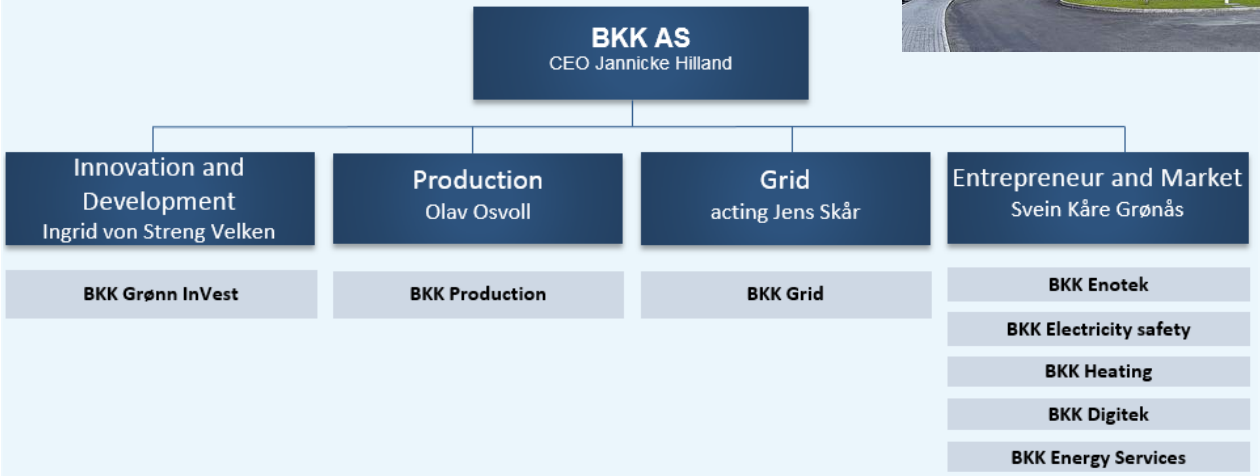
Flexibility resources as part of the solution for regional grid owners

18-04-16 | Line Bergfjord, BKK Nett

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:

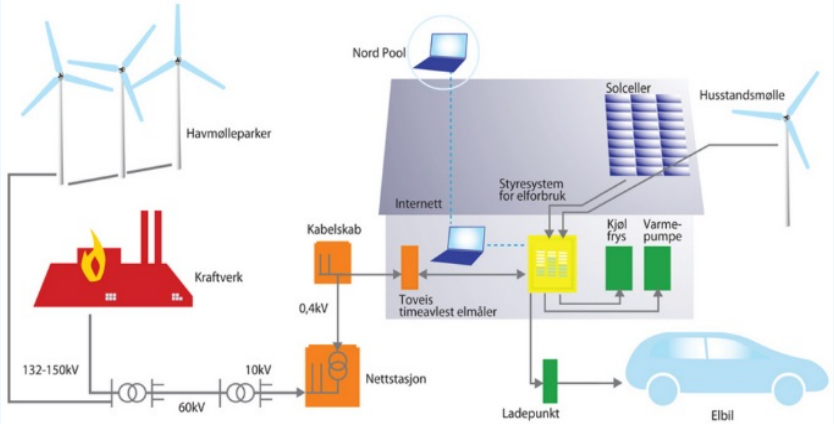
- The use of flexibility resources must reduce grid costs and increase efficiency compared to the alternatives

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)

Photo: perspectiveinaction.com

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

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**


Photo: Tesla


Photo: NORLED


Photo: Rune Sævig / Adresseavisa

The value of flexibility in Norway

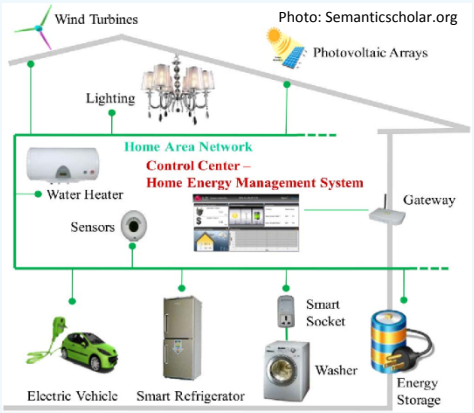
- Transmission grid (TSO): Existing marked (regulating power)
- Distribution grid (DSO): Experiences from a few pilots in Norway

- 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?

Photo: e24.no

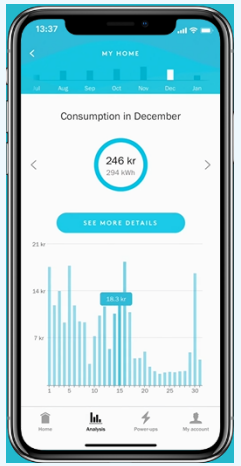
We need more knowledge, testing and experience!

How can demand side management (DSM) provide flexibility to the grid?



1. Load management systems at the costumers
   - Responding to market signals
2. Aggregator
3. The costumers/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 costumers (Tibber costumers)

- **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 costumers
- 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 costumers*

Thank you for your attention!