
Demand Response in the Design of the Italian Electricity Market

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- Background information on the Italian electricity market
- Demand response in the past and current system
- Demand response under the new trading arrangements



- Gestore del Mercato Elettrico S.p.A. (GME) is owned by the transmission system operator (GRTN, which is publicly owned)
- GME will run electricity and ancillary services markets
- Market rules are designed by GME and approved by the Ministry for Productive Activities, after seeking the opinion of the Regulator

- Regulator set rules on:
 - a) procurement of ancillary services by the system operator through GME's markets;
 - b) short run allocation of transmission rights (implicit auction in the energy market & non-discriminatory congestion fee on bilateral contracts);
 - c) attribution of ancillary services cost to customers (imbalance charges ...)



Towards the new Italian electricity market

2000

June 2000

GME established

November 2000

GME submit Market Rules to the Minister of Industry

2001

May 2001

Electricity Market Rules approved by the Minister

December 2001 **GME assigns the contract for the development of IT systems**

January 2002

GME submit “Instructions” complementing the Market Rules to the Minister

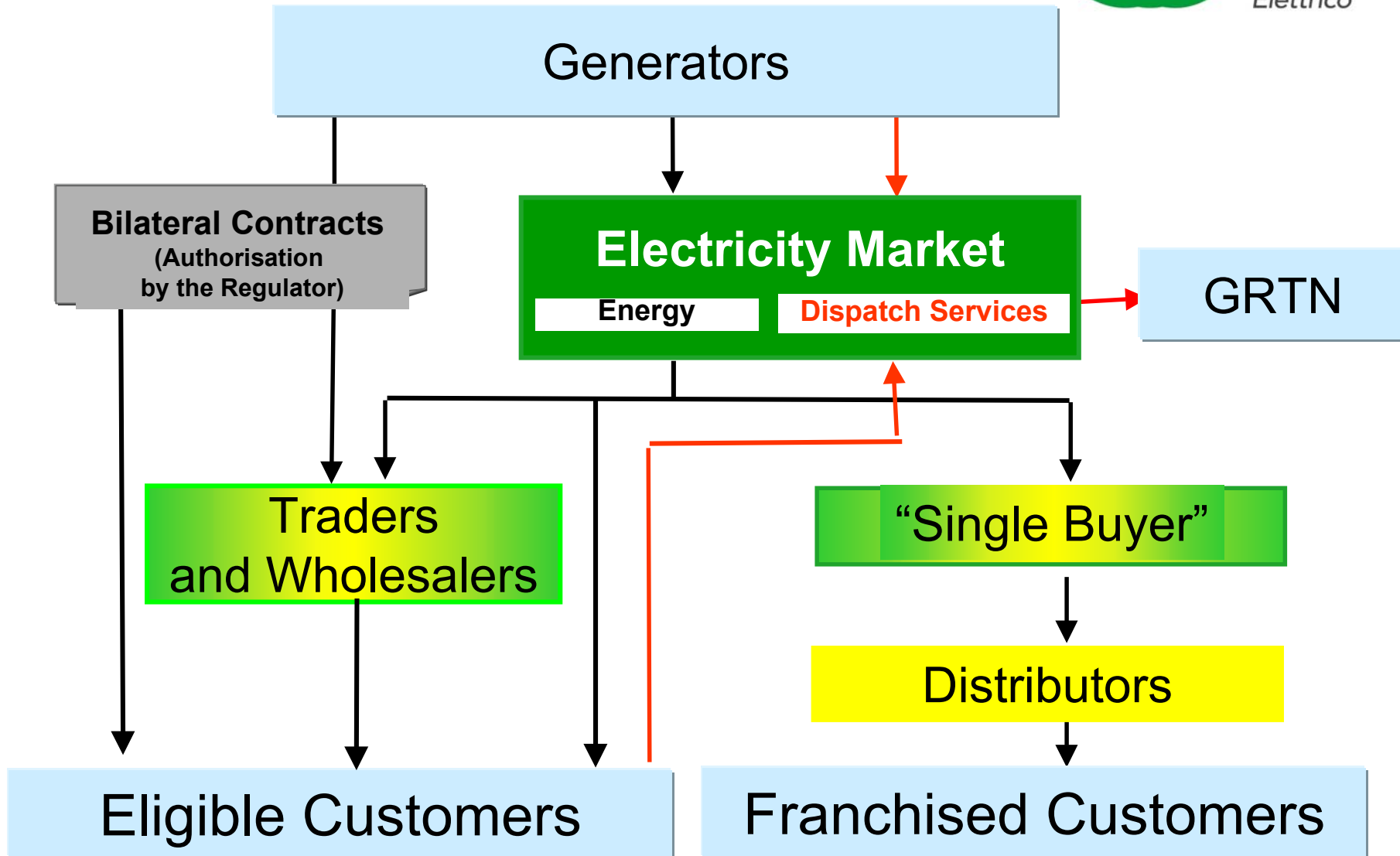
2002

August 2002 **Daily dry runs start**

2003

Decrees by the Minister of Productive Activities approving the Instructions and setting the take-off date are necessary for GME to start commercial operations

Overview of the Market Design



Eligibility Criteria

Eligibility Criteria	Legislative Decree n. 79 of 1999			90 days after sale of Enel's 3 rd GenCo	Draft Bill on Energy Sector Reform
	1999	2000	2002		
Threshold for Customers and Consortia	30 GWh/yr	20 GWh/yr	9 GWh/yr	0,1 GWh/yr	0,05 GWh/yr
Threshold for Multi-Site Customers			40 GWh/yr		
Threshold for Each Consortium Member or Site	2 GWh/yr	1 GWh/yr	1 GWh/yr	0,1 GWh/yr	0,05 GWh/yr
Consumption of Potentially Eligible Customers	≈ 30%	≈ 35%	≈ 40%	>60%	>65%
Number of Potentially Eligible Customers	≈2000	≈3000	≈5000	>180000	>500000

- During the monopoly period “interruptible-service” contracts were (informally) introduced in response to a shortage of generation capacity that appeared in the late 70s.
- Large customers (195 in 1992) with interruptible load totalling more than 2000 MW:
 - a) enjoyed a 5-10 % discount on their total electricity bills;
 - b) could be asked by the incumbent utility to refrain from withdrawing power with a 24-hour notice (maximum number of requests 30 per year);

*(Warning!: Figures on the past system are little more than anecdotal;
the whole system was not transparent)*

- Interruptible-service customers could refuse to shade load without incurring any “major” penalty
- Interruptible customers were required to reduce load very rarely (twice in the worst year, basically never from the second half of the 80’s)
- The logic underlying the decision to activate Interruptible-service customers was not “cost-based”. Interruptible customers were activated only if that was necessary to avoid a widespread service disruption
- From 1993 the monopolist reduced the number and the value of interruptible service contracts (on the basis that they were no-longer needed).

- In the last couple of years the concept of interruptible service has come back in fashion
- 2 types of interruptibility:
 - a) instantaneous (remotely managed by the dispatcher);
 - b) advance notice (at least 15 minutes)
- In 2002:
 - 1100 MW instantaneous interruptible load
 - 800 MW advance notice interruptible load

- Two types of compensation for interruptible load customers:
 - a) priority access to cross border import capacity (worth around 150.000 euro per MW);
 - b) privileged access to subsidised energy from renewable sources (sold at a 20-30 euro/MWh discount in 2001)
- Only once, in 2002, around 1000 MW interruptible load has been dispatched (with advance notice).

- In the monopoly and in the current system interruptible demand:
 - a) was (is) not a tool to achieve efficiency
 - b) was (is) a price-discrimination device

- In 1980 time-of-day tariffs were introduced for HV customers (1984 introduction for MV customers)
- In a couple of years a significant shift in the HV load profile (industrial customers modified their production processes)

The new electricity market

Energy Trading Markets

- Day-Ahead Energy Market (MGP)
- Adjustment Market (MA)

Markets for procurement of dispatch resources

- Congestion Management Market (MRC)
- Reserve Market (MR)
- Balancing Market (MB)

Day-ahead and Adjustment market(s)

- Demand participation in the Day-Ahead market
- Simple bids (price-quantity) for both demand and supply
- Zonal price differentiation for congestion management
- Hourly settlement per withdrawal point (may change before the start towards some level of geographical aggregation)
- Intertemporal constraint dealt with via the Adjustment market (two sessions per day)
- Demand participation also in the transitory regime with uniform demand-side price and zonal supply-side prices

Congestion management market

- Used by the system operator to procure variations of the injection/withdrawal programs to solve (residual) congestions
- The Regulator stated that demand can participate in the congestion management market
- System operator to decide on criteria to qualify loads to participate

Reserve/Balancing market(s)

- Used by the system operator to procure variations of the injection/withdrawal programs to balance the system
- The Regulator stated that demand can participate in the Reserve/Balancing market
- System operator to decide on criteria to qualify loads to participate

Conclusions

- Customers are not used to considering electricity as a business opportunity rather than a “necessary” input ...but they learn quickly ...
- System operator is not used to “dealing with” customers as service providers:
 - a) little trust that a customer will keep her commitment ...
 - b) large(r) number of counter parties requires a different way to manage the relationship
- The real price-elasticity of demand has not been tested yet, but it is probably underestimated
- Potential benefits are relevant for both system security and market power mitigation