EVERY1

Energy digitalisation

Student workbook · 50-minute lesson

Name _____

Class _____

Date _____

Key terms — fill in the meaning

These six terms come up in the lesson. As each is explained, write a one-line definition in your own words. Use them in your answers later.

Smart meter

Dynamic tariff

Demand response

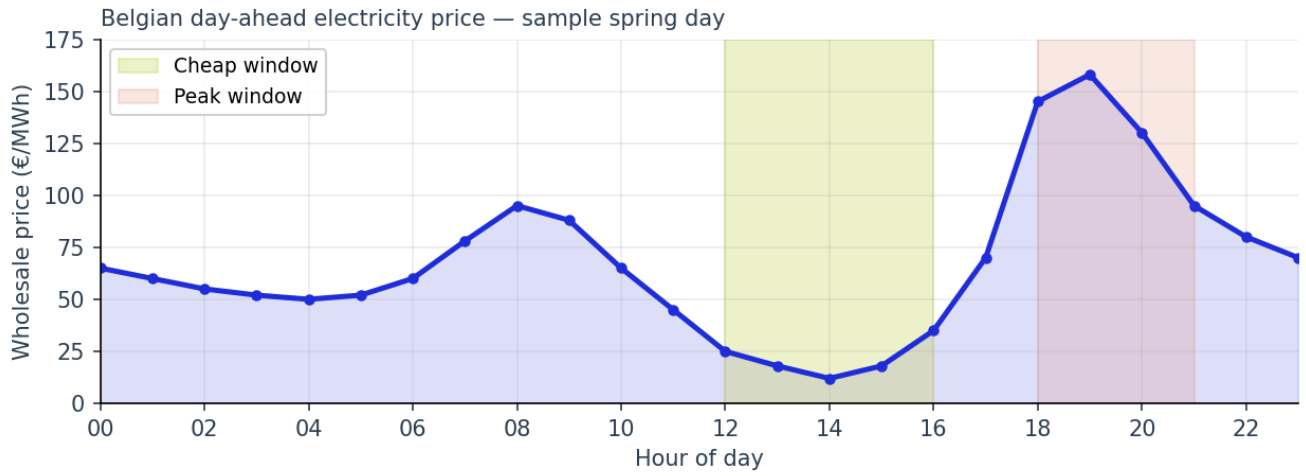
Aggregator

Energy community

Prosumer

Activity 1: read the price profile

Below is a real-style hourly wholesale electricity price for a sunny spring day in Belgium. Use it to answer the questions and to design your smart day on the next page.



1. At what hour is electricity cheapest? Price? _____

2. At what hour is electricity most expensive? Price? _____

3. What is the price spread (most expensive – cheapest) in €/MWh? _____

4. Convert to cents/kWh (divide by 10): _____

5. Why is electricity so cheap between 12:00 and 16:00? (Hint: weather.)

Activity 2: design a smart day

A household has these loads to run on this day. Decide when to start each one. Aim to maximise the cheap window and avoid the evening peak.

Load	Details	Start hour	Cost (€)
EV charge	20 kWh, can run any 4-hour block		
Heat pump boost	5 kWh, can run any 2-hour block		
Dishwasher	1.5 kWh, 90-minute cycle		
Washing machine	1 kWh, 60-minute cycle		
Tumble dryer	2 kWh, 60-minute cycle		

Compare to a flat tariff at €0.30/kWh

Total energy used: 20 + 5 + 1.5 + 1 + 2 = 29.5 kWh.

Flat-tariff cost: 29.5 × €0.30 = € _____

Your dynamic-tariff cost (sum the Cost column): € _____

Your saving: € _____ = _____ % of the flat bill

Discussion: is this fair?

Three quick questions. Write a short answer for each, then discuss with your partner.

A. Who wins, who loses?

Your design saved the household money. Who pays for that saving — and is anybody worse off because of it?

B. The privacy question

A smart meter records your consumption every 15 minutes. With enough data, the supplier knows when you're home, when you sleep, even what appliances you use. Should this data be allowed to be sold? Why or why not?

C. People without a smart home

Not every household has a smart meter, EV or heat pump. Are those households at risk of paying MORE under dynamic tariffs? How could policy avoid that?

Where this could take you

Energy digitalisation is creating about 250,000 new EU jobs by 2030. Circle the ones that interest you, then write down a related subject you'd like to study more.

- **Smart-grid engineer** — Designs how the network is controlled. Physics + electronics.
- **Battery storage analyst** — Models when a battery should charge or discharge. Maths + chemistry.
- **Aggregator-platform developer** — Builds the software that bundles thousands of homes. Coding.
- **Energy data scientist** — Finds patterns in 15-minute consumption data. Statistics + Python.
- **Community-energy coordinator** — Sets up and runs local energy cooperatives. People + policy.
- **Climate / energy policy advisor** — Writes the rules that make new tech possible. Economics + law.

A subject I want to know more about:

Three things I learned today

1.

2.

3.