



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

Electricity market dynamics

How to get addicted to lower energy prices

Ondřej Caletka | 16 November 2023 | NCC Sevens

Previously: Variable price per kWh



Year	Energy + distribution	Electricity tax	Support of renewable sources (ODE)	Total
2021	€ 0,21	€ 0,11	€ 0,04	€ 0,36
2022	€ 0,21	€ 0,04	€ 0,04	€ 0,30
2023	€ 0,65	€ 0,18	€ 0	€ 0,84

Let's get more dynamic



- My offer from Vattenfall for 2023:
 - January - June: **40 ct/kWh** (price cap)
 - July: 38 ct/kWh
- Zonneplan (among others) offers **dynamic pricing**
 - **different price every hour**
 - price is determined by **day-ahead market price** + tax (15.2 ct) + fixed margin (2 ct)

My smart meter is now even smarter

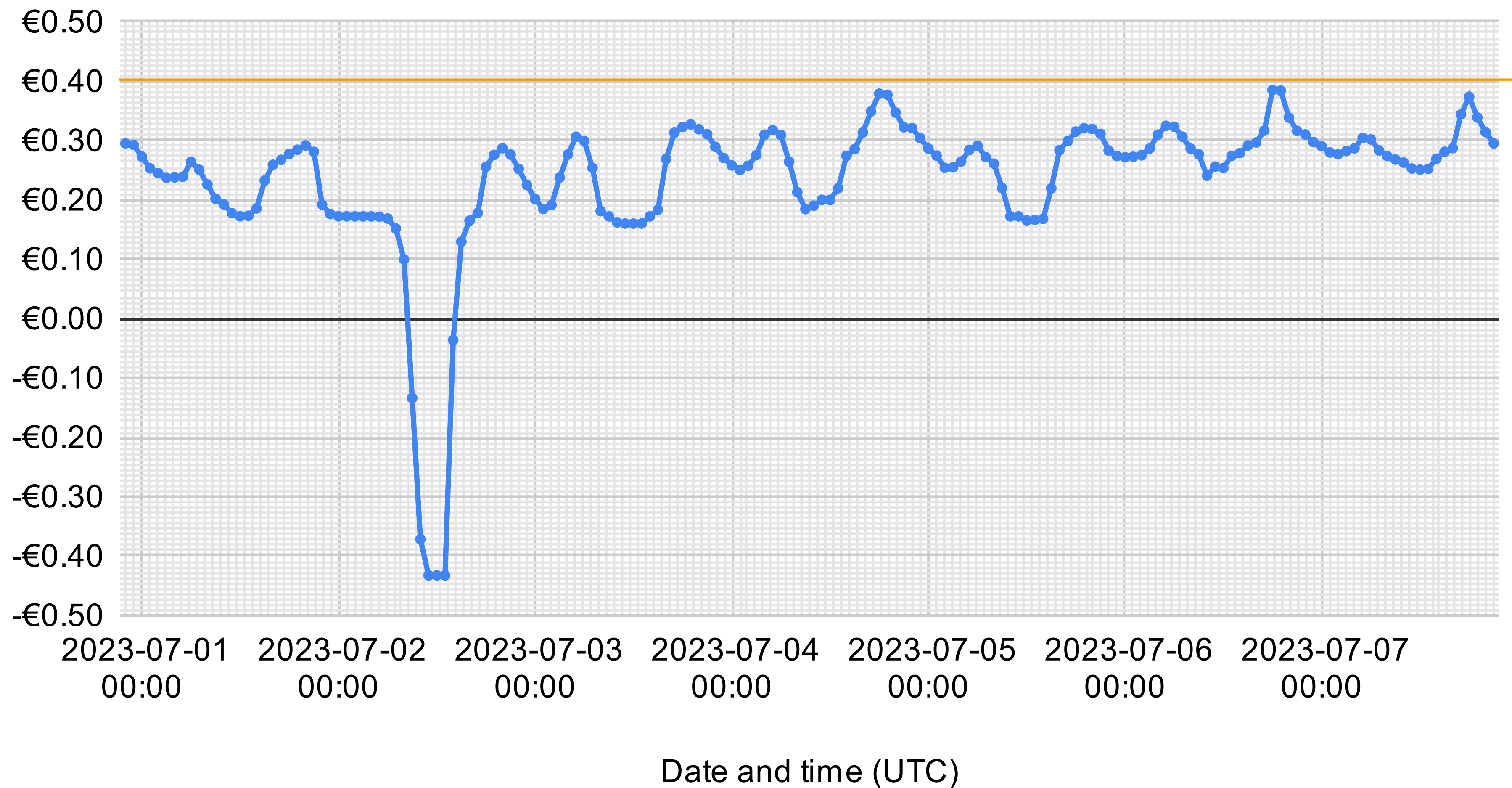


- Connects to **P1-port**
- Contains **LTE-M** modem
- No user interface, just one LED
- **Not used for invoicing**
 - Integrated P4-port is used for that
 - But this is real time

A slightly a-typical week



End user price per kWh



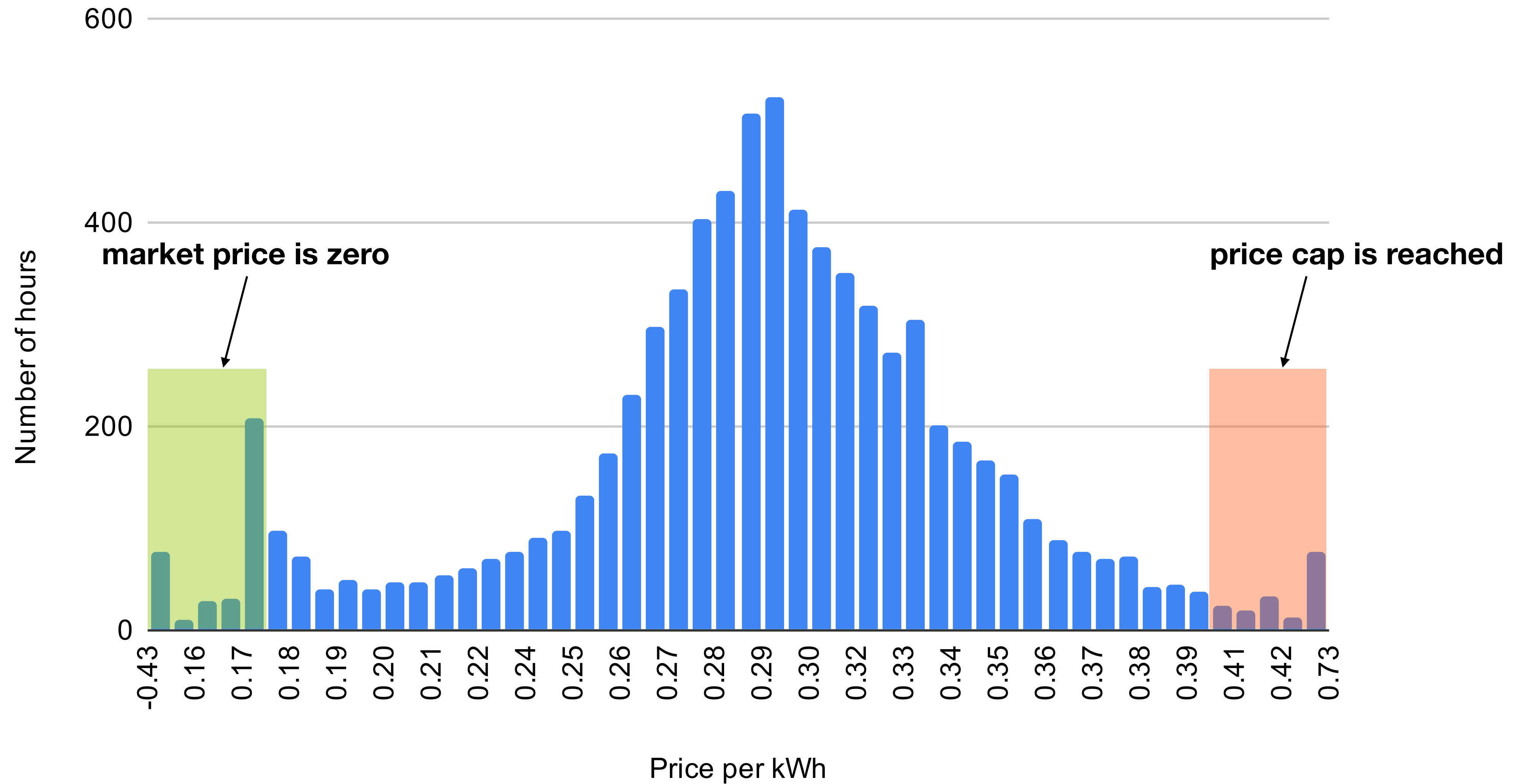
Was the change worth it?



Month	Average price per kWh
January - June	€ 0,40
July	€ 0,22
August	€ 0,28
September	€ 0,28
October	€ 0,28

YES!

End user price histogram



The most expensive hour







11 September 2023

19:00 - 20:00

€ 463,77 per MWh

73 ct per kWh

September 11, 2023

	Atmospheric conditions and temperature °C	RealFeel °C	Atmospheric pressure mmHg	Wind speed m/s	Humidity
Night	 +23°	+23°	761	▲ S 3.2	78%
Morning	 +20°	+20°	760	↙ SW 2.8	91%
Day	 +25°	+25°	760	▶ W 5.0	73%
Evening	 +22°	+22°	760	▶ W 2.4	78%

The madness of negative price



- Only **15 out of 7680** hours this year (0.2 %)
- Sign of an **unhealthy market**
- Wholesale cap seems to be at **€ -500 per MWh**
- Yet **people get creative**





No Time For Questions



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Market price downloader
Market price spreadsheet