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# Welcome!

# Programme



- April 25 “Demand Response Resources – Electricity Market Impacts”

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Increased elasticity on the demand side in case of shortage in production and/or transmission capacity is recognized as a vital challenge in a deregulated market environment. This seminar is based on the activities in the IEA/DSM project “Demand Response Resources (DRR)” with participants from 11 countries. The intention is to give the attendants an update on demand response activities world wide, in the European Union and in the Nordic countries and to take part in the discussion of further development

- April 26 “Capacity Shortage – Is there a problem, and how should it be solved?”



# Today



1000	Introduction	Inge Harald Vognild, Norway
1020	DRR world wide	Ross Malme, USA
1105	EU perspectives	Håvard V. Malvik, EU Commision
1145	Nordic Regulatory perspectives	Gunn Oland, Norway
1215	Discussion	
1230	Lunch	
1330	Back-up generation as regulating power	Mikael Togeby, Denmark
1350	Large scale 2WC, DR impacts	Willy Bergstrøm, Denmark
1410	DR activities in Finland	Erkki Stam, Finland
1445	Discussion	
1500	Coffee Break	
1515	DR - Market design aspects	Peter Fritz, Sweden
1550	Market based Demand Response	Ove S. Grande, Norway
1625	Norwegian DR demonstrators	Kjell Øvrebø, Norway
1645	Discussion	
1700	End of session	



**Monday 25 April 2005**

**Demand Response Resources  
Electricity Market impacts**

**A brief overview of DR in Norway from the  
TSO perspective**

Inge Harald Vognild

[inge.vognild@statnett.no](mailto:inge.vognild@statnett.no)

[www.statnett.no](http://www.statnett.no)

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# Content

- Statnett – The Norwegian TSO
- Statnett motivation for Demand Response (DR)
- Economic incentives for DR in Norway
  - The Reserves Option Market (ROM)
- The Norwegian IEA/DSM-DRR project
- New R&D project: Market based demand reponse



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## The Norwegian TSO

- System operator
- Grid owner/operator
- Part owner of the Nordic electricity exchange (Nord Pool)
- Network and balance settlement
- Close co-operation with the other Nordic TSOs
  
- Business idea:
  - *”Statnett shall efficiently promote and facilitate a well-functioning electricity market”*
  
- Re. efficient electricity market:
  - DR an even more necessary condition



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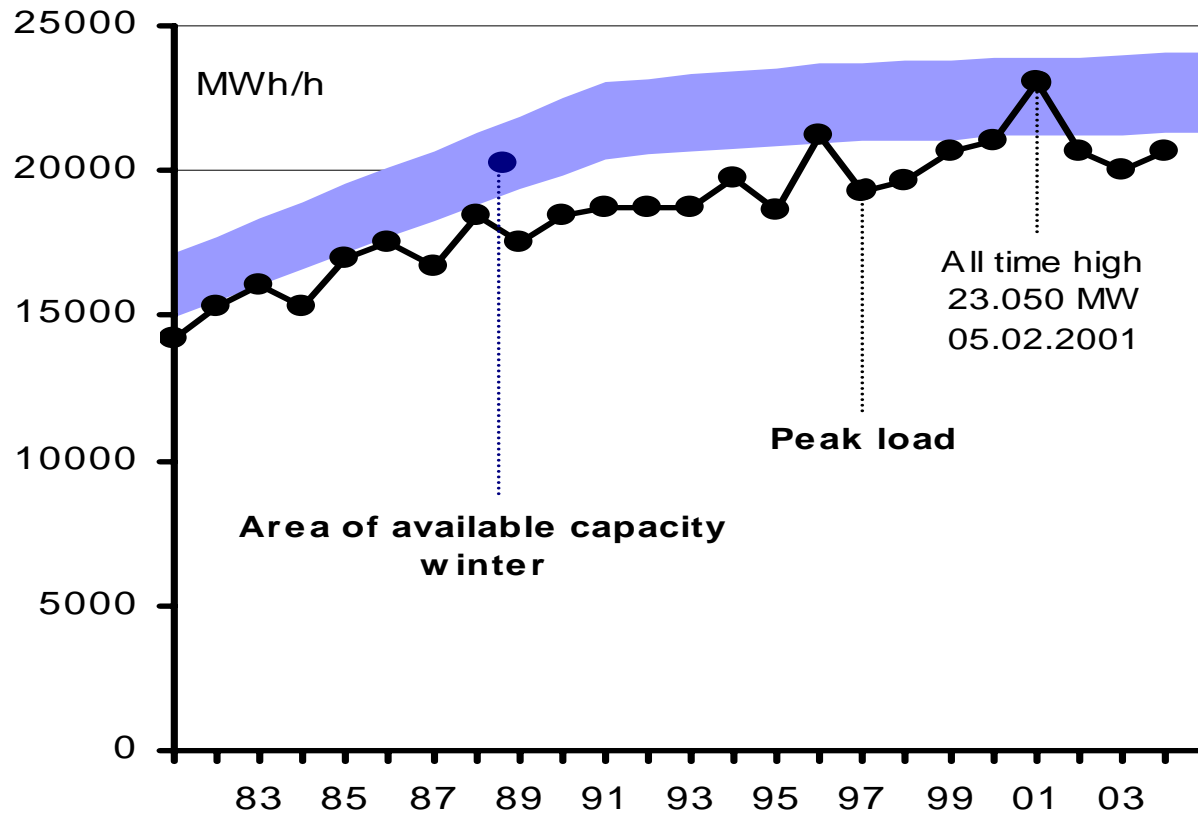
## Motivation for promoting DR

- Tighter capacity and energy balance
  - A White paper on the security of supply has recently emphasized that the System Operator shall contribute actively to a further development of demand side price flexibility (focus on energy)
- Corporate profitability
  - Improved network utilization
  - Increases competition as well as the total potential resources for operating reserves
- Mitigate abuse of market power



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# A tighter Norwegian capacity balance



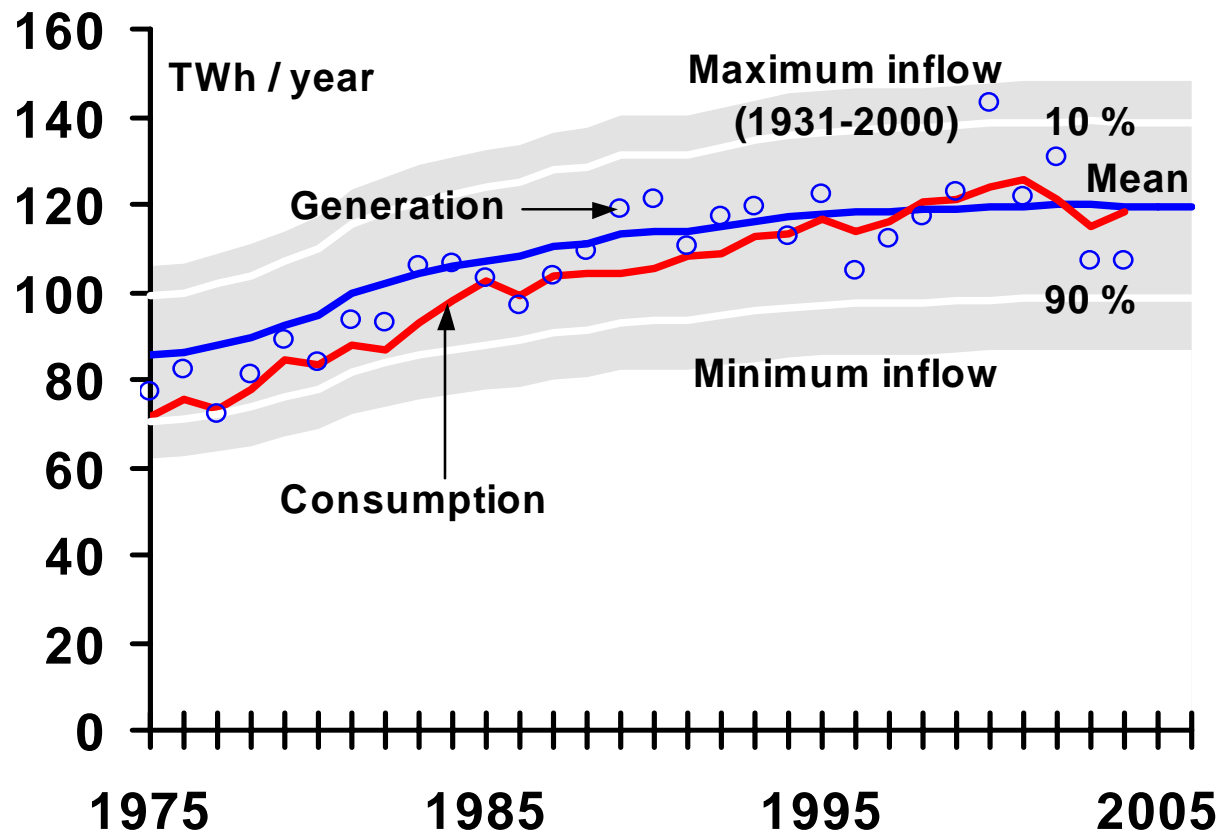
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# A tighter Norwegian energy balance



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# Markets/monetary arrangements giving DR a (potential) value in Norway



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Market / arrangement	Economic value in Norway	Buyer / incentive provider
Bilateral physical contracts	Seldom	Market participants
Elsport (day-ahead market)	Seldom	Market participants
Balancing market	Seldom	Market participants
Financial market	Seldom	Market participants
Fast operating reserves (Reserves Option Market)	Yes	TSO
Frequency-based ancillary services	(Possible future arrangement)	(TSO)
Transmission pricing incentives (capacity fees, interruptible tariffs)	Yes	TSO, other GridCos

# The Reserves Option Market (ROM)

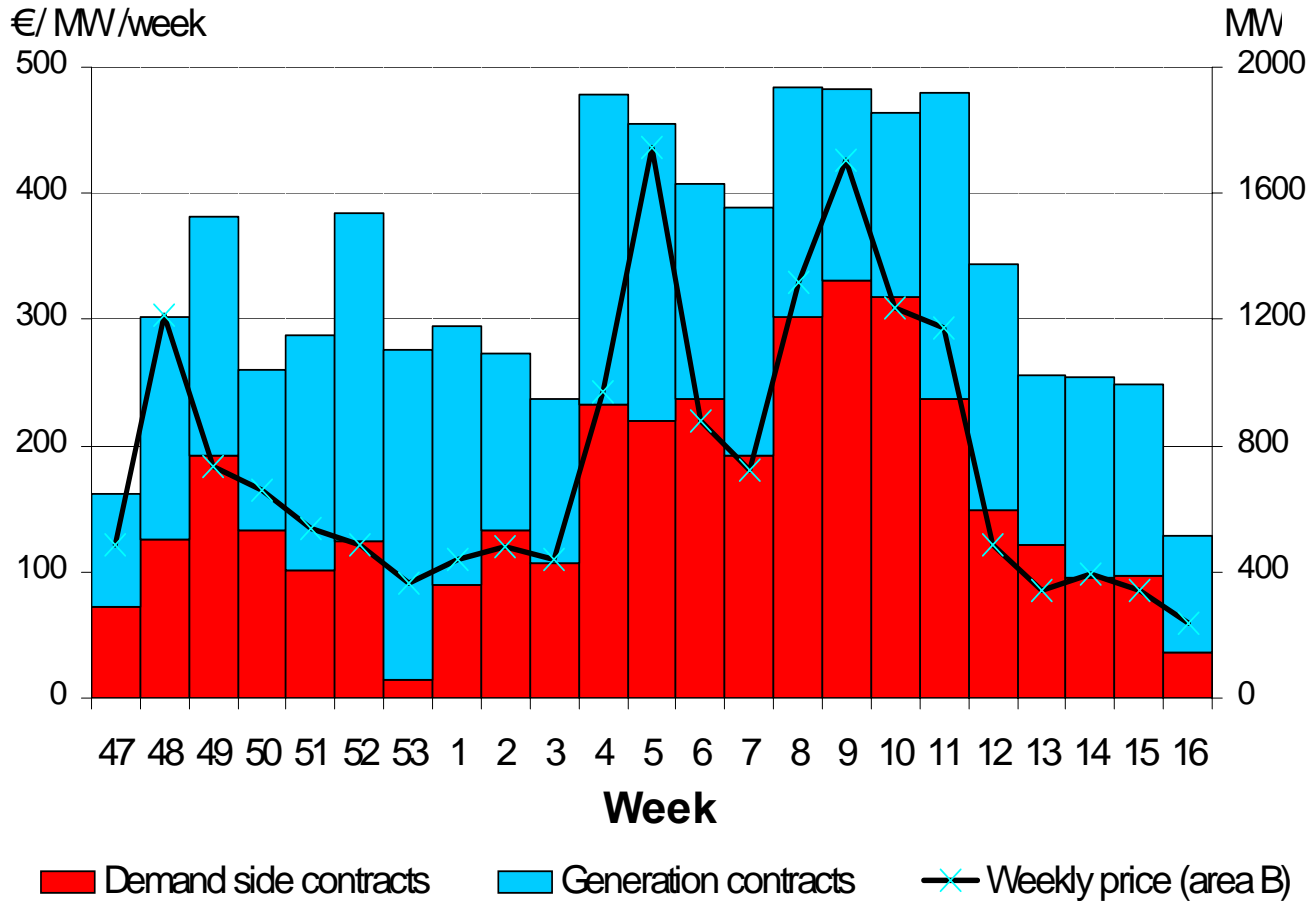
- ROM has provided extra resources in the balancing market during the winter season since 1st November 2000
- ROM gives demand-side participants economic incentives to offer fast operating reserves
- Successful ROM participation from large industrials
  - Iron, steel and ferroalloys
  - Primary aluminium
  - Other non ferrous metals
  - Paper and paper products
- Demand side contractors are also allowed to opt-out to the day-ahead market



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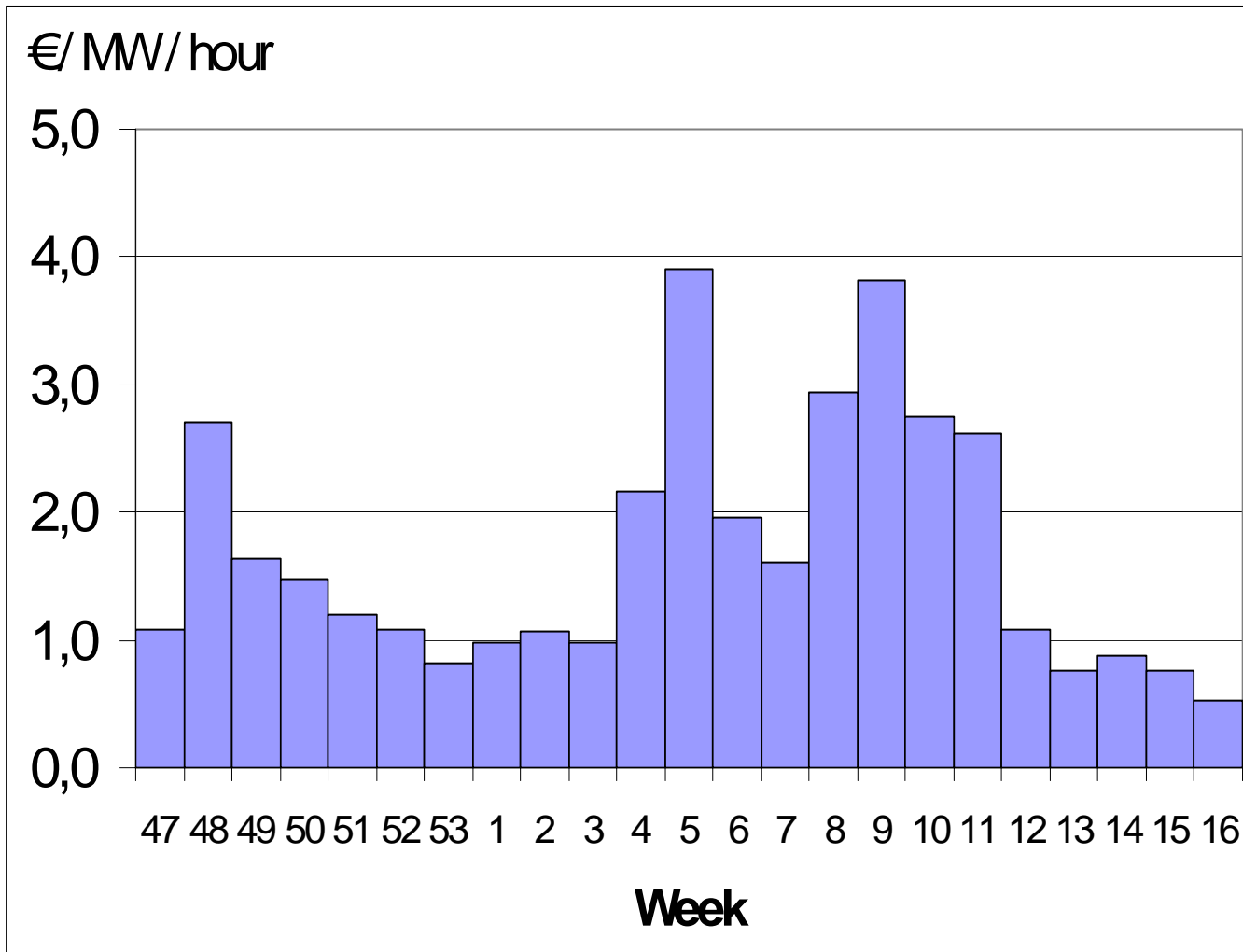
# ROM purchase winter 2004/05



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# ROM unit price winter 2004/05 (area B)



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# DR from medium-sized consumption



- Statnett encourages ROM participation from medium-sized consumption (pilot projects)
  - Electric boilers
  - Back-up generation

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<b>Market</b>	<b>Aim at end of winter 2004/05</b>	<b>Aim at end of winter 2005/06</b>
Day-ahead market	50 MW	60 MW
Balancing Market (via ROM)	130 MW	200 MW

# IEA/DSM-DRR Norway

## Purpose

- Information exchange with an international network of DR competence:
  - Technology
  - Cost and volume comparisons
- Contribute to increased price elasticity in the day-ahead market and in the balancing market
- Development and promotion of Norwegian technology through two demonstration projects



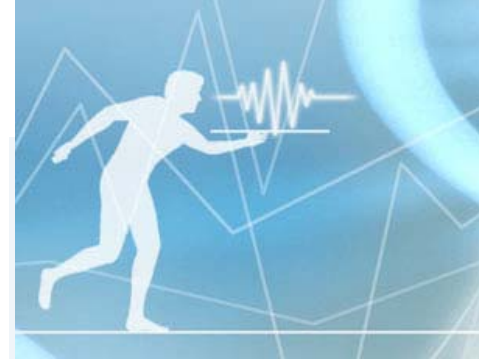
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# IEA DRR Norway

## National reference group

- BKK Nett (distribution company)
- EBL (Norwegian Electricity Industry Association)
- Elink (software vendor)
- ENOVA SF (The Norwegian energy agency)
- Hydro Energi (oil&gas, metal producer, hydro generator)
- Norwegian Water Resources and Energy Directorate (Regulator)
- Powel (software vendor)
- Statoil (oil&gas, electricity retailer)
- Skagerak Nett (distribution company)
- Statnett SF (TSO)
- Troms Kraft (retail company)



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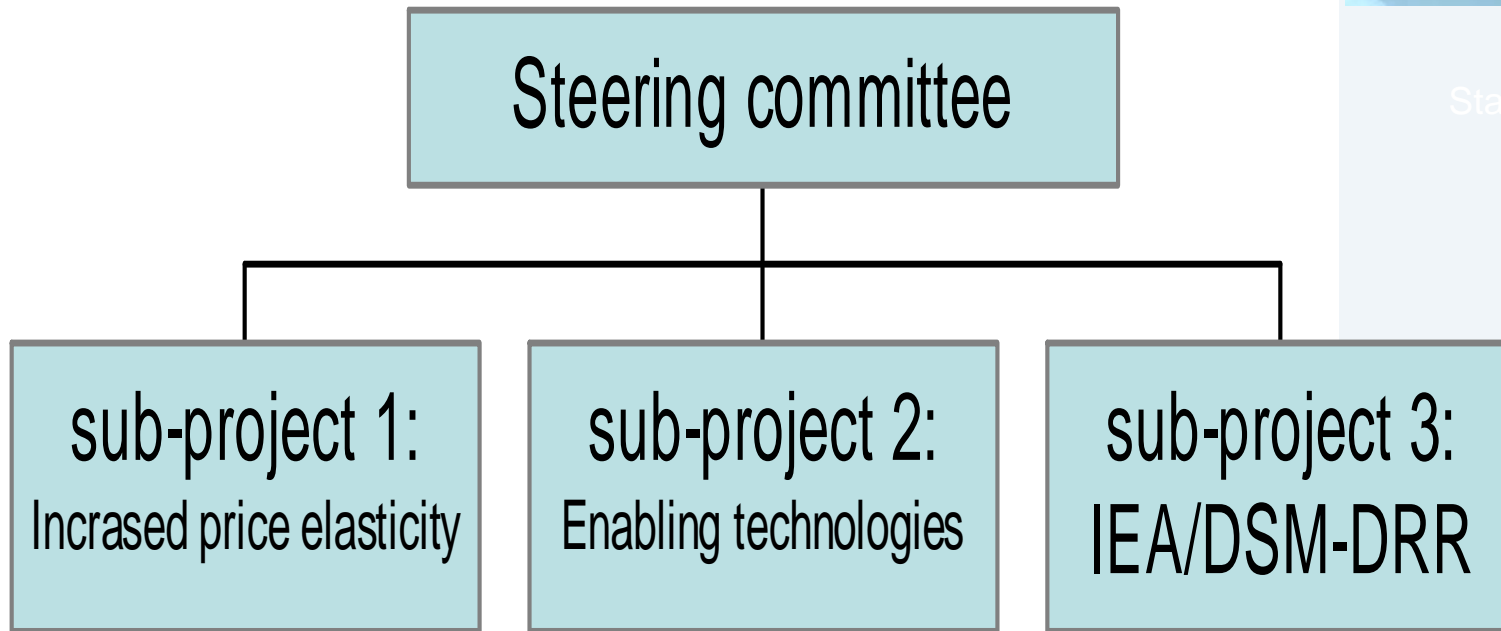


# Market based demand response

Norwegian R&D project (2005-2008)



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## Conclusion



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High focus on DR / demand side  
price flexibility in Norway