Discussion

Workshop Demand Response Tuesday, October 15th, 2013



Federal Ministry for the Environment, Nature Conservation and Nuclear Safety





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</p>
 - 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?





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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?



Characteristics of Germany's tertiary reserve

Tertiary Reserve
Positive <u>or</u> negative
100%
No limits within a "balancing
region"
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



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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)



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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
 - ...





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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 ٠ (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

