

Electricity Markets and RES-E integration



October 24th 2012

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Market Operation. OMIE

INTRODUCTION

INTRODUCTION (1)

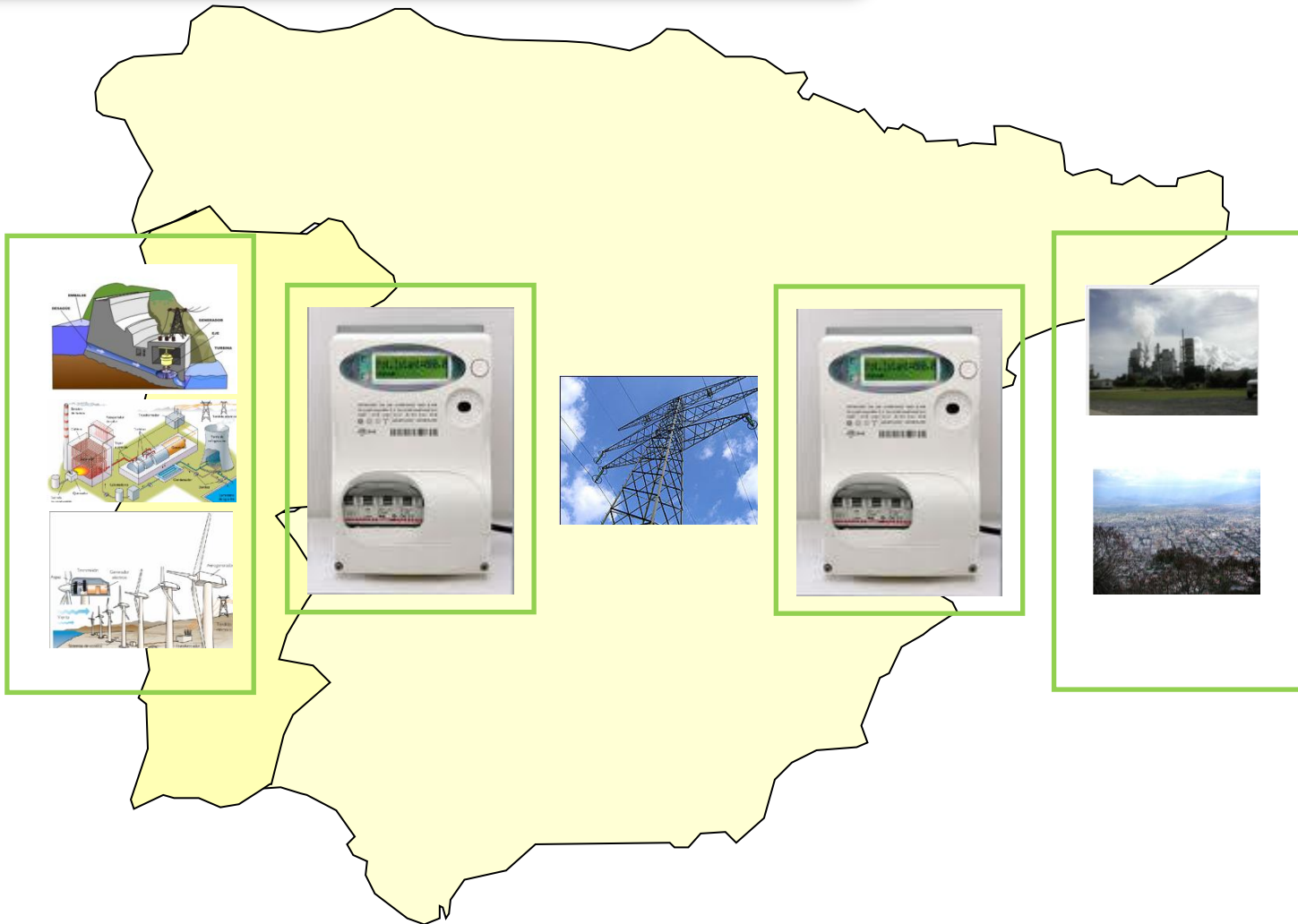
The market manages sales and purchases



Hourly basis

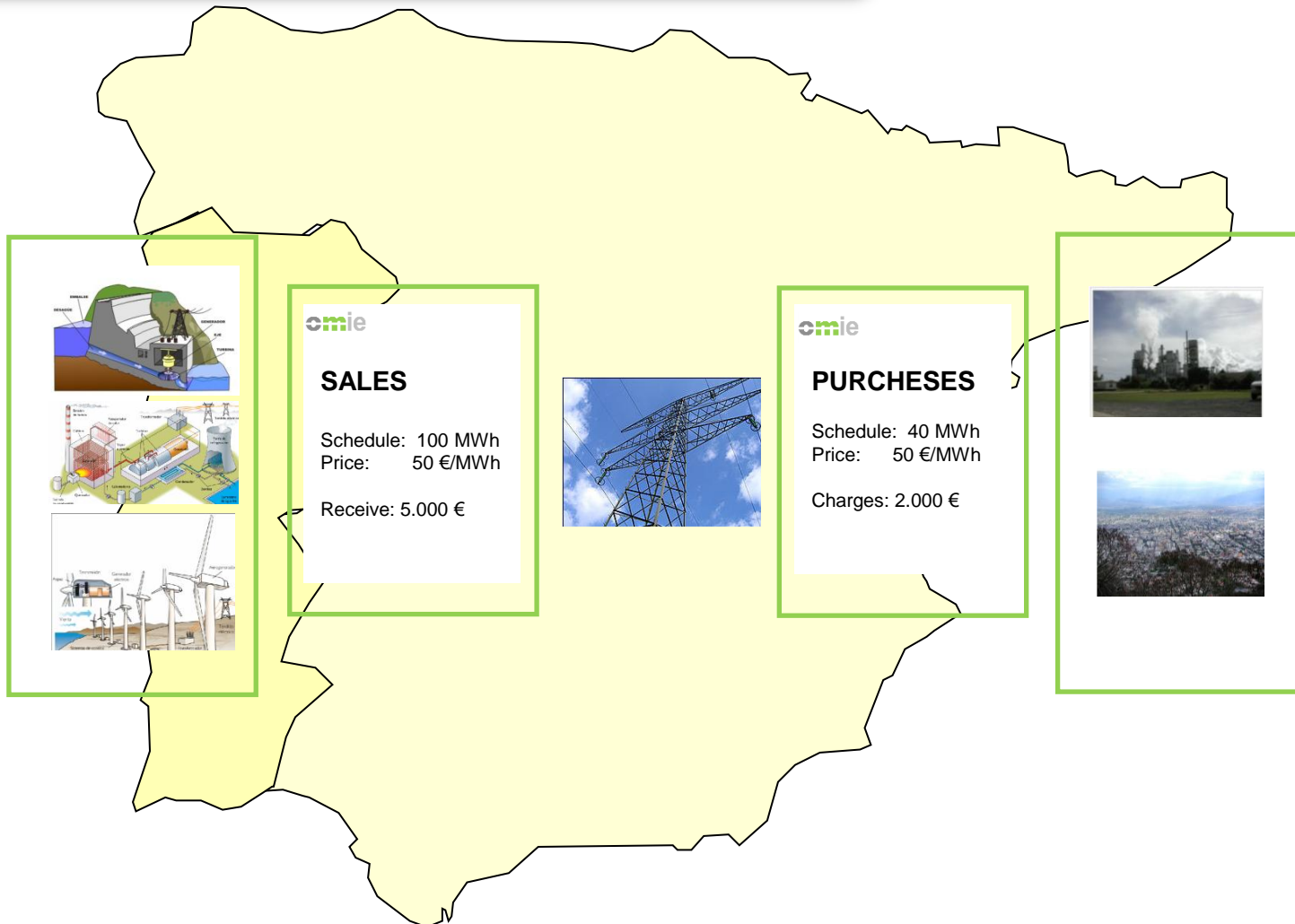
INTRODUCTION (2)

The product is the same



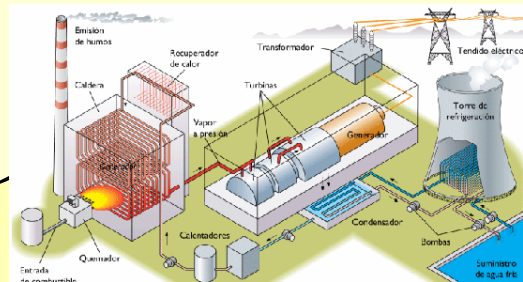
INTRODUCTION (3)

The market manages schedules



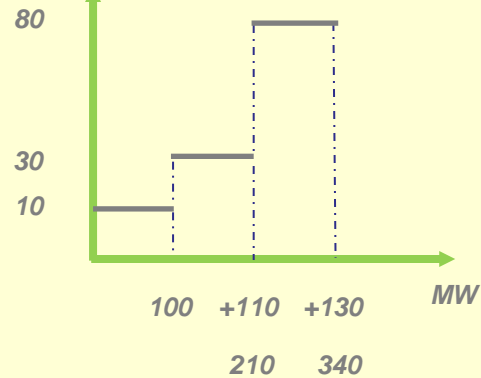
INTRODUCTION (4)

There are bids at different prices



Price

(Euro/MWh)



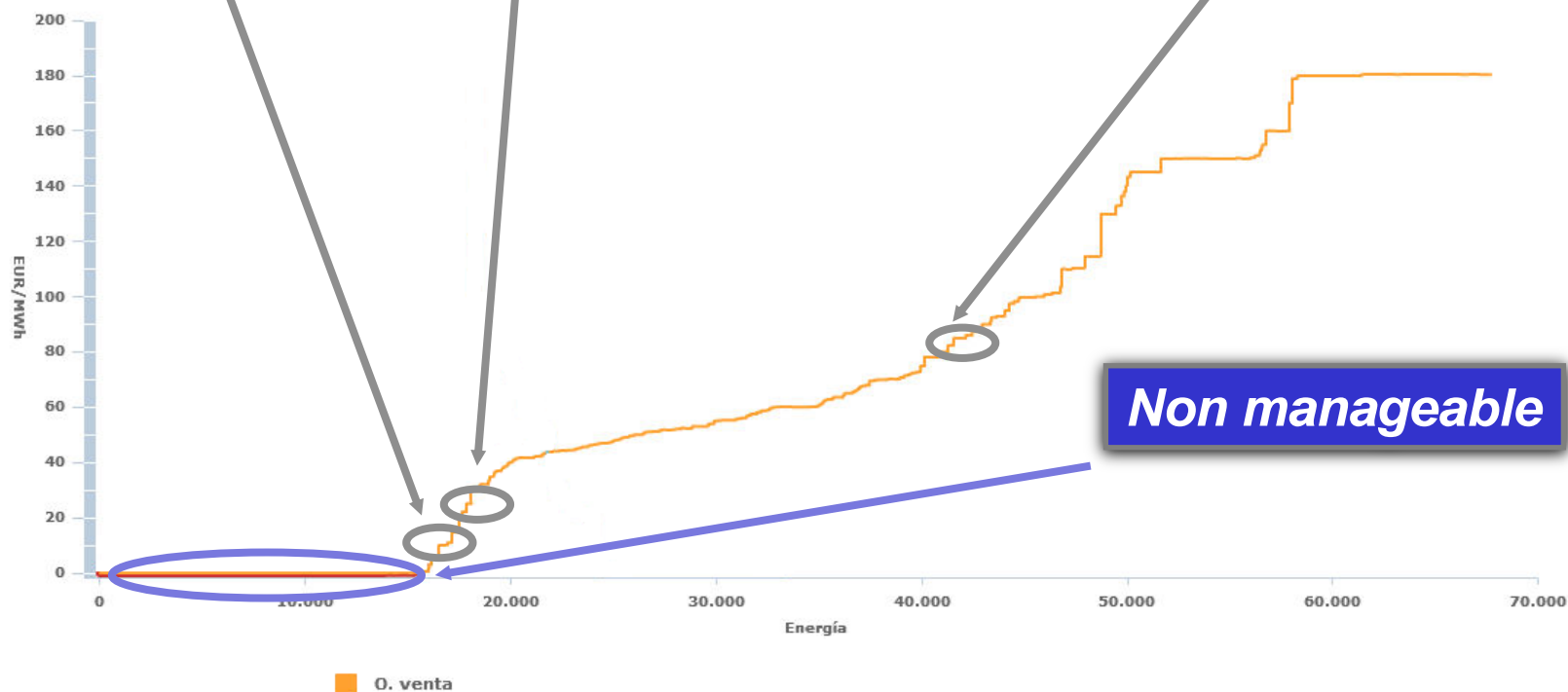
INTRODUCTION (5)

All sales bids are aggregated

First block:
Energy 100,0 MWh,
to 10,00 Euro/MWh

Second block:
Energy 110,0 MWh,
to 30,00 Euro/MWh

Third block:
Energy 130,0 MWh,
to 80,00 Euro/MWh



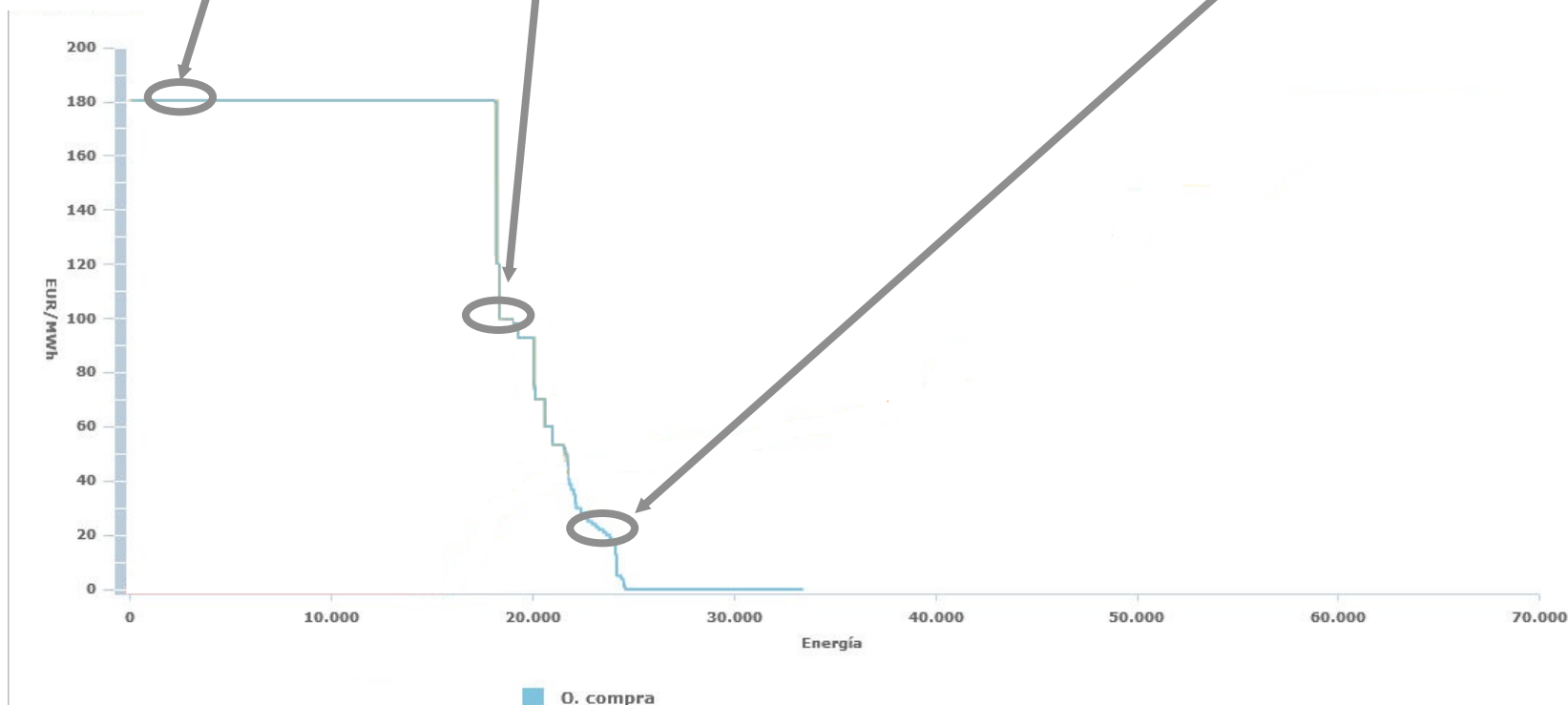
INTRODUCTION (6)

All purchase bids are aggregated

First block:
Energy 15,0 MWh,
to 180,3 Euro/MWh

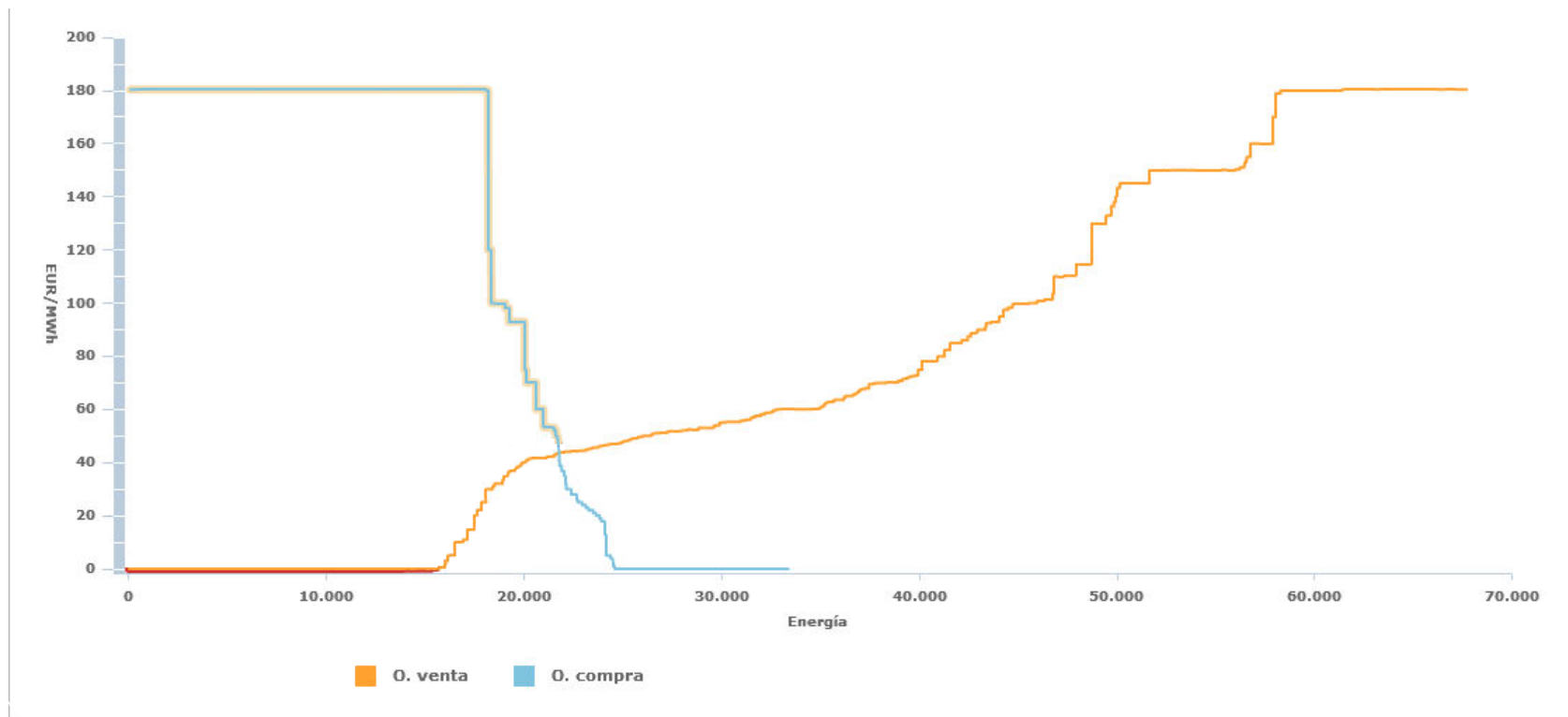
Second block:
Energy 10,0 MWh,
to 100,0 Euro/MWh

Third block:
Energy 3,0 MWh,
to 20,00 Euro/MWh



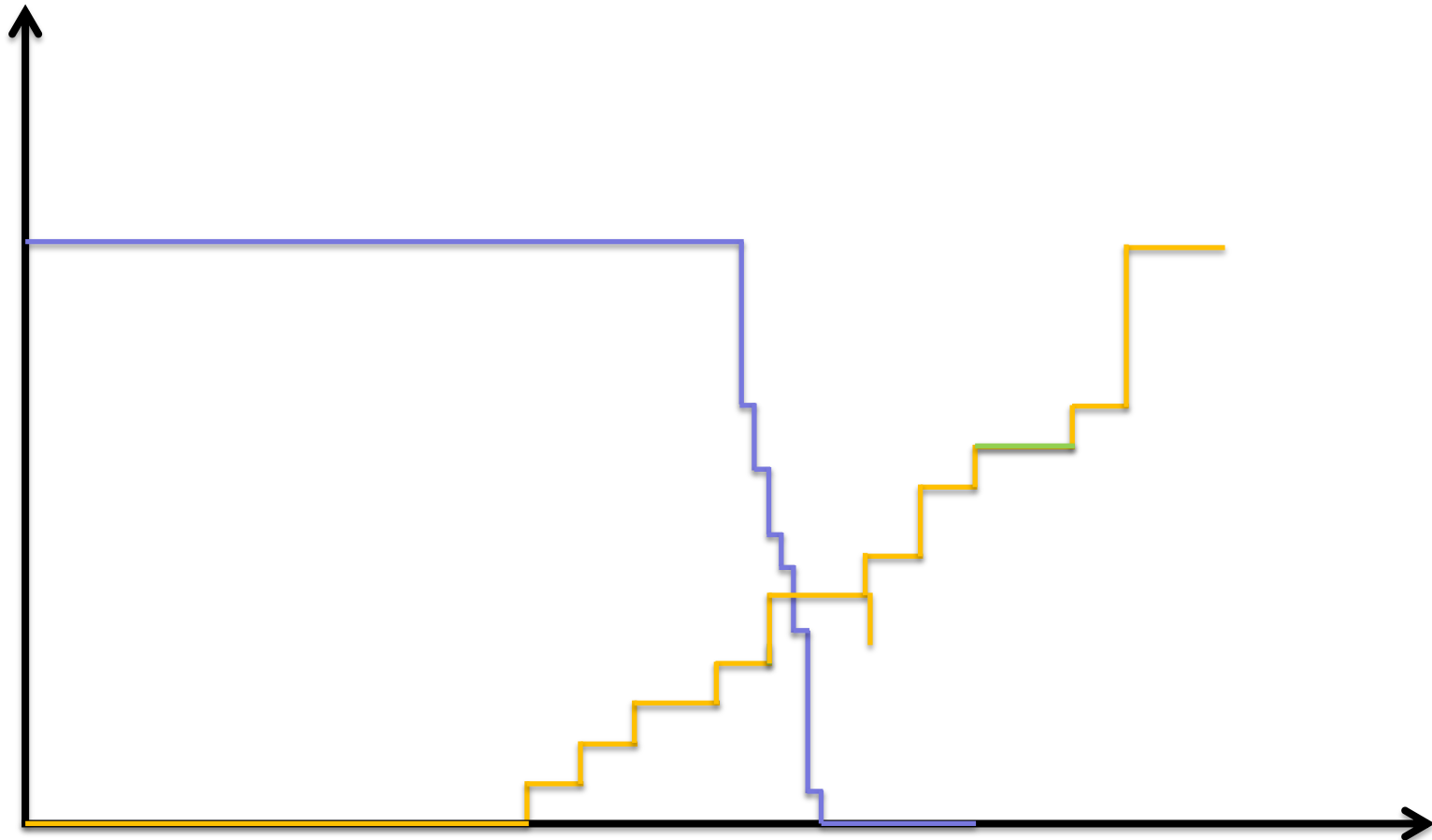
INTRODUCTION (7)

The cross point establishes the market price and matched energy



Payments outside the market

PAYMENTS OUTSIDE THE MARKET (1)

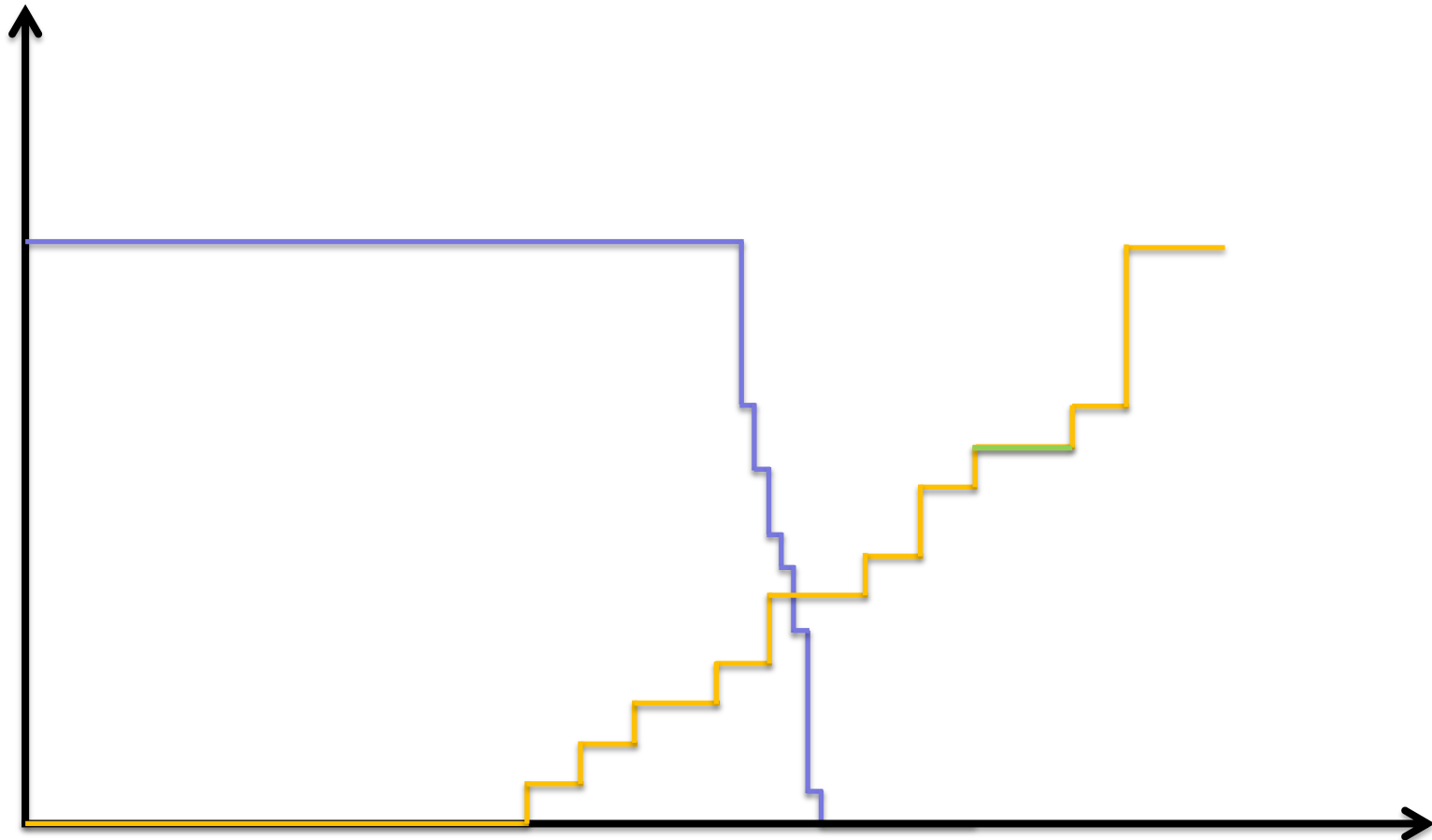


PAYMENTS OUTSIDE THE MARKET (2)

Renewable

- Fixed remuneration
- Market price plus premium
- Market price plus premium with cap and floor

PAYMENTS OUTSIDE THE MARKET (3)



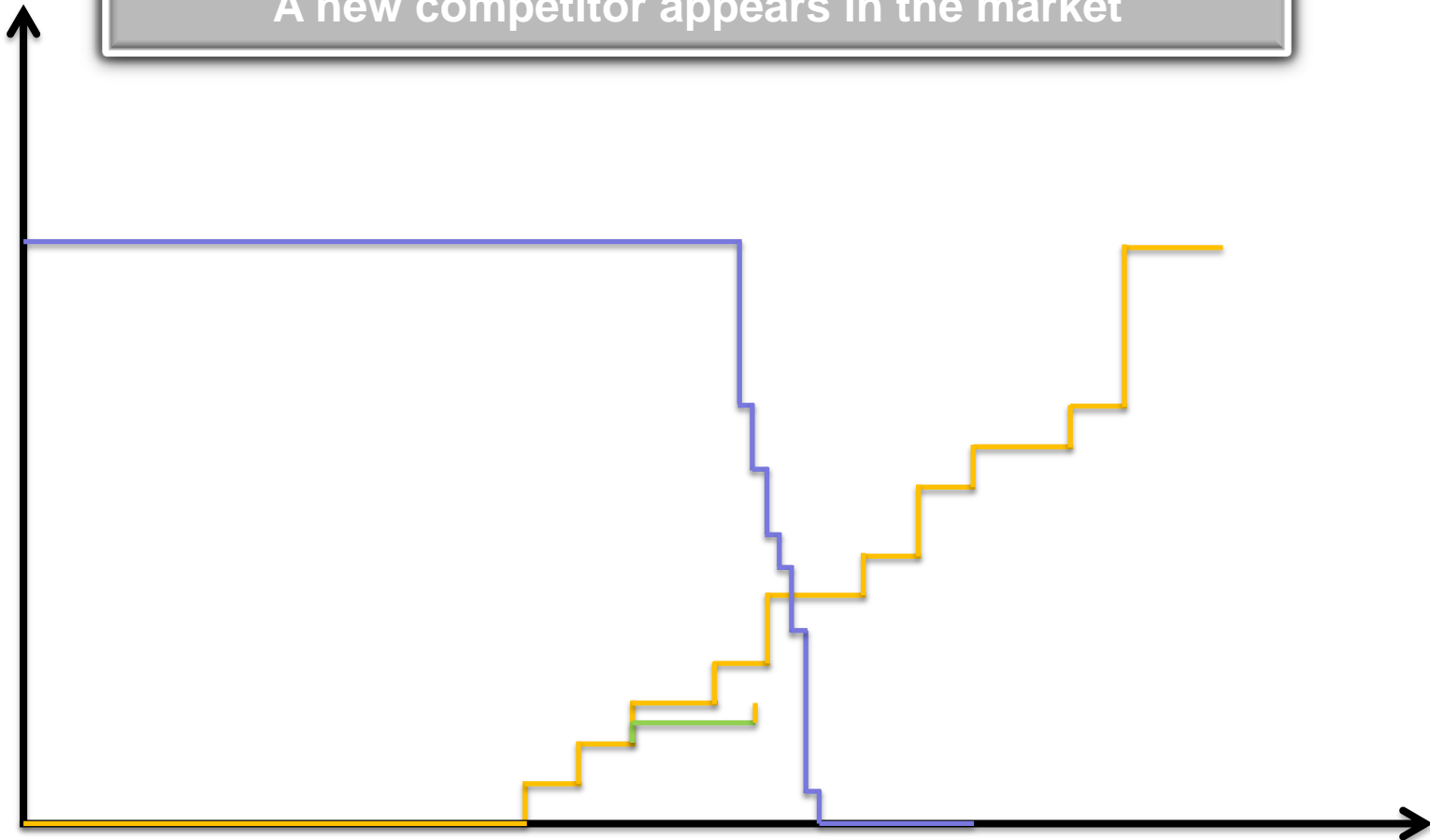
**Political reasons can justify these incentives, but
provoke distortions**

A horizontal bar on the left side of the slide, consisting of a white segment followed by a green segment.

New producer

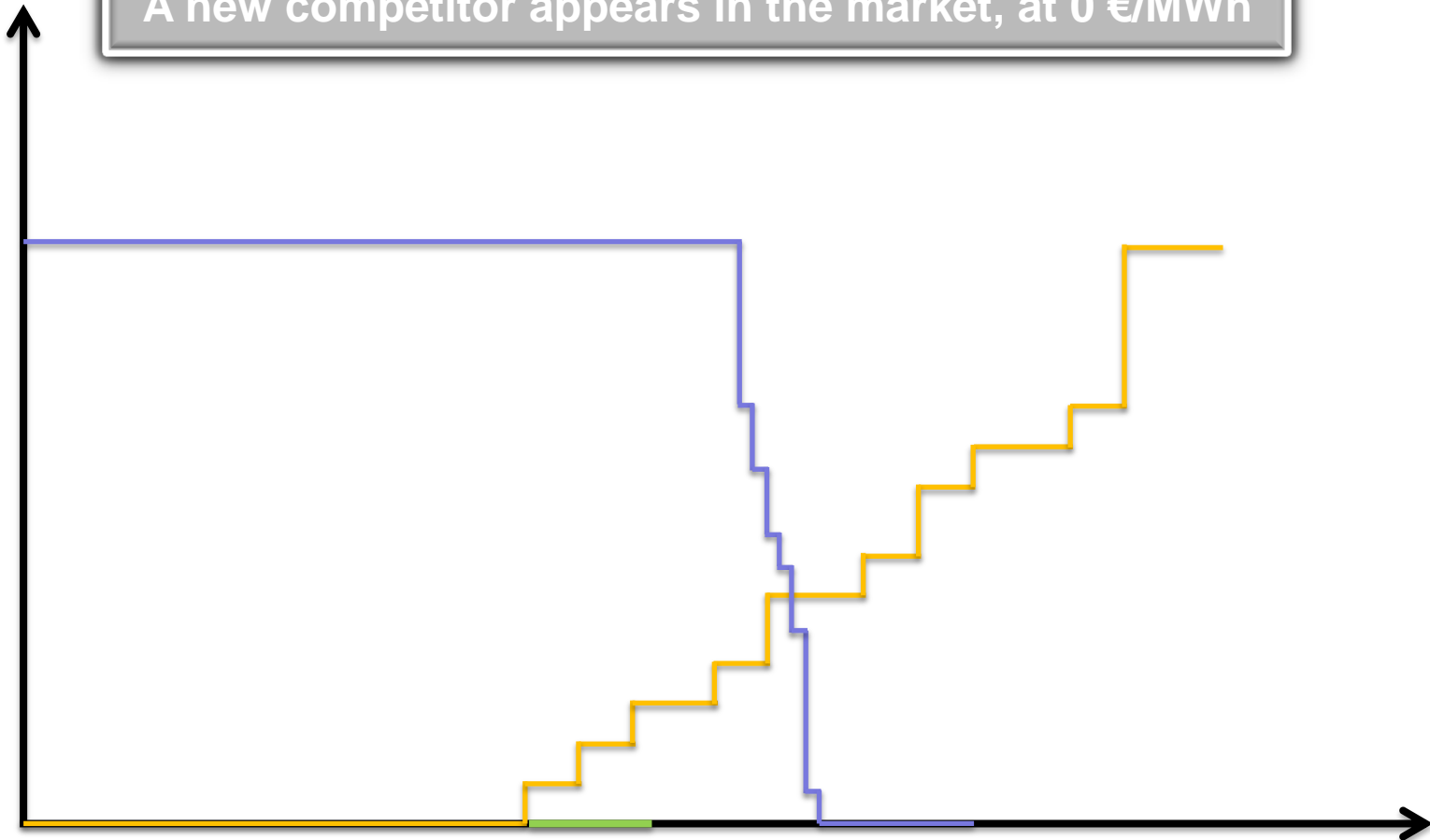
NEW PRODUCER (1)

A new competitor appears in the market



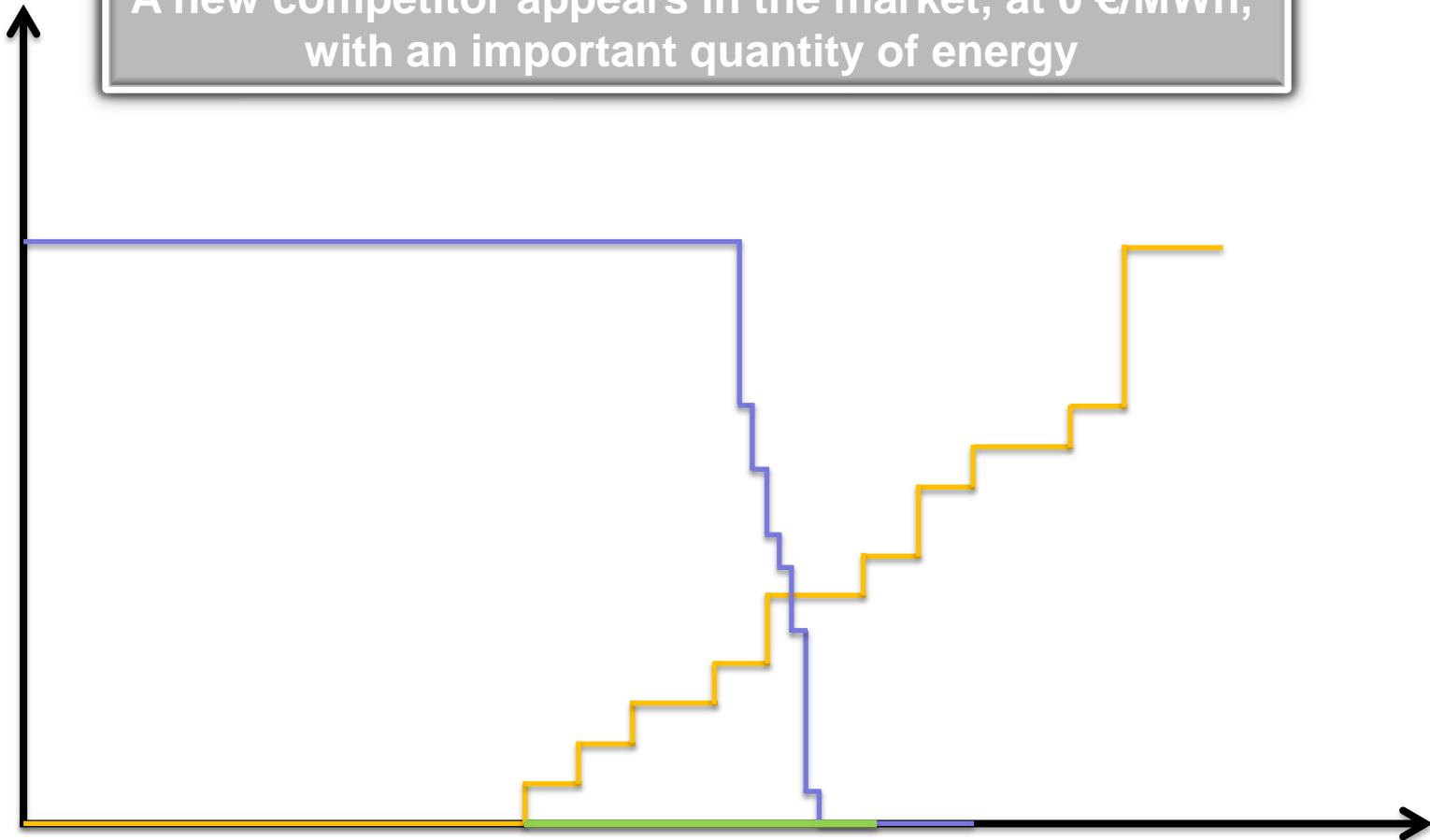
NEW PRODUCER (2)

A new competitor appears in the market, at 0 €/MWh



NEW PRODUCER (3)

A new competitor appears in the market, at 0 €/MWh, with an important quantity of energy



SOLUTIONS

Can the demand be increased?

- Yes, using the interconnections in an efficient way;

- **Market Coupling.**

Right

Can the “zero” price offers be decreased?

- Not possible (nuclear power plants).
- Inefficient; renewables, thermal unit.

Wrong

THERMAL UNIT PROBLEMS

Does zero price affect thermal units?

- **Yes, because of start/stop cost.**

Can this problem be avoided in the intraday market?

- **Yes, but it could have some cost.**

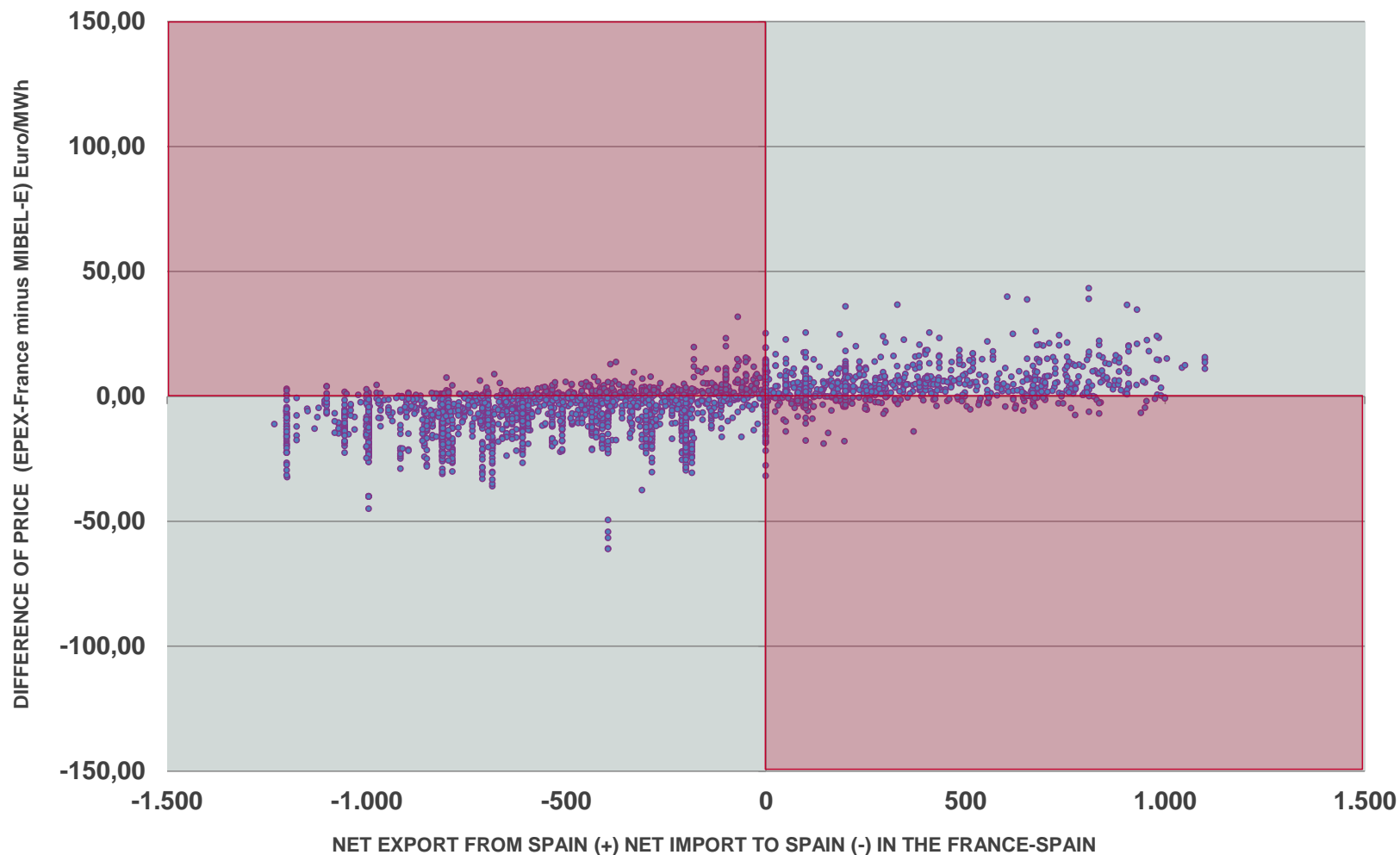
Can this problem be avoided in the daily market?

- **Yes, by using the **complex conditions**.**

Market Coupling. PCR

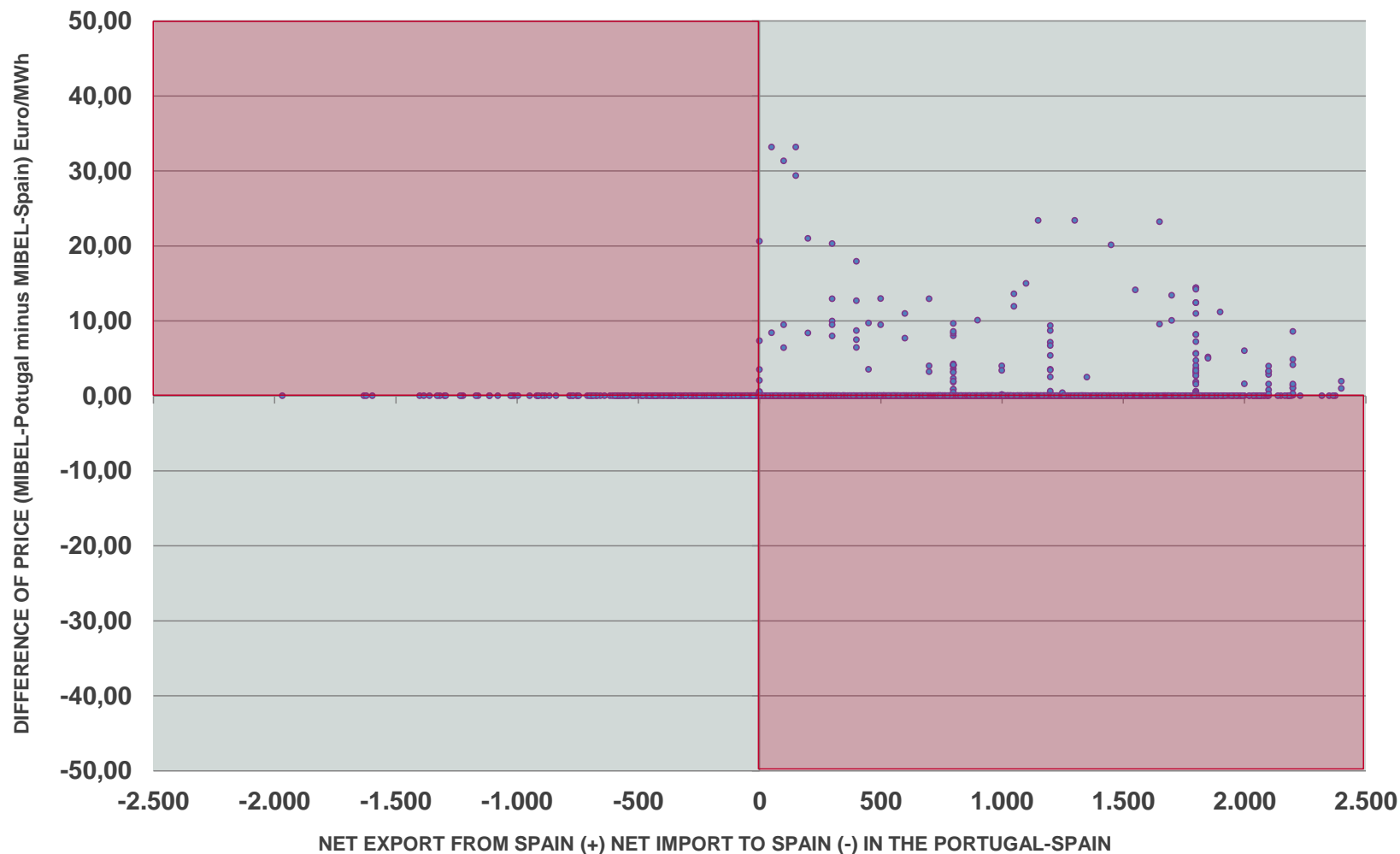
SPAIN – FRANCE INTERCONNECTION

INTERCONNECTION WITH FRENCH SYSTEM
JULY 2012 - 21 OCTOBER 2012



SPAIN – PORTUGAL INTERCONNECTION


INTERCONNECTION WITH PORTUGUESE SYSTEM
JULY 2012 - 21 OCTOBER 2012

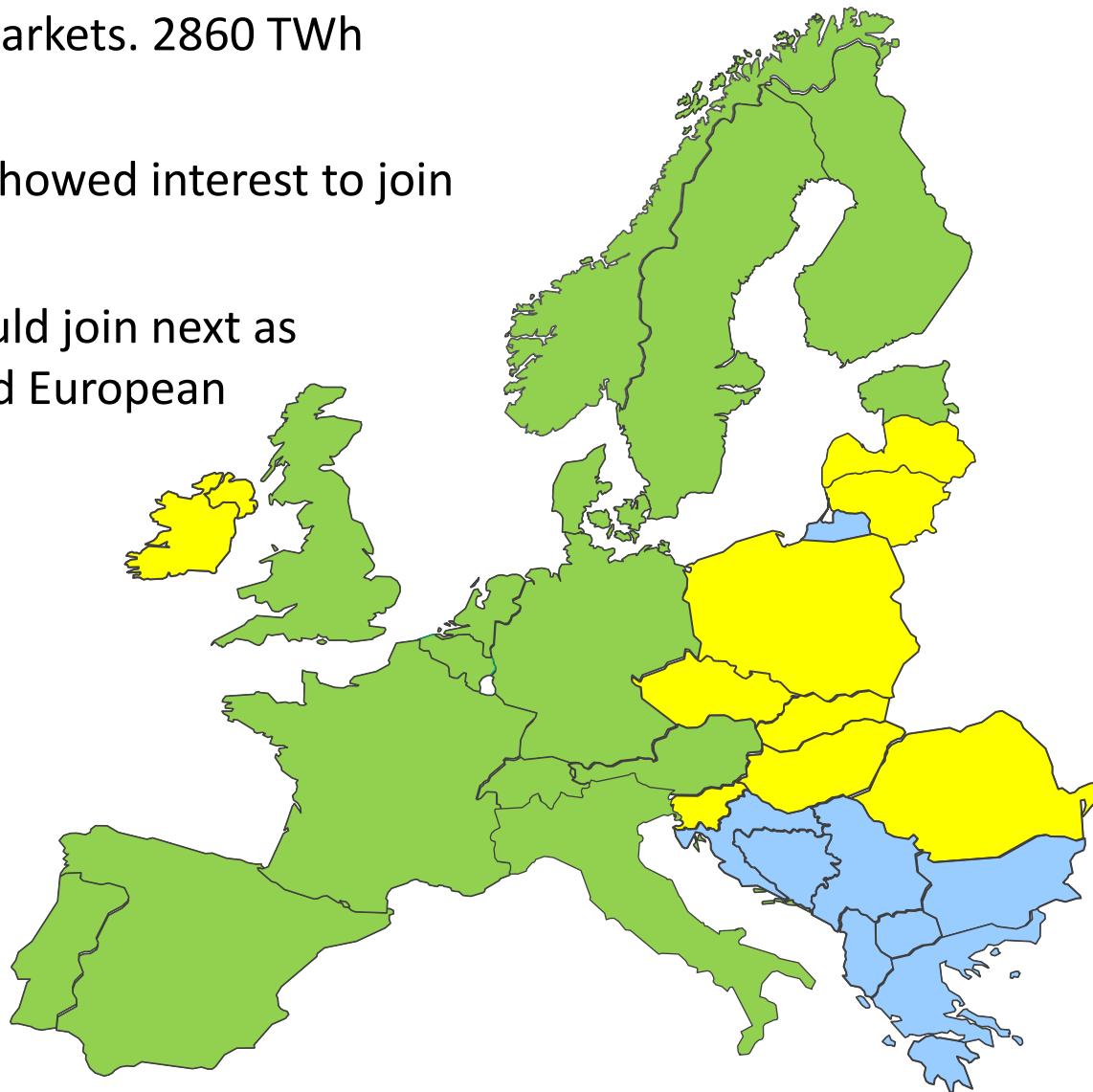


PCR Project (1)

 Core member markets. 2860 TWh

 Markets which showed interest to join

 Markets that could join next as part of an agreed European roadmap



PCR Project (2)

“Price Coupling of Regions” produces perfect price formation in several price areas, optimizing cross-border capacity allocation under a governance framework, built on the existing markets

- The concept fits also with the European “Target Model”
- Integrates the energies from all markets, while building on the infrastructures and regulatory regimes of each market

Complex Conditions

COMPLEX CONDITIONS

Minimum Income Condition

If the bid does not obtain an income over a minimum, the bid is wholly rejected

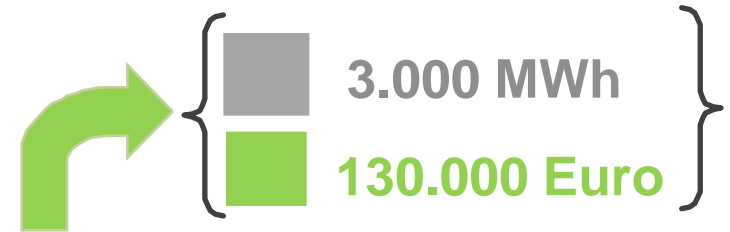
The declared minimum income is made up of:

- **Fixed Term (euro).**
- **Variable Term (euro per MWh) proportional to the matched energy**

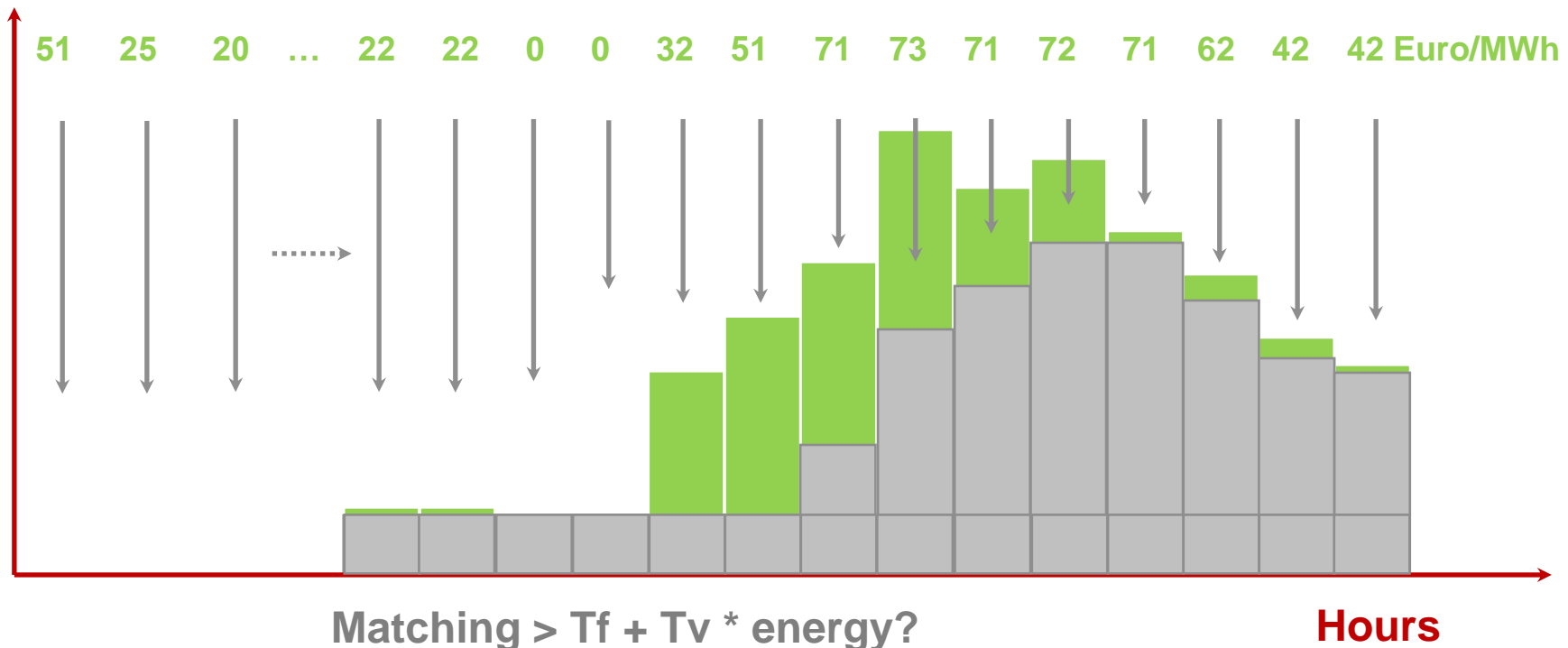
COMPLEX CONDITIONS (2). Minimum Income condition

Fixed term = 25.000 Euro

Variable term = 45 Euro/MWh



Euro
MWh



130.000 Euro > 25.000 Euro + 45 Euro/MWh * 3.000 MWh = 160.000 Euro ?

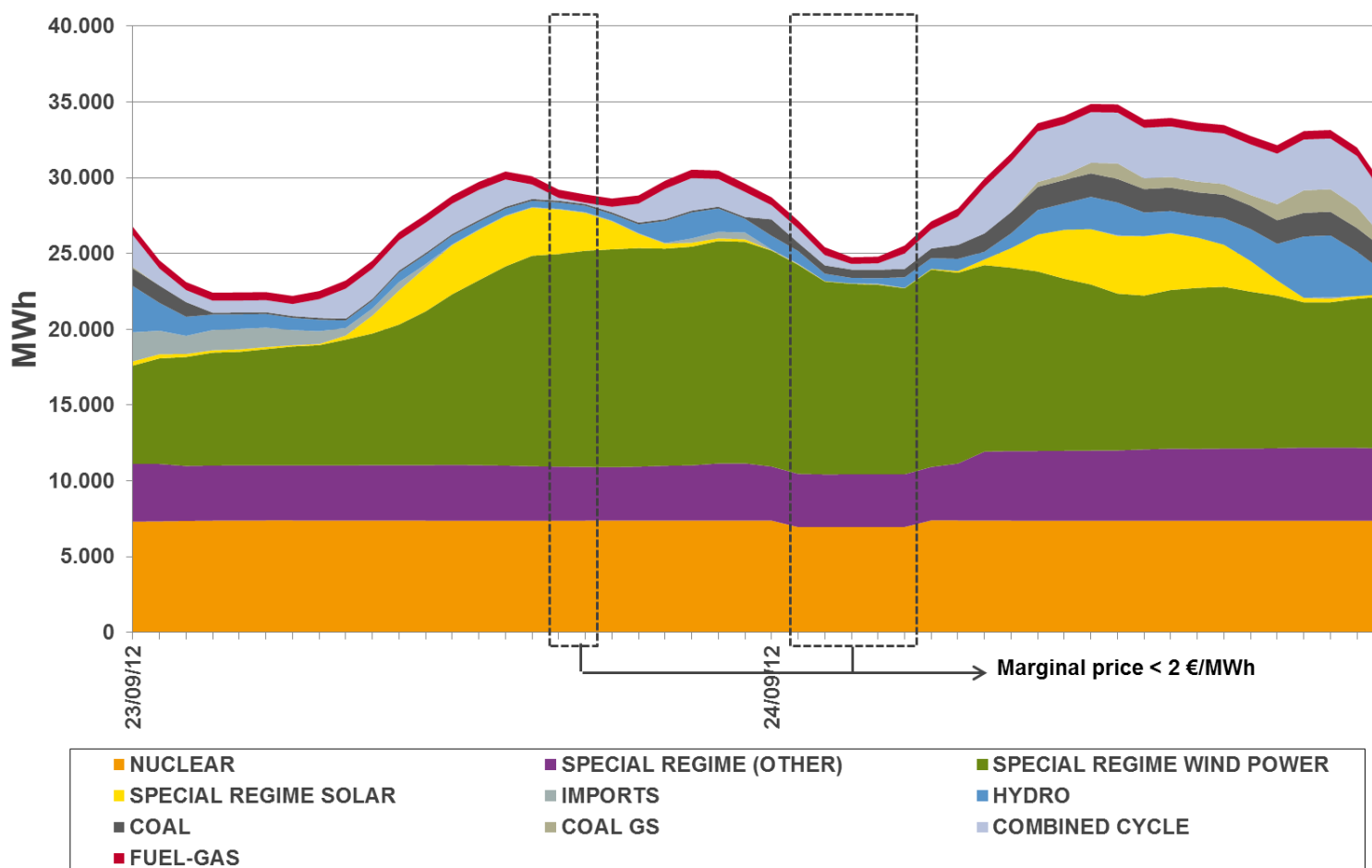
If the answer is NO, the bid is rejected

If the answer is YES, the bid is accepted with a minimum

HOURS OF LOW PRICES OF THE PERIOD GENERATION STRUCTURE IN PDBF. 23th AND 24th

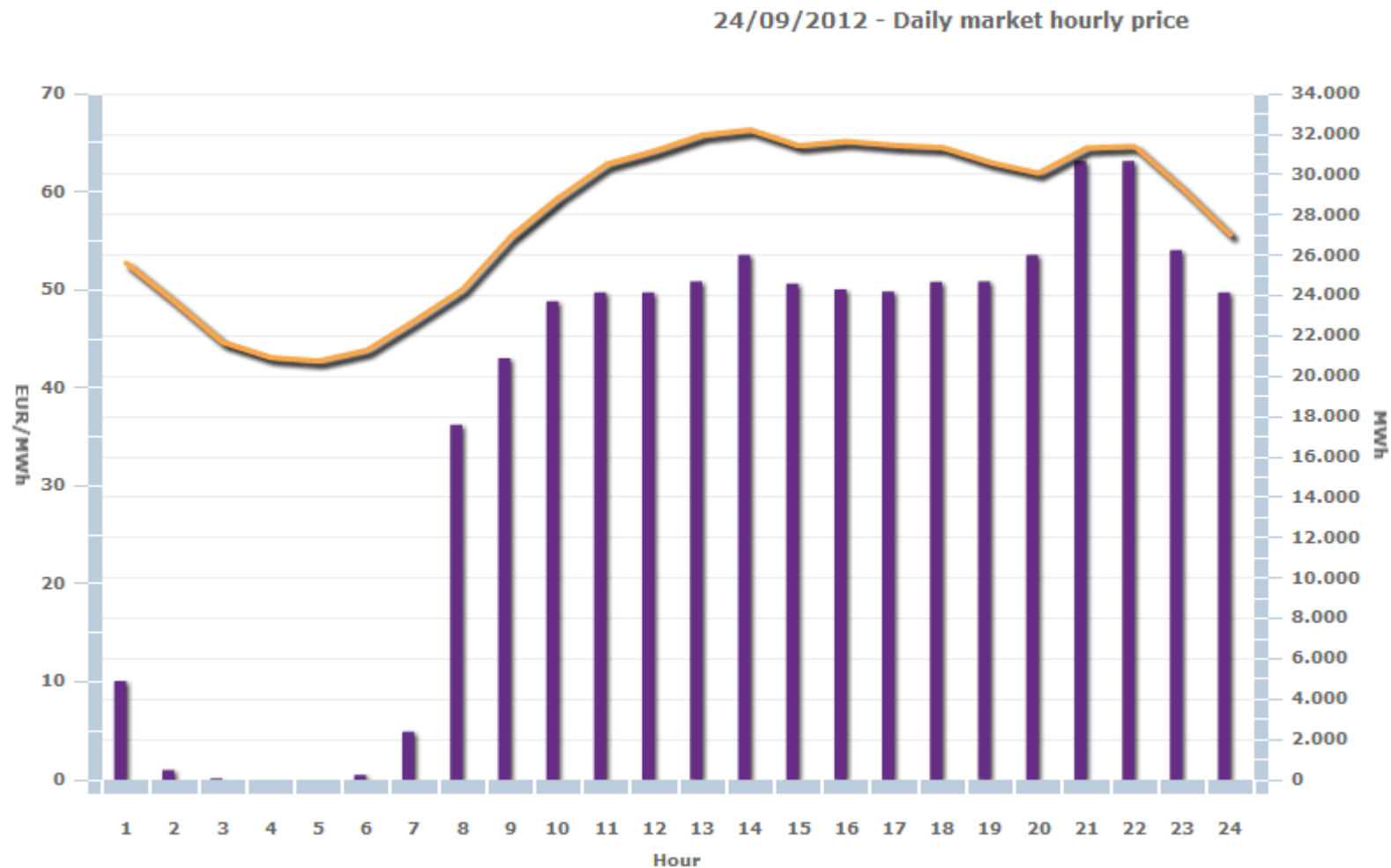
SEPTEMBER

HOURLY ENERGY GROUPED BY PRODUCTION TECHNOLOGY IN PDBF
SPANISH ELECTRICAL SYSTEM
23 SEPTEMBER 2012 - 24 SEPTEMBER 2012



DAILY MARKET HOURLY PRICE.

MARGINAL PRICE SPANISH SYSTEM 24/9/2012



CONCLUSIONS

To mix technologies without variable cost with technologies with variable cost may provoke problems in a competitive market.

Increase interconnections (using the interconnections in an efficient way) decreases the problem and benefits both sides of the interconnection.

Efficient intraday market allows deviation to be managed.

