



# **Demand Response Resources (IEA)**

## **Nordic Regulatory Aspects**

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# Agenda

- The Norwegian regulator's view
  - Automatic meter reading (AMR)
  - Two-way communication (TWC) - demand control/load shedding
  - What regulations are adequate and necessary?
  
- Development in other Nordic countries
  - Sweden
  - Denmark
  - Finland



# Terminology

- AMR: Automatic meter reading: Meter reading from a terminal via established communication
  - GSM, GPRS, radio, broadband, high/low voltage grid etc.
  - Hourly, daily, weekly or monthly metering, depending on what the purpose is
  
- TWC: Two-way communication
  - Opens more possibilities for demand control, remote load shedding/disconnection



# AMR and TWC – the Current Situation in Norway

- Hourly metering mandatory from January 2005 for customers with annual consumption over 100.000 kWh
- Else wise not widespread in terms of metering points:
  - 4-5 % of Norway's 2,5 million metering points have AMR
  - But 60 % of the total consumption
- Grid company may install hourly metering in any case if it wants to
  - Must cover the costs
- Customer may require hourly metering
  - Must cover excess costs
    - no standard prices
- Customers without AMR have to read the meter 4 or 6 times a year.



# Why is AMR/TWC not Installed in Large Scale Today?

- Too costly for most of the grid companies' point of view
  - Uncertainty with regards to the benefits
- Problems with technology
  - Improvements are being made
- Coordination problems
  - Large transactions costs between the various partners involved benefiting from AMR

# Proposed Regulations from NVE –

ref. NVE report nr.18, 2004

- Current suggestion: Setting a maximum price for AMR/hourly metering
  - Make AMR/TWC a more explicit offer for the customers
  - Easier to assess willingness to pay
- May impose further requirements on other functionalities, information on benefits etc.



## Possible Costs

- Investments costs ca. NOK 2500 per metering point
- Operation and maintenance costs: NOK 250-300 per point per year
- Depreciation time: 10 years
- Discount rate: 8 %
- Annual net cost for grid company:
  - NOK 500-600

*Will benefits be achieved to a larger extent by imposing investments in AMR?*

*Do we have new key issues in the present and coming situation?*

## Possible Benefits

- Exact metering values
- Benefits for suppliers
  - Reduction of volume risks
  - New products
- TSO
- Customers
- Quality of supply

# Obligatory Full Scale AMR/TWC in Norway?

Use of AMR/TWC will only increase in the future, but now...



- Not appropriate to impose full scale investments in AMR/TWC on the grid companies **now**
- Too costly in a socioeconomic perspective
  - Major increase in tariffs would be the result
- Too many unsolved questions and challenges





# A Brief Look to Sweden



- From July 2009 meters have to be read on a monthly basis
  - Ca. 5 mil. Consumers/metering points
  - The obligation is on the function and not on the technology
  - Installing automatically metering
    - 500 000 meters per April 2005
  - Almost all the metering systems can manage two-way communication
  - No requirement of to-way communication
- According to the legislation, customers with main fuses higher than 63 A are hourly metered (July 2006)



# A Brief Look to Denmark



- Ca. 3 mil. consumers/metering points
- January 2005: Hourly metering is mandatory for metering points with an annual consumption > 100 000 kWh/year
  - > 50 % of total consumption
  - 29 000 consumers have hourly metering
- All consumers have free access to hourly metering for at a pro rata charge to the grid company
  - Charge is larger than the potential benefits at the moment
- In the long term all metering points may be subject to hourly metering



# A Brief Look to Finland



- 3 mil. consumers
  - About 600 000 consumers with hourly metering
- All consumers with main fuses higher than 63 A have hourly metering
  - The costs are covered through the customers tariffs



# Common Nordic End User Market

- Impacts on AMR and TWC installation
- Common guidelines for handling the end user market
- Special products require AMR
- Harmonization between the Nordic Regulators?

# The Road Ahead...

- Possibility for other utility services and commercial interests
  - Water, security systems etc.
- Development of new dynamic electricity end user contracts
  - Combination of fixed and dynamic prices
  - Security of supply
- Grid tariff development
- Direct compensation after disconnection
- Direct access to relevant energy information for consumers
  - Individual Web page
  - Energy efficiency
- QA Quality assurance

