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# Price forecasting in the power markets

The new challenges of a deregulated European power market will mean a whole new competitive environment for power producers, consumers and investors. Here, Ragnar Ottosen of SKM AS describes how price forecasting can be used effectively in this market.

Power companies, in recent years, have developed a strong expertise in forecasting demand and load over both the short and the long term. These forecasts were the basis for plans for investments in increased capacity. Power producers, consumers and investors will now have to handle the new competitive environment. This will involve a great deal of uncertainty concerning load and demand, and the future development of electricity prices.

## **Market demand for forecasting services**

Most power traders will establish their own in-house analysis team, with the aim of understanding market development and the forecasting of prices. With increased liquidity in the futures and forwards markets, a power trader will continuously check the market forward curve against own price expectations. The input for such analysis will have to rely on computer models analysing large volumes of data. These in-house analyses can again be supplemented with additional information and forecasts from professional suppliers of such services.

## **Several types of analysis**

Trading decisions will be based on a complicated set of decision parameters, involving factors such as risk position, price expectation as well as 'gut-feeling'. Many traders use both a 'fundamental' and a 'technical' approach. The fundamental approach concerns analysing the development of the underlying physical supply structure. The corresponding supply and demand curves will then be used to estimate the spot price from both a long and short-term perspec-

tive. The technical approach mainly involves an analysis of time series of observed market prices as a basis to forecast prices, spot prices and the prices of different products. Both these approaches adds information for a trader, who also has to relate to the day-to-day 'market psychology'.

## **The basis for the fundamental analysis**

The spot price in a competitive market will be strongly influenced by the short-term marginal cost of electricity production. From this information a short-term supply curve can be estimated. In addition, from market data concerning consumer behaviour when prices change, a demand curve can be estimated. In this sense the supply and demand analysis and price forecasting are based on the same elements of economic theory as any other market analysis, but the key to success in the forecasting of electricity is to understand the complexity of the business. There are numerous factors that can influence electricity prices. The most important are: fuel prices, availability of capacity, limitations in grid capacity between areas, climatic factors, demand patterns, the behaviour of large market players, long-term investments in capacity, taxes etc.

## **The value of short- and long-term fundamental analysis**

The information from short, as well as long-term analysis of supply and demand will provide valuable information to support day-to-day trading decisions. Such analysis will also provide the basis for any long-term analysis supporting investment decisions. Power

plants have an estimated economic life of 15 years upwards, for hydro power; this can be as long as 40–60 years. An investment decision will have to address the very complex and uncertain subject of long-term price development. Firstly, the market for long-term contracts will certainly increase in liquidity, giving power traders the possibility to take positions in 10–20-year contracts. Such a market will also act as a reference for decisions relating to investment in power plants. If the price of a long-term contract is lower than the total production cost for a new plant, this is a clear indication to postpone the investment or alternatively, invest in a forward contract (or 'virtual' power plant) as a financial alternative. In the Scandinavian market, the prices of forward contracts with 10–20-year durations have been in the range of €20–25/MWh. Financial investments in contracts have, therefore, generally been seen as more interesting than investment in power plants. For this reason, investment in power plants has been very low in the Scandinavian market for the past five–10 years. On the other hand, a power plant investor can hedge most, or part of the volumes in the long-term contract market and thereby reduce the risk of the investment. However, such decisions will require a good understanding of the different scenarios of future price development and the risk involved.

### The development of on-line price forecasting services

Price forecasting services for long- and short-term analysis has been available to power traders and

investors in the Scandinavian power market for several years. Examples of such products are the analysis of long-term price scenarios and both short and mid-term price forecast as a subscription service with daily update. Figure 1 shows examples of information from the SKM SYSPower forecast service for the Scandinavian market.

The SYSPower system is accessed via the internet and the forecasts are updated on a daily basis. The system gives the user the option of viewing the forecasts and comparing them with the real-time prices of the forward curve. As price forecasts are uncertain by nature, it is necessary for the users to know what analytical tools are used and how changes in the underlying assumptions can change the forecasts. This information is part of the SYSPower product.

SKM AS has already worked with power price forecasting for a decade in the Scandinavian market and is now extending these services to the Continental European market. To receive more information on price forecasting, please contact SKM AS as detailed below.

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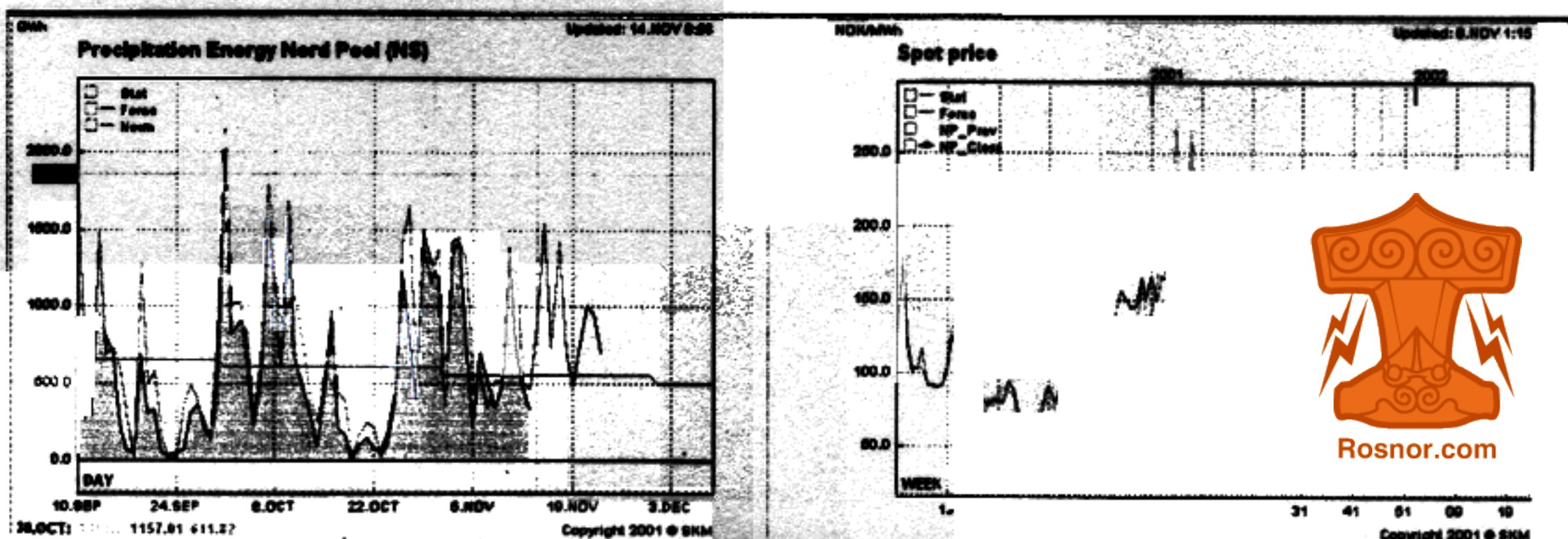


Figure 1. The SKM SysPower on-line forecasting services. Daily spot forecasts and actual price over a 30-day period