

Statnett's Reserves Option Market

Reserves Adequacy and Demand Response



Grid Operation Division, 26.03.2005

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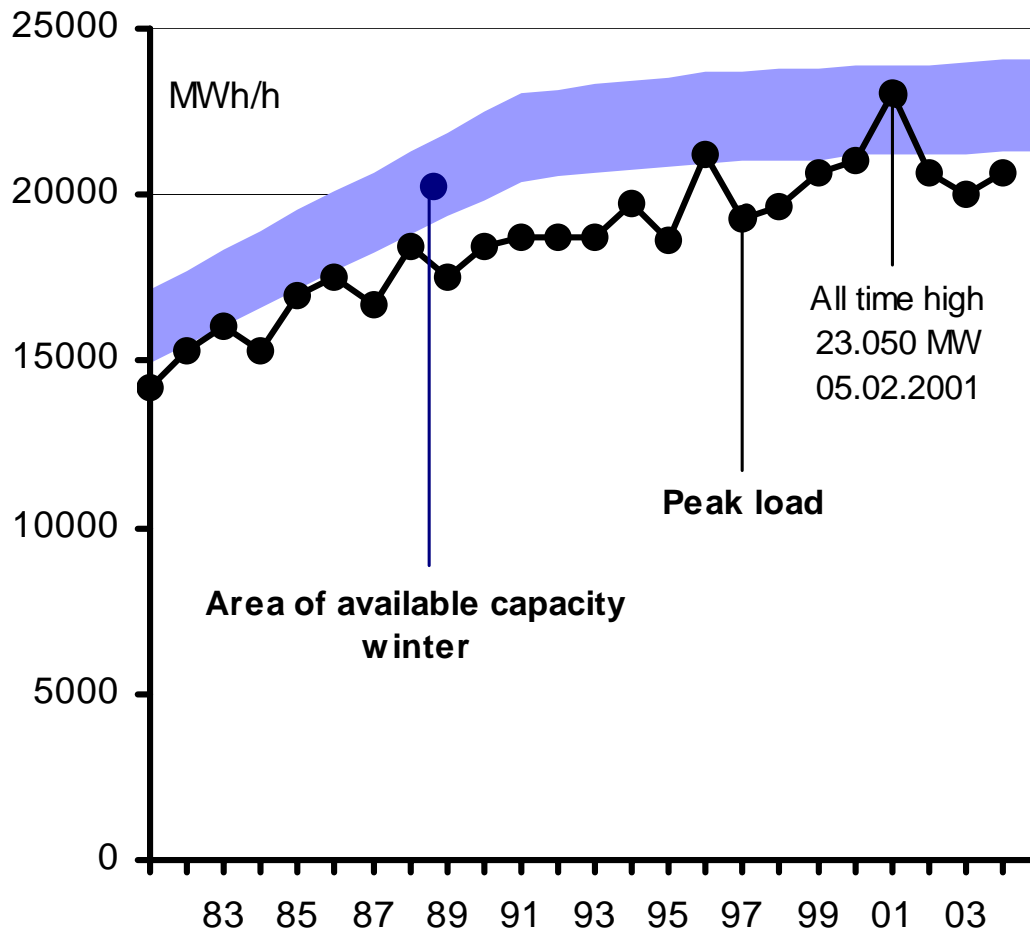
Capacity shortage

- Is there a problem
- How should it be solved



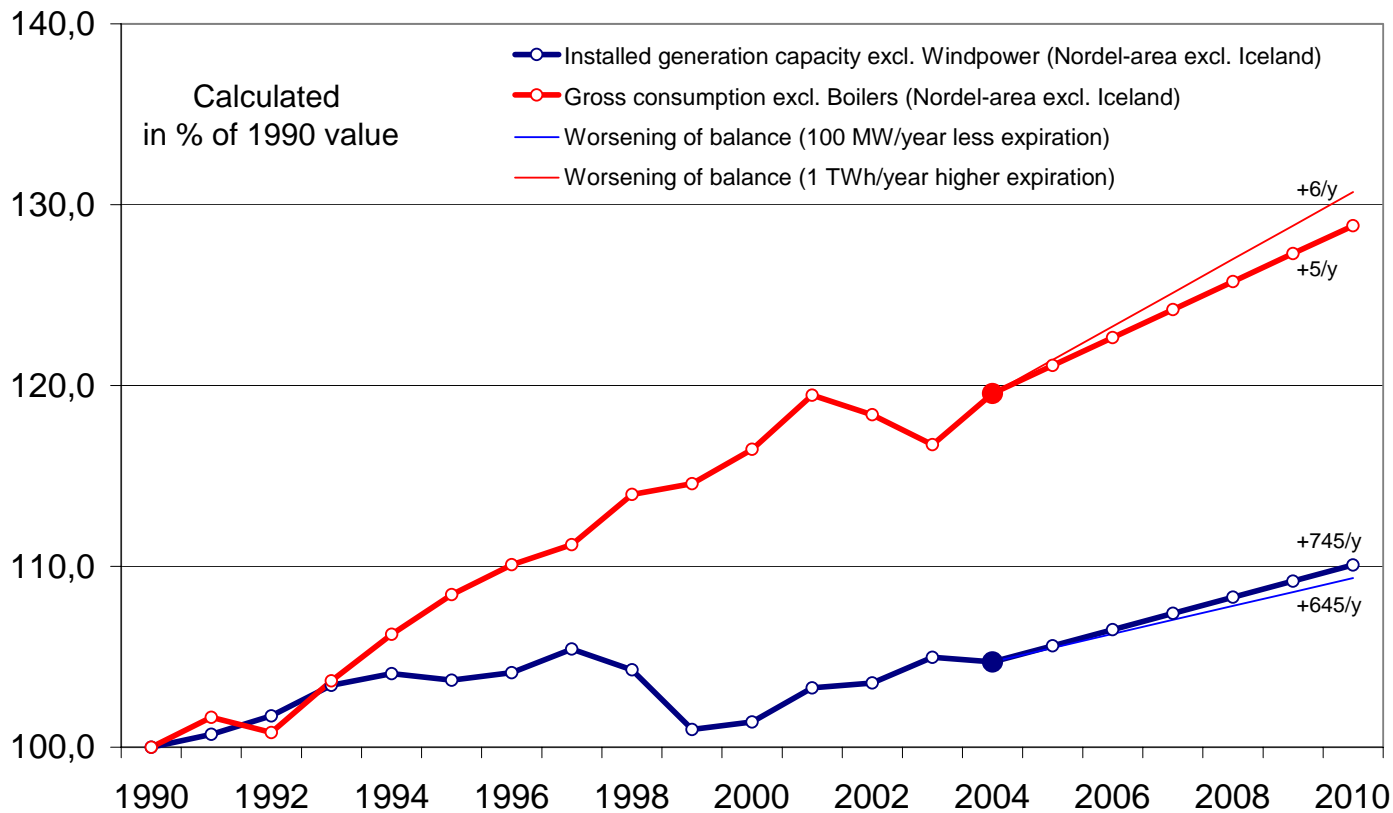
Peak load versus available capacity

Norway



Gross consumption versus installed generation capacity

Nordel-area excl. Iceland





Methods to achieve DR

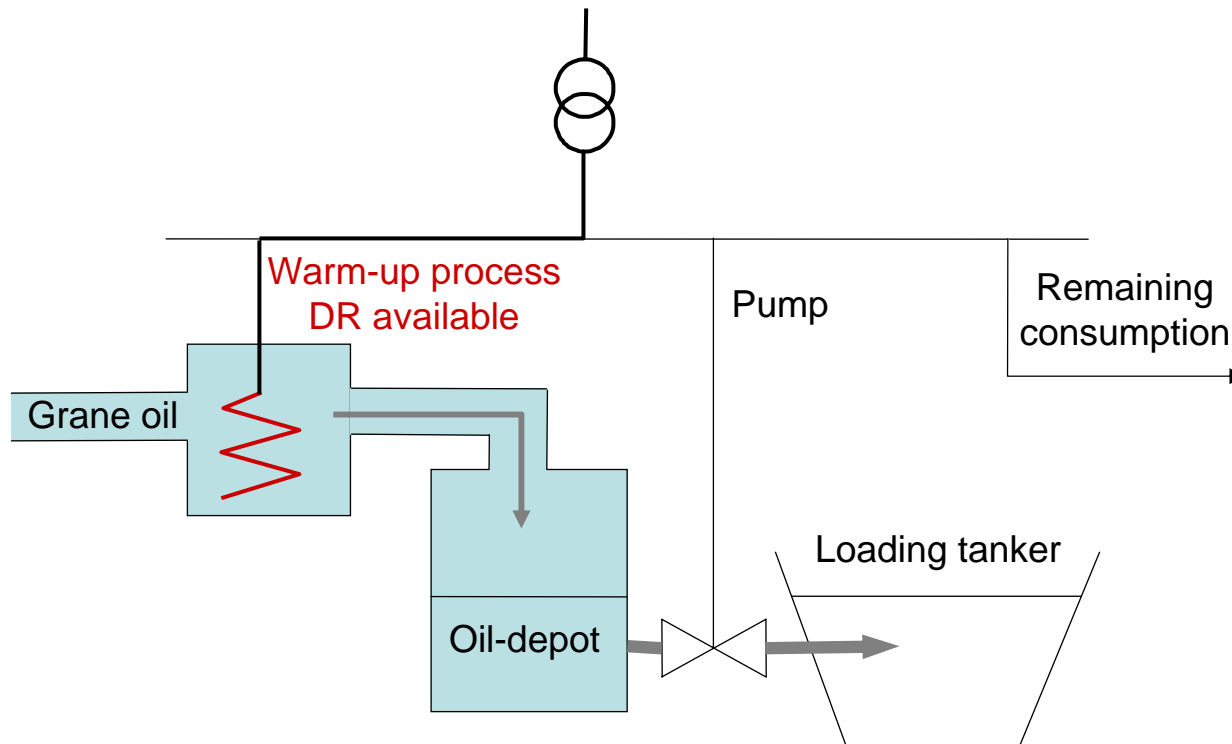
Complementary methods how to solve

- Day-ahead Market (Elspot)
Consumption (DR)
- Balancing Market
Also based on the short term (weekly)
Reserves Option Market, reserves
acquisition, when needed (RKOM)
Generation and consumption (DR)
- Balancing Market, long term bilateral
contracts
New generation capacity

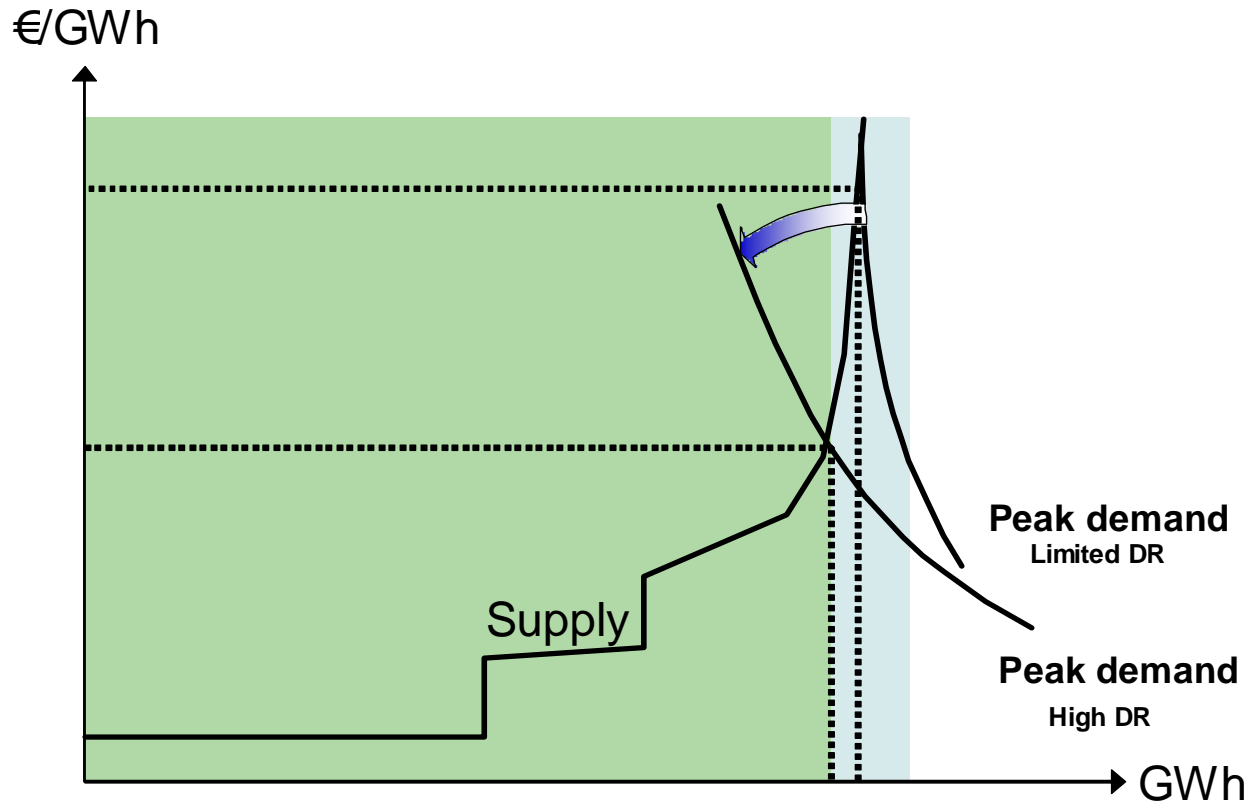


Oil and gas business sector included

DR available load at the Sture work station



Demand response in Elspot market





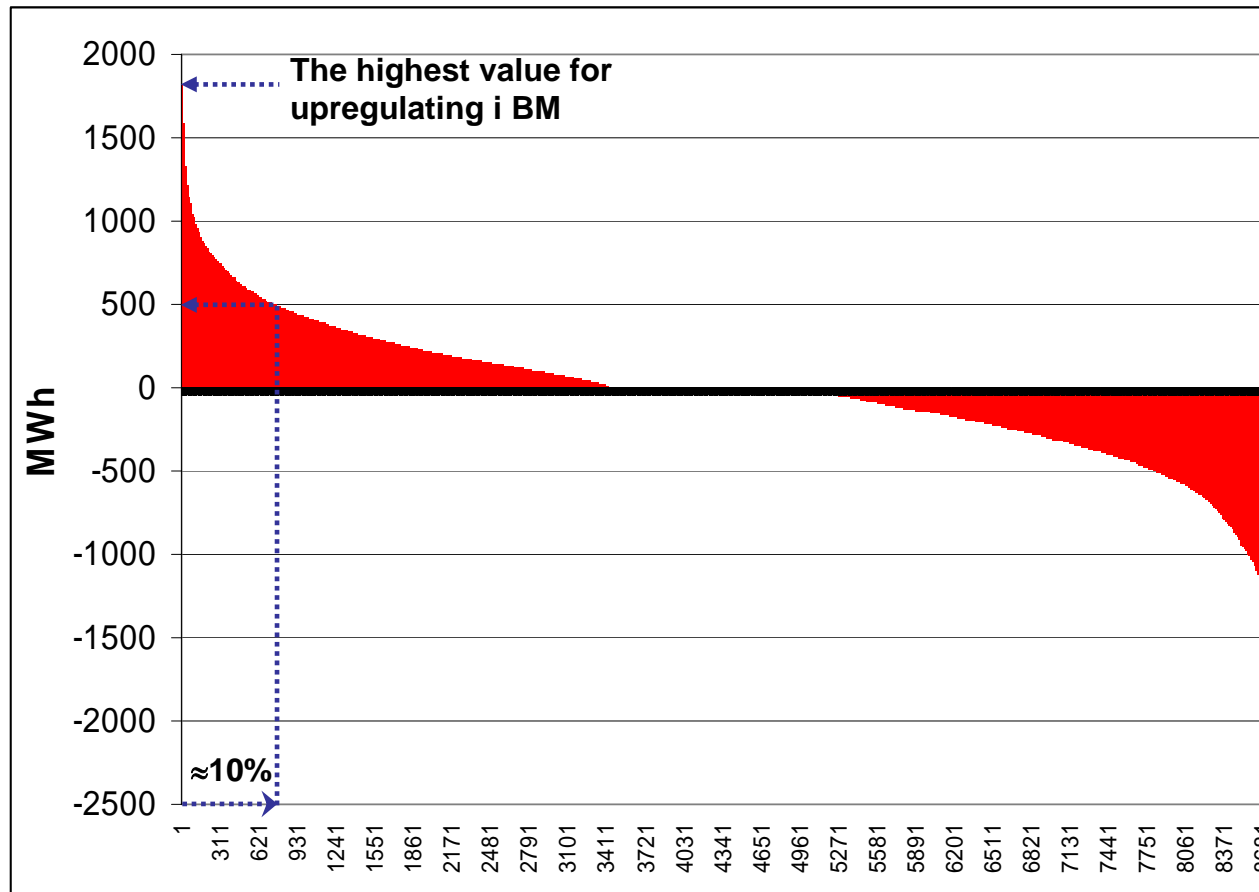
Activation of demand response (DR)

- Day-ahead Market according to price
 - More eksplisit response
 - More flexible products
- Balancing Market according to situation
 - According to deviation in forecasted consumption
 - According to disturbances
- Present in both markets
 - Excluded in RK-Market if activated in Elspot

Norwegian balancing

Need 2001. Duration curve

(frequency control only)



Various markets and their timescale



Financial market	Elspot	Elbas	Regulating Power Market
3 years – 13 h	36 – 12 h	33 – 1 h	The operating hour
	0,1 MW	0,1 MW	10 / 25 MW

RKOM

A catalyst to secure sufficient regulating power to be available in the Balance Market

Internet

- RKOM operated by the NCC
- Fully integrated internet solution
 - Offers from the utilities
 - Response to utilities
 - Messages and information
 - Settlement and invoicing



RKOM weekly result



Velg visningsmodus Kart Graf Tabell

Velg år:

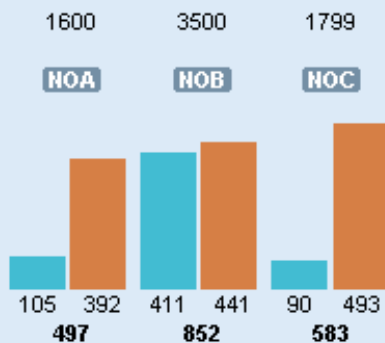
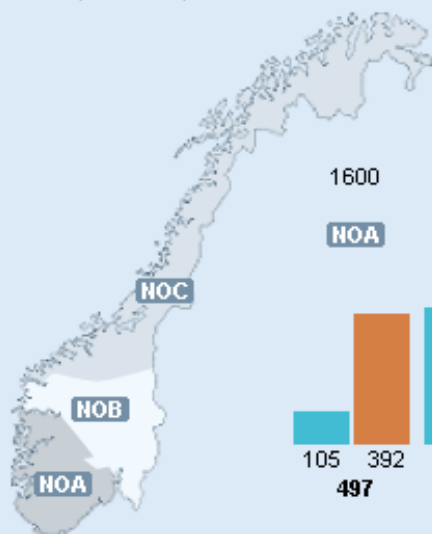
2005

Velg uke:

9

Avtalt volum (MW)

Pris (NOK/MW)/uke



Produksjon

Forbruk

Sum Norge



RKOM acquisition overview

Velg visningsmodus Kart Graf Tabell

Velg år:

2005

Velg fra uke:

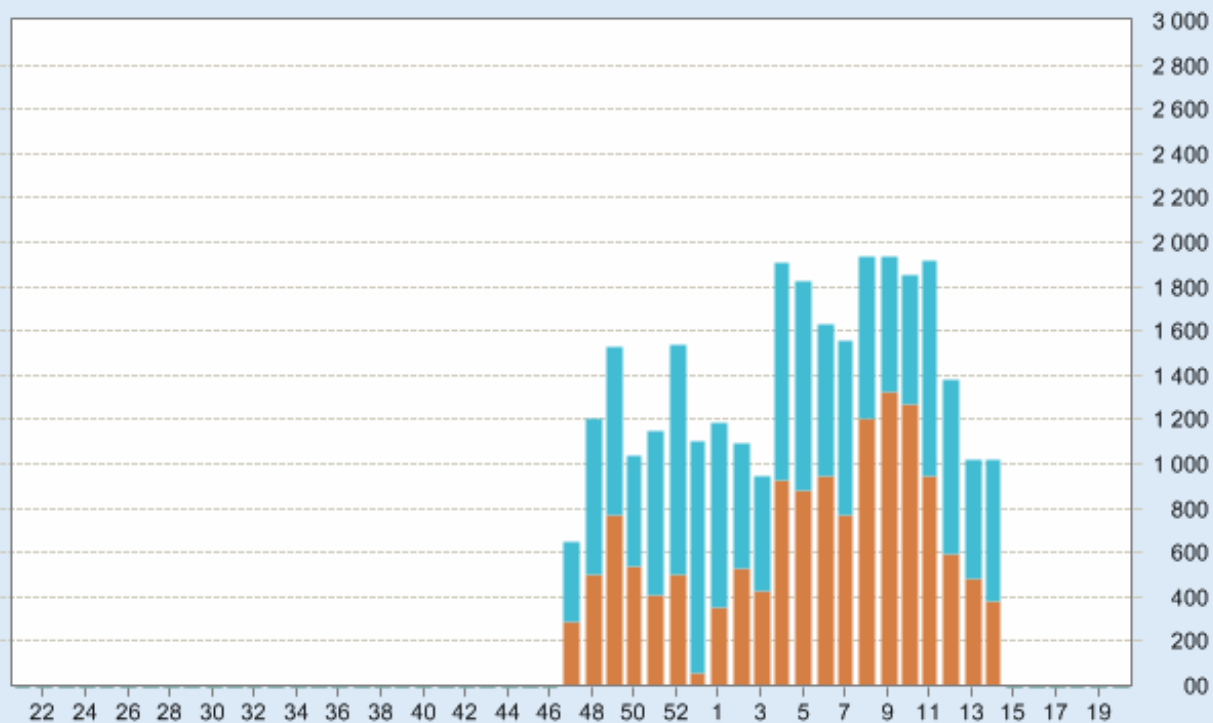
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Velg område:

Alle

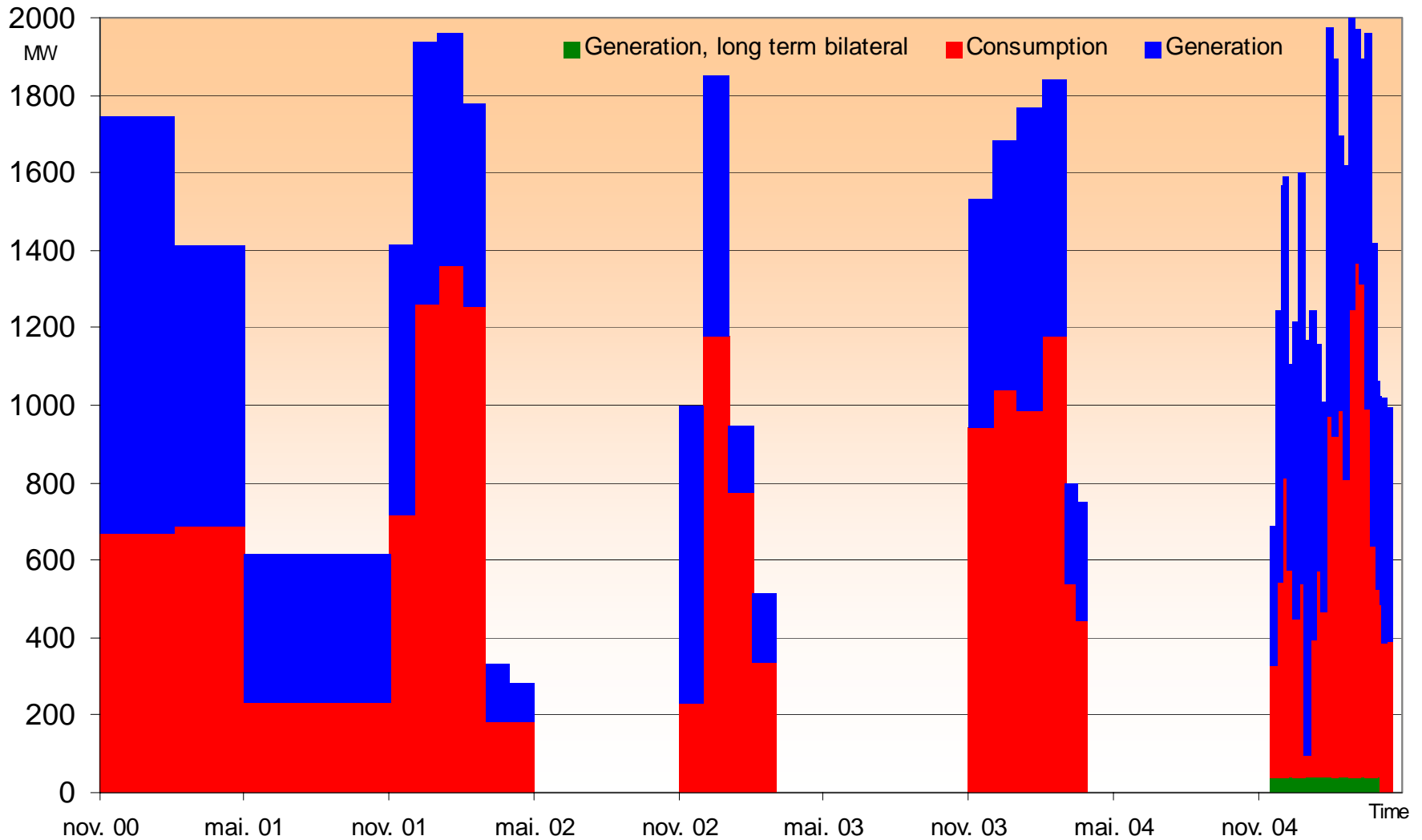
Avtalt volum pr. uke(MW)

Produksjon
Forbruk



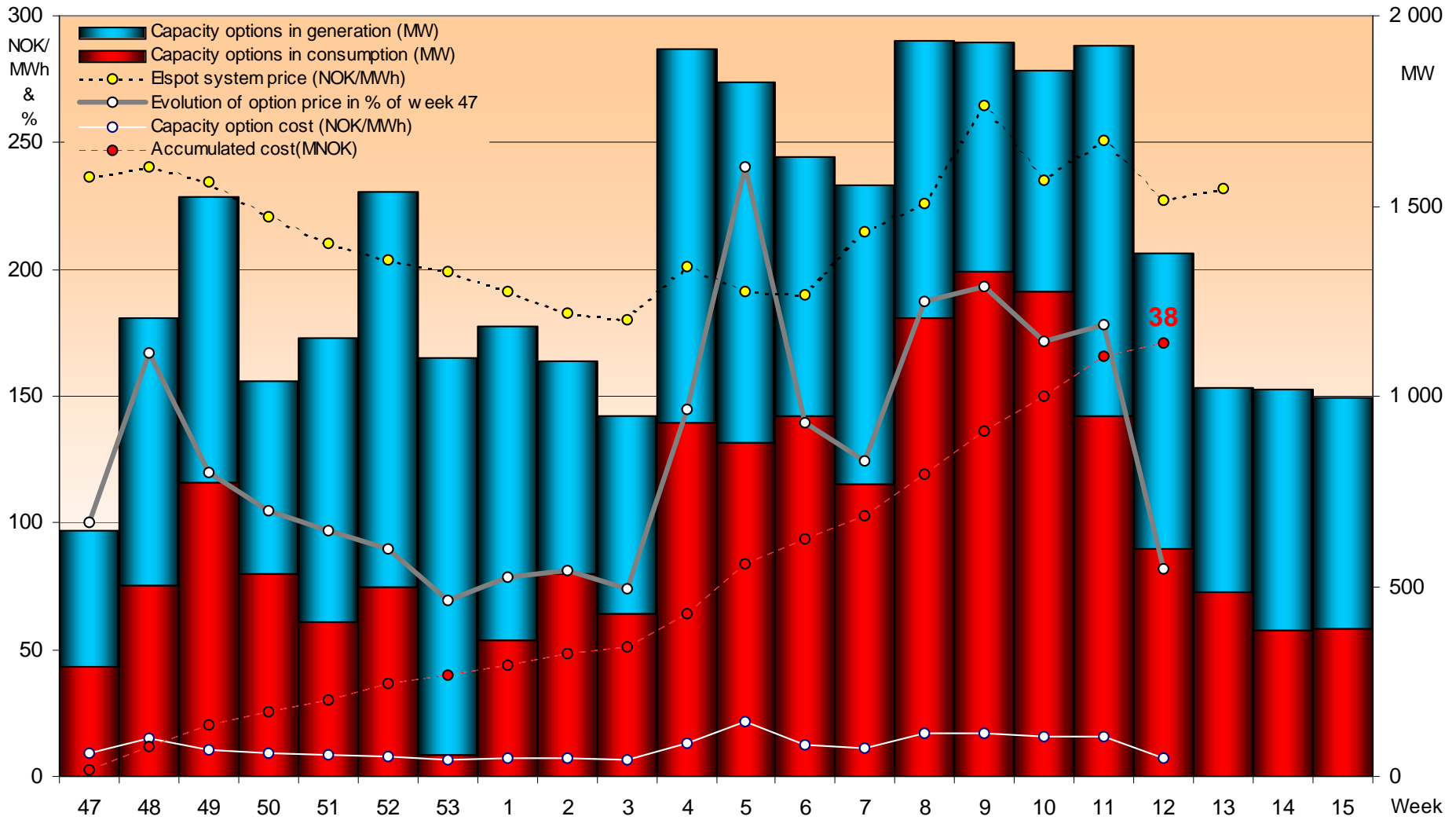
RKOM acquisition overview

From the beginning, nov 2000



RKOM acquisition overview

2004 / 2005



Nordic perspective

- The Nordic potential for DR is large
- Increasing need of DR as a consequence of more windpower installed
- Nordic coordination is important and will reduce the total cost of keeping the necessary amount of capacity reserves



Conclutions

- Norway and the Nordel-area has an increasing capacity problem and consequently an increasing need for capacity reserves
- Considerable and increasing amount of DR available for the Balancing Market
- Insufficient visibility of DR in Elspot
- Potential for Nordic exchange of capacity reserves on commercial basis
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- Competition with generation and consumption in the same market
- The RKOM-Web-solution is transferable to other TSO's if required (plug and play almost)

