Flexibility resources as part of the solution for regional grid owners

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BKK Nett

- Second largest DSO in Norway
  - 210,000 customers
- Part of the BKK group
Content

- Flexibility resources as a solution
- The situation in the grid today
- Trends and developments
- The value of flexibility?
- How can DSM contribute
- Ongoing initiatives
- The way forward - what is needed?
Flexibility resources as a solution

Requirement:
- The use of flexibility resources must reduce grid costs and increase efficiency compared to the alternatives

Expected challenge to solve:
- Capacity issues

Consequences/benefit:
- Reduced or avoided CENS
- Reduced, postponed or avoided investments in increased infrastructure
Capacity issues

- Expected capacity issues
- Maintenance
- Unexpected capacity issues
- Unexpected fault situations
Today’s alternatives for the grid owner

- Increase grid capacity by investing in new infrastructure
- “Paying” the CENS
- Make use of interruptible load contracts (ILC)
The situation in BKKs grid today

- In general sufficient capacity during normal operating conditions and usually good redundancy (N-1) in case of faults.

![New demand record 01.03.2018: 1974,8 MW](red_graph)

**However:**
- The situation in the low voltage grid?
- New trends and developments?
Trends and possible drivers for flexibility demand

- Increase in **power demand**
- New products/equipment in the households
- Expected increase in **distributed power production**
- Increased **monitoring** of the distribution grid (i.e. **AMS**)
- Increasing need for **security of supply**
- Possible increase in **CENS**
- **Aging grid**
- A need to avoid or **reduce investments**
The value of flexibility in Norway

- Transmission grid (TSO): Existing marked (regulating power)
- Distribution grid (DSO): Experiences from a few pilots in Norway

- Lack of experience (especially at lower voltages)
- Many questions:
  - What is the value of flexibility?
  - What is the potential volume?
  - Can we trust the flexibility to be available when we need it?
  - Can a change in grid tariffs take away the marked for flexibility?
  - Is the grid owner interested in buying flexibility?

We need more knowledge, testing and experience!
How can demand side management (DSM) provide flexibility to the grid?

1. Load management systems at the customers
   - Responding to market signals

2. Aggregator

3. The customers/end users must be interested in selling flexibility
   - It must be economically beneficial – how much?
   - The costumer should not experience a reduction in comfort
Ongoing initiatives at BKK

- **Energy market 2.0** – A pilot project together with Tibber* and NHH
  - Tibber: energy retailer, aggregator
  - Targeting household customers (Tibber customers)

- **FRONTIER** - Possible European research project
  - BKK-pilot including larger end users (Municipality of Bergen)
The way forward – what do we need?

- More research and pilot testing
- A new market
- Load management systems at customers
- New players in the market (e.g. aggregators)
- Funding / support programs
  - Energi-X, PILOT-E, “Large scale demonstration of the future energy system”, investment support to end customers
Thank you for your attention!