Voltalis

Energy flexibility in Europe

Demand Response

from homes and buildings

now in GWs and TWhs

Ninth Roundtable, Prague, 23rd Jan.'25

DR is already a reality, for all consumers

1.5m+ DER connected	**250k** Sites	**800 MWp** VPP	**1.2 GWp** Under construction	**8** European countries
Daily activation	**>200b** Data entries collected since inception	**10b** Individual shedding orders since 2010	**13** Patents	**€200m** Project finance in past year

2 GW

All types of Distributed Energy Resources

Appliance

HVAC

Boilers

Heat pumps

EV

Batteries

Generation

Solar

On-site Gen

V2G

2

Electricity systems now need DR at scale

A rapid shift is required to enable the energy transition

- Ensure better integration of renewables
- Accompany electrification of usages, e.g., EVs, HPs
- **From 10s MW here & there, to 1-200 GW across Europe**
- Extend from large industrial consumers to (sm)all consumers
- Involve all flexible appliances in buildings

DR activation needed daily

Provide automation & operation triggered by market signals

- Frequent use: from rare (emergencies) to daily activation
- From availability of 10s MW to **delivery of 100s GWh/per day**
- Via wholesale market
  - Appropriate for such volumes (also SOs services, plenty of resources, hence prices will drop)
  - Wholesale market price is a relevant signal
- By 2030, SmartEn assessed 130 GW downward flexible power and ~340 TWh downward DSF in Europe alone[1]

Source: 1 - SmartEn 2030 Demand-Side Flexibility Quantification of benefits in the EU (2022)

DR benefits are massive

Consumers, power systems, the planet, DR is a win win win (2030)

- First step 30 GW → energy sourcing costs to be reduced by about €290 million in Europe, benefitting suppliers[2]
  - DR activation to decrease the price by circa €40/MWh in France[2] for the highest peak price (quoted by Kadri Simson)
- Energy affordability: DR full potential
  - ~€300 billion in annual market-wide benefits for European consumers
  - ~€71 billion per year of direct savings on electric consumption[1]

Sources: 1 - SmartEn 2030 Demand-Side Flexibility Quantification of benefits in the EU (2022)
2 - Compass Lexecon for DR4EU

DR benefits are massive

Consumers, power systems, the planet, DR is a win win win

- Security: Improved power supply networks - ~ €11-29 billion saved annually on power grid investment at EU level
- Sustainability: Contribute to grid decarbonization - 61% renewables curtailment emission – 37.5 million tons of GHG saved annually

Source SmartEn 2030 Demand-Side Flexibility Quantification of benefits in the EU (2022)

Let’s put customers at the centre

Energy transition means using less energy, and **time is of essence**

- Engaging large numbers of consumers to reach GWs and TWhs
- Enroll and retain with an attractive value proposition:

  no burden, no capex, no exposure to price risk

  - **Affordable DSR automation and operation to (sm)all consumer**

THE enabler

DSR and Energy Efficiency go hand in hand

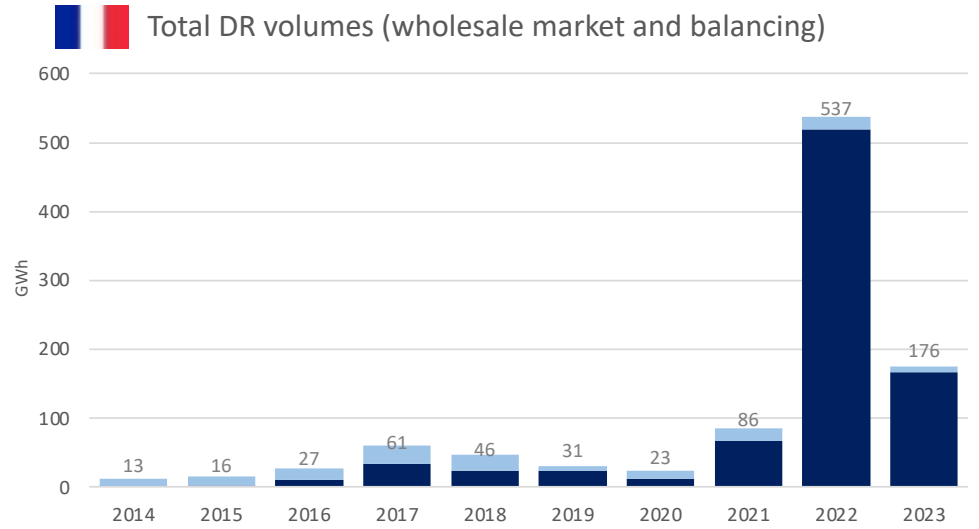
Access for DR to wholesale market: a best practice to enable scale-up

- DR in all electricity markets as an alternative to generation, no discrimination (CEP, 2019)
- Deliver benefits by reducing prices in all markets
- Market-based revenues for DR to trigger large-scale investment => ensure automation & daily operation of aggregator DSR
    - **Energy efficiency supported by DSR automation**

Market design matters

Access to wholesale market a best practice to enable scale-up

- DR in wholesale market ensures benefit for all stakeholders, i.e. suppliers, consumers, BRPs
- France: relying on state aids, benefits?
- The UK is leading the show for a market-based approach



ofgem
Making a positive difference for energy consumers

Live on 7th Nov.'24

In conclusion

- Renewables and electrification → Demand-side response on a large scale is next step to net zero
- All consumers need to be involved
- To make decision simple for them, aggregators to provide for automation and daily operation in the market
- **ENERGY EFFICIENCY & DSR to go hand in hand**

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Thank you

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