

Some relevant fundamentals of electricity market regulation.

Electricity market regulation introduced during the last decades in many countries to facilitate competition varies remarkably between different countries. Terminology is sometimes confusing in international discussion as the same word has different meaning in different legislations.

Experience has shown me that only simple regulation can be efficient. Exceptions and exemptions introduced into regulations with good intentions of solving problems often create more problems. Worse, complicated regulations makes it difficult for actors to understand enough to behave rationally.

Despite the differences I will try to describe the common basics, and details that are different but important for security of supply as well as economic efficiency.

The fundamental rule is that actors who want to trade electricity via the grid must have one party that assumes economic balance responsibility. After all these balance responsible actors have tried to achieve physical balance, the System Operator, (sometimes called Transmission System Operator) will ensure real time balance in the system using a balancing market – A market that always involve producers of power and often also consumers willing to adjust consumption.

After managing the system balance at some cost, the System Operator checks measured production and consumption at invoice those balance responsible actors who have failed to achieve physical balance. Usually the marginal cost of balancing are low, and balance market prices close to the spot-market prices, often a day-ahead market that decides which power generators can provide the lowest cost power during the day.

This is the case also with a lot of solar and wind power in the system as the generation is predictable with precision as good as the prediction of consumption. Instances when the balancing market shows prices well beyond the spot market is when unexpected events requires the System Operator to make large corrections in the balancing market, typically failures of large thermal power plants or extreme weather conditions raising consumption.

When competition was introduced, the generation capacity has sufficient to ensure that capacity was available even during extreme scenarios. However, as competition has kept prices low, capacity has sometimes been reduced, and extreme scenarios may become possible where the System Operator cannot find generating capacity or voluntary demand reduction. Instead the System Operator has to disconnect unwilling customers in order to keep balance in the system.

Several countries have regulations that does not define how the balance responsible actors who fail to achieve physical balance in that situation shall be treated. It seems obvious that if the cost of failing to provide capacity under such conditions is not defined there is no incentive to invest in capacity – or using other less costly means to balance also under extreme conditions.

In the Swedish system there is a predefined "disconnection price" of Euro 5 000/MWh. This is high enough for any actor to understand there is a value of having capacity available or other less costly, voluntary demand side opportunities to avoid ending up off balance during extreme situations. Some companies found a failure can eat total net assets in hours or days.

With this complete balancing responsibility defined, there is no reason to call the market an "energy only" market as capacity is valued as well. As a result there will not be uneconomically large risk for power system failure.

Regarding the economic consequences of such a real market regulation it is worth noticing that the largest economic risk appears to be large thermal power plants and high capacity power lines failing. This risk of thermal power creating balance problems makes the claim the thermal power deserves subsidies for capacity reasons even less convincing. /END