CEER

Council of European Energy Regulators

Fostering energy markets, empowering **consumers**.

European Energy Regulation

Flexibility and Demand Side Response

Any views expressed in this presentation are my own, and do not necessarily represent the views of the Council of European Energy Regulators, individual European energy regulatory authorities or the European Commission.

Technology is changing

- Introduction of smart meters and smart grids
  - Early stages but underway in many countries
  - Prerequisite to demand side involvement of small and medium sized consumers
- Information generated by new technology will enable valuation of demand response
  - Time of day metering will enable value of consumption to be revealed at each point in time. Consumption avoided at peak may have a very different value to that avoided at other times
  - Audit of demand-side involvement (consumption avoided)
- New technology will allow consumers to control consumption patterns
  - And will enable new service providers to enter the market

2.1 Energy sector trends (I)

- Consumer concerns:
  - Rising energy price remains a major concern: in household budgets and for companies' competitiveness
  - The increasing share of intermittent renewable generation requires grid investments i.e. fixed costs become higher

  - Households and industry can save energy and money by improving their energy efficiency and be involved in demand response

Simple and clear information is needed to encourage consumer to take up innovative products and services

2.2 Energy sector trends (II)

- Enabling demand response:
  - Larger consumers have already provided load management services to system operators for many years
  - Demand response-enabling technologies will increasingly allow all types of consumers (including small and medium sized) to participate (e.g. time-of-use pricing, demand-response contracts, load limiters, demand reduction contracts, …)
  - Complexity will increase for smaller consumers

Consumer engagement will be increasingly important to ensure that new relationships are understood and that demand response matches consumer needs (habits, load flexibility, size, etc.)

3. CEER's work on Demand Side Flexibility (1)

Why Demand-Side Flexibility?

- The Energy Efficiency Directive (2012) places requirements on regulators **to promote the demand side**
- There are huge potential benefits if we can harness DSF and make it work in the **best interests of European consumers**
- The 2014 CEER Advice Paper on DSF explores at a high level the emergence of Demand-Side Flexibility.
  - Process included an internal survey of regulators, a public consultation and workshop
- The Bridge to 2025 Conclusions document sets out the **role we expect DSOs to play** in the developed internal energy market of 2025. CEER is committed to providing guidance on how NRAs can help DSOs achieve this

3.1 Energy markets are evolving

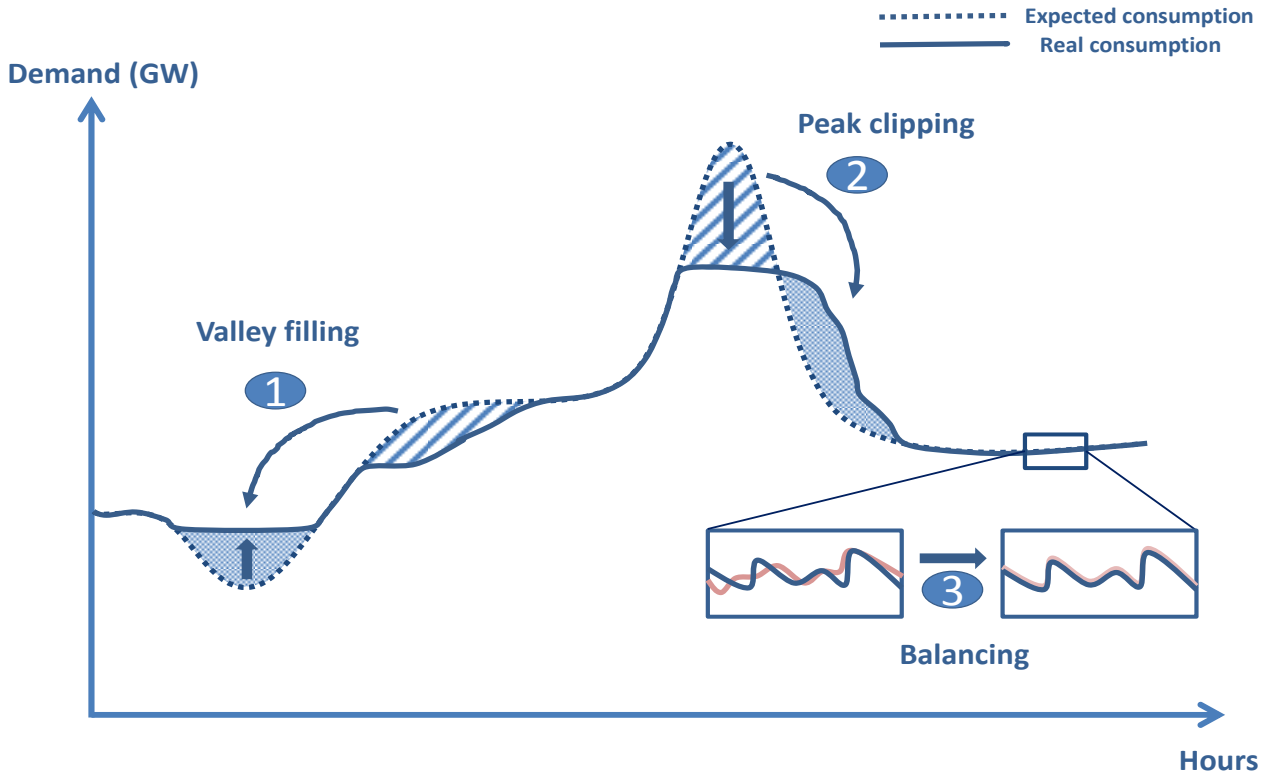
Massive changes in energy system due to environmental policy and technological advance

- Increased amount of intermittent Renewable Energy Sources (RES)
- Distributed generation; new market players
- Technology: smart meters, smart grids; increased electrification of heat and power
- Security of supply concerns
- Consumers: increasingly aware and concerned (prices, trust, privacy, the environment)

Demand-Side Flexibility is part of the response

3.2 What is DSF? (1)

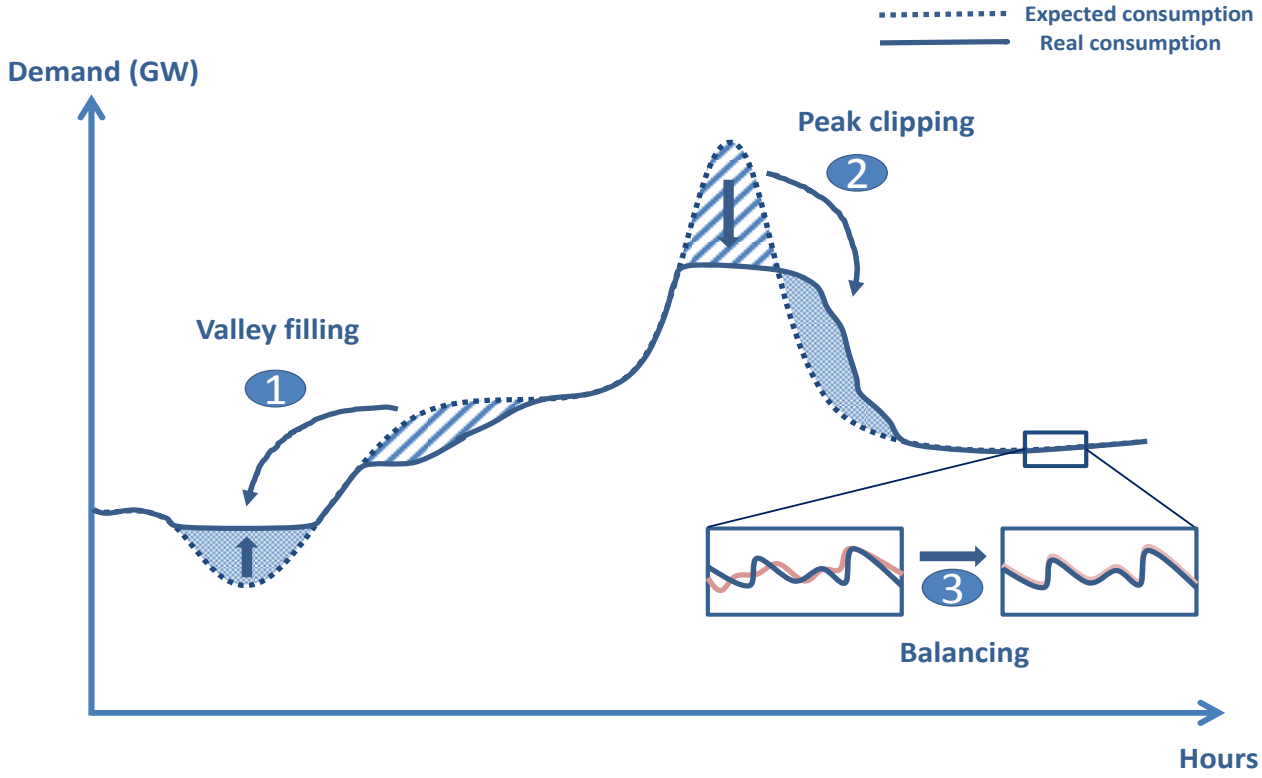
- The ability of consumers to change their electricity usage in **response to some form of signal** (such as time-variable electricity prices, or the price on organised electricity markets where consumers can, alone or through a third party such as an aggregator sell demand **reduction/increases**)



3.3 What is DSF? (2)

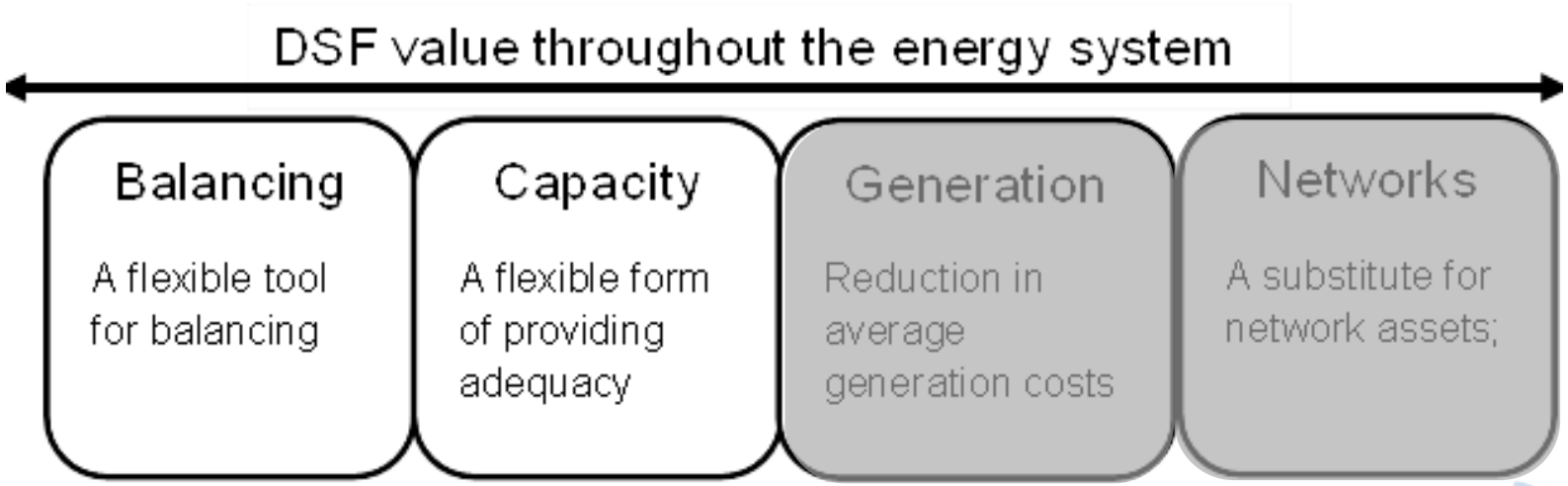
- The graph shows a standard load profile shape. DSF is about flattening the shape of this curve by shaving the peaks, and filling the valleys

- These can happen independently of each other, as in some cases it might be the same demand that is providing those changes



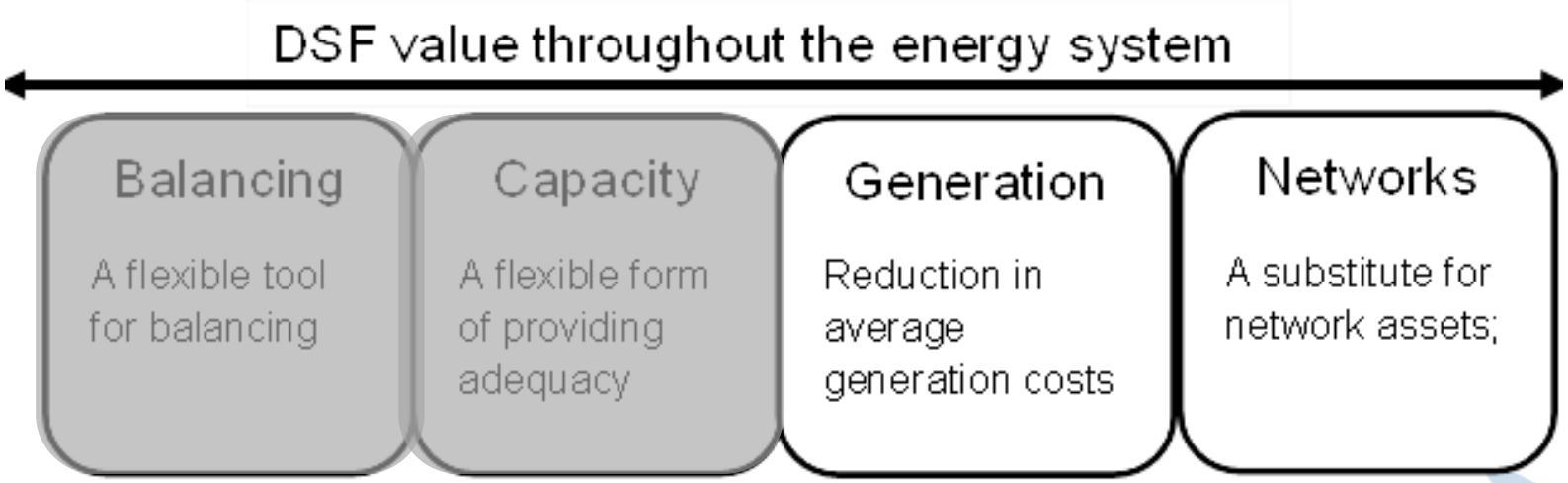
3.4 Where is the value?

- The value is spread across the whole energy system
- **Balancing:** TSOs can use DSF to help them manage constraints and balance the system. Large producers can also use it to balance their portfolios – to avoid payments for being long/short
- **Capacity:** DSF can provide 'spare capacity' reducing the need for peaking plants and increasing generation adequacy. Allowing for an increase in demand at times also avoids having to curtail wind generation, again improving adequacy



3.5 Where is the value?

- The value is spread across the whole energy system
- **Generation:** A flatter demand profile should allow existing plants to run more predictably, thereby increasing their operating efficiency and reduce the average cost of generation. Also, by avoiding peaks, we can see a reduction in energy costs to residential consumers, and to large industry when they provide their flexibility to the market.
- **Networks**: finally, by alleviating system constraints, DSF can postpone or reduce the need to invest in new network infrastructure.



3.6 Challenges

- Clearly established roles and responsibilities among market players
- DSF needs access to all markets (balancing, wholesale, retail, capacity)
- The changing role of the DSO
- Competition between the market players (new and incumbents)
- Existing price regulation hinders DSF
- Technological compatibility, measurement & verification, smart meters
- Consumer awareness, engagement & understanding
- Information management and data protection

3.7 A forward looking approach for DSOs

In order to combat these challenges DSO must address key issues:

- DSOs must be **neutral market facilitators** to enable the development of new market based services to consumers by third parties and to ensure secure system operation
- DSOs will need to manage their networks actively; also through **smart grid solutions** and **innovative investments**
- **Coordination between DSOs and TSOs** for network operational matters. DSOs should increase resilience to new threats, including cyber-security
- Where data management is entrusted to them, DSOs should ensure that consumer's **data privacy** is maintained
- DSOs will need to adapt their networks to **meet new demands** (e.g. EV recharging stations and compressed natural gas filling stations).

Overview of CEER medium-term proposals:

4.1 Existing regulatory requirements (1)

- Continue to monitor the activities of vertically-integrated DSOs and assess the adequacy of the current rules on business separation against the evolving role of DSOs

4.2 New services to consumers (2)

- Define **core DSO functions** to facilitate the development of potentially competitive services;

- Develop a **“toolbox approach”** for the regulation of DSOs, that is flexible, adaptable to nationally conditions and includes a set of consistent options to ensure an adequate level of business separation

4.3 Investments in innovation and efficient network management (3)

- Identify and share good practices regarding distribution **network tariff structures** with the aim of:
  - Enhancing efficient network development and operation
  - Not impeding efficient price signals at the wholesale and retail levels
  - Responding to the needs of simplicity and adequate levels of protection for end-consumers

- Develop guidelines for good practice for **incentive schemes** to encourage efficient innovation by DSOs in such areas as smart grids (e.g. pilot projects for encouraging research and development)

- Continuing to monitor Quality of Service

4.4 TSO-DSO Coordination (4)

- Develop recommendations for clarifying the distinct roles and responsibilities of TSOs and DSOs in order to strengthen cooperation and technical data exchange between them
- Encourage coordination amongst DSOs for both the gas and electricity sectors

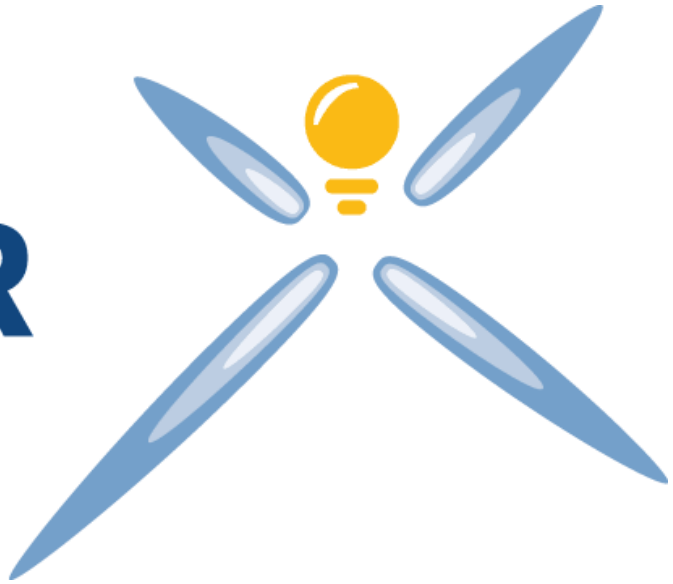
Working with ACER

- CEER and ACER (Agency for the Co-operation of Energy Regulators) collaborating on wholesale market aspects:
  - Enabling the pricing of flexibility products
  - Audit of demand side response
  - Wholesale and retail market rules to accommodate demand side response
- Roadmap will set out future work

Thank you for your attention!

CEER

Council of European Energy Regulators



www.ceer.eu