Regulatory Recommendations for the Deployment of Flexibility

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EC Smart Grids Task Force
Expert Group 3 – Regulatory recommendations for smart grid deployment

E-Control (Energie-Control Austria)
CEER (Council of European Energy Regulators)
CEER/EC-activities to Smart Grids regulation

**CEER Status Review on European Regulatory Approaches Enabling Smart Grids Solutions ("Smart Regulation")**

- The definition of smart grids
- The regulatory and commercial challenges
- Plans for implementation of smart grids
- Encouraging innovative solutions in el. networks
- Cost benefit analysis
- Potential performance indicators

- Regulatory and Commercial Challenges
  - Regulations vary at national level
  - Integration of RES/EV, customer engagement in DSR, data protection

- Roles and Responsibilities
  - DSO major role - TSOs to a lesser extent
  - Customers are involved in DSR in a few countries

- Incentive Mechanisms
  - Mechanisms are in place to incentivise DSOs to undertake innovation projects
  - Projects funded by network charges & “other” sources
Potential key issues

Opportunities that Smart grids could deliver
interactions and synergies of gas, electricity, heat and cooling
➡️ to increase flexibility

Incentives
• Mechanisms
• Structure

Regulatory and Commercial Arrangements:
• role of the DSOs/TSOs
• trading/provision of smart grid services … use market mechanism whenever possible!

Demand Side Response & flexibility
• maximise incentives
• minimise entry barriers

Potential Barriers, including:
• data access (previous work)
• use of storage
Work programme of EC-Smart Grid Task Force (EG3) in 2014

- **WP I**: Flexibility
- **WP II**: Regulatory and commercial arrangements
- **WP III**: Incentives, mechanism & structure

Structured into three sequential phases:
- Q1 2014: WP I
- Q2 2014: WP II
- Q3 2014: WP III
- Q4 2014: WP I
Executive Summary

Flexibility

Regulatory and Commercial Arrangements

Incentives

Recommendations

Annex
Flexibility

- Definition of Flexibility (gas and electricity!)

Rational. Why do we need flexibility?

**Consumer Empowerment**

**Definition:**
- On an individual level, flexibility is the modification of generation injection and/or consumption patterns in reaction to an external signal (price signal or activation) in order to provide a service within the energy system. The parameters used to characterize flexibility in electricity include: the amount of power modulation, the duration, the rate of change, the response time, the location etc. In gas potential parameters can be the market area, pressure level, gas quality.

**Flexibility services**

- **EU Climate Objectives**
- **Introduction of DER**
- **Further growth of electrification**

**Reasoning logic**

- **Flexibility** requires
  - **Customer engagement** requires
    - **Empowerment** requires
      - **Enablers**

- **Reduction of peaks and imbalances** requires
- **Delay or avoidance of investment in generation and networks** requires
- **Obtain optimal system costs**
Users:

- national differences

Provider:

- domestic consumers
- commercial consumers
- industrial consumers
- distributed generators
- generators (> 5 MW)

Flexibility services:

- frequency control
  - primary
  - secondary
  - tertiary
- frequency response
- short term operating reserve
- fast response
- peak shifting (avoid grid reinforcement)
- overall load reduction
- constraints management (load reduction)
- portfolio optimization
- peak shifting
- valley filling
- fault management
- voltage control
- losses reduction
- black start reserve
Flexibility

Key Enablers:
- Smart Appliances and Smart Meters
- Market rules and processes
- ICT technology and standards
- Regulation & Codes
- Grid and retail products & tariffs

Value of flexibility
- Benefits for providers of flexibility services
- Benefits for users of flexibility services

Maximising the value of Flexibility Services
Regulatory and Commercial Arrangements

How to realise consumer flexibility?

- Acceptance of demand side resources in the markets
- Consumer participation requirements and offerings
- Contractual arrangements
- Measurement and verification requirements
- Telecommunications aspects
- Financial adjustment mechanism
- Recognition of aggregation service providers
Regulatory and Commercial Arrangements

Roles and responsibilities

new/old role?
Incentives

- Kick-start a new market - or
- Introduce changes to the existing markets - or
- Ensure efficient investment decisions - or
- Contribute to consumer behaviour change programmes

- Network companies in the energy industry
  (Competitive activity that is regulated)
- Non-regulated companies/competitive activities in the energy industry
- Customers
- Telecom, ICT, Manufacturers

- At EU level
- At national level
  - Member States
  - NRA's
Incentives

- **Smart grids** and **smart metering** as enablers of flexibility
- **Network investments** in general
- Establishment of **new flexibility services** from demand side and generation
- Development and **Roll-Out of Home Appliances**
- Machine to machine (M2M) communication in the energy system
- Interoperability (compatibility)
Recommendations

R #1: Assess the Flexibility Potential and maximise the value of flexibility

R #2: Equal access to Electricity Markets

R #3: Contractual arrangements

R #4: Financial adjustment mechanisms

R #5: Definition of Balance Responsibility in a connection
Recommendations

**R #6:** Standardised measurement methodology for flexibility

**R #7:** Timely access to data while ensuring consumer privacy

**R #8:** Clear framework for domestic customers

**R #9:** Communication & coordination for secure grid operation
Recommendations

**R #10:** Open and interoperable standards for interfaces

**R #11:** Secure communication infrastructure and services & utility-telco synergies

**R #12:** Incentivise grid operators to enable and use flexibility

**R #13:** Improve price signals to incentivise consumers’ response

**R #14:** Smart appliances for end users
Next Steps

- refine the recommendations
- maximise the impact for the upcoming market design initiative in the Energy Union framework

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