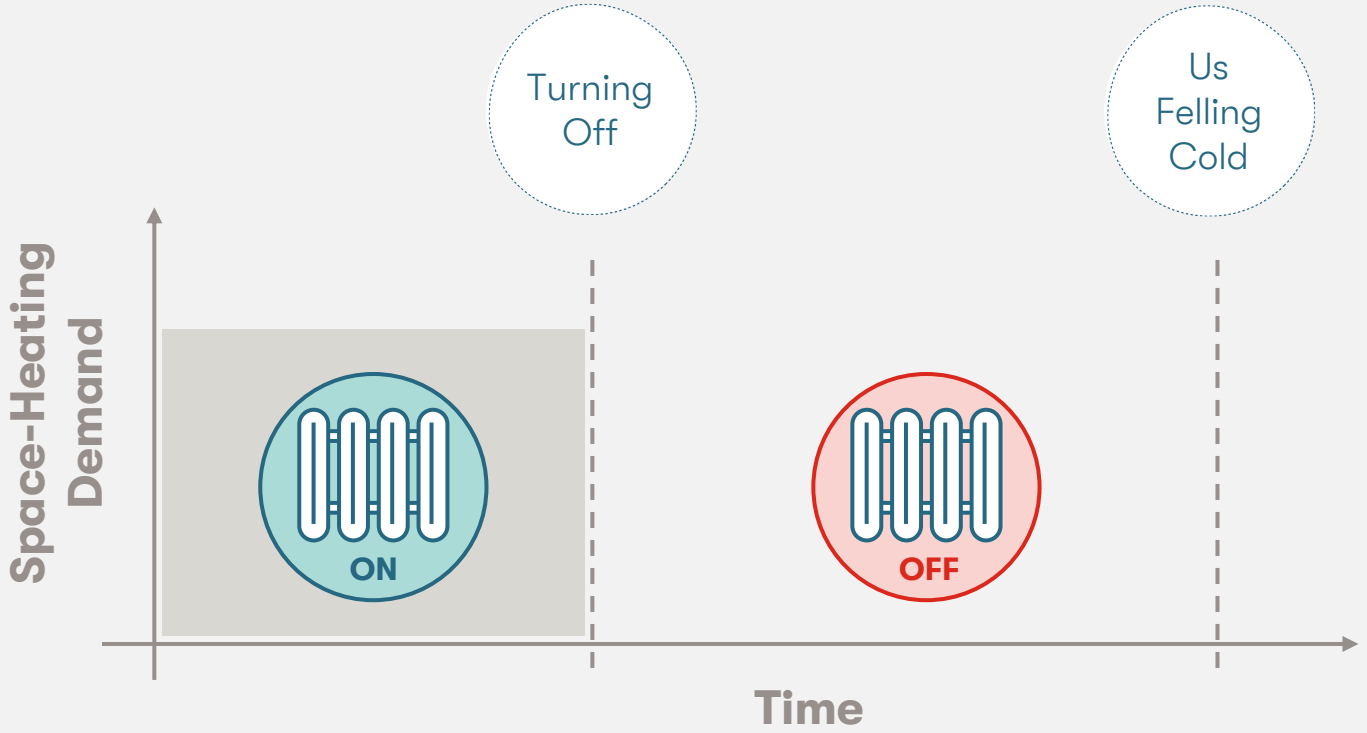


What Is the Flexibility of Buildings?

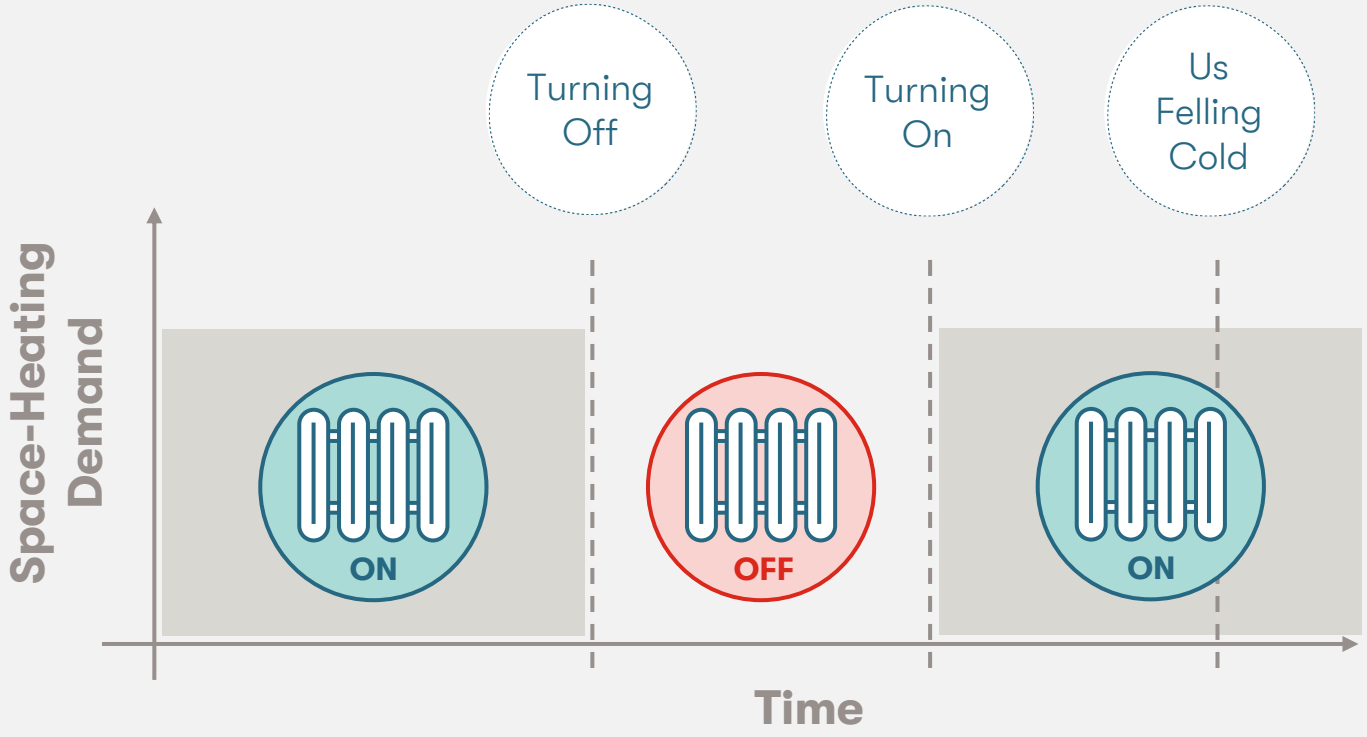
Time lag between turning off space-heating and us feeling cold



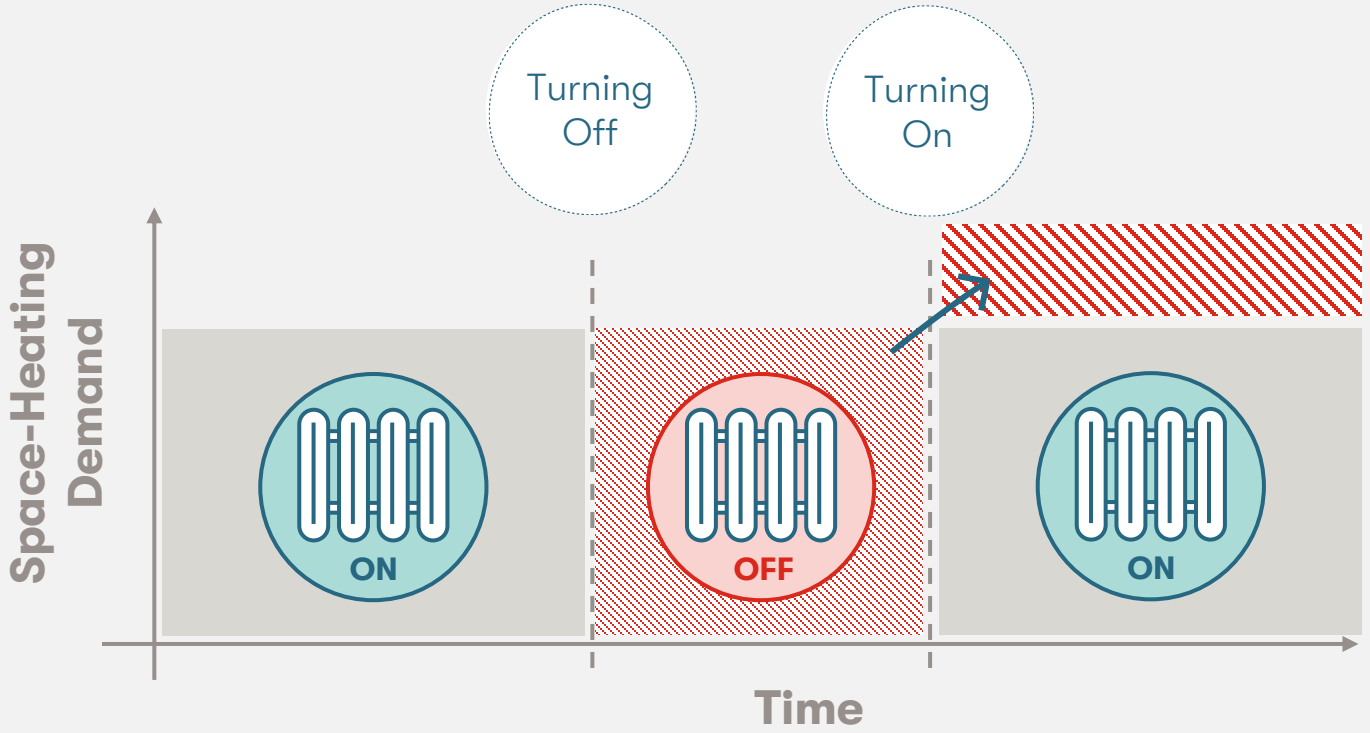
Building properties dictate how long it takes until we feel cold



Building properties allow us to turn off space-heating without feeling cold; **just turn it back on in time**



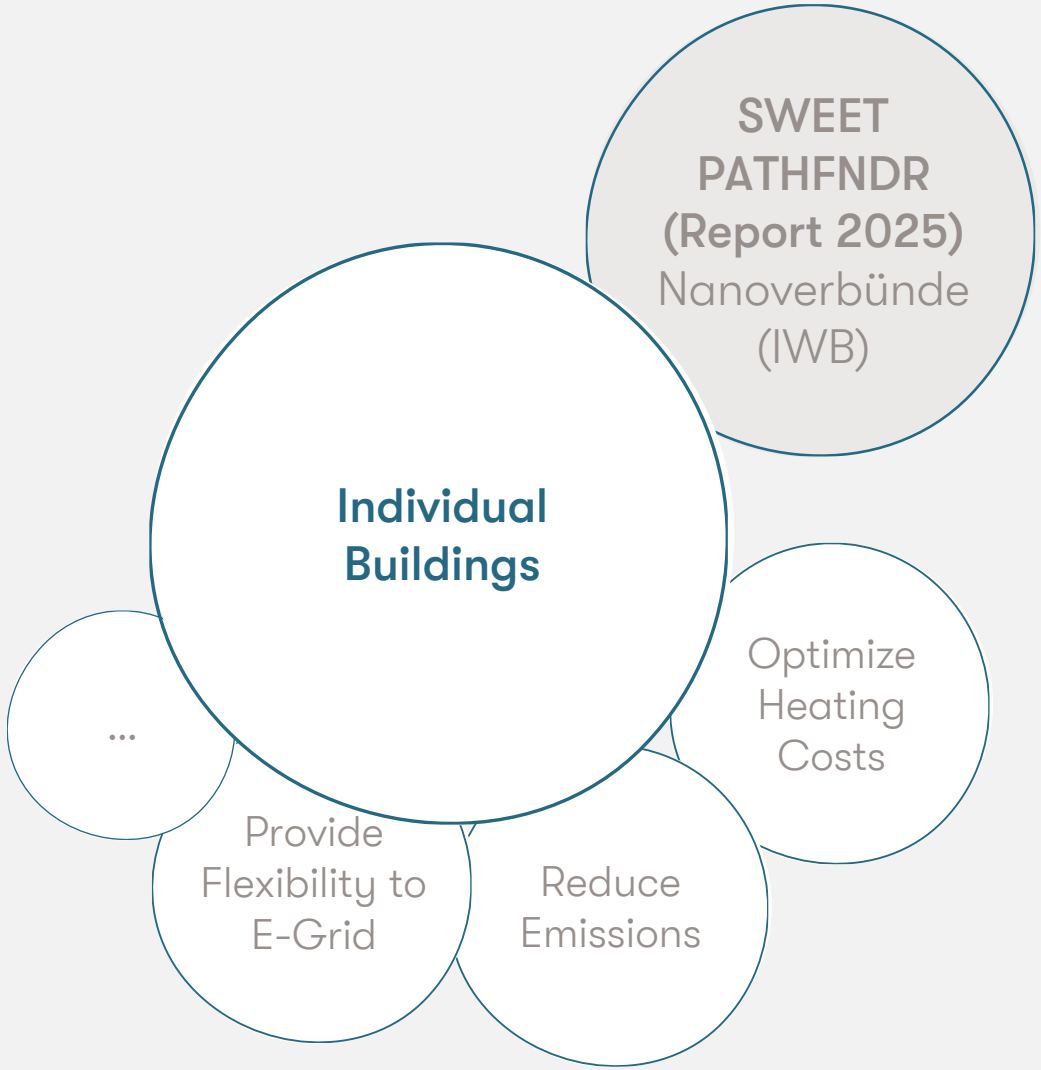
However, not to get cold we must **provide the energy we retracted later in time**

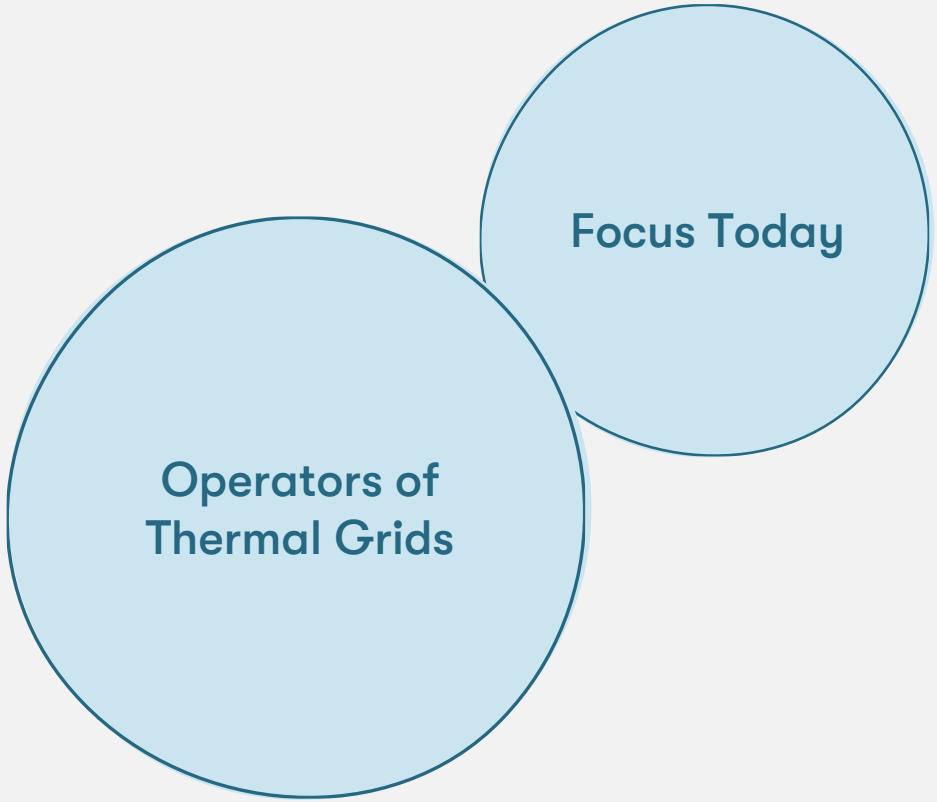


Buildings can act as
heat buffers;
they provide flexibility

To Whom Is the Flexibility of Buildings Useful? Why?

Two Perspectives



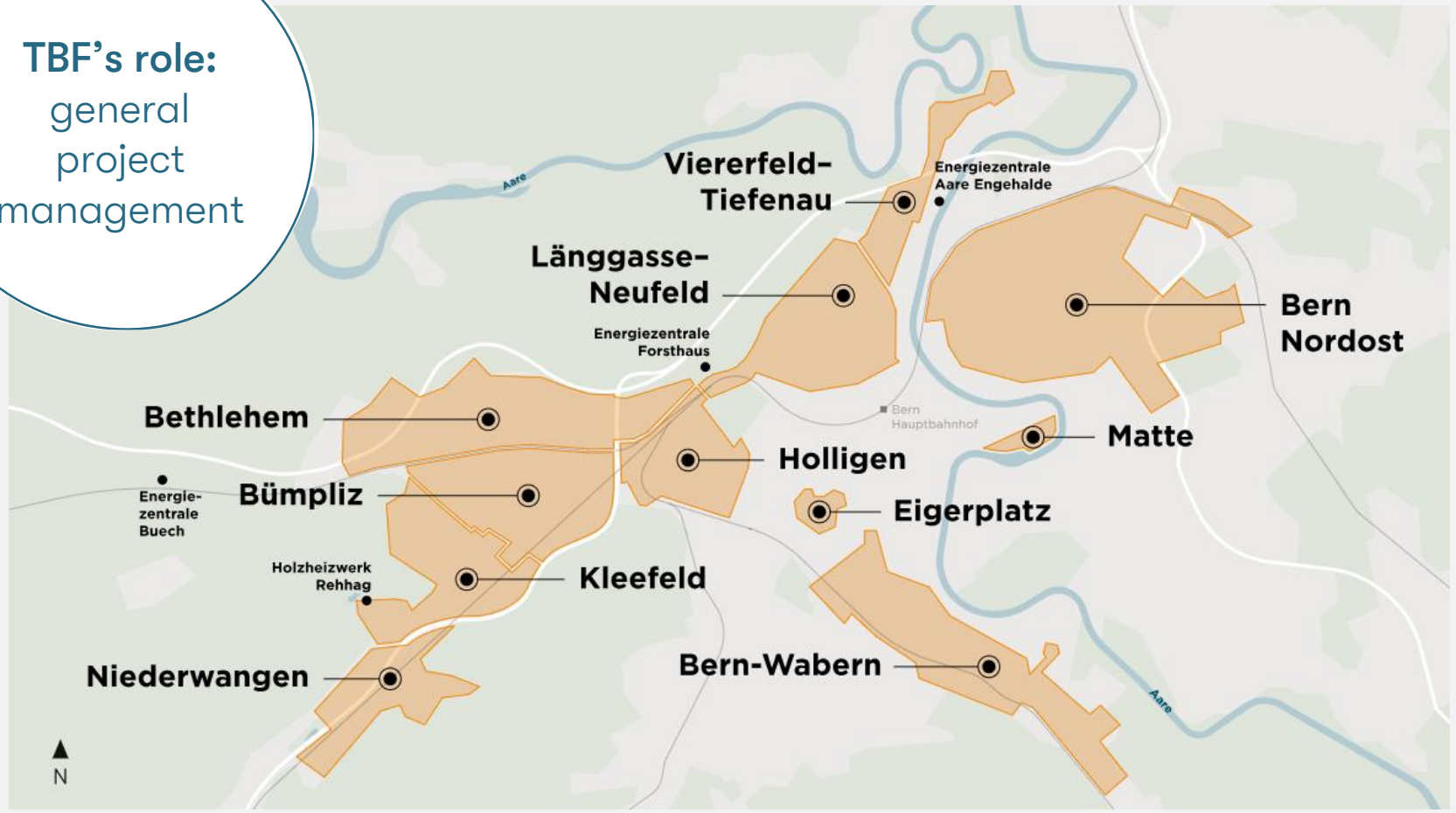


How to Access and Use the Flexibility of Buildings?

Ausbau Fernwärme Bern as Case-Study

ewb expands the thermal grid, **building 53 km of piping and new energy infra-structure**

TBF's role: general project management



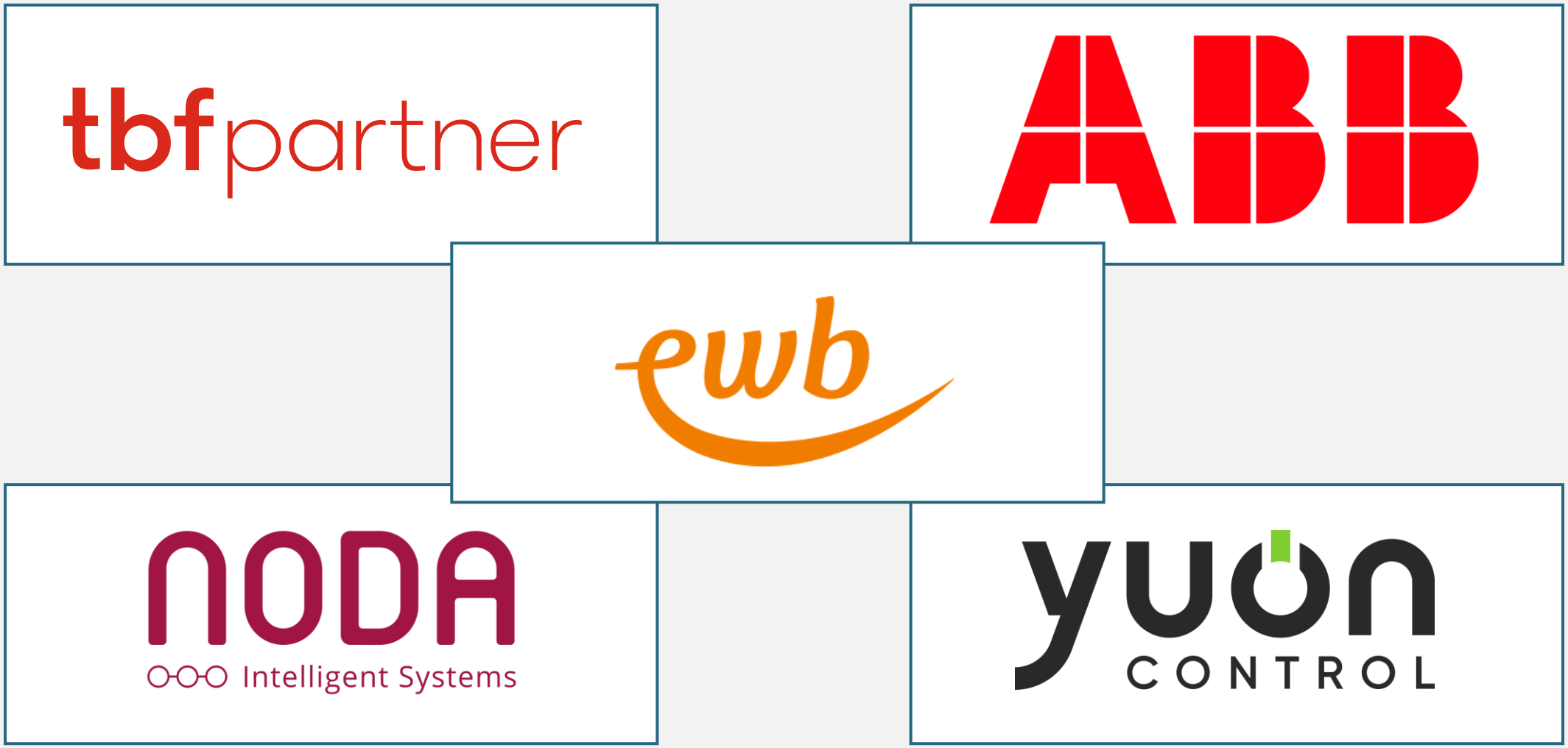
The goal: **use the flexibility of all 4’800 buildings**

By using building-flexibility;
ewb introduces 4’800 new heat buffers in their grid

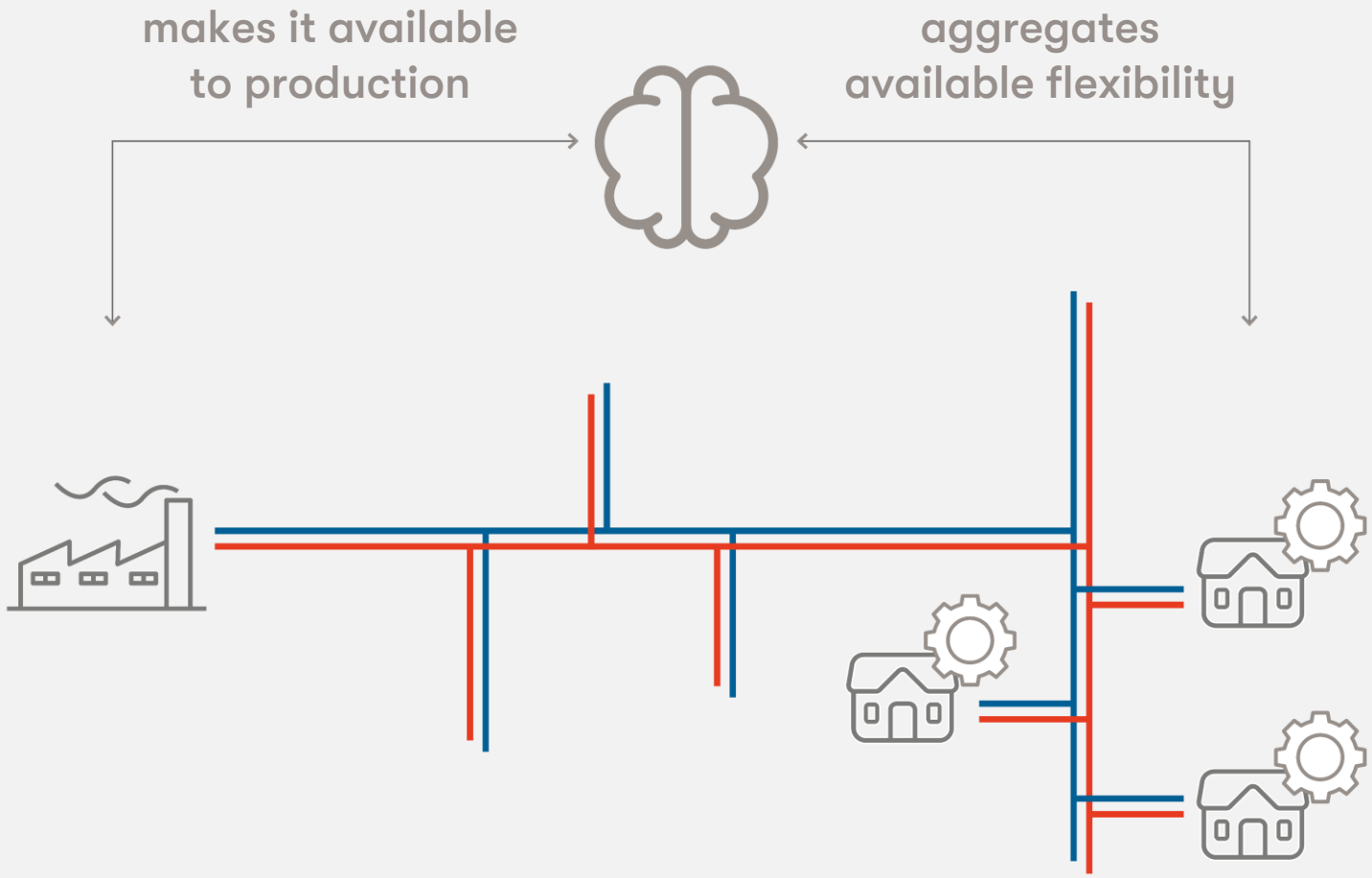
The Bern Project:

How to Access and Use the Flexibility of Buildings?

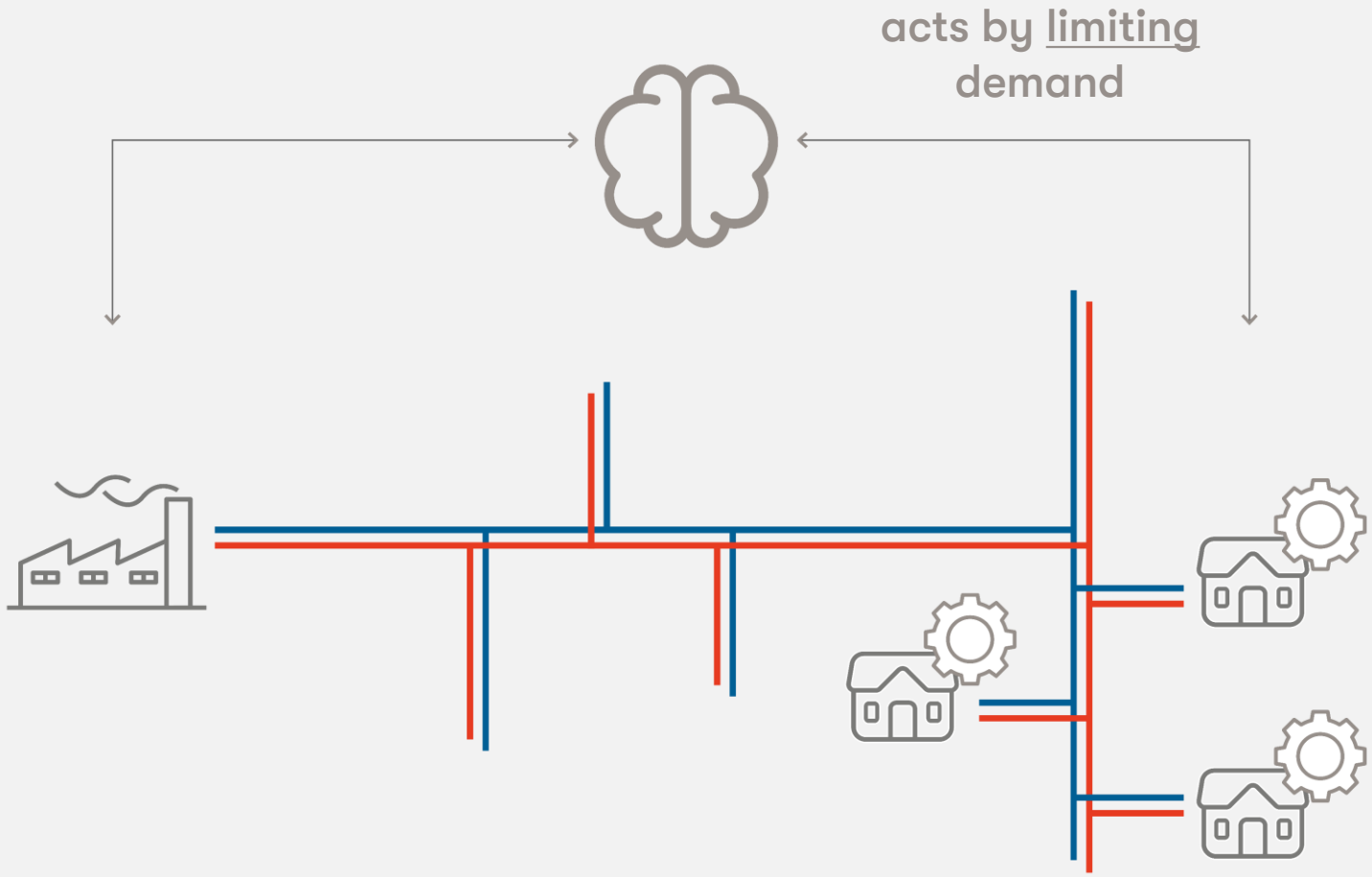
Implementation Partners



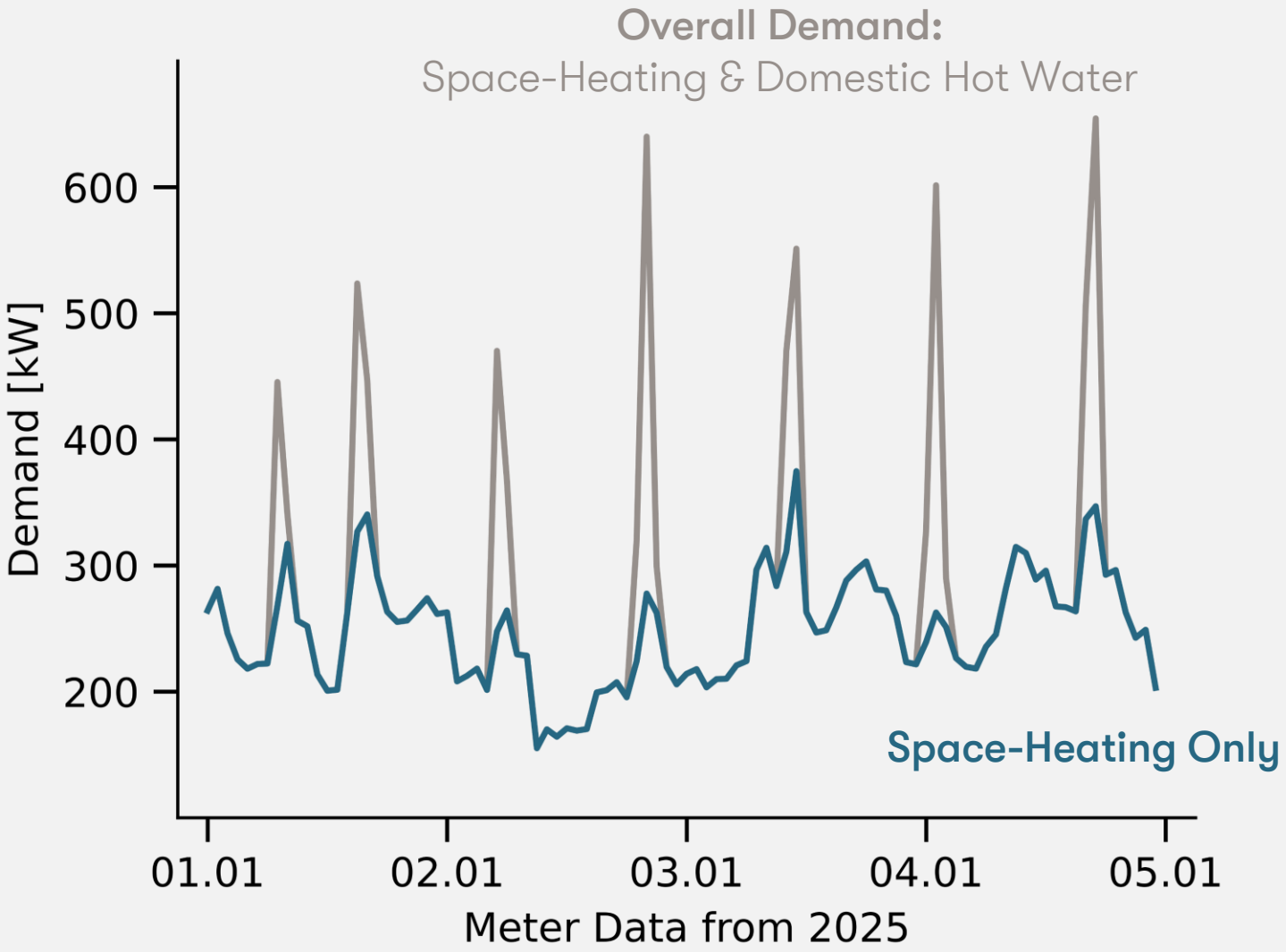
Many decentralized buildings; **one centralized brain controlling all of them**



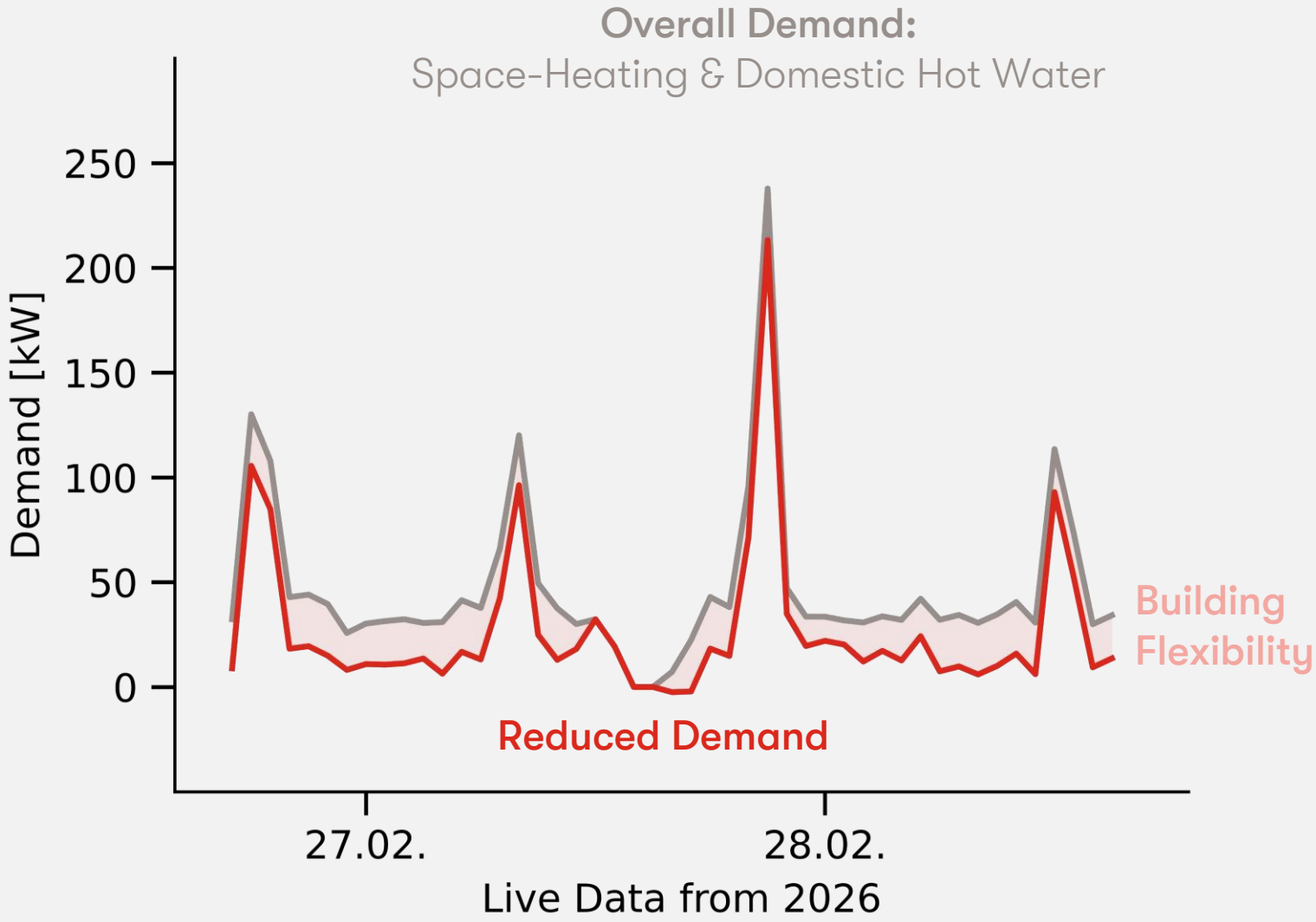
Focus on limiting primary-side demand not on managing the entire building



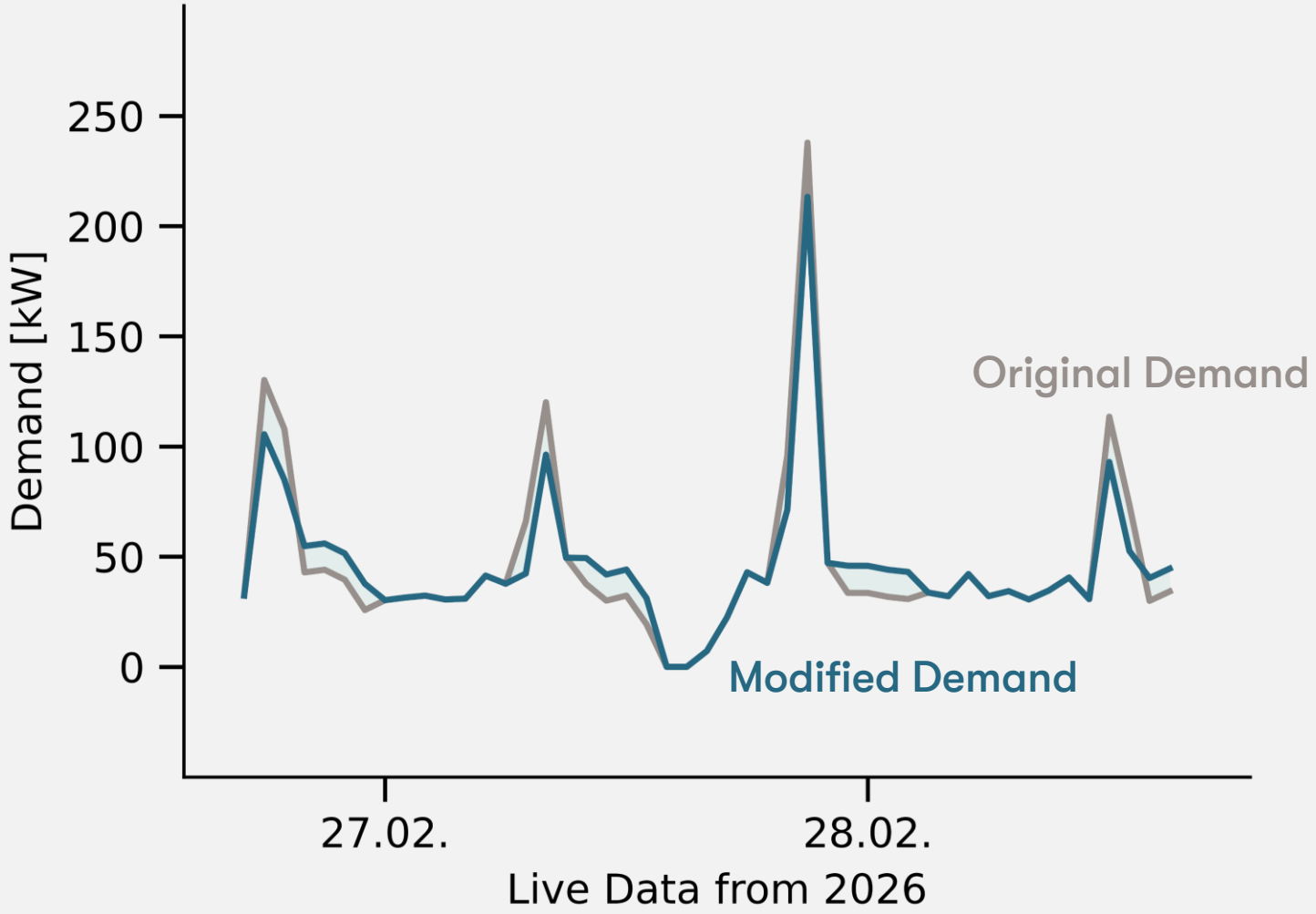
Use historic meter data to **deconvolute space-heating from domestic hot water**



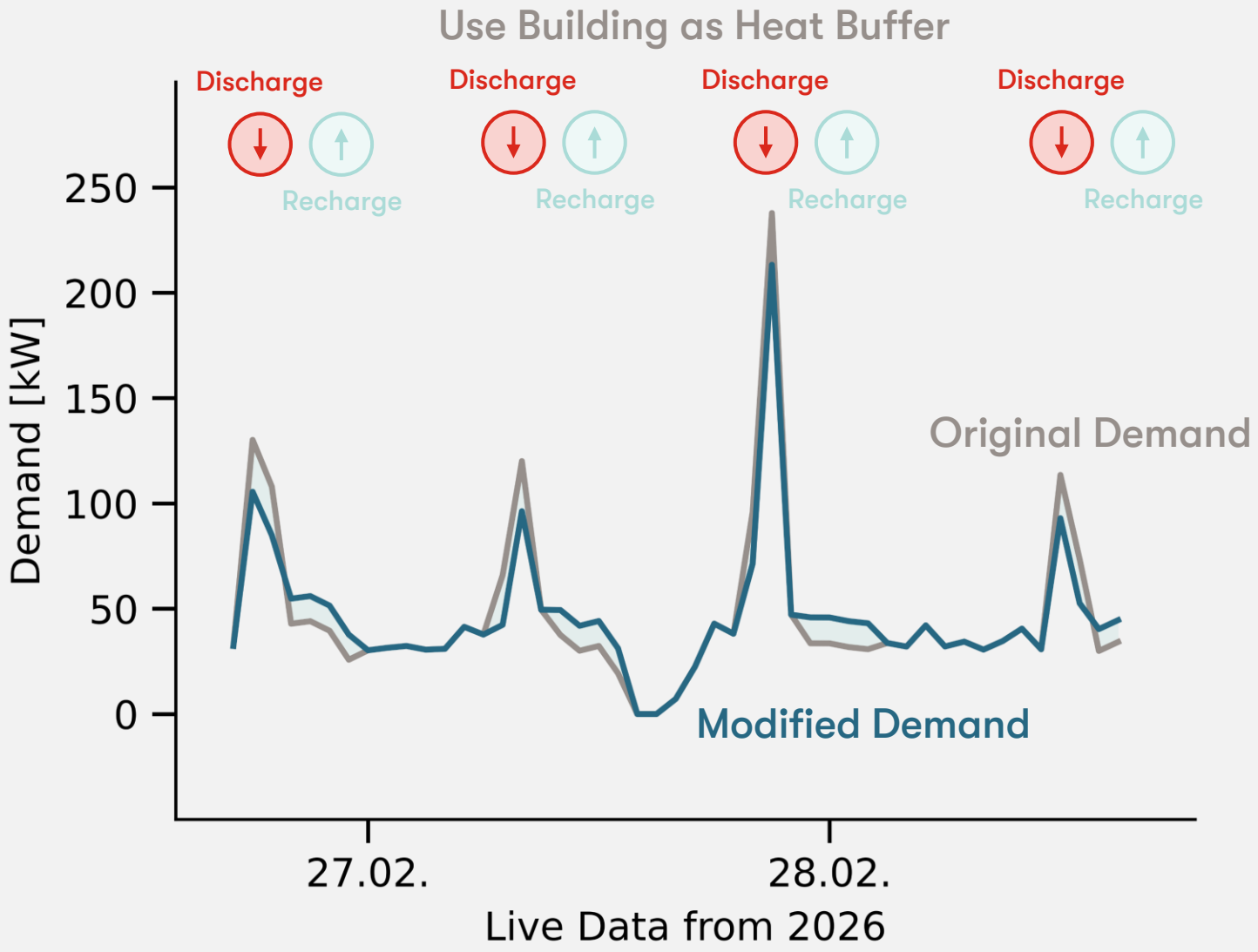
In real time:
Compute available flexibility of each building



Use available flexibility of the building to modify its demand;
e.g., for peak shaving



Remember to **recharge after discharge;** else we deplete building as heat buffer

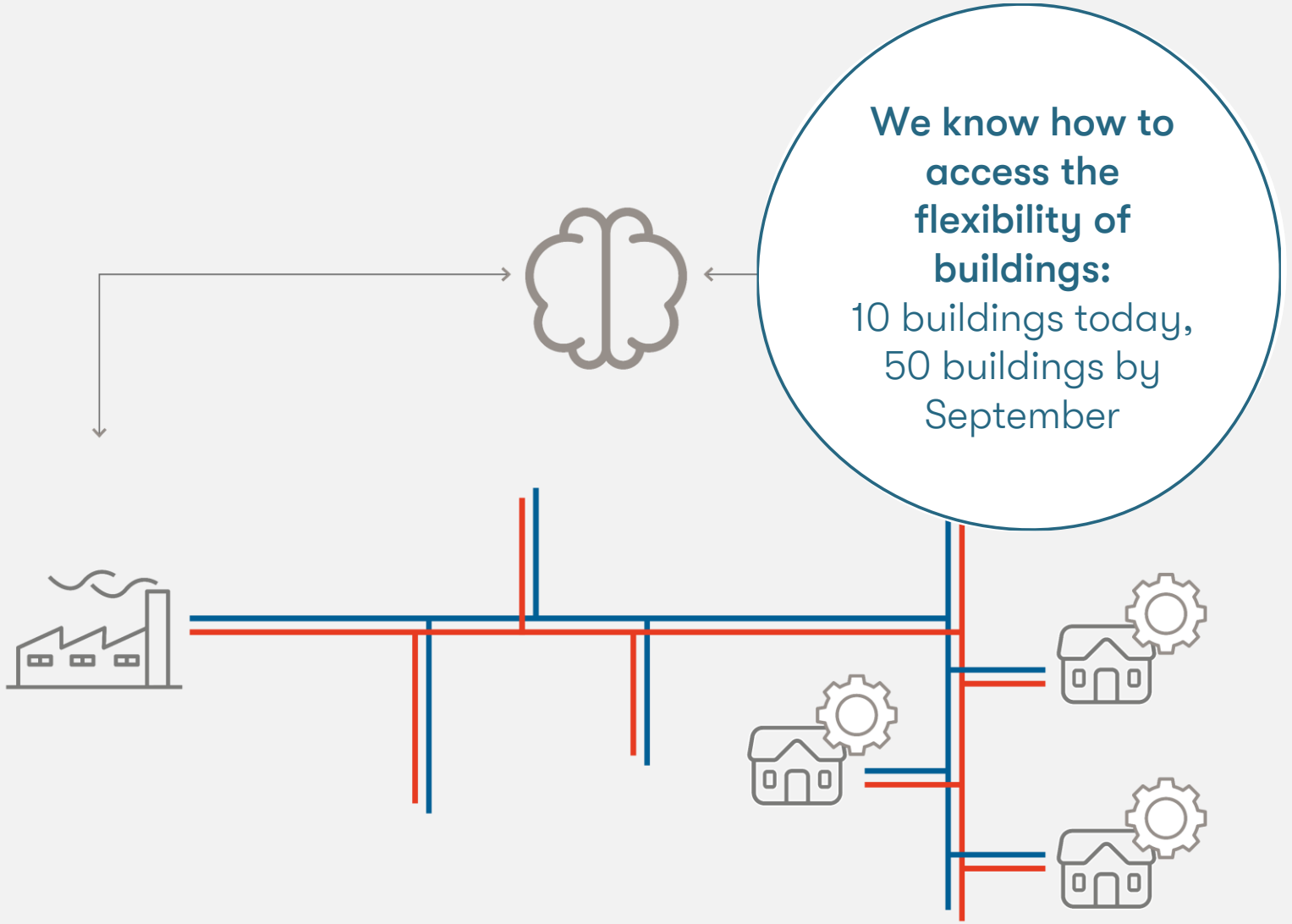


The Bern Project:

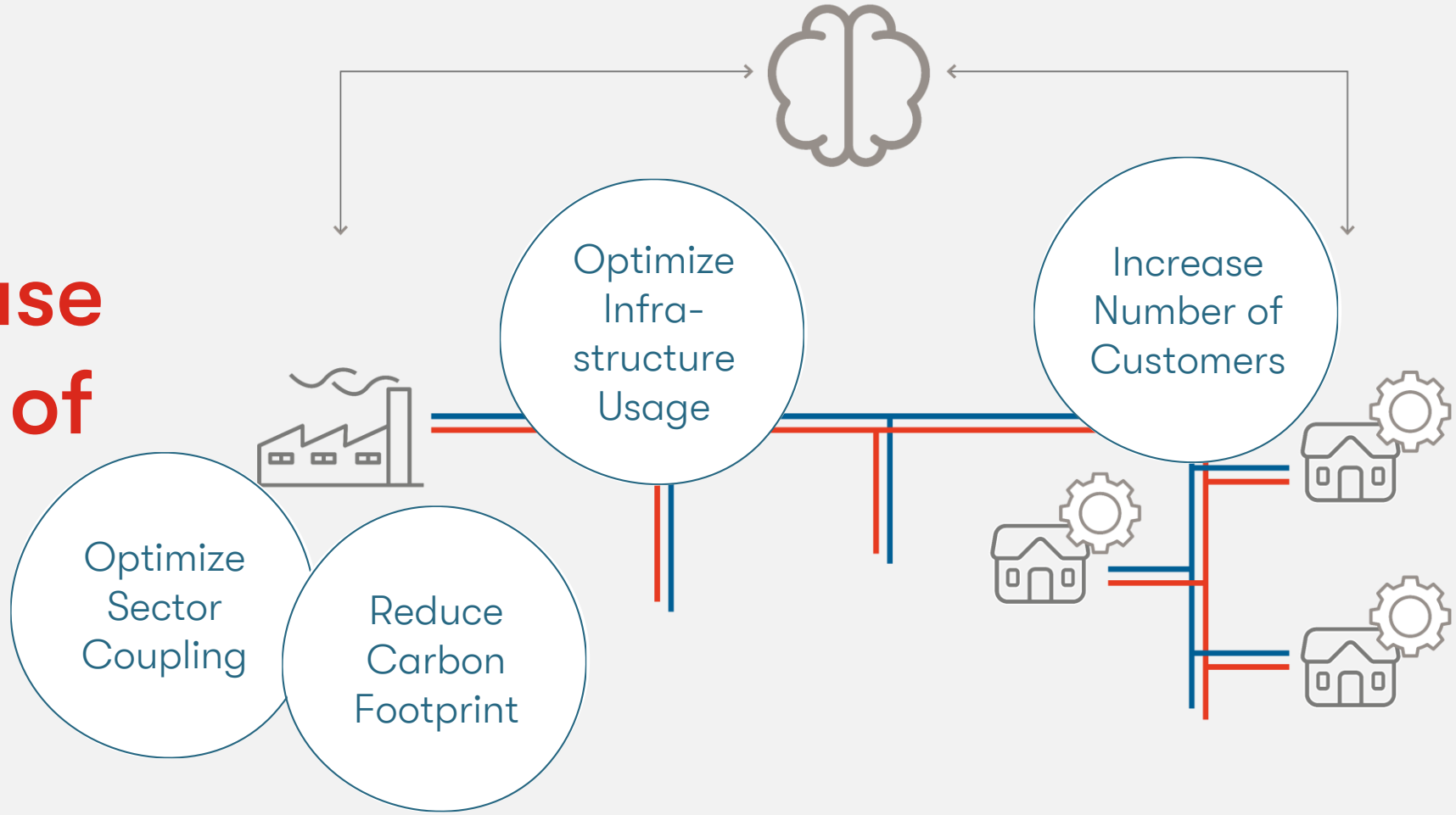
What Has Been Achieved? What Are We Working On?

So far:

10 Buildings;
230 kW load reduction;
1.5 MWh new decentralized storage capacity



How to best use the flexibility of buildings?



ewb as user:
They get a new tool; make sure it's designed such that they best use it!

The Bern Project and Beyond:

Message and Actionables

Buildings are heat buffers: **Let's access them!**

Buildings are heat buffers: **Let's access them!**

For this to gain traction:

1. Research Community (Visionaries):
   The Swiss perspective: Guidelines for operators of thermal grids on using it

2. Operators of Thermal Grids (Implementers):
   Ensure to access building-flexibility and integrate it in your planning and operation

3. Technology Providers (Enablers):
   Develop tools for using building-flexibility in planning and operation

Buildings are heat buffers: **Let's access them!**

Contribution from DeCarbCH:

1. Assessment for Operators of Thermal Grids:
   Potential and impact of using building-flexibility in thermal grids in Switzerland

2. Decision Making Framework for Operators:
   Depending on the boundary conditions: What to use building-flexibility for? Why?

3. Tools for Planning:
   Demand-estimation tools (e.g., TESSA+) that include buildings as heat buffers

tbfpartner

Bern · Geneva · Lugano · Zürich · Hamburg · Munich · Stuttgart · Milan