

SESSA @ Cambridge

14th July 2004

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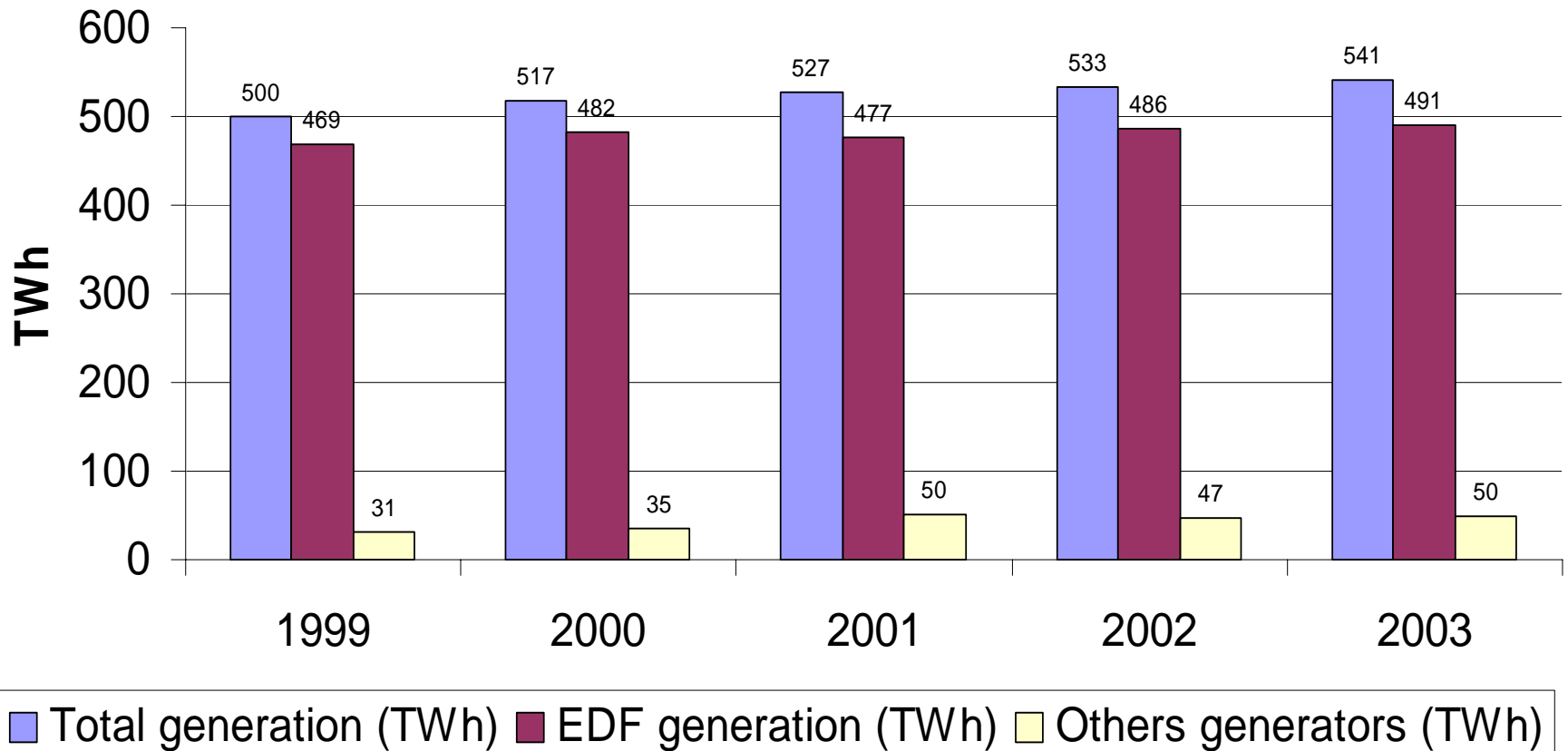
**France Market Design:
Hard Facts & Soft Dreams**

A « Tour de France » in four steps

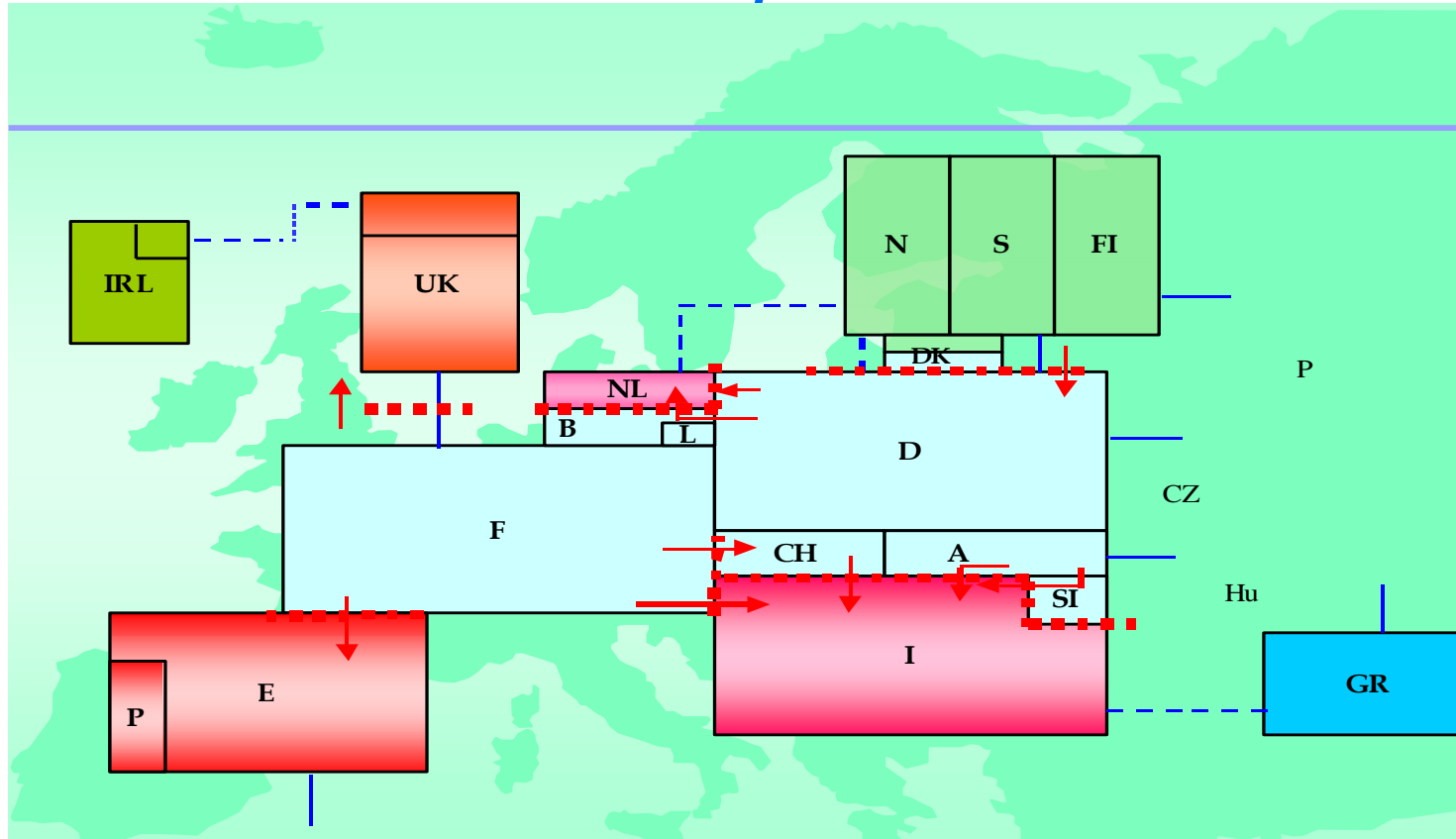
- *STEP 1- Monopoly in an Open Network*
- *STEP 2- Softening Monopoly by Fringes*
- *STEP 3- Any New Generation Investment?*
- *STEP 4- New List of Dreamed Softeners*

1st STEP- *Yes a French (quasi)Monopoly ...*

Generation in France in TWh (1999-2003)
source : www.rte-France.com; www.edf.fr

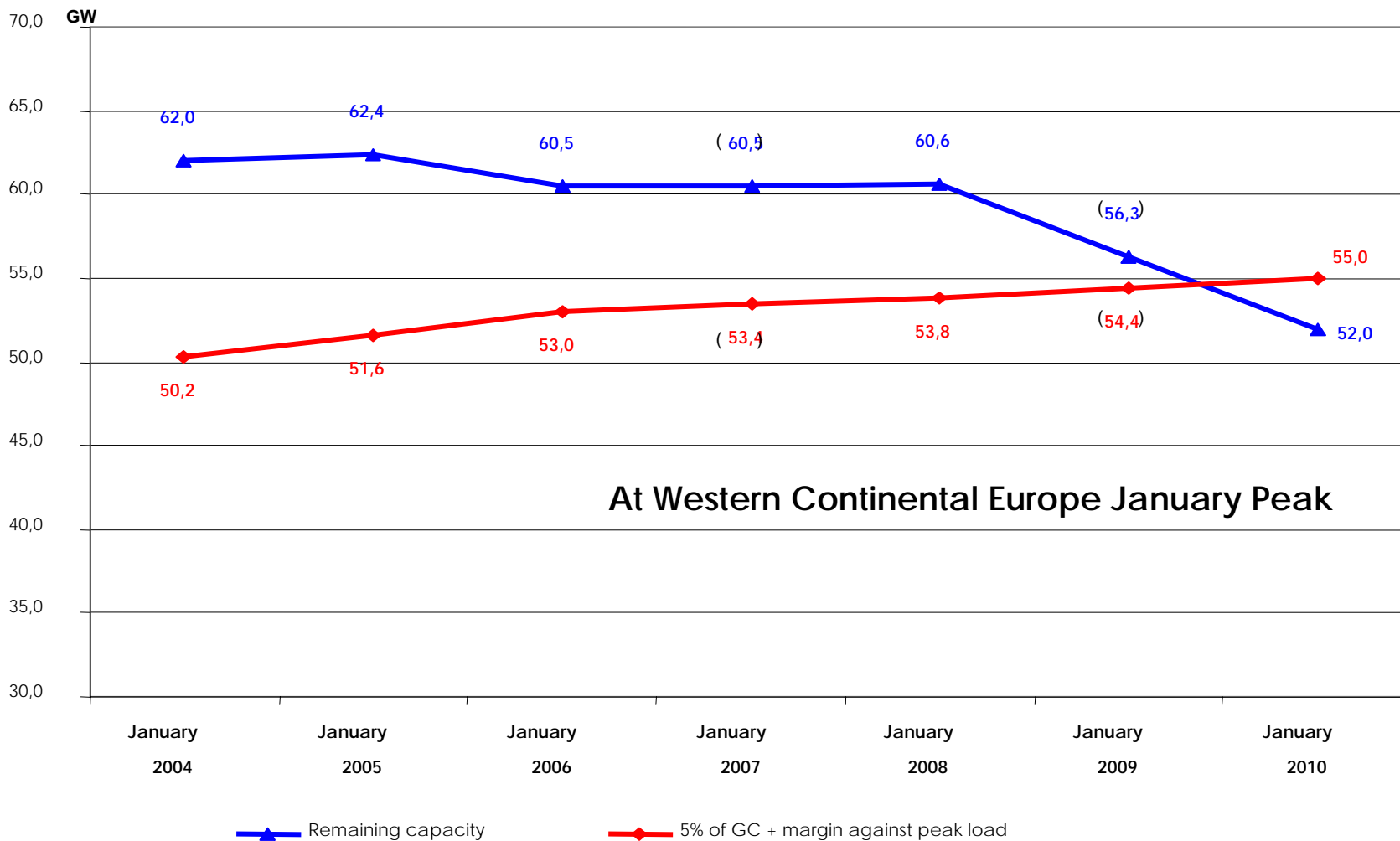


A French Monopoly ... linked to an Open Network

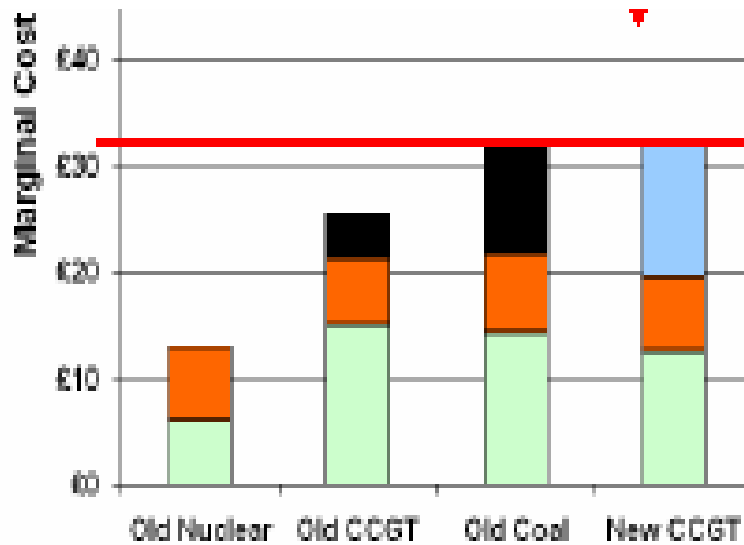


*(European Transmission Grid Splitting
as Seen by the French TSO)*

A French Monopoly ... surrounded by Overcapacity until 2006-2008



A French Nuke Monopoly ... surrounded by bigger generation costs



Fuel

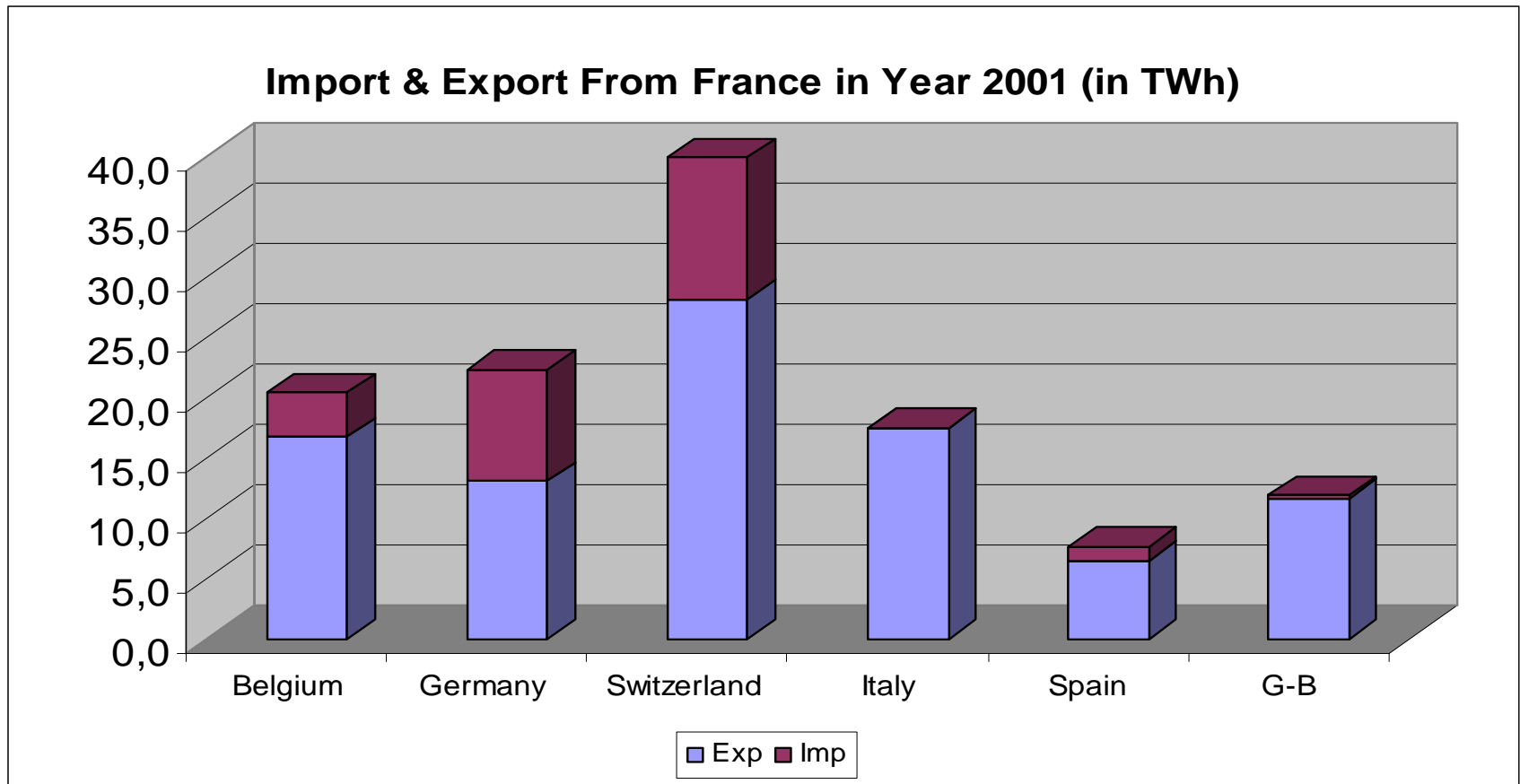
O&M

(John Bower Estimates / June 2004)

EUETS

Capital

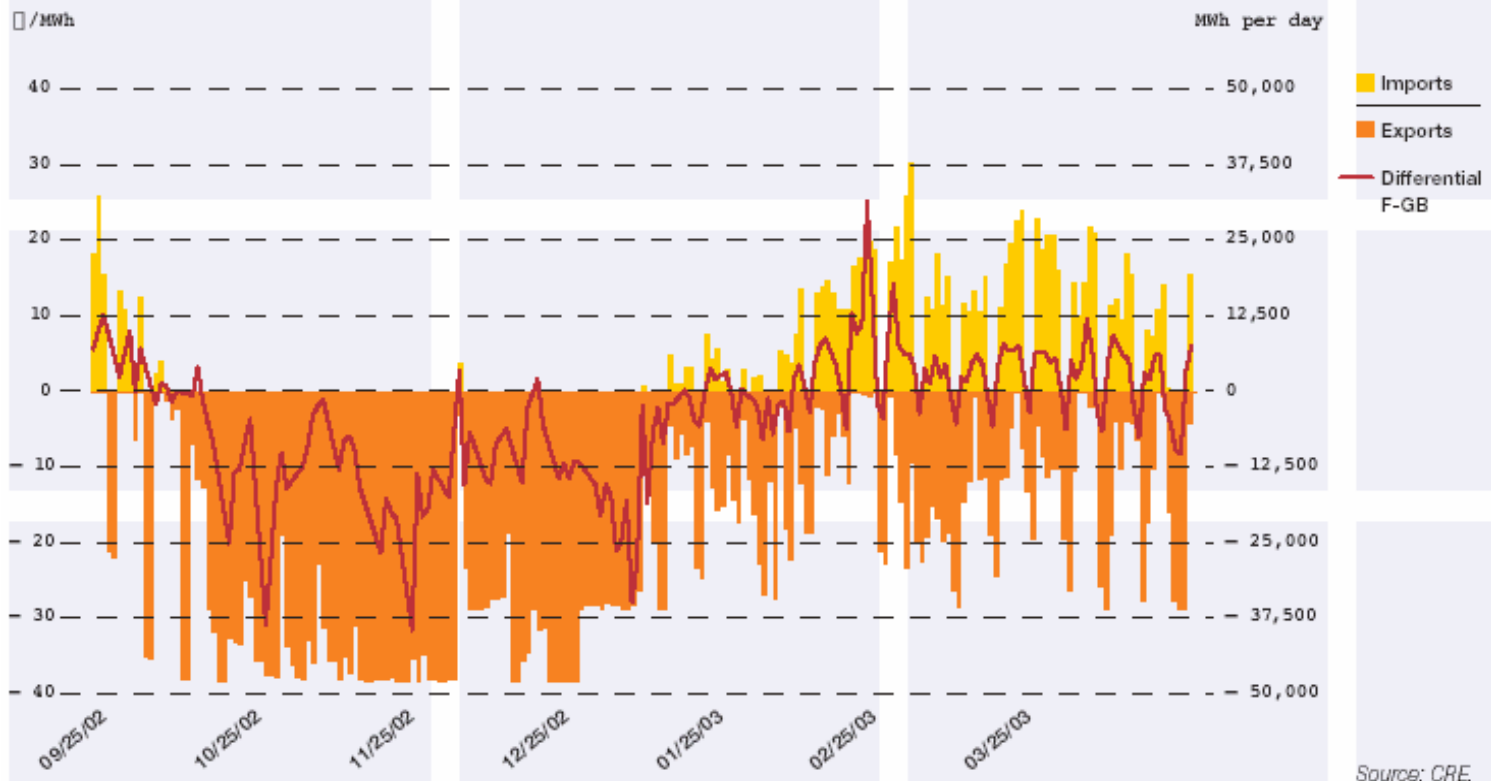
France large contractual Export & Import (as notified to French TSO)



Export = 93,7 TWh Import = 26 TWh TOTAL = 119,7 TWh

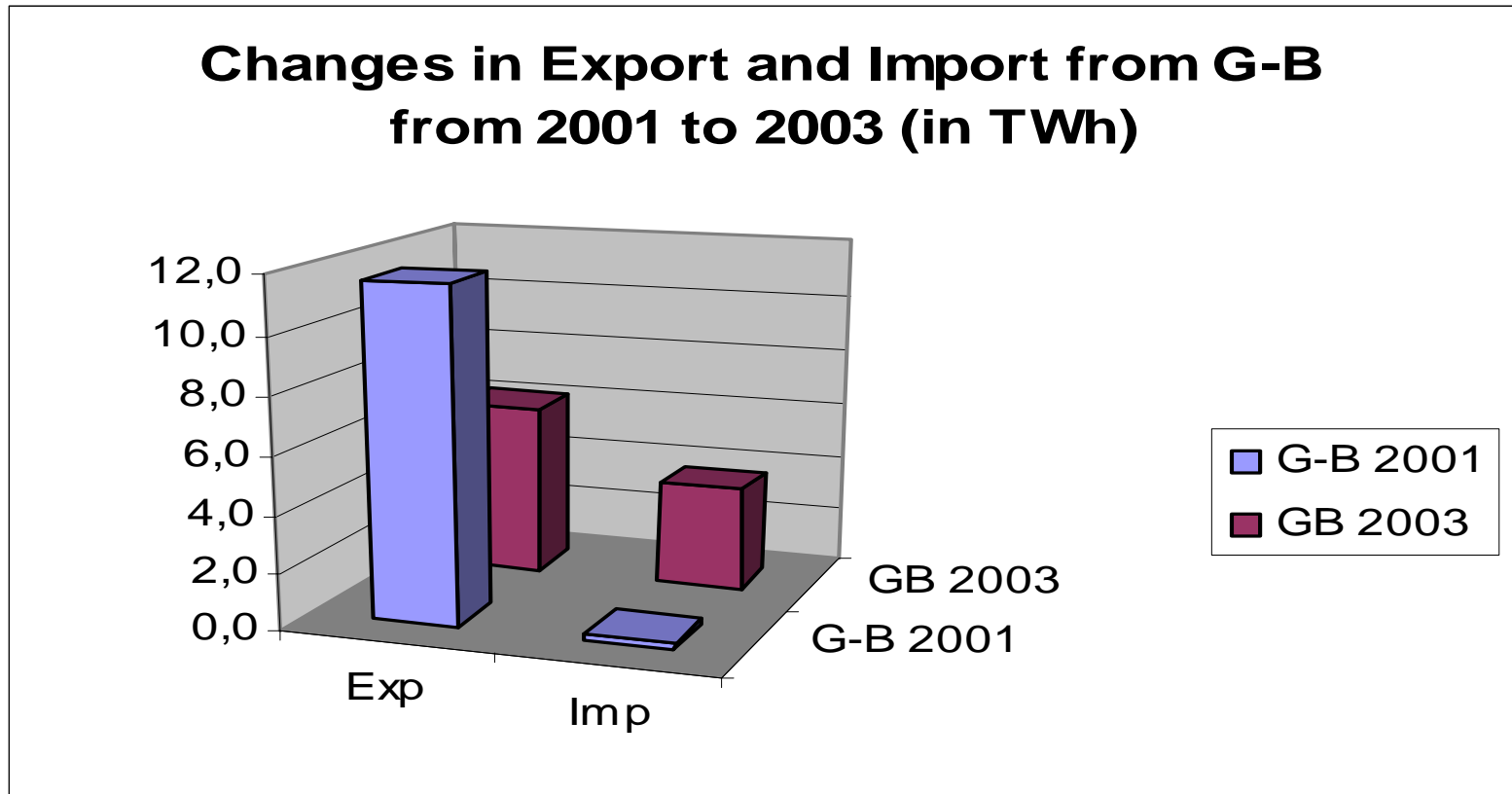
G-B & France Export & Import Changes seen by the French Regulator (Sept. 2002 to April 2003)

Figure 13/ Imports/exports and price differential on IFA



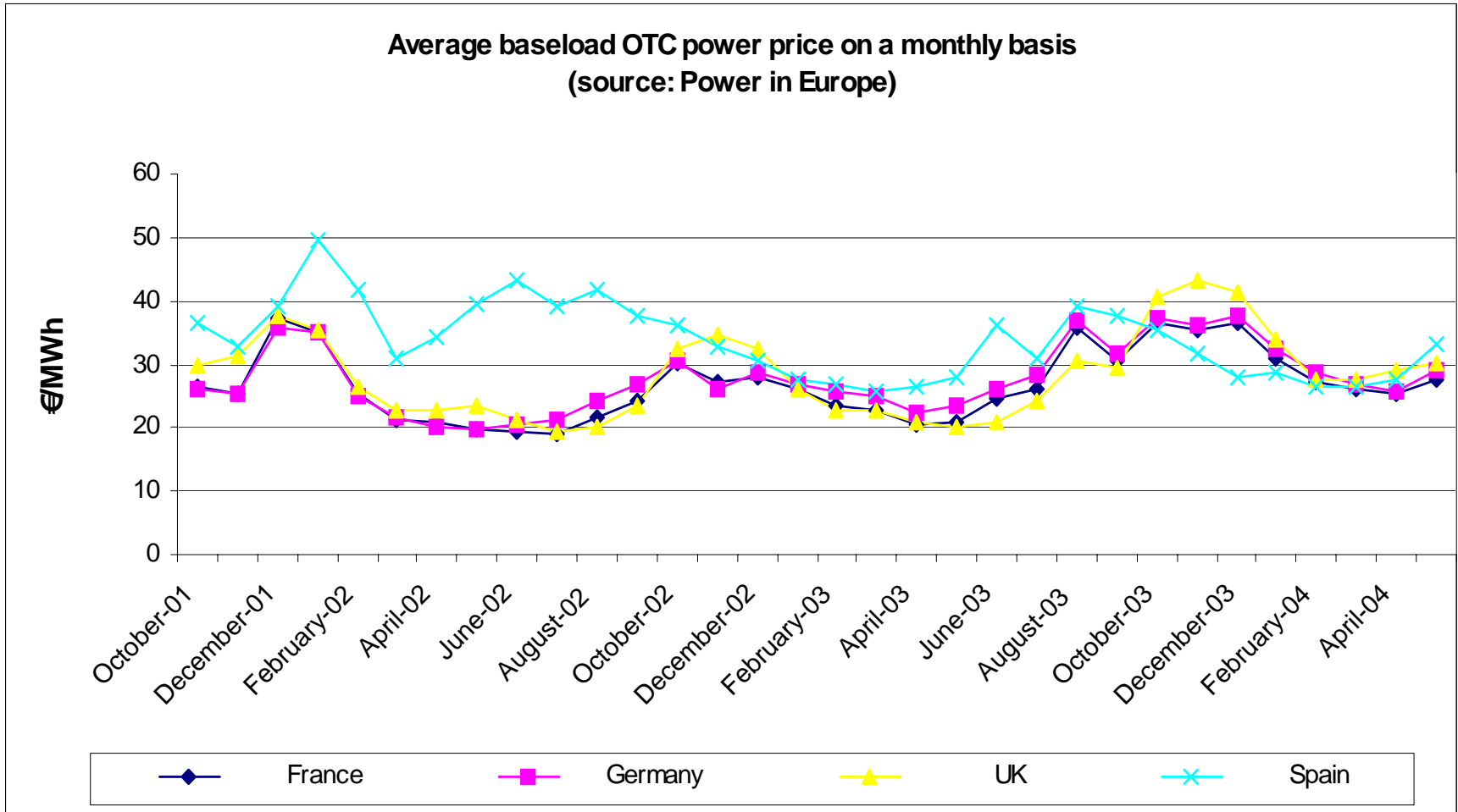
Red Line = France – GB Price Differential

French Export & Import Recent Changes



Export = - 5,6TWh Import = +3,4 TWh TOTAL = 9TWh

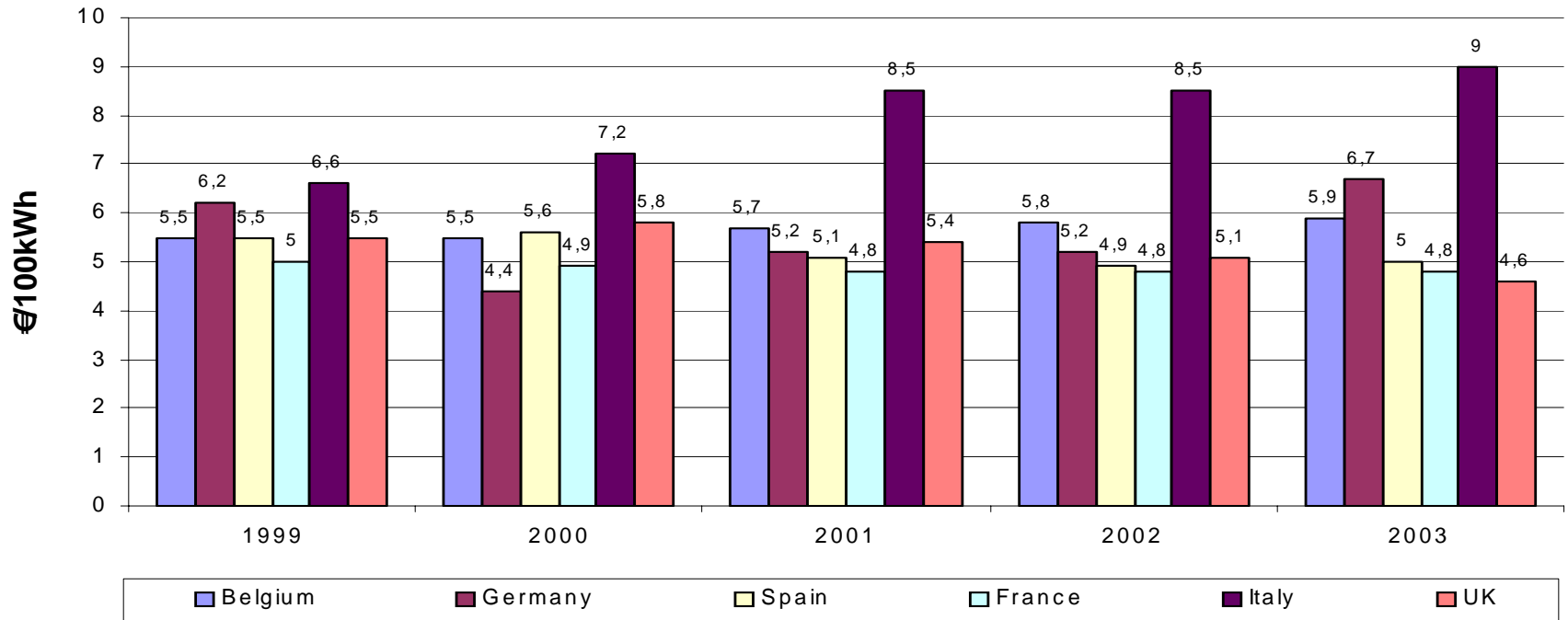
30 Months of French Baseload Wholesale Prices (Oct 2001-Mai 2004)



Favourable French Prices for Industry

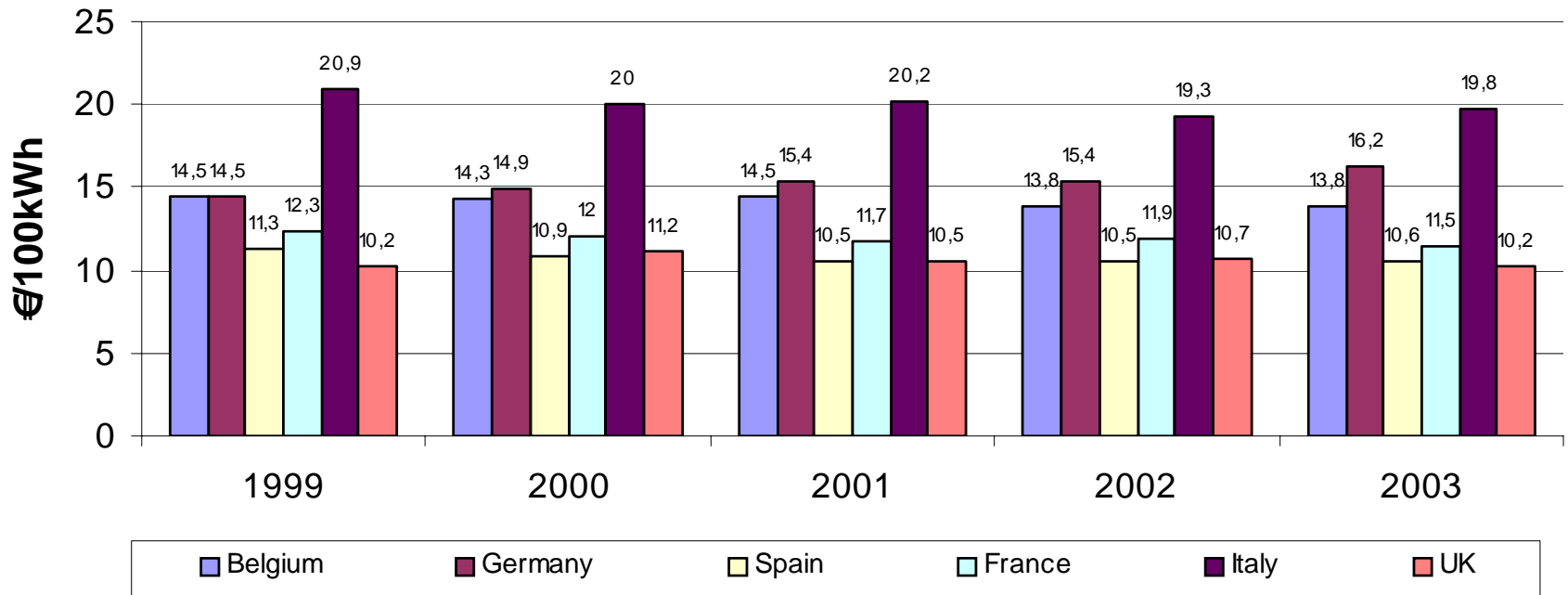
Electricity prices without taxes for industrial users in Euro per 100 kWh (annual consumption = 24 GWh; maximum demand = 4 000 kW; annual load = 6 000 hours)

Source : Eurostat



Less Favourable Prices for Households

Electricity prices without taxes for domestic consumers in Euro per 100 kWh (annual consumption = 3 500 kWh of which 1 300 kWh is overnight - standard dwelling of 90 m²)
source : Eurostat



STEP 2- *Softening Monopoly by Fringes*

1° Monopoly was not broken: no splitting of generation & supply nor of distribution; with a 'management' unbundling of TSO

2° Monopoly was softened by other means

*DEMAND: Auctions for TSO losses procurement
=13 TWh*

+ Gradual opening of the market

1999 = 22 % (95 TWh)

2000 = 30 % (130 TWh)

2003 = 35 % (160 TWh)

July 2004 = 67% (320 TWh)

Softened Monopoly

OFFER:

Independence given by French government to nonEDF public generators

(SNET + SHEM + CNR) = 26 TWh

*+ Electricity release asked by the EU Commission
(VPP = Virtual Power Plants Auctioning)*

Max 6000 MW on 2003-2006 = 42 TWh / Year

Last round on June 2004. Compet. Review in 2006

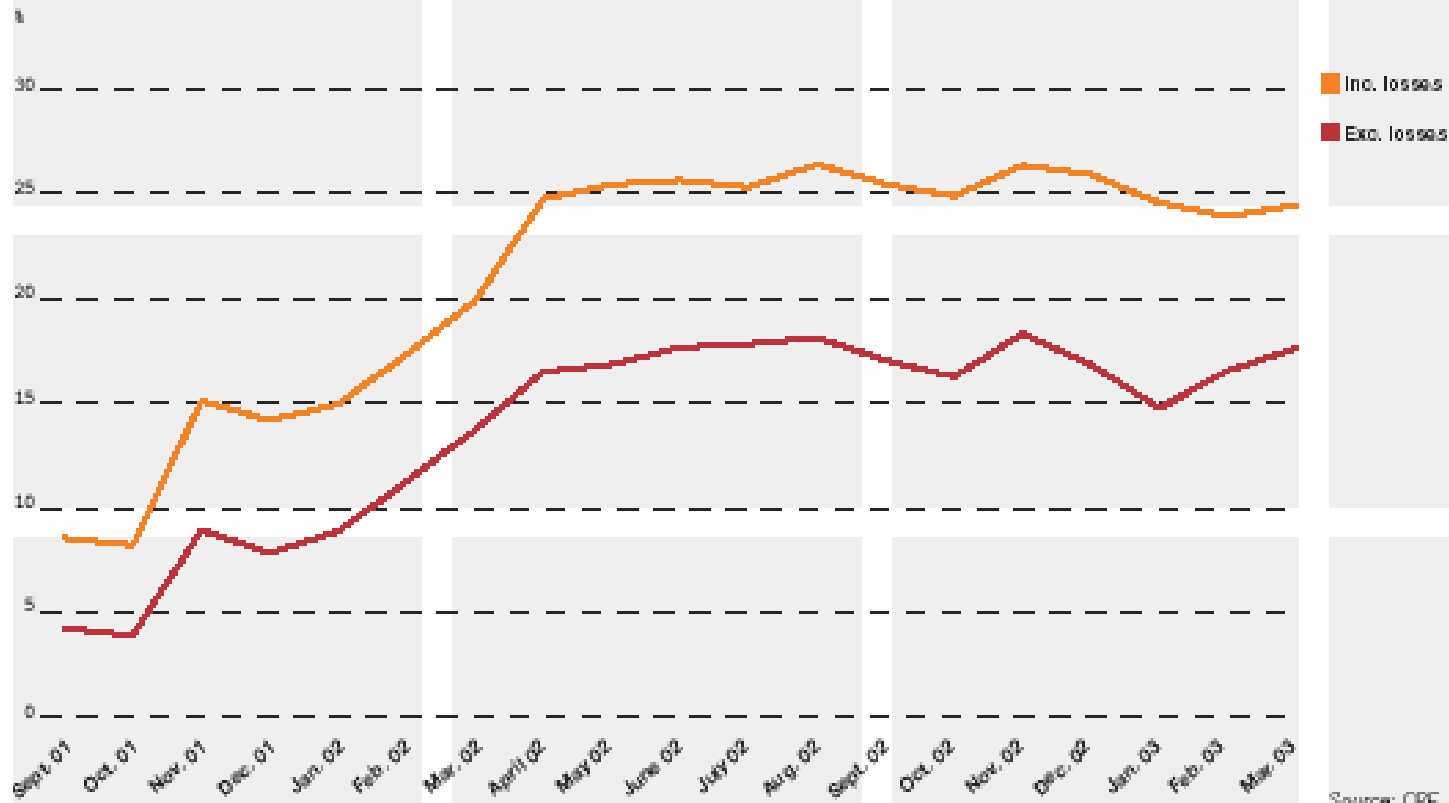
Peak Price : (23 Eur 1 Year duration) +7.633 Eur MWh

Base Price: (8 Eur 1 Year duration) +16.982 Eur MWh

Softened Monopoly

Since March 2002 *nonEdf* suppliers cover more than 15% of the eligible market = 20 TWh (near 25 % with Grid losses = 30 TWh)

Figure 14/ Approximate market share of suppliers (excluding EDF)

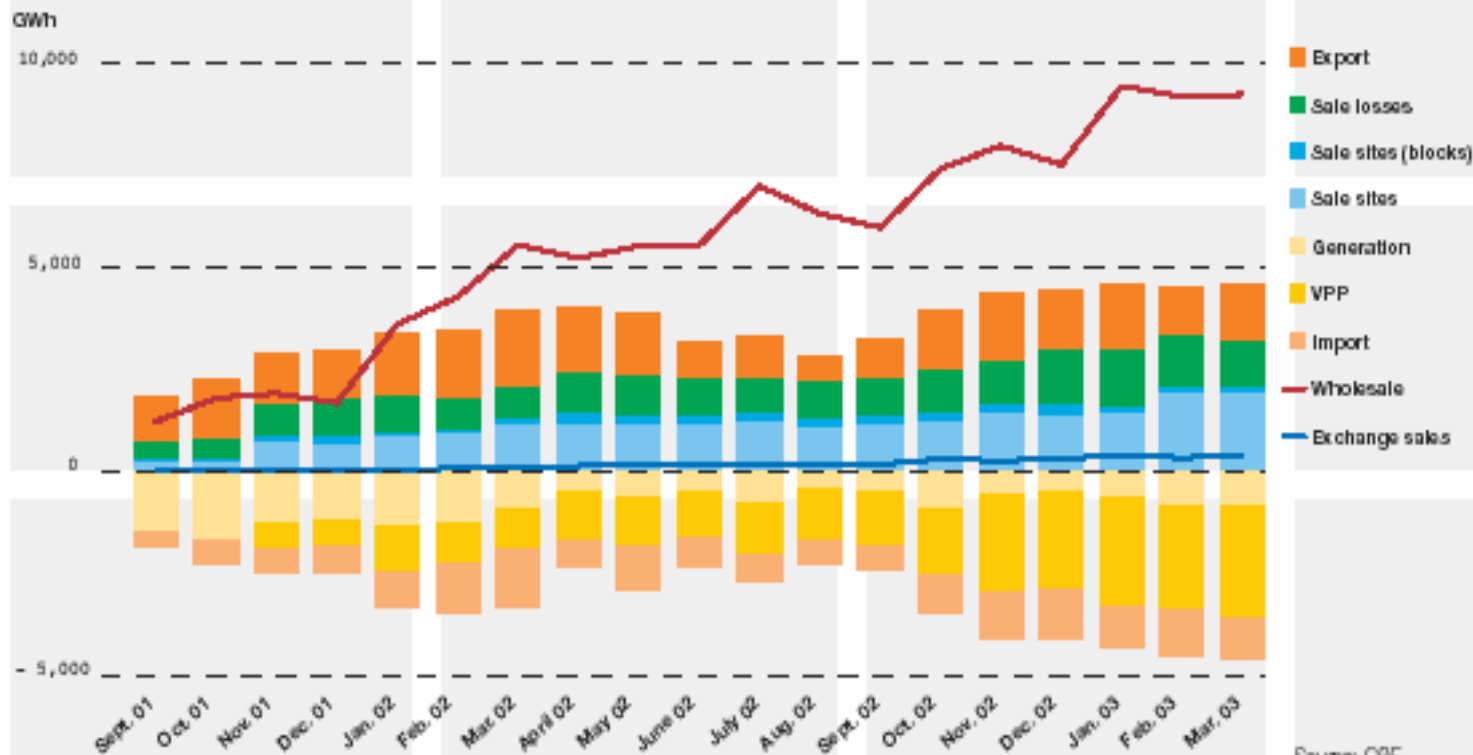


Source: DRE.

Softened Monopoly

Data from July 2002 to March 2003 showed **VPP** (not Import nor Generation) as the main source of power for non EDF actors (>50 TWh in 2003) and export + grid losses their main activity.

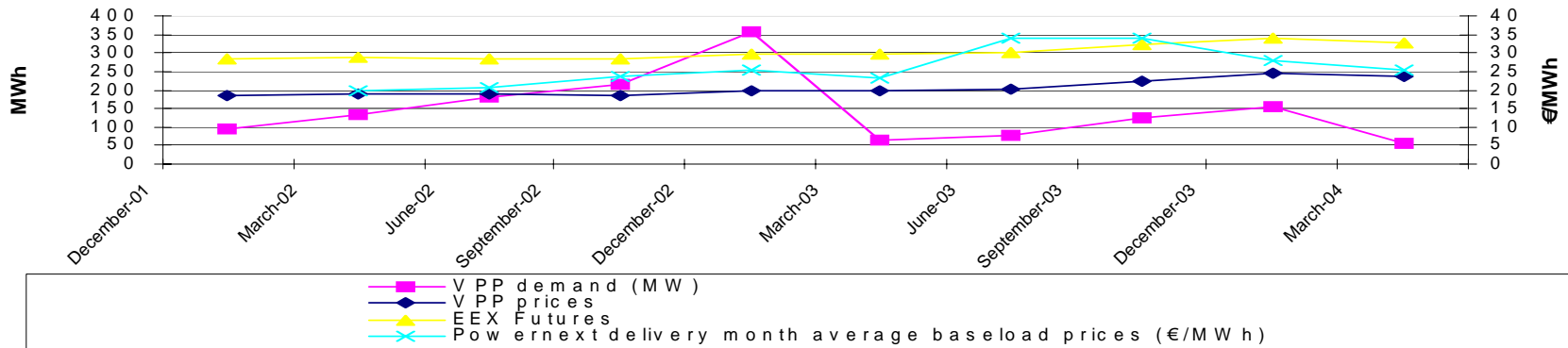
Figure 11/ Developments in purchase and sale of electricity by suppliers outside the EDF Group



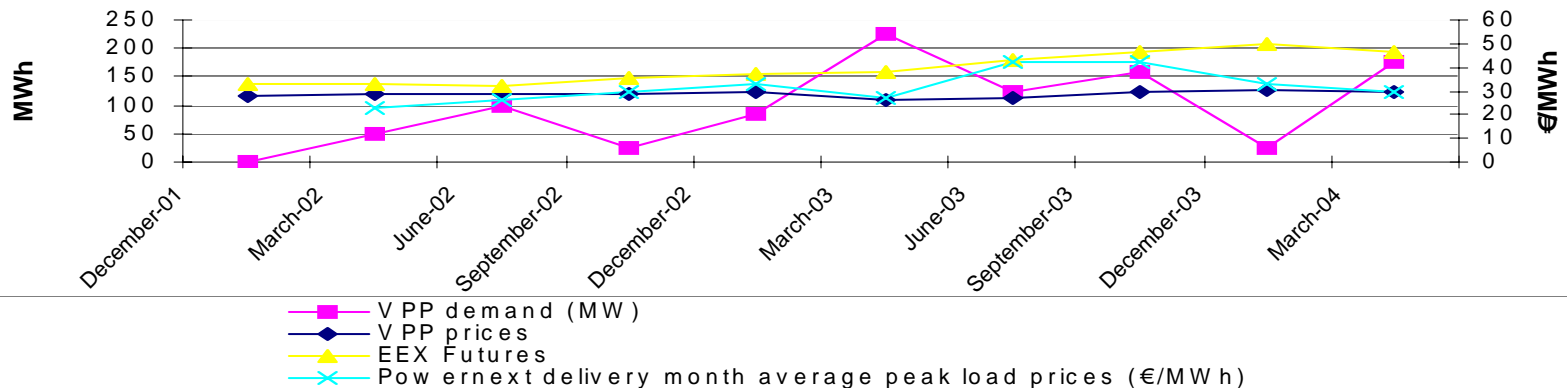
Source: CRE

VPP are for 3 months to 3 years. 1 year the most common (2 500 MW sold). VPP Prices stay under French & German PXs' levels.

EDF VPP prices & demand for 12 months baseload product compared with EEX futures (12 months & baseload) and with Powernext spot prices
(source : www.edf.fr; www.eex.de; www.powernext.fr)

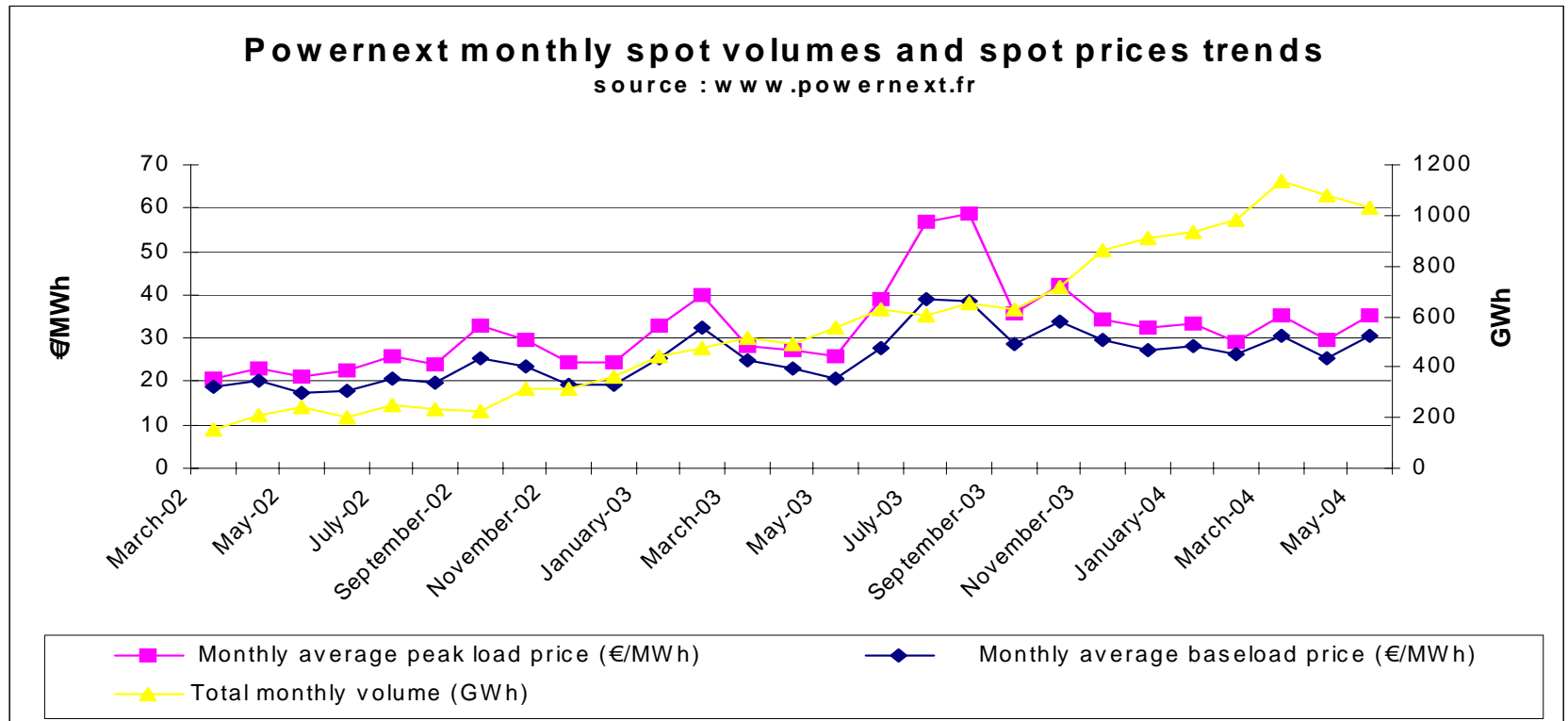


EDF VPP prices & demand for 12 months peak load product compared with EEX futures (12 months & peak load) and with Powernext spot prices
(source : www.edf.fr; www.eex.de; www.powernext.fr)



Softened Monopoly

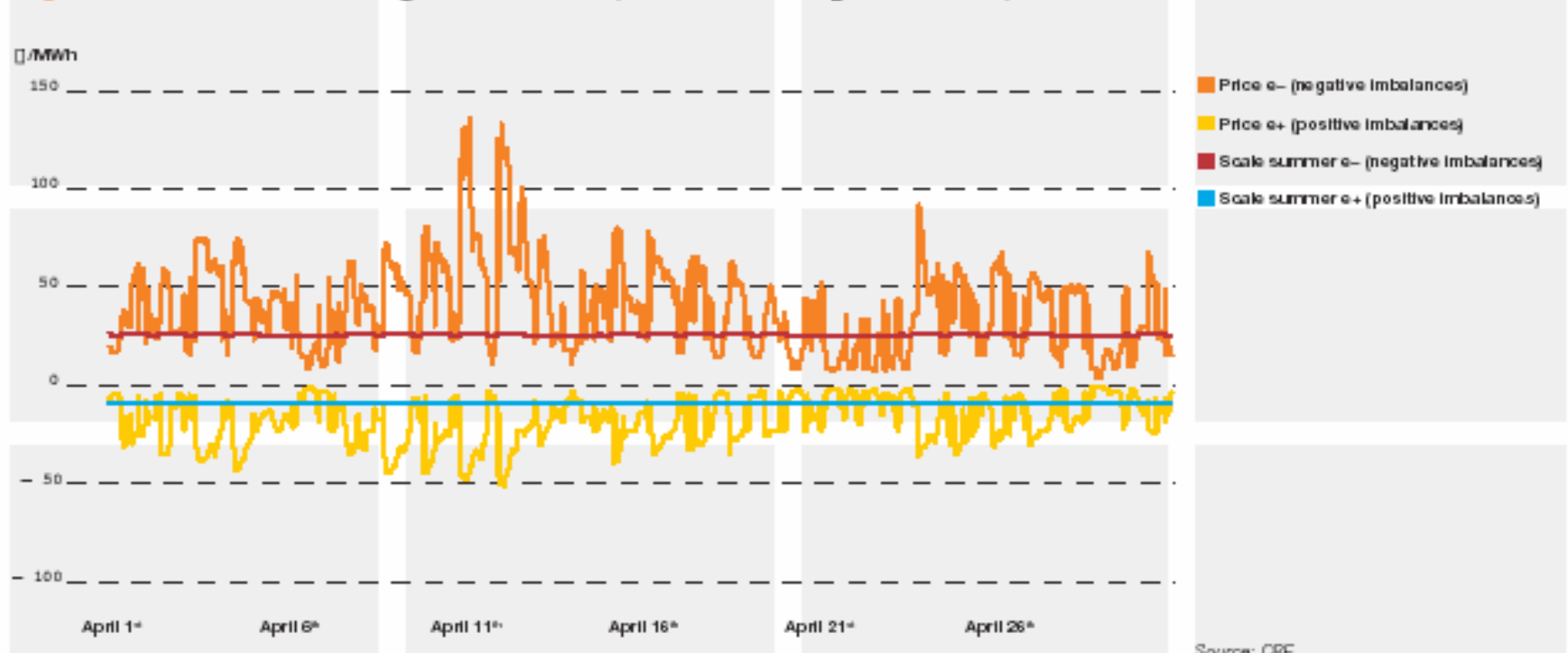
Price Transparency increased by the **French PX Powernext**. It functions (Year 2002) as a French hub backed by the French TSO (one of its shareholder). Volumes reach 1 TWh/ month in April 2004. Futures Market is to open soon.



Softened Monopoly

Balancing Market procuring balancing energy. It replaces Edf own tarif since April 2003. Schedules Imbalances are paid the Day Ahead PX price if helping the TSO, or the mean Balancing Market Price x 1,2 if contributing to the global imbalance.

Figure 18/ Price of settling imbalances (before/after April 1st 2003)



Softened Monopoly

French TSO opened in 2002 an exchange mechanism named « Block Exchange Notification »

by which OTC trade could be taken into account by the balancing market.

It became intraday in December 2002 (4 hours to 3 hours ahead).

The volume of this « grey market TSO mechanism » is bigger than the French PX (more than 100 TWh a year).

Softened Monopoly

Access to interconnections are of various kinds.

-With G-B (2000 MW) it is a competitive auction, long term (3 years to 1) to medium (3 months to 1) and short term (Day Ahead) + 'Use it or loose it'. It is yet price responsive. Going to be linked with access to the French balancing market.

-With Belgium, harmonization between TSOs opening monthly, daily & intradaily auctioning

-With Italy use of prorata favoring Italian Industry

-With Germany, remaining difficulties in harmonizing interconnection access and intraday allocation (to link balancing markets)

-With Spain mix of market and non market mechanism

Softened Monopoly

French Transmission Tarif is neutral vis-à-vis any Generator

As in Italy, Germany, etc., all Grid Costs are paid by a Consumer Postal Stamp ($L = 100\%$ and $G = 0\%$).

French Tarif covers notably Grid assets, losses, and congestion costs.

STEP 3- Any New Generation Investment?

Generation Investment in France uneasy to forecast because.... it's in the future!

1° Technology Costs comparison still open:

**Price of Gas and of Coal (Spark Spreads) & Price of CO² for Thermal Plants;*

***Cost of Capital, Cost of Equipment and Availability for Nuke (EDF confident having cheaper equipment with good availability & discounting 11 %?)*

(contradicting MIT study or Bower estimates)

2° Access to sites and to gas not so easy:

Where to site new Plants in France?

How to get competitive, reliable & flexible Gas?

France Generation Investment Forecast

3° *Who will invest?*

IPP dead for ever? Only Incumbents able to put money in? Will Oil & Gas industry enter?

Having customers first then investing? New entrants in supply could build 'entry gates' for other investor (100 000 small business customers = 5 TWh)?

Will Gaz de France (11 M customers with 500 000 non domestic) expand in electricity generation? Alone or with a partner (like Suez-Electrabel?)

4° *Why to invest in France and not abroad by 2010?*

5° French TSO 2010-2020 Forecast

Consumption Growth Rate (Yearly %)

<i>Till</i>	<i>2010</i>	<i>2010 – 2015</i>	<i>2015 – 2020</i>
<i>Scenario R1 (L-F)</i>	<i>1,4</i>	<i>0,9</i>	<i>0,6</i>
<i>Scenario R2</i>	<i>1,3</i>	<i>0,9</i>	<i>0,5</i>
<i>Scenario R3 (St-Int)</i>	<i>1,1</i>	<i>0,6</i>	<i>0,3</i>

Source : Bilan prévisionnel RTE (2006 – 2015)

French Consumption (in TWh)

<i>Year</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
<i>Scenario R1</i>	<i>520</i>	<i>544</i>	<i>561</i>
<i>Scenario R2</i>	<i>513</i>	<i>536</i>	<i>550</i>
<i>Scenario R3</i>	<i>503</i>	<i>519</i>	<i>527</i>

Source : Bilan prévisionnel RTE (2006 – 2015)

Default Assessment with low Generation investment

**Year 2006: 1% to 3% probability of 1 hour default*

***Year 2010: 22% probability of 11 hours default >>
1,4 to 4 GW investment needed to be protected*

****Year 2015: 83% probability of 87 hours default >>
More 5 GW investment is needed*

TSO Forecast: NO new big Plants before 2010-2015

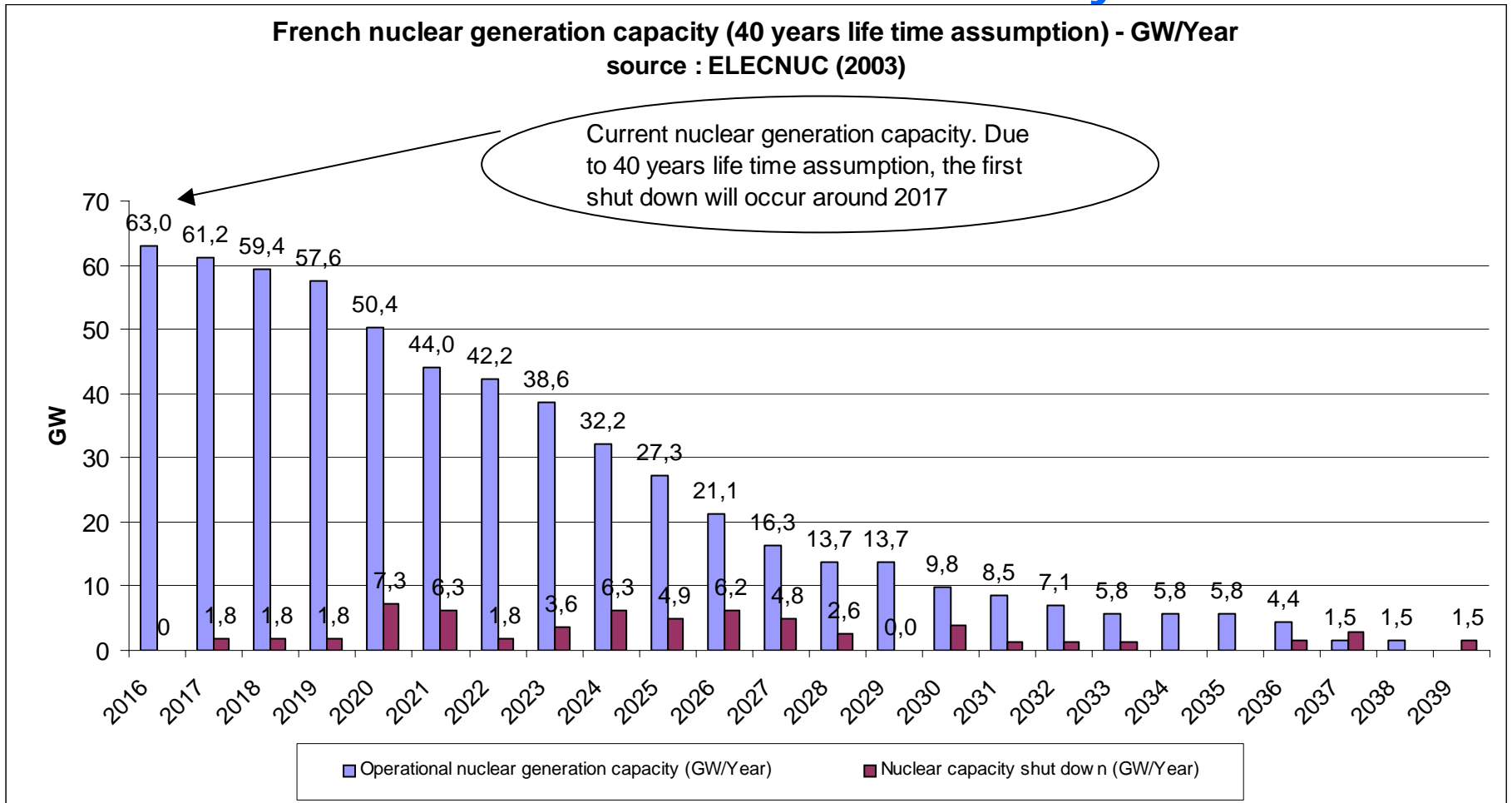
**Peak Load Voluntary Reduction in France could
come back to past value (3 GW more than today)*

***French exports at Winter peak will reduce because
new Foreign plants will be available abroad*

****EDF mothballed thermal plants in France could
be refurbished*

6° Nuke Plants Retirement begins after 2015

From 2017 to 2019: 1 800 MW a year



From 2020 to 2027: 7 000 MW to 4 000 MW a year

How much nuke plants replaced by EDF with CCGT or new nuke technology?

New nuke technology as French State energy priority?

Will EU Commission continue to ask for VPP program after 2006?

Will EDF translate its « 20% market shares lost » objective into any Generation adjustment goal?

French coming new investment wave really unclear:

**Technology & Costs (Nuke vs CCGT; Renewable?)*

**Volume (only few hundred MW before 2010?)*

**Timing (rush only after 2010? 2015?)*

**Location (France vs Foreign?)*

**and Players (Gaz de France ? Electrabel? Enel?)*

STEP 4- New List of Dreamed Softeners

*Many uncertainties...with one certitude:
no EDF generation-supply splitting by any
French government in the near future*

>> Only one real alternative

- To Dream about a different word with a different France... ..*
- Or to soften Dreams to workable solutions*

Dreamed List of Workable Softeners

Unbundling Softeners

- Transmission Grid as an independent public corporation owned by neutral third party (like Caisse des Dépôts)*
- Distribution Grid accountability for Costs and Quality of Service on a regional basis (24 existing French regions)*
- Latter on: Distribution Grids established as regional public corporations*

Dreamed List of Workable Softeners (C^{ted})

Demand Softeners

- *Energy procurement by French public entities (Ministries, Municipalities, Universities, Hospitals, etc.) have to obey legal competitive procurement methods as soon as their 'vested contracts' expired*

Dreamed List of Workable Softeners (End)

Market Softeners

- *Due harmonisation of French Balancing Market to create a continental open balancing mechanism*
- *Due harmonisation of interconnection management to create a continental coordinated auctioning*
- *Protection of the emerging French « Dual Fuel » market from the establishing of dominant positions*
 - *No single player could cover more than (x) % of the dual fuel market*
 - *The sum of the two first players cannot outpace (y)% of the dual fuel market until a satisfactory competitive market emerged*



*In the long run could a monopoly position be eroded
in a fringe reform frame?*

*Could this 'Competitive Fringe Frame' be easily
combined with the new policy priorities' pressures
like 'Security of Supply' and 'Environment &
Renewable' ?*