



ASSEOLETTRICA

*1st AIEE Energy Symposium
Current and Future Challenges to Energy Security*

*Dual Plenary Session
Energy security of supply and market developments*

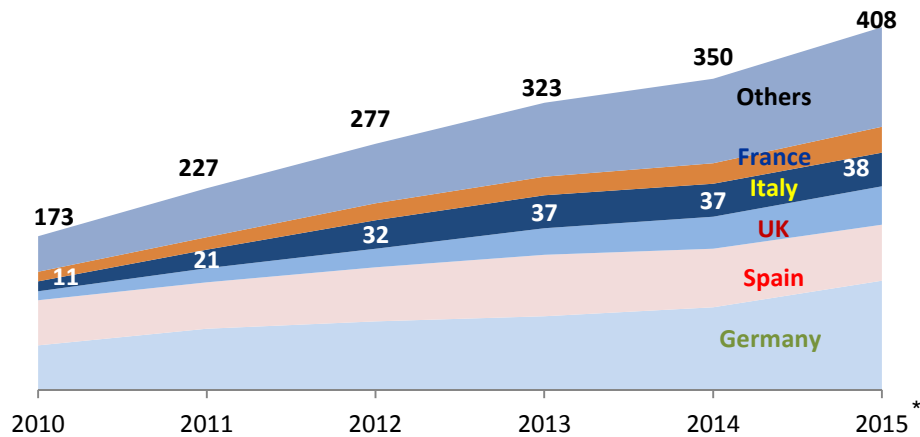
A new market deal for security of supply

**Felice Egidi
ASSEOLETTRICA**

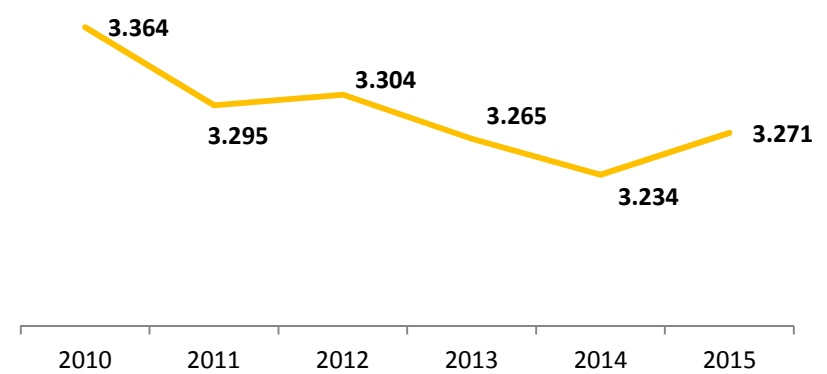
December 1st, 2016

European energy transition

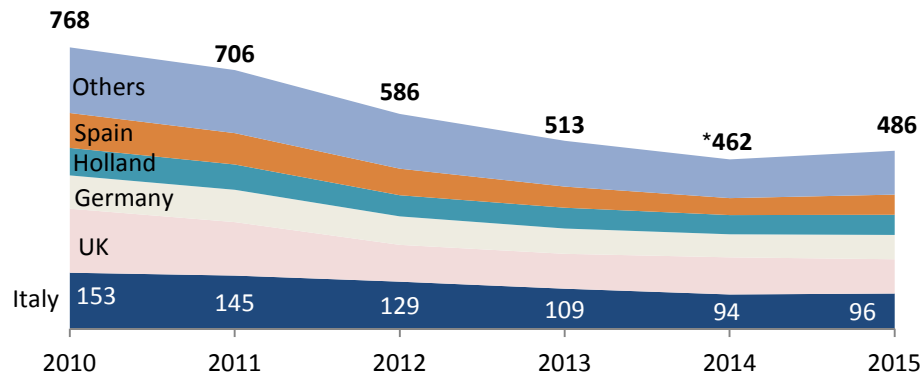
Wind and solar production (TWh)



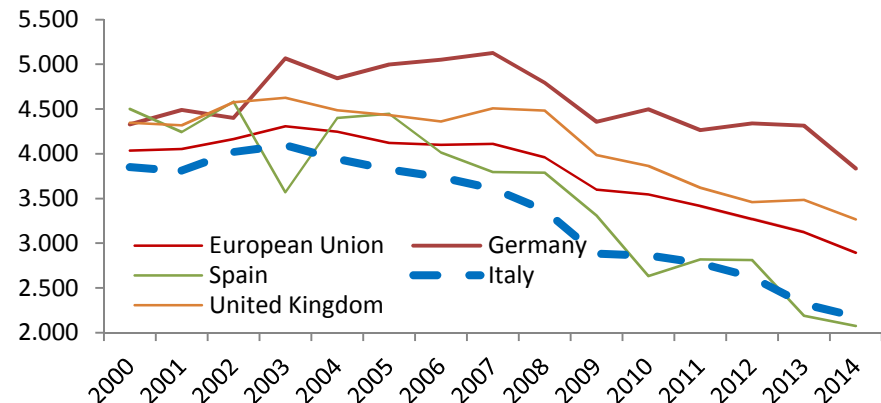
Total electricity demand** (TWh)



Production of gas fired plants (TWh)



Operating hours in fossil fuel plants



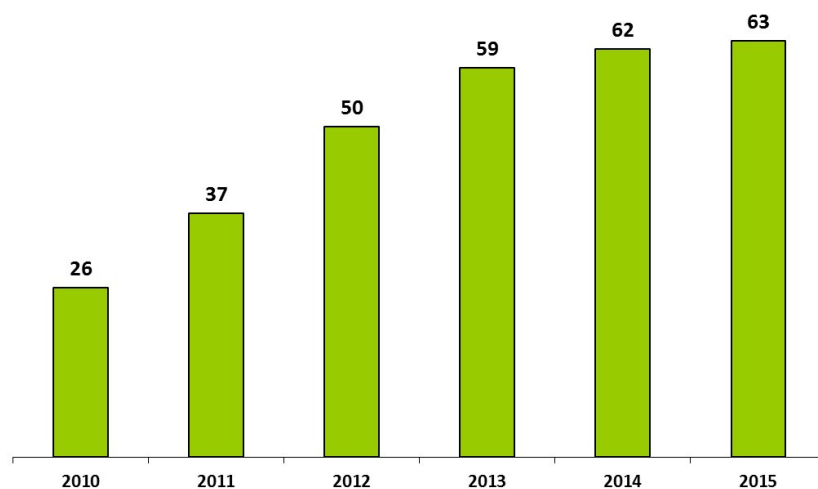
*Early data **Countries Entso-E

Source: Agora Energiewende (2016): Energy Transition in the Power Sector in Europe: State of Affairs in 2015. Review of the Developments and Outlook for 2016 - data processing by Entso-E

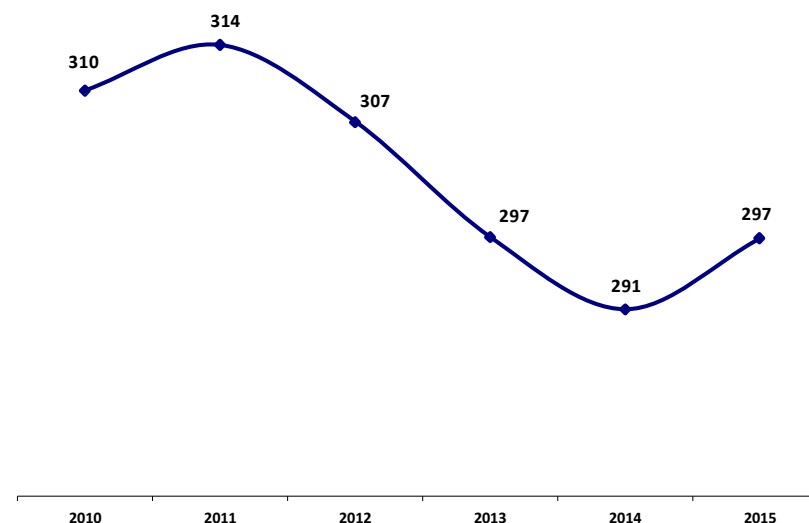
Development of demand and production from renewable sources in Italy

TWh

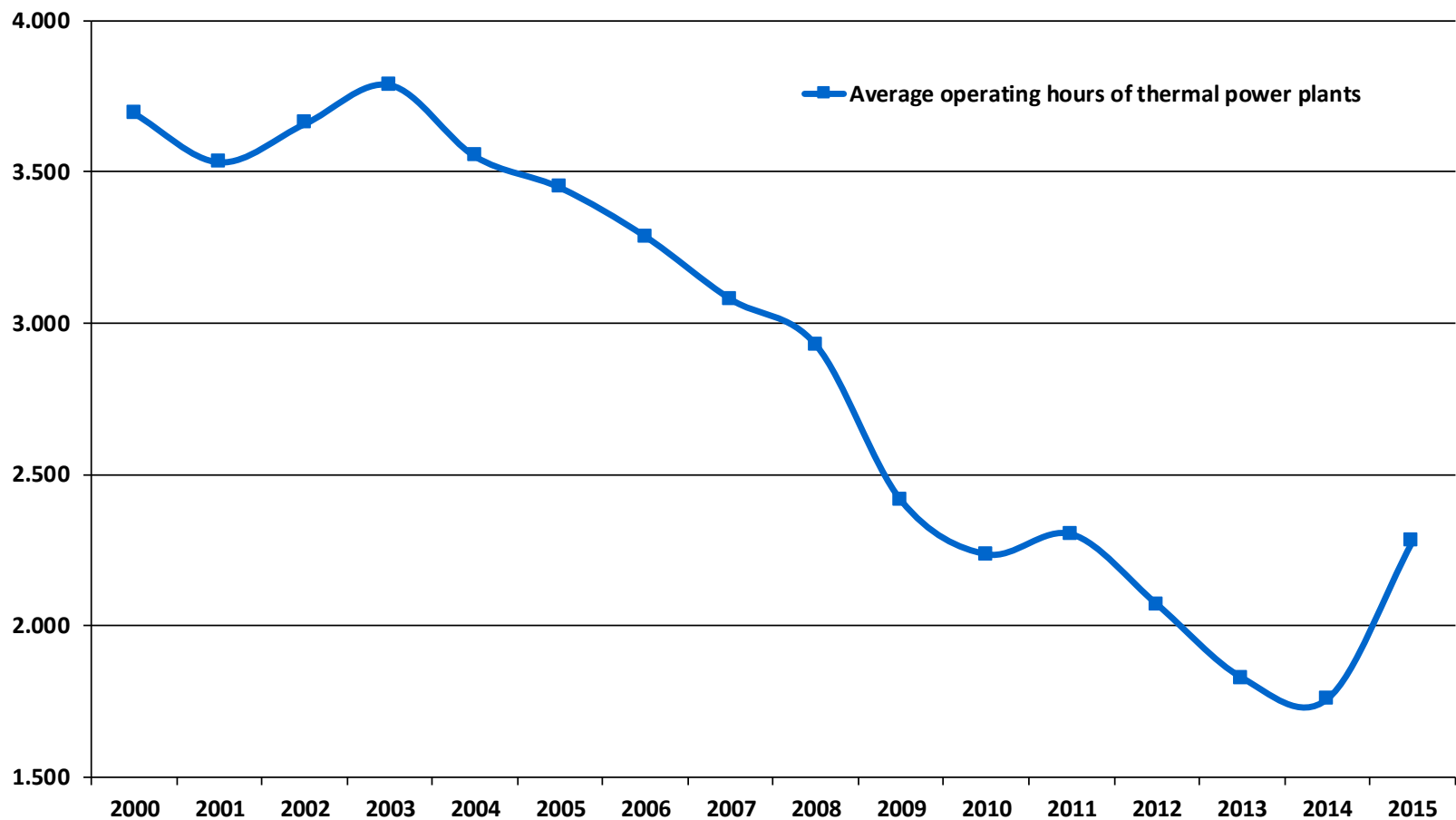
Evolution of production from new renewable sources



Evolution of electricity demand



Development of operating hours of thermal power plants

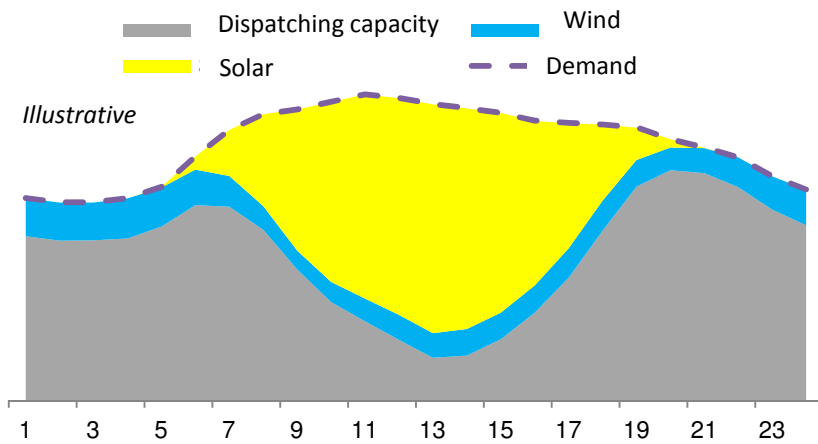


Note: figure refers to plants using non-renewable sources excluding the power and production of the combined cycle cogeneration plants fueled by natural gas

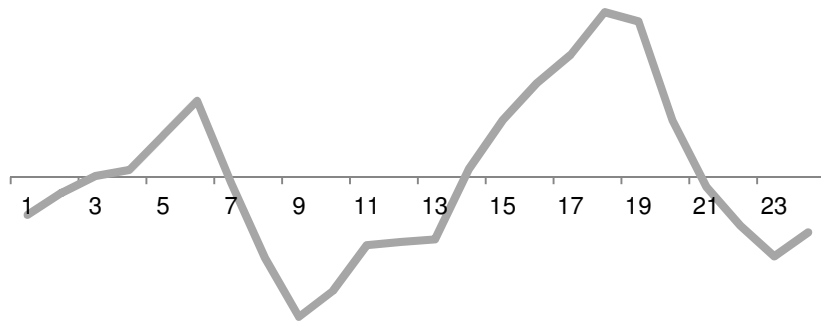
Source: ASSOELETRICA processing from Terna ad GME figures

Need for flexibility increases in the presence of intermittent sources

Medium generation profile with high solar capacity

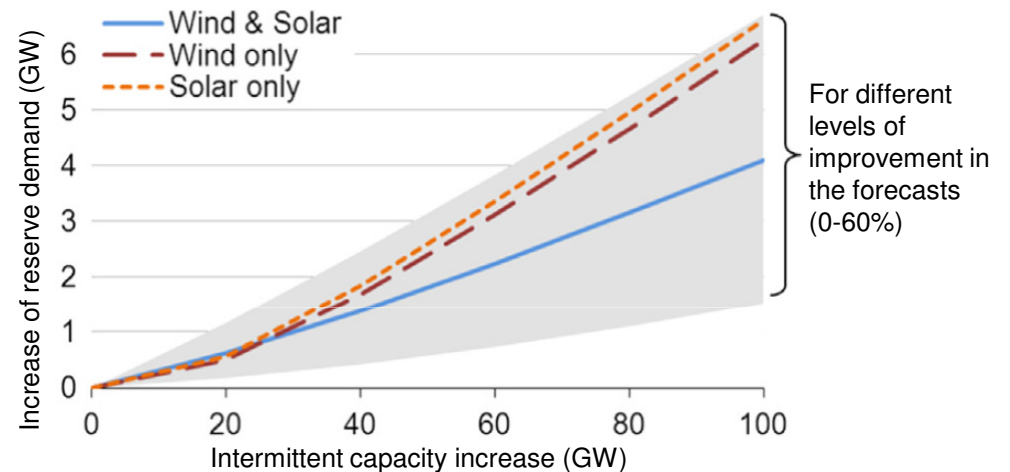


Needs of medium ramp Correspondent



The back-up plants are more and more essential while the profile of the residual demand that becomes more extreme

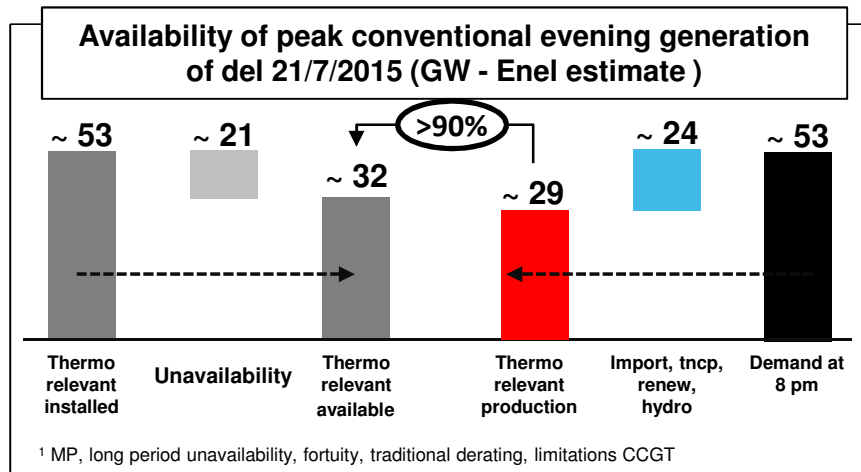
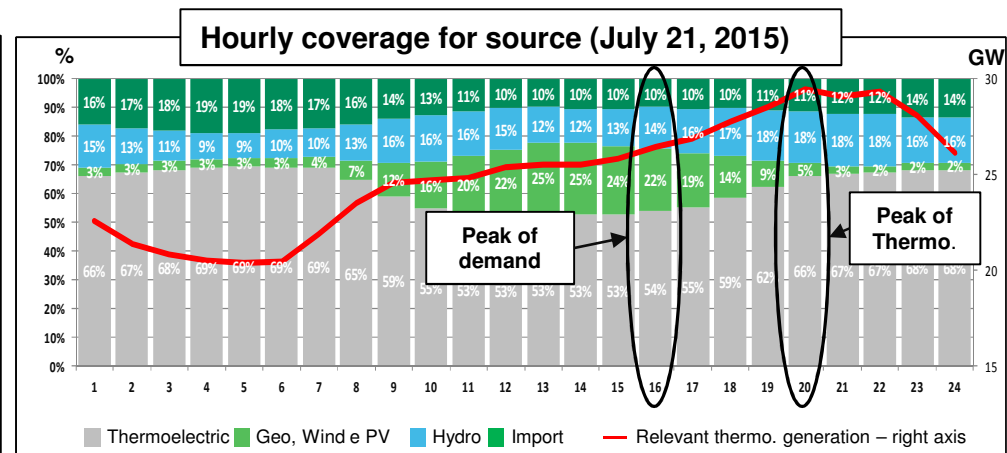
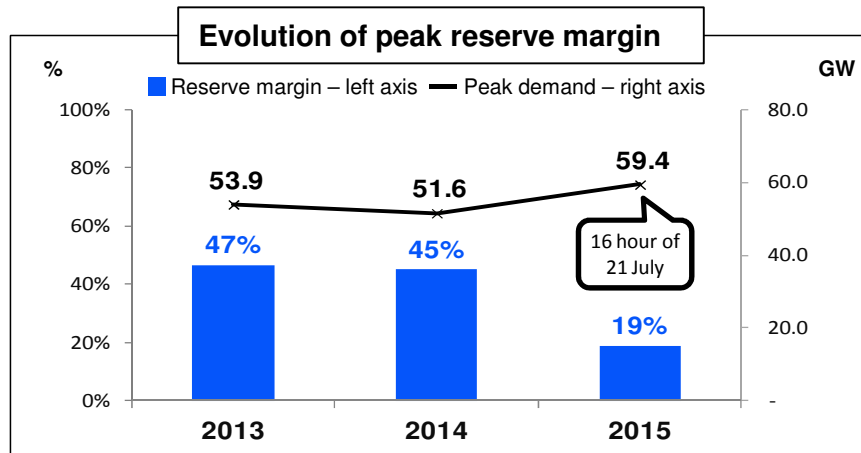
Impact of additional intermittent capacity on reserve demand *



- Greater reserve demand
- Greater use of rapid reserve
- In Italy the higher new costs are recovered through the uplift

System Adequacy in 2015

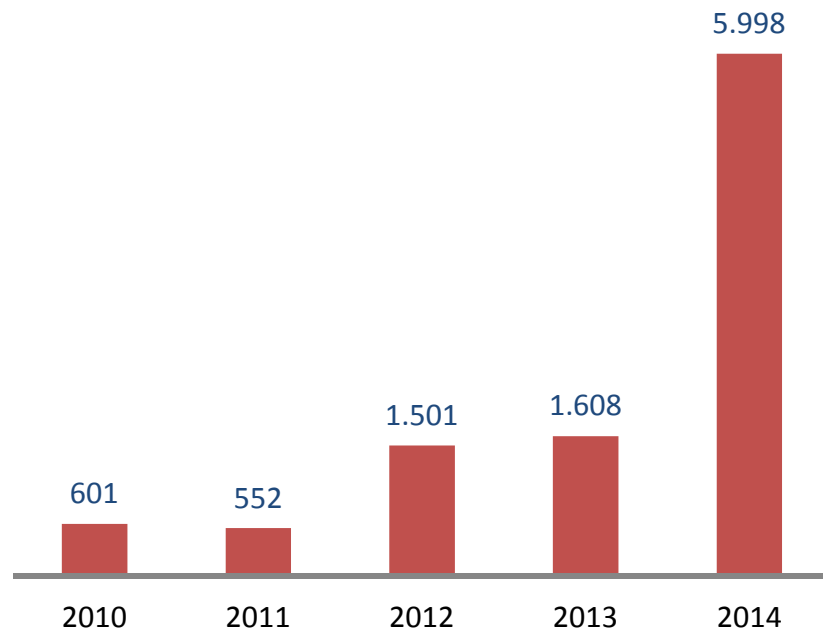
Reserve margin at peak load



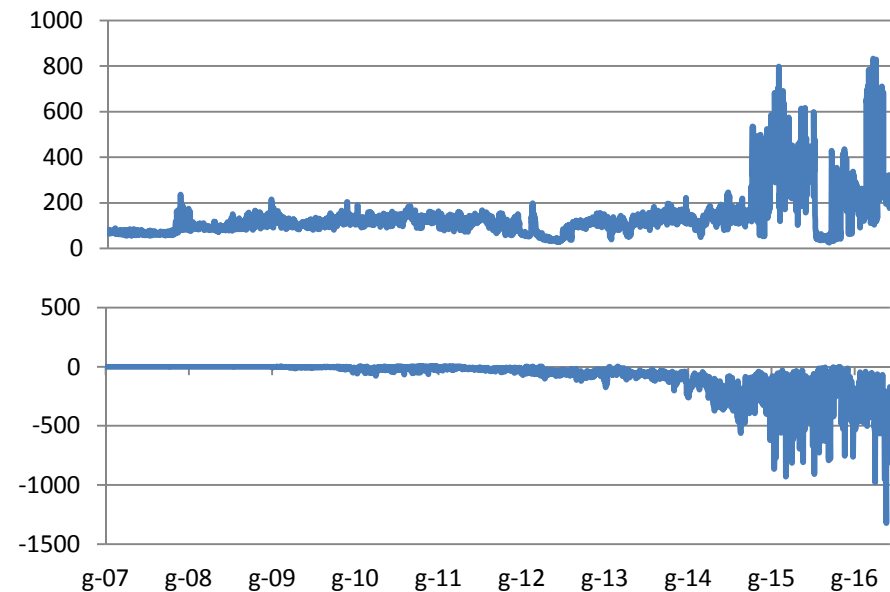
- ✓ In 2015 the absolute record of peak demand was recorded
- ✓ Maximum conventional generation contribution in the evening hours (> 90% availability occurred July 21, 2015 at 8 pm) compared to a reduction of the PV production
- ✓ 2015 reserve margin stood around 19% (Substantially touching the minimum adequacy limit specified by the TSO)
- ✓ Recently, Terna revised its peak demand estimates for the coming years

The growth of renewable generates volatility of balancing prices. The German case

Maximum prices of balancing energy (€/MWh)



Average prices of the activation of tertiary reserve * (€/MWh)



Extraordinary increase in 2014 in the maximum prices of balancing energy that reached 5,998.41 €/MWh. In 2014 the prices have exceeded 2,000 € / MWh in 12 occasions.

* : Average energy prices, activated by tertiary reserves to rise and to fall in the time slot 16-20

Europe is adapting the market design with the view to support the energy transition

Integration of energy markets

- Better integration of intra-day and balancing markets
- European common platform for continuous trading on intraday with trading near real-time
- Coordination for congestion resolution (*redispatching e countertrading*)
- *Netting* of unbalances and integrated european market, for secondary and tertiary reserves, opened to the participation of all resources of production and consumption

New Market Design

- Elimination of price constraints to spot markets to help provide price signals in times of stress (peak demand, local criticality of the system, etc.)
- Capacity remuneration as a possible complement to the energy markets in order to ensure safety and reduce price volatility
- Preferred mechanism: central buyer of capacity (as in the case of Reliability Options proposed by Italy) to ensure transparency and competitiveness and provide long-term signals to guide investment and divestment decisions efficiently

Better forecasting of production of variable sources

Reduction of the need of dispatching resources

More competition on dispatching markets

Price signals for decisions of investment / divestment / maintenance in exercise

- 1) **high volatility in spot prices**
- 2) **Contractualization of capacity through market mechanisms to reduce volatility and ensure adequacy**

Clean Energy For All Europeans

Comprehensive package of 18 *main* documents

(1) Chapeau Communication “Clean Energy For All Europeans”

5 pillars of the Energy Union

SECURITY OF SUPPLY

(2) New Regulation on risk preparedness

INTERNAL MARKET

(3) Review of Directive Internal market in electricity

(4) Review of Regulation on electricity market

(5) Review of Regulation on ACER (EU energy regulators)

(6) Bi-annual report on prices and cost

(7) Sector inquiry on CRMs

ENERGY EFFICIENCY

(8) Review of Directive on Energy efficiency

(9) Review of Directive on Energy performance of buildings

(10) Report on EU Energy Efficiency Fund

DECARBONIZATION

(11) Review of Directive on Renewable energies

(12) Communication on Eco-design

(13) Regulation on Eco-design for heating and cooling

(14 – 15) Regulation on tolerances in eco-labelling

INNOVATION

(16) Communication on Accelerating clean energy innovation

(17) Communication on intelligent transport system

(18) New Regulation on the governance of the energy union

Clean Energy For All Europeans

Most relevant items 1/3

Renewables

- 27% minimum penetration on EU final consumption
- Long-term planning for RES tenders (3+ years)
- Opening to technology-specific auctions
- Mandatory opening of national auctions to foreign projects
- Streamlined permitting for repowering and small RES
- EU Commission can fill-the-gap through tenders financed by Member States, if needed
- Protection against retroactive changes

Capacity Remuneration Mechanisms

- Reliability Options considered an appropriate solution in the State Aid Inquiry
- CRM allowed only if supported by a 10-year European adequacy assessment by ENTSO-E (EU TSOs) with data provided by national TSOs and the approval of ACER (EU energy regulators)
- Mandatory participation of foreign capacity, with volumes defined at regional level (instead of national)

Clean Energy For All Europeans

Most relevant items 2/3

Improvement of Short Term Markets

- **Markets fit-for-RES**: higher granularity and closer to real time in day-ahead, intraday and balancing
- Balancing responsibilities for all technologies
- No priority dispatch for new plants (but yes for existing RES)
- **Market based curtailments**
- No price restrictions / improved scarcity signals
- Regionalization of balancing markets

Long Term Price Signals

- **Member States to enable** the development of forward hedges
- Removal of admin **barriers to corporate long-term RES PPAs**

Improvement of Short Term Markets

- **Obligation to install EV recharge points** in new/renovated buildings and from 2023 for all building
- **Smart building readiness requirements** from 2023
- **Markets fit for storage and demand response**: day ahead, intra-day and balancing
- **Aggregation allowed** in all markets
- **New European Network Codes** on storage, demand response, re-dispatch and cybersecurity
- **Dedicated budget** in EFSI and structural funds

Clean Energy For All Europeans

Most relevant items 3/3

DSO

- No additional unbundling requirements
- Possible DSO engagement in storage/EV only in case of market failures and with the approval of national regulation authorities
- Metering can be opened to third parties
- EU principles on grid tariffs, incentives and R&D
- New European Network Codes on distribution tariffs
- Creation of a new European Electricity DSO body
- Partial shift of cross-border activities to a new Regional Operation Centres (ROCs)

Retail Markets

- Removal of regulated prices with possible temporary exceptions for vulnerable households
- Obligation on suppliers to offer dynamic pricing contracts
- New requirements for billing and data provision

Energy Efficiency

- 30% binding target at EU level. Indicative target at national level and extension of obligation on energy operators (1,5% of energy sales)

Redesign the Italian market

❑ **Reform of capacity market**

- In our country the need for introducing a capacity market to the spot market has been discussed in depth analysis since 2005
- At the moment there is a capacity market proposal is under examination, in pre-notification phase, by General Direction (DG) Competition of the EU
- The same DG Competition defined the Italian proposal as the most appropriate to market needs

❑ **Despatching market**

- The Authority has already started the despatching market reform in order to enlarge the set of sources authorized to participate
- When fully operational, this market will be fully opened to all resources of supply and demand, including renewable sources, according to predictions of the Target Model and Balancing EU Code
- Renewables sources will fully participate in this market when the rules will make possible to define the production plans in the proximity of real-time and in the presence of the possibility of aggregation of supply and demand
- To evaluate the possibility of expanding the set of plants to contractualize

❑ **Despatching charges**

- pending of the Market Design redefinition, it is necessary a corrective action in order to incentive despatching operator to make correct programmes



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Grazie dell'attenzione

**Felice Egidi
ASSOELETTRICA**