



Reliability of Supply in competitive electricity markets

Summary of CEER Task Force: Security of Supply
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Liberalization introduced new challenges as :

- Reduced reserve margins
- More commercial flows + missing Transmission links
- CBT permanent system difficult to agree on and implementation delayed
- Loss of integrated business approach
- Disappearances of “regulated” investments in generation
- Higher risk both for generation and transmission
- More complex Transmission Management (common congestion rules and data exchange difficult to manage in an efficient way without mandatory EC rules)
- More renewable - wind - dispatch issues important !

Security of supply – still an unsolved agenda

- Lack of common “acceptable” definition
- Why is investment “low” ?
- Do we need carrot or stick or both
- Why mix generation adequacy and transmission capacity
- Different dimensions of SoS not fully addressed
- Will regional or common market be a catalyst to “solve” SoS ?
- Renewable the only “source” that will expand ?
- Risk analyses a new tool for analyzing SoS

Definition

- **“Security of supply means that customers have access to electricity at the time they need it with the defined quality ”**
- *This means that the whole value chain of the power sector is included and many stake-holders are effected !*

Most stakeholder focus on their core business

- **ETSO** : Most used issues: Reliability, Adequacy to supply demand, Security as operational issues as : frequency control, reserve (primary etc), voltage support, RAS schemes etc.
- **EURELECTRIC** : Ensuring Investment in Generation, robust Transmission system, access to primary fuels, fair return on investments
- **CEER** : Market, prices, competition, Regulation
- **EC** : will use the new directive to improve SoS, current situation nor comfortable !
- Who is able to make the **full** overview ?

Scope

- Main problem: long term adequacy between supply and demand, when supply is provided in competition
 - → *“Are we sure enough generation capacities will be built in time?”*
- Transmission lines: monopoly issue
investing in the grid by the TSO - “controlled” by the regulator
- Short term: balancing mechanisms exist
Power plants can respond quickly - Demand Response can be used if quick response can be organized efficient

Responsibilities Today

- **Governments:** Most focus on : Strategic goals (primary energy sources...), scenarios, some have specific power (tendering or licensing)
- **Governments, regulators or TSOs** (depending on the Member State) Main focus on : Demand & Supply forecasts
- **Regulators:** market rules and market supervision
- **Markets**, when effectively competitive: primary mechanism, also for SoS

Market rules are important

- **A liberalized system needs a clear definition of tasks and responsibilities of the various actors**
- Assignment of tasks and responsibilities should be stable: Government should not change it or distort market rules
- Lack of a clear definition may lead to crisis
- Electricity companies, in their pursuit of profit, should act in a way as to “produce” security of supply. Good rules ensure consistency of private interest and common goals
- This is easier in a large market, where risks can be spread
- Where this is not possible, obligations (performance standards) imposed on firms should be clear and defined ex ante

Electricity Prices and Investment in Generation

- Risky environment for investors
- When prices increase, existing generators may be satisfied with the situation without the need to new investments
- Forward prices
 - useful for hedging
 - today, available for fewer years than needed
 - lack of liquidity (risk of manipulation)
 - spot price signals alone are not an adequate tool for investment decisions
- Other signals are to be assessed
 - forecasts of demand and supply (reintroduce long term planning ??)
 - interconnection projects
 - primary energy sources: diversity, availability, price volatility
- Markets are not perfect
 - Market “insufficiencies” must be removed

Incentive Schemes for Generation (?)

- Incentive schemes should be market-based and should not destabilise the market situation

- Possible schemes, which could be studied, include:
 - capacity payments (fixed or dynamic)
 - installed capacity markets (ICAP)
 - mandatory call options for the TSO or the suppliers
 - call for tender

- Incentive schemes as **tender** can have the effect that all generators will “force” this system to be the common rule !

Necessary Principles for Security of Supply

- Clear definition of roles and responsibilities of all the stakeholders
- Well defined regulatory framework (EU challenge !!)
- Market rules that facilitate effectively competitive generation markets
- Continuous monitoring and reporting - are power balances needed ?
- Security of supply best addressed in a broad integrated market - the regional approach(**EU Strategic Paper**) - do we need new Regulatory tools for regional markets and how and when will regional TSO be created ?

Some conclusions from CEER TF on SoS

- **There is no common denominator from recent black outs**

- However there are 2 hypotheses that either should be rejected or accepted
 1. Existing rules are inadequate or incomplete in an interlinked power system with several TSOs running separate parts of the grid
 2. Existing reliability standard n-1, has not been adapted to the new environment with increased utilisation of the grid

Conclusions from CEER TF on SoS 2

- Most of the black out could have been prevented but because of: lack of coordinated measures, supervisions, responsibilities, actions, misunderstandings, etc. made it happen !
- No control centre had the “full” overview beyond its service area
- No training on “black outs”
- Since deregulation the cost of n-1 has become visible and questioned
- Lower costs to make higher earnings, spinning reserve down to minimum
- n-1 is used for 2000 hours instead of 200 hours
- Utilization and complexity of the grid has increased
- Increased number of dispatches caused by renewables

Recommendations (CEER)

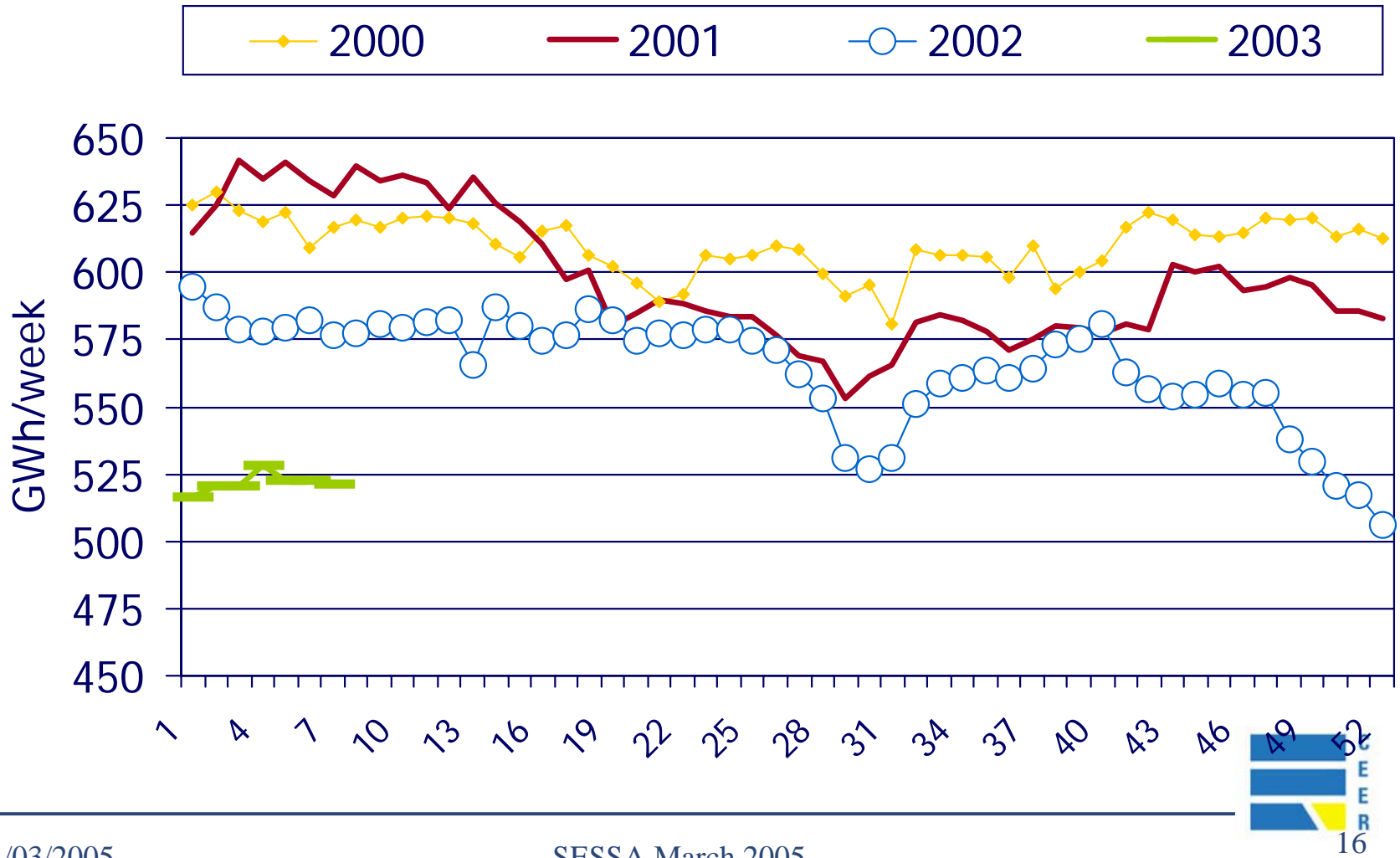
- EU-wide approach (or regional market approach)
- Increase of transparency
- Analysis of incentive schemes and of their costs
- Assessment of the impact of primary energy sources (including renewables and small-scale distributed generation)
- Demand response measures (e.g. demand side bidding)

More recommendations

- Reduction of regulatory uncertainty (new nuclear in Finland, expansion stop elsewhere in Scandinavia)
- Clearer roles and responsibilities for all stakeholders (removing of grey zones)
- Improving Demand Response (use of aggregators)
- Operator management and training (lack of experiences and simulations of “crises”)
- Coordinated reserve capacity and real time control of peak demand (TSOs act like one “body” in regions)
- The Political issue (must realize the importance of SoS and allow means to meet with growing demand and quality including SoS)

Demand response – example from the 2002-2003

Weekly consumption power intensive industries
2002 - 2003 (Source: PIL)



Is there a simple technical solution ?

Is there a need to standardize specification to 2way com. meters ?



Will CEER make an initiative?

All domestic end user in Italy will have these meters installed mid 2005

Total costs meter and installation less than euro 100!

Black outs and “other disconnections” put SoS on the agenda – new EC proposal for SoS and Infrastructure dir.

- Significant investments needed in generation and transmission
- Clear stable regulatory system
- Interconnection equals 10% of installed capacity
- Increased consumption ,closure of plants, more new gen. from renewable
- Scheduling timetables, voluntary guidelines need to be updated
- Revised “handbooks” UCTE and NORDEL
- Will the private investor ensure sufficient capacity?
- Supply issues goes beyond borders
- Coordination of SoS issues across member states

Directive 2003/54/EC of 26 June

- SoS is “directly” addressed :
- Article 3, 3,9
- Article 6 1.2
- Article 7, 1
- Article 9, a,b
- Article 11, 1,4,5,6,7
- Article 14, 1
- Article 23, c,f,g
- Article 28, 1 c,d, and 3 third bullet
- **SoS is well taken care of, but “further guidelines are needed!”**

New SoS directive, comments from CEER

- Article 6. Investments add little or no scope already given
- Article 7. Cross Border etc. Most covered in the Regulation.
- **Full liberalization** is the main prerequisite for development of infrastructure
- SoS is dependent of efficient regulation of TSOs by CEER members
- Regional markets will improve SoS
- Handbook UCTE in progress
- No need to for statutory consultation between regulatory authorities and the commission on planned investments. Current systems can cover co-ordination of investments that span TSO borders.
- **SoS directive still pending and many revisions have been done, and now left to political bodies to decide! EP may issue a proposal soon!**

Too many “conflicting” directives??

➤ illustration made by E-control

