

Capacity mechanisms in Europe

The fundamental issues behind the ongoing sector enquiry

Session 2 - If a capacity mechanism, which design is most appropriate?

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Brussels,

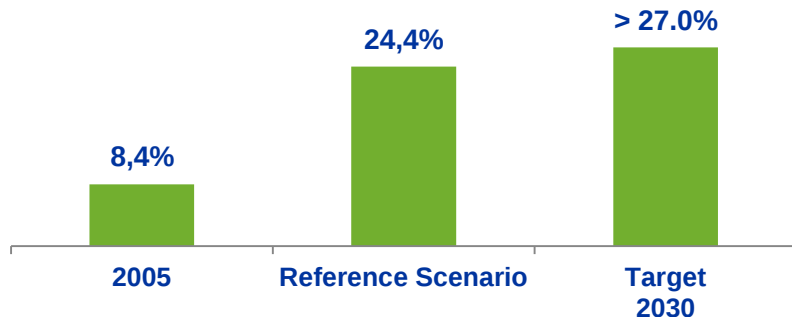
28th September 2015



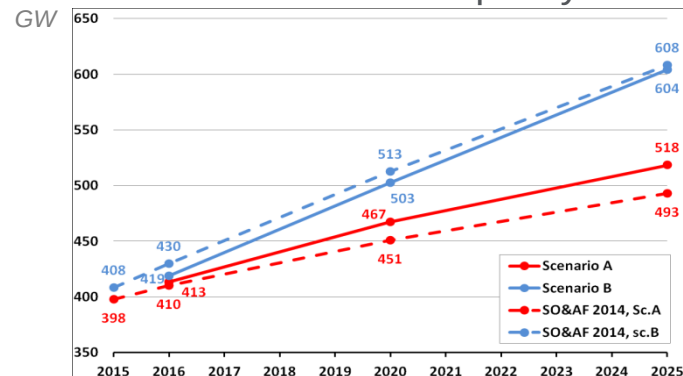
Future RES Development



Renewable share on final gross consumption*



RES Generation Capacity**



RES investments still needed to achieve 2030 targets

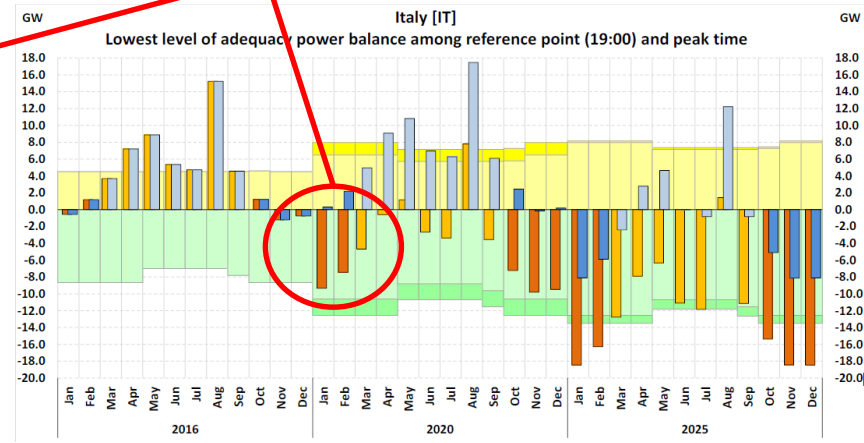
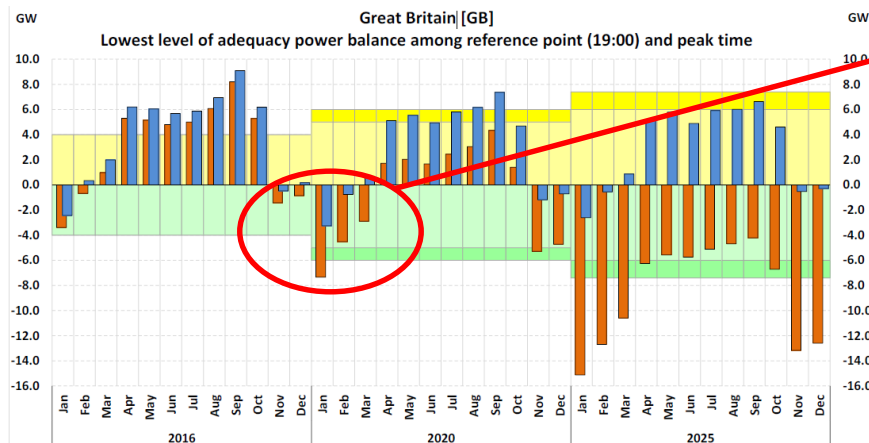
(*) RES target refers to all sectors (electricity, heating and cooling, transport) Sources: Primes 2013, 2030 Climate Energy Package

(**) ENTSO-E Scenario Outlook & Adequacy Forecast 2015, page 27

Adequacy Forecast 2016 - 2025



New capacity needed



- Importable capacity for adequacy - sc. A & B
- Remaining Capacity (reference point) minus Spare Capacity - sc. A
- Remaining Capacity (reference point) minus Spare Capacity - sc. B

- Exportable capacity for adequacy - sc. A & B
- Remaining Capacity (peak time) minus Adequacy Reference Margin - sc. A
- Remaining Capacity (peak time) minus Adequacy Reference Margin - sc. B

Future Trends in European Electricity Markets



Now

RES still not dominant in the energy mix

- Energy prices >0 most of the time
- RES offer limited balancing services
- Predictable imbalance costs

Near future

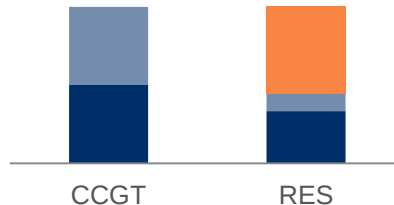
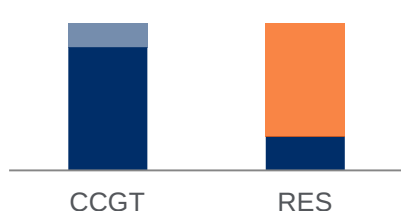
RES more prominent in the energy mix

- Energy prices >0 most of the time, but many hours with 0 and <0 prices
- RES offer some balancing services
- Imbalance costs increases

Next Decade

Bulk of energy from RES

- Energy prices 0 and <0 for many hours
- RES offer balancing services
- Imbalance costs very high



Shares of Revenues

■ Incentives

■ Intraday and Balancing

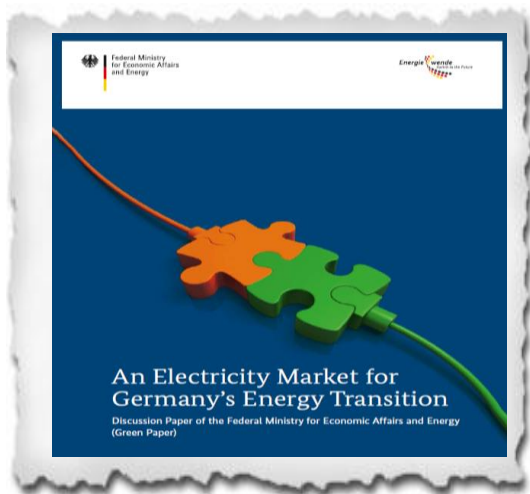
■ Day ahead

Variability in energy prices increases financing costs for new projects

Low revenues for programmable capacity could bring problems of Security of Supply

Note: Graphs are illustrative

Current Debate Examples



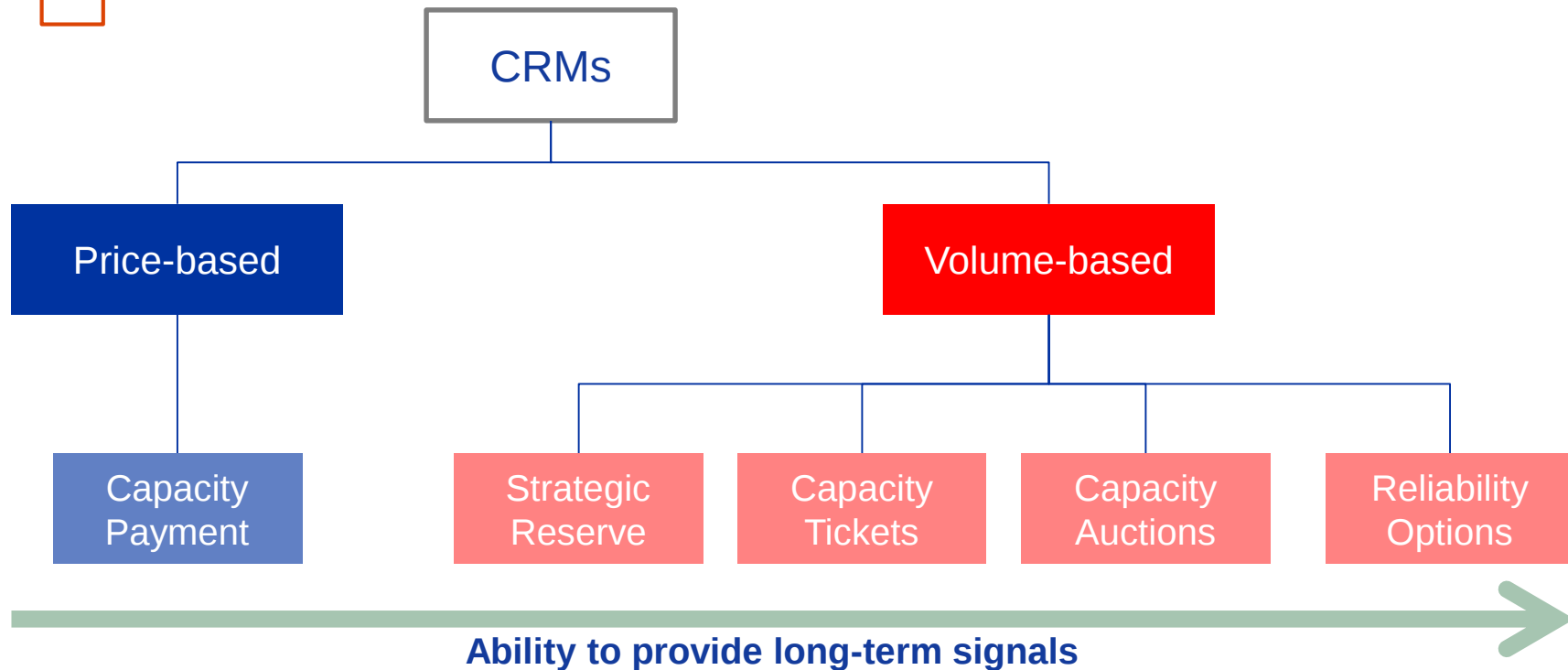
Focus on energy-only market : how to foster day-ahead, intraday, and balancing prices

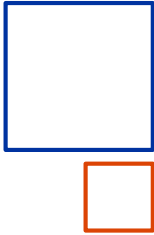


Capacity mechanism based on capacity tickets

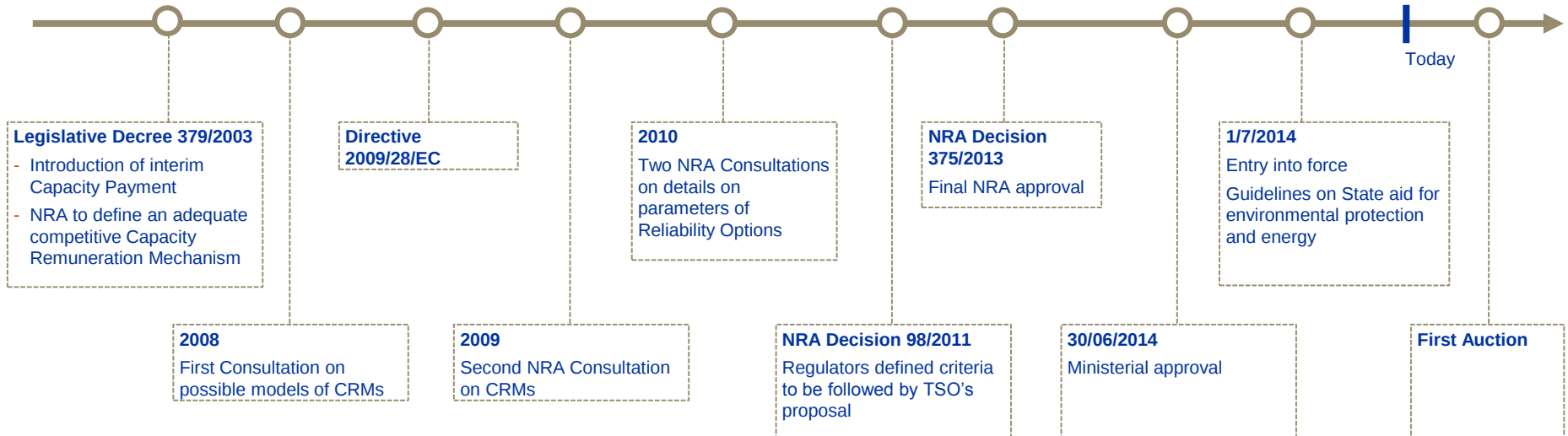
**The two sides have started tackling some issues of the current market design
BUT they miss the major point: how to foster long-term signals**

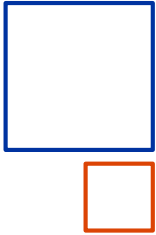
Capacity Remuneration Mechanisms (CRMs)





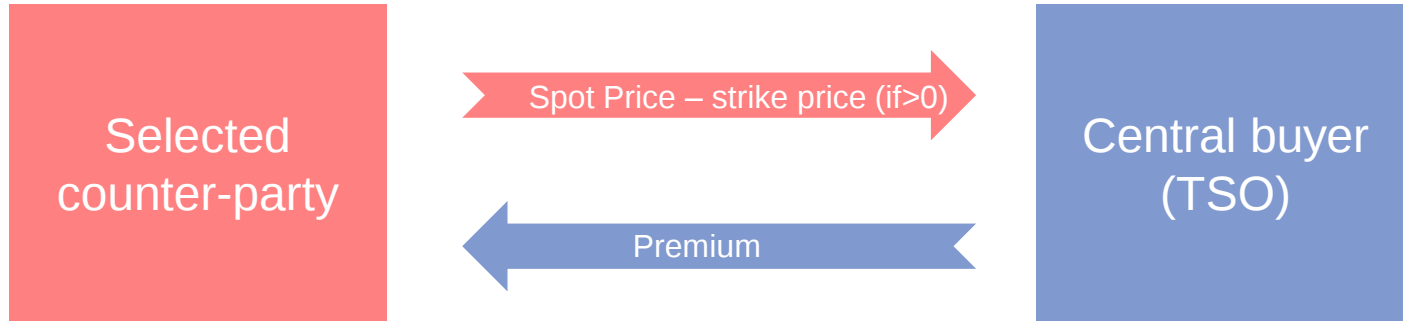
Introduction of Reliability Options in Italy





Reliability Options in Italy

1-way CfD between TSO and selected counter-parties



Rights

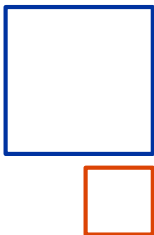
Receive premium (€/MW/year) during delivery period

Obligations

1. To submit offers in DAM and Ancillary Service Market (ASM)
2. To pay the difference between spot price and strike price (if > 0)



1. Deliver long-term signals for all capacity
2. Incentives to deliver capacity when is needed
3. Market-defined triggers and penalties



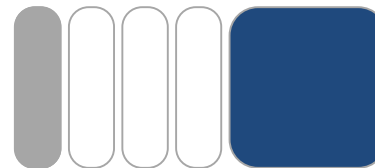
Auctions for Reliability Auctions in Italy



● Auction year ● Delivery period

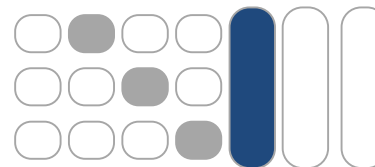
General Auction

- Lead time 4 years
- Delivery period 3 years



Adjustment Auctions

- Lead time 3, 2, 1 year
- Delivery period 1 year



Secondary Market

- Lead time <1 year
- Delivery period 1 month





Reliability Options Supply and Demand



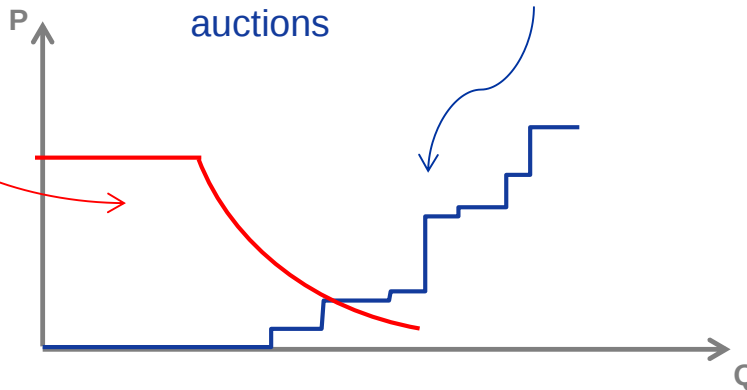
Zonal Demands

Negative sloped zonal demands defined by TSO considering VOLL, electricity demand and required reserve (netting for foreign interconnection capacity)

Supply

Voluntary participation of not incentivised new and existing national programmable capacity > 10 MVA (de-rated capacity, calculated by TSO)

Possible participation of foreign capacity, distributed generation and demand side management in future auctions



*Note: Graph is illustrative. For existing capacity under discussion the possibility to receive a minimum premium equal to avoidable fixed costs
Calculation of de-rated capacity considers average unavailability due to incidents and technical and regulatory imitations
VOLL: Value of Lost Load*

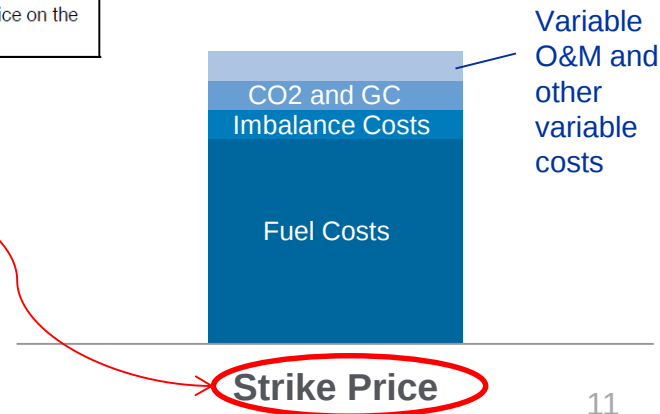
Spot and Strike Prices



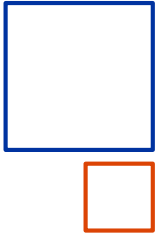
Quantity		Spot price	
		Offered price $\leq$ strike price	Offered price $>$ strike price
Accepted on the Day-ahead market		Price on the Day-ahead market (P_DAM)	
Presented but not accepted on the Day-ahead market (DAM) and not presented on the Dispatch Services Market (DSM) or Not presented on the DAM nor on the DSM	Adequacy system	Max (P_DAM; Max Price on the DSM)	
	Lack of adequacy system	VOLL	
Presented and accepted on the DSM		Strike price	Offered price
Presented but not accepted on the DSM			Max (P_DAM; Max Price on the DSM)

DAM: System Marginal Price
DSM: Pay as Bid

Single strike price for all accepted capacity, calculated on variable costs of peak technology – updated



Note: the graph is illustrative, table from Terna



Thank you very much
for your attention

