

Practical example of how a central virtual power plant (VPP) works

Imagine a virtual power plant (VPP) made up of:



500
homes with solar panels.



200
home batteries.

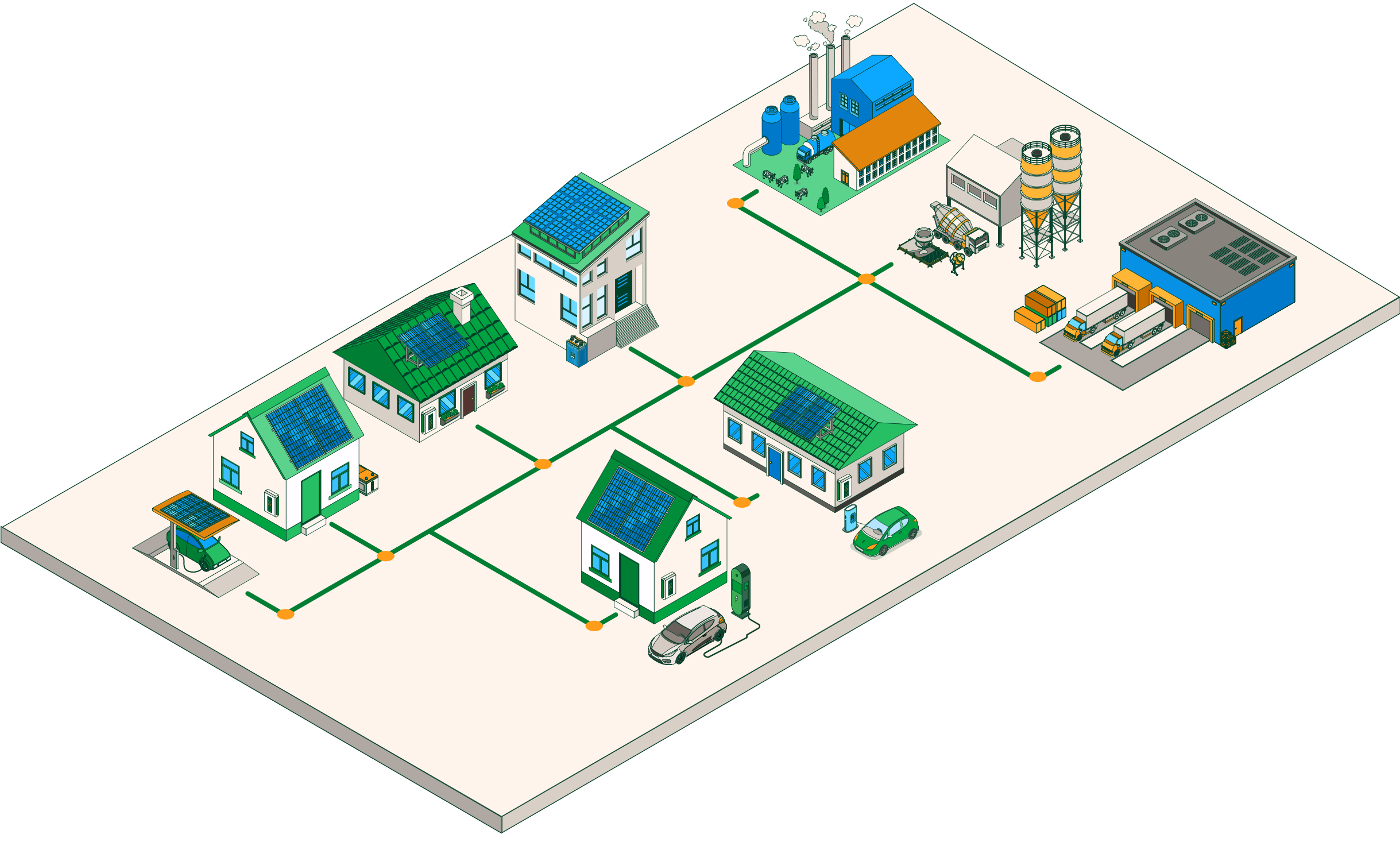


100
connected electric vehicles.



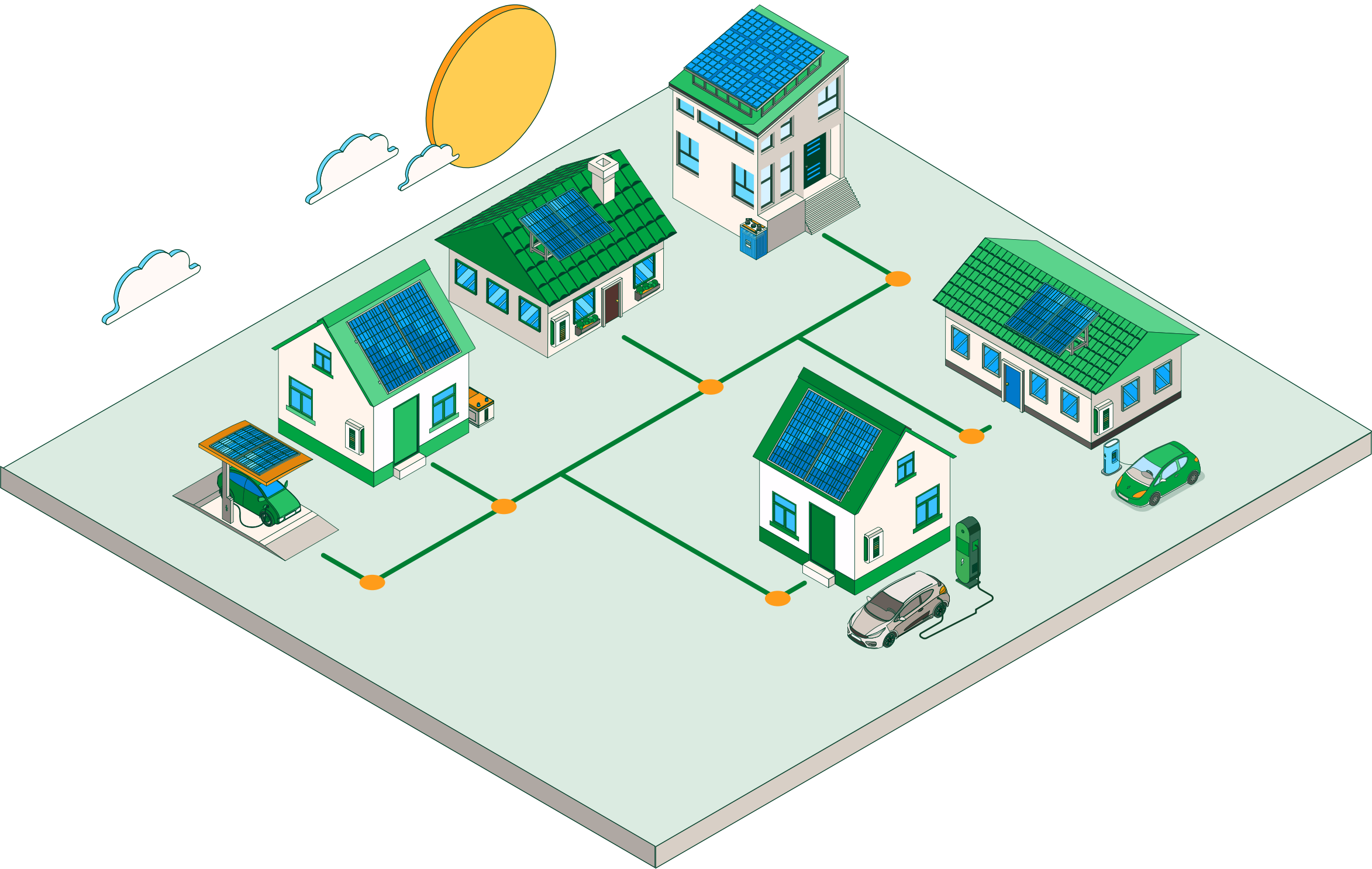
Several businesses that can delay some non-urgent consumption:

- A dairy company.
- A cement plant.
- A logistics centre.



At 2pm

At 2pm, there is plenty of sunshine and photovoltaic generation exceeds consumption.



With a VPP



The platform detects the excess generation.



It schedules charging for connected and available electric vehicles.



It instructs the batteries to charge.



If there is still surplus energy, it sells it on the electricity market.

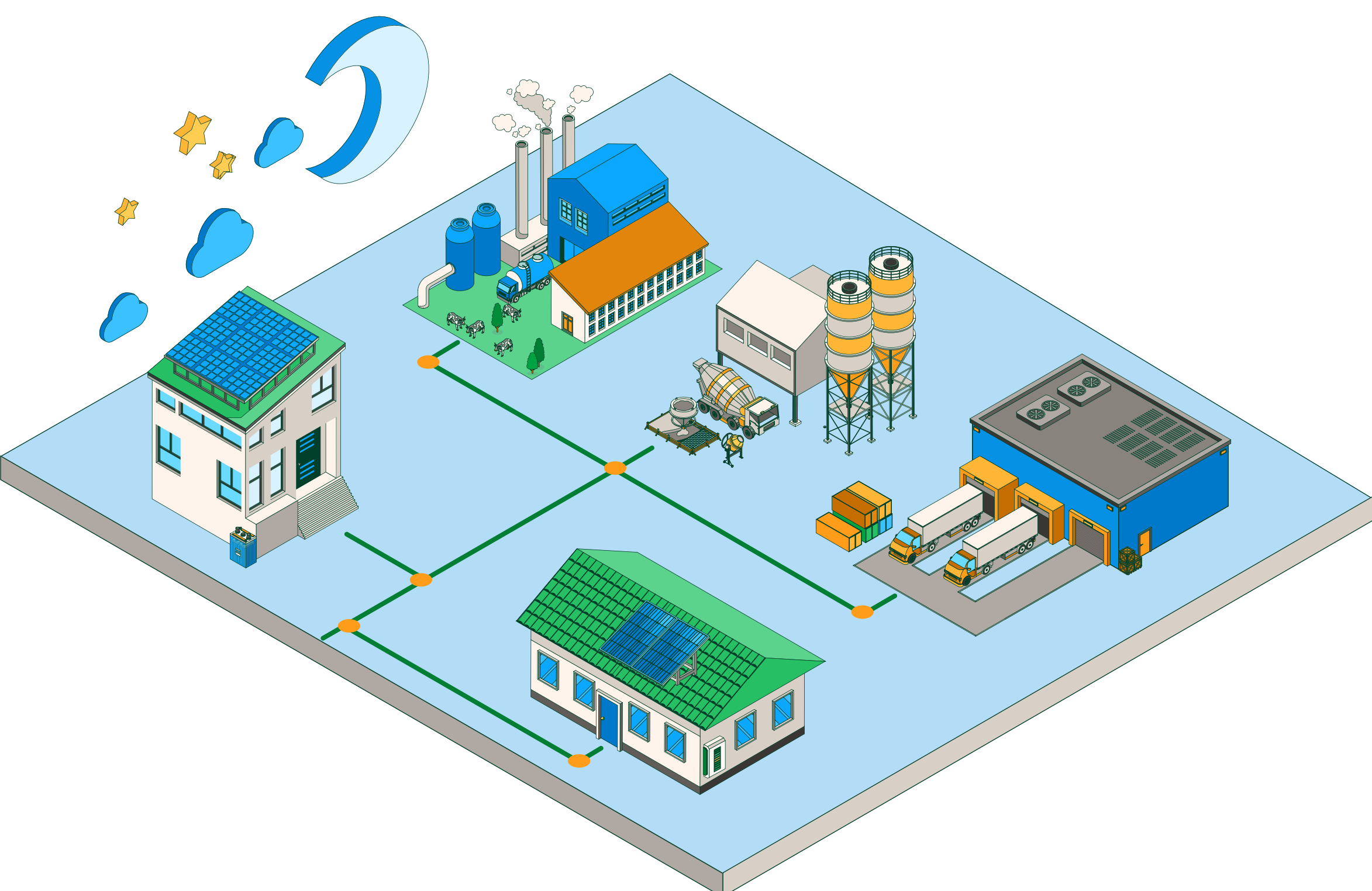
Without a VPP



Some of this energy could go to waste if generation exceeds available demand.

At 9pm

At 9pm, there is no longer any solar generation and demand has increased.



With a VPP



The platform instructs the batteries to discharge.



It uses the energy stored in connected electric vehicles that can feed energy back into the network (V2G).



It delays some industrial consumption.

- It adjusts the operation of its industrial refrigeration systems for a few minutes without compromising the cold chain.
- It reschedules certain processes with high electricity consumption, bringing their operation forward or delaying it by a few hours without affecting production.
- It delays charging the electric vehicles in its fleet and adjusts the heating and cooling of its facilities without affecting its core operations.

Without a VPP



The system needs to activate other flexibility resources, such as dispatchable generation or energy storage, to meet the increase in demand.