Discussion

Workshop Demand Response
Tuesday, October 15th, 2013

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

IASS POTSDAM

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Possibilities of demand response

Characteristics of demand response

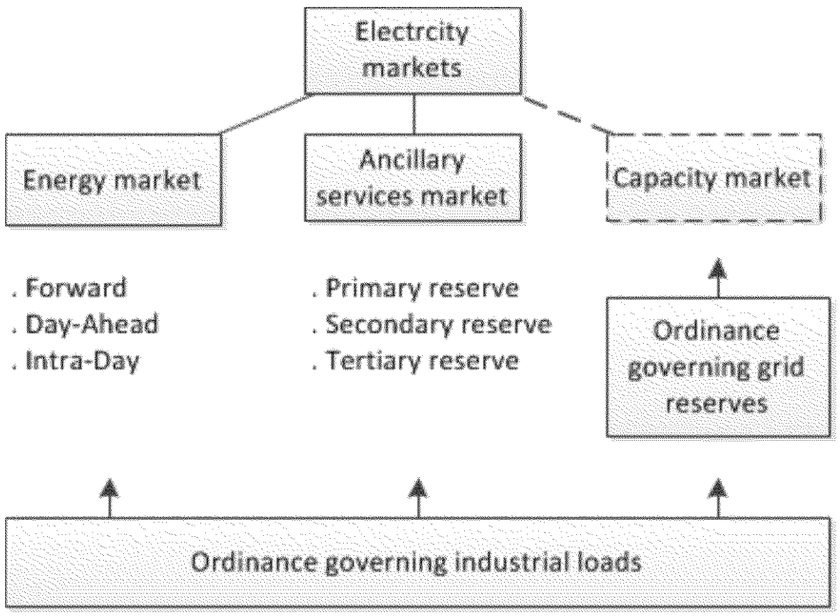
- Duration of load reduction
  - Usually 0.5 - 2 hours
  - With 20% of respondents over 2 h
- Full activation time (advance notice)
  - Group 1: < 1 hour
  - Group 2: > 8 h up to 1 day
- Total number of activations (year)
  - Usually up to 50 activations

Questions for discussion

- Can future demand response offer load reductions for more than 20 - 50 hours a year?
- Is demand response limited to short and rare load reduction and to participation in ancillary service markets and as emergency resource in capacity markets?

Electricity markets
The role of demand response

Germany's current market structure



Questions for discussion

- What is the **value** of demand response in each market segment?
- What resources should demand response **compete** with?
- Is generic product possible or is market **segmentation** necessary?
- Are additional **enabling policies** necessary and would they be justified?

Ancillary services

Characteristics of Germany's tertiary reserve

	Tertiary Reserve
Positive / negative Power	Positive or negative
Availability	100%
Aggregation	No limits within a „balancing region"
Payment	Up to 5.000 USD/year

Questions for discussion

- What resources should demand response **compete** with?
- Is generic product sufficient or is **market segmentation** necessary?
- Are additional **enabling policies** necessary and would they be justified?
  - premium price or floor price
  - quote for demand response or capacities that do not have to be in operating mode

Role of demand response providers (DRP)

Current status

- PJM & ISO-NE: DRP are the most relevant aggregators
- Germany: DRP needs authorization of the responsible utility and others
- California: DRP need contracts with the utility

Questions for discussion

- Which **parties** should be able to aggregate loads and bid them into the markets (capacity, ancillary services,…)?
- Should the contractual relationship between demand response providers and utilities be **standardized** by law?
- What monetary **compensation** should the utility receive from the DRP?
  - energy that has been scheduled and bought, but not been used because a DR event
  - additional expenditure for scheduling load shifts (backlog demand)

Capacity markets
Market segments for demand response

Design parameters

- Market segment definition
  - trigger
  - activation time
  - availability
  - product runtime
  - ...
- Accepted limitations
  - availability limits
  - event duration limits
  - dispatch frequency limits
  - ...

Questions for discussion

- What additional **market segments** would be helpful in addition to ancillary services?
- Should the **characteristics** of a demand response program be **adapted** to the different limitations of demand response resources?

Capacity markets
Competition

Competition is possible within the following market segments

- Product for generic capacity
  Comprehensive capacity market
- Product for existing peak resources (full load hours < 2000)
  Focused capacity market
- Product for stand by resources
  Strategic reserve
- Product for demand response only
  Ordinance governing interruptible loads

Questions for discussion

- Which resources should demand response **compete** with?
- Which of Germany's capacity markets **proposal** would be beneficial for demand response?

Capacity markets
Dual participation

Non-electric storages

- Non-electric storages → Flexible energy consumption
- Operation modes
  - base load: 24 hours/day
    → load reduction is possible all day
  - off peak load: 8 hours/day e.g. during off peak hours
    → load reduction is only possible during off peak hours

Questions for discussion

- Should **dual market participation** be allowed for non-electric storages?
  - E.g. Optimization on the **day-ahead market** while participating on the capacity market
  - E.g. Offering **ancillary services** while participating on the capacity market