

**EFFLOCOM Workshop 13-06-2003**

# **Sydkraft Load management project**

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# Background

## Deregulation

- Generators get income during operation
- Difficult to get profitability for peak load plants
- A lot of peak capacity is mothballed
- Radically decreased capacity margin
- Extremely high prices during winter peaks  
(600 €/MWh)
- Sydkraft once more became interested of peak reduction

# Sydkraft project - Step 1

## Objectives

- Increase the internal knowledge
- Investigate profitable load management potential

## Results

- 140 MW reduction ought to be profitable
- Only hourly metered customers accepted for sales of 'Negawatts' by the Swedish TSO (Svenska Kraftnät)
- Profiled customers can be utilised in grids where the actual generator is dominating
- A proposal for a 30 MW reduction during winter 2002/2003

# Proposal

<u>Category</u>	<u>(MW)</u>
Industry	0
Heat pumps	24
Electrical boilers	5
Offices	1
<u>Single family houses</u>	<u>0</u>
<b>Total</b>	<b>30</b>

# Sydkraft project - Step 2

## Objectives

- Contract 30 MW reduction possibilities
- Develop principles for estimation of reduction
- Develop operational strategies
- Evaluate the real reductions against contracted

# Results - Contracting

## Planned

- 24 MW heat pumps
- 5,2 MW electric boilers
- Around 0,7 MW offices

## Contracted

- 20 MW heat pumps
- 3,2 MW electrical boilers
- 0,7 MW offices

# Results - Estimation of reduction

## Principle

- Reduction = Difference between Normal Demand and Demand during reduction

## Demand during reduction:

- Can be metered or estimated

## Normal Demand:

- Can't be metered
- Have to be estimated

# Results - Operational strategy

- **General**

- Generator sends generation plan, load forecast and bids for additional generation or purchase
- The pool decides the generation plan

- **Optional strategies**

- **Negawatt** - Generator offers TSO a reduction option
- **Spot price** - Demand reductions are included in the bids for additional purchase
- **Regulation price** - Initiated during operation if the load forecast is too low

# Result - Heat pumps

## Reduction

- 0 MW reduction when the button was pressed

## Reason

- Cold winter
- Dry conditions
- High spot prices
- Heat delivery at return pipe in a district heating system with a CHP plant

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- Heat pumps already closed in order to increase electricity production

# Result – Electrical boilers

## Reduction

- 3,2 MW

## Comments

- No major problems
- Customers where already contracted but not used for load management

# Result - Offices

## Reduction Office 2

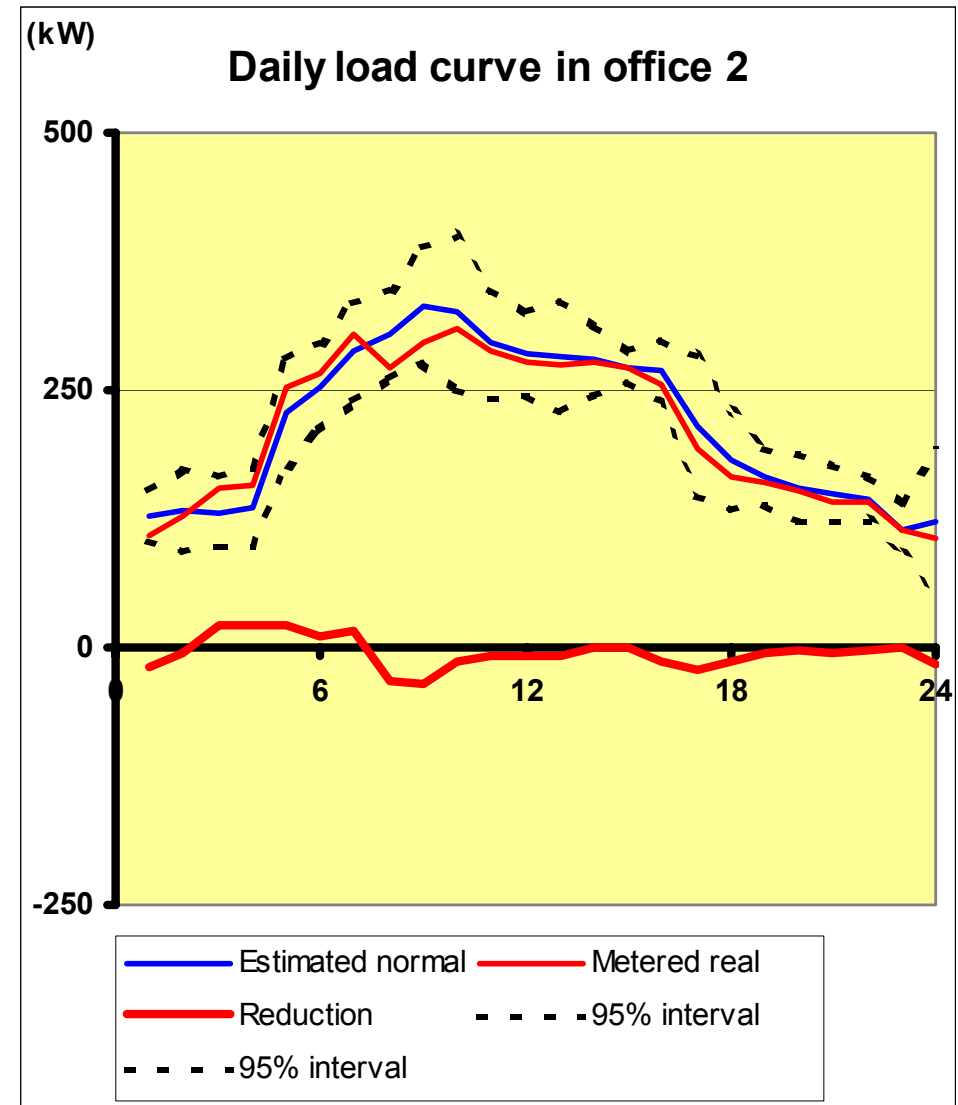
- Managed load curve not outside the confidence interval

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- 0 kW reduction

## Reason

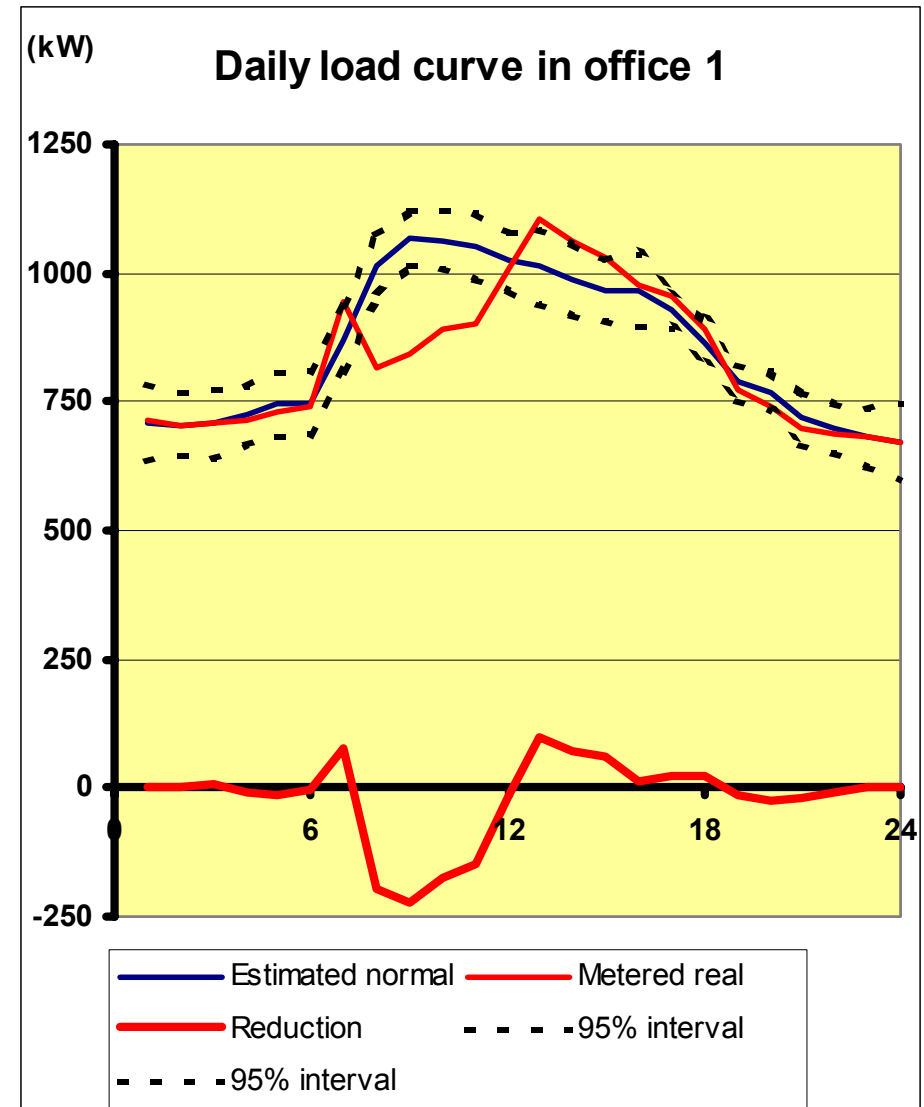
- Cold day
- Office owner was afraid that it should become cold inside
- Cancelled the contract



# Result - Offices

## Reduction Office 1

- Managed load curve significantly outside the confidence interval
- 186 kW reduction (4 hour average)
- Around 3 hours for energy pay back



# Conclusions

- Load management is
  - Not a technical problem
  - Mainly a business problem concerning incentives and consequences
- There are no problems to estimate the real reduction