

# Managing the System during Euro 2004

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# Items to cover

- Background
- Historical record demand pickups
- Forecast considerations
- Match timetable and scenarios
- Group stage outturns
- Fast reserve strategy
- Quarter final outturns
- Summary

# Introduction

- National interest in Euro 2004 meant that the actions of a large proportion of the population were governed by events on the pitch which was relayed via TV to homes and pubs across the country.
- Historically, popular sporting events and particularly football strongly affect demand.
- Typically demand drops as people start to watch a match and then increases rapidly at the end of half time and full time.
- If people watch in the pub instead of at home, this helps reduce the size of pickups (less kettles!)
- Viewing figures were up 15% on Euro 2000



# All time TV pickup records

- July 1990 - England Germany World Cup semi-final 2800MW
- Jan 1984 - Thorn Birds 2600MW
- July 2002 - England Brazil World Cup quarter-final 2600MW

*2800MW corresponds to around 1.1million kettles on simultaneously.*

- Few domestic electrical items stay on continuously, especially the larger ones e.g. for electric cookers, the hotplates, grill and oven(s) are never all on at exactly the same time because the thermostats prevent overheating. This is the load diversity factor.
- TV programmes synchronise kettles into a very narrow timeband.
- UK is almost unique worldwide - very few other countries have such widespread use of kettles. Also, tea drinking is a very British custom!
- Another factor is the relatively small number of TV channels to choose from. Until recently, virtually all major TV pickups have been from BBC or ITV programmes. In future, cable and satellite are expected to be a bigger factor in TV pickup forecasting. (Eng-Tur qualifier in Oct 03 became most watched non-terrestrial programme - 4.1M).

# More record pickups

Date	MW	Category	Programme
04-Jul-90	2800	Sport	World Cup Semi - W Germ v Eng
22-Jan-84	2600	Drama	The Thornbirds
21-Jun-02	2570	Sport	WC - England v Brazil HT
12-Jun-02	2340	Sport	WC - Nigeria v England HT
05-Apr-01	2290	Soap	EastEnders END
28-Apr-91	2200	Drama	The Darling Buds of May
12-May-91	2200	Drama	The Darling Buds of May
08-May-85	2200	Drama	Dallas
22-Nov-03	2110	Sport	Rugby World Cup Final England v Australia HT
18-Apr-94	2100	Soap	Coronation Street
30-Jun-98	2100	Sport	World Cup 98 (EnglandvsArg)HT
19-Feb-86	2100	Drama	The Colbys END
07-Apr-02	2010	Soap	Coronation Street END
03-Jul-90	2000	Sport	World Cup Semi - Italy v Argen
02-Apr-84	2000	Soap	Coronation Street / Film: Blue Thunder
02-Apr-86	2000	Soap	Coronation Street
04-Sep-86	2000	Soap	EastEnders END
30-Apr-86	2000	Drama	Dallas
01-Apr-91	2000	Soap	Coronation Street
20-Apr-97	1960	Soap	Coronation Street End
05-Apr-94	1900	Soap	EastEnders END
21-Apr-02	1900	Soap	Emmerdale CB
11-Apr-02	1850	Soap	EastEnders END
17-Apr-97	1830	Soap	EastEnders End
21-Jun-02	1820	Sport	WC - England v Brazil FT
21-Apr-99	1820	Sport	The Big Match Juv vs ManU HT
29-Jul-81	1800	State Occasion	Royal Wedding: Charles & Diana

# Demand drops

- Demand drop offs can also be a challenge to manage
  - Demand can fall dramatically as people stop doing what they normally do.
  - Examples of this are two or three minute remembrance silences or during the eclipse in August 1999.
  - Even the Grand National every year causes a sizeable drop in demand.
  - The largest drop in demand ever was 2700MW for the three minute silence on 14th September 2001.

# 1966 World Cup

- The pickup at the end of the England Portugal semi-final on Tuesday 26 July 1966 was 1700MW. This was the highest ever at the time.

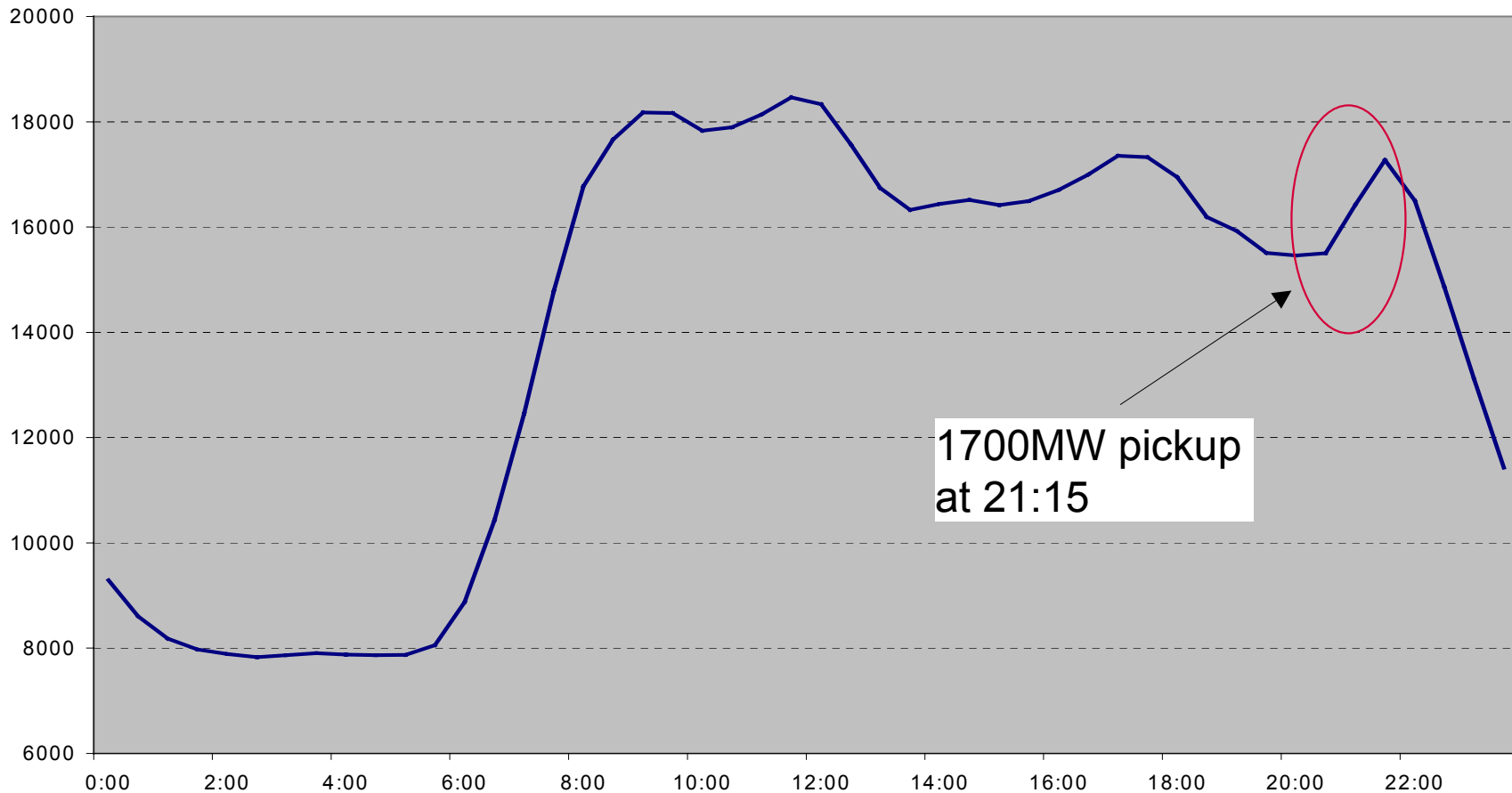
Date	Match	Pickup (MW)	
		Half Time	Full Time
Mon July 11 1966	England v Uruguay (opening match)	450	950
Mon July 25 1966	West Germany v Russia (SF)	300	1500
Tues July 26 1966	England v Portugal (SF)	350	1700
Thu July 28 1966	Portugal v Russia (3/4th place)	300	700
Sat July 30 1966	England v West Germany	800	600

## Other large non-football pickups

Date	Programme	Pickup (MW)
Tue Aug 9 1966	"Love Affair" and "Love Story"	1600
Tue Feb 22 1966	"Secret Place" and "Power Game"	1400
Sun May 20 1966	"Last Night of the Crazy Gang"	1300

# World Cup 1966 - England vs Portugal semi final

## Tue 26 July 1966

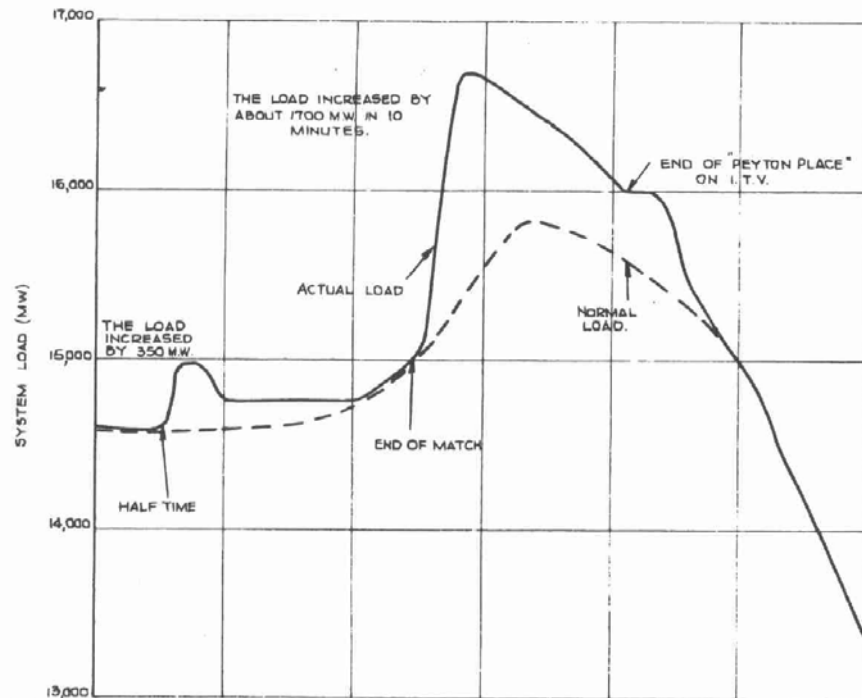


# 1966 World Cup

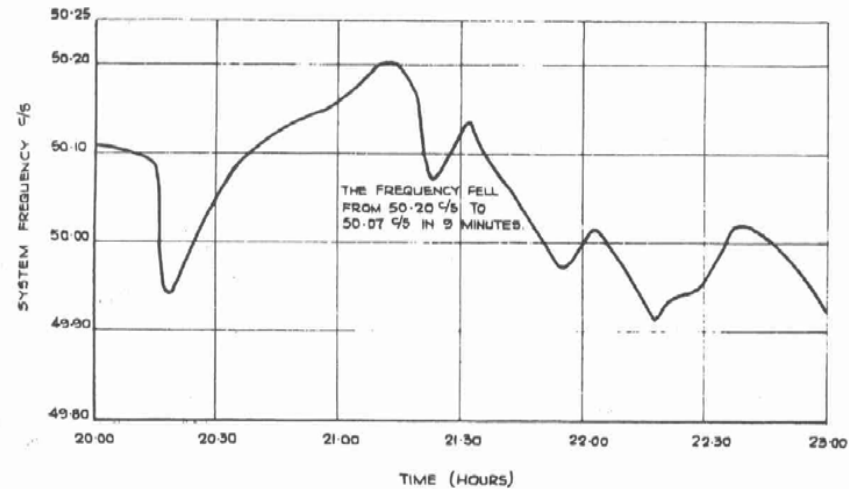
## Opening Match 26th July 1966

### England v Portugal

### Demand



### Frequency



EFFECT ON SYSTEM LOAD AND FREQUENCY OF THE SEMI-FINAL OF THE WORLD CUP BETWEEN ENGLAND AND PORTUGAL SHOWN ON B.B.C. AND I.T.V. ON TUESDAY 26th. JULY 1966.

# EURO 2004 - ENGLAND



# Forecast considerations

- Euro 2004 was expected to be difficult to forecast, and the longer England stayed in the competition, the more interest it would attract.
- The success of the England Rugby team was expected to have a big impact on the general support England would have.
- Kick offs for all games were either 17:00 or 19:45, meaning that half times were 17:45 and 20:30, and full times approx. 18:45 and 21:30.
- Because of this, the only time when a popular TV programme was expected to coincide with one of the football times was 20:30, the end of Eastenders on Monday & Friday.
- If coverage was on BBC, no commercial breaks so people may stay seated and listen to the comments from the panel immediately after half/full time!



# Analysis from first game in Euro 2000 vs Portugal

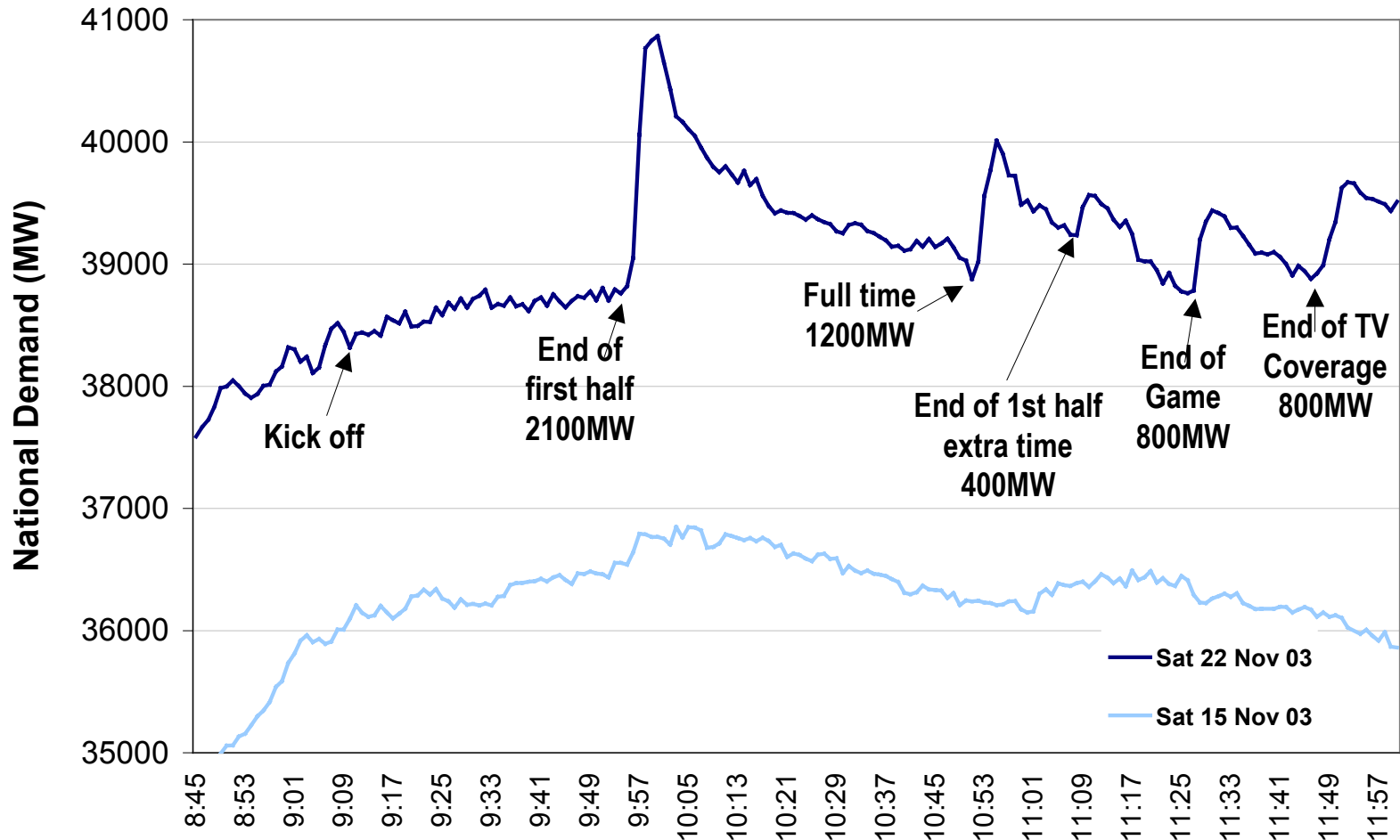
- Based on an analysis of England's opening game vs Portugal in Euro 2000, the following range of TV pickups was predicted for the opening game against France in Euro 2004:
  - Half Time      Between 900 and 1200MW
  - Full Time      Between 1200 and 1500MW
  - End Time      Between 300 and 600MW

# Actual TV pickups from Euro 2000

	HT	FT	END	Day Of The Week
Portugal	1020	1370	340	Monday
Germany	880	870	520	Saturday
Romania	710	1000	480	Tuesday
Semi Finals				
Average pickups	HT	FT	END	
	400	600	250	
	360	770	210	
Final				
Actual Pickups	HT	FT	END	
	360	770	210	

Note: lower levels once England out of competition at group stage!

# National Demand Rugby World Cup Final (22 Nov 03) and the week before



# Match Timetable for Euro 2004

## Group B

<b>Sunday 13th June</b>	Switzerland v Croatia (Kick off 5pm) <b>France v England (Kick off 7.45pm)</b>
<b>Thursday 17th June</b>	<b>England v Switzerland (Kick off 5pm)</b> Croatia v France (Kick off 7.45pm)
<b>Monday 21st June</b>	<b>Croatia v England (Kick off 7.45pm)</b> Switzerland v France (Kick off 7.45pm)

## Quarter - Finals

<b>Thursday 24th June</b>	<b>A1 v B2 (Kick off 7.45pm)</b>
<b>Friday 25th June</b>	<b>B1 v A2 (Kick off 7.45pm)</b>
Saturday 26th June	C1 v D2 (Kick off 7.45pm)
Sunday 27th June	D1 v C2 (Kick off 7.45pm)

## Semi - Finals

<b>Wednesday 30th June</b>	<b>QF1 v QF3 (Kick off 7.45pm)</b>
<b>Thursday 1st July</b>	<b>QF2 v QF4 (Kick off 7.45pm)</b>

## FINAL (Lisbon)

<b>Sunday 04th July</b>	<b>(Kick off 7.45)</b>
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# Possible scenarios

## Scenario 1

England get knocked out in the qualifying stages. The results of the first couple of games will determine the demand for the final group game.

	HT	FT	END
France	1000	1400	500
Switzerland	900	1000	500
Croatia	?	?	?

## Scenario 2

England win or come second in the group and qualify for the quarter finals. The respective quarter-final games concerning this group will be held on Thursday 24<sup>th</sup> June and Friday 25<sup>th</sup> June.

	HT	FT	END
England v ??????	1000	1500	500

## Scenario 3

England qualify for the Semi Finals. These are played on Wednesday 30<sup>th</sup> June and Thursday 1<sup>st</sup> July

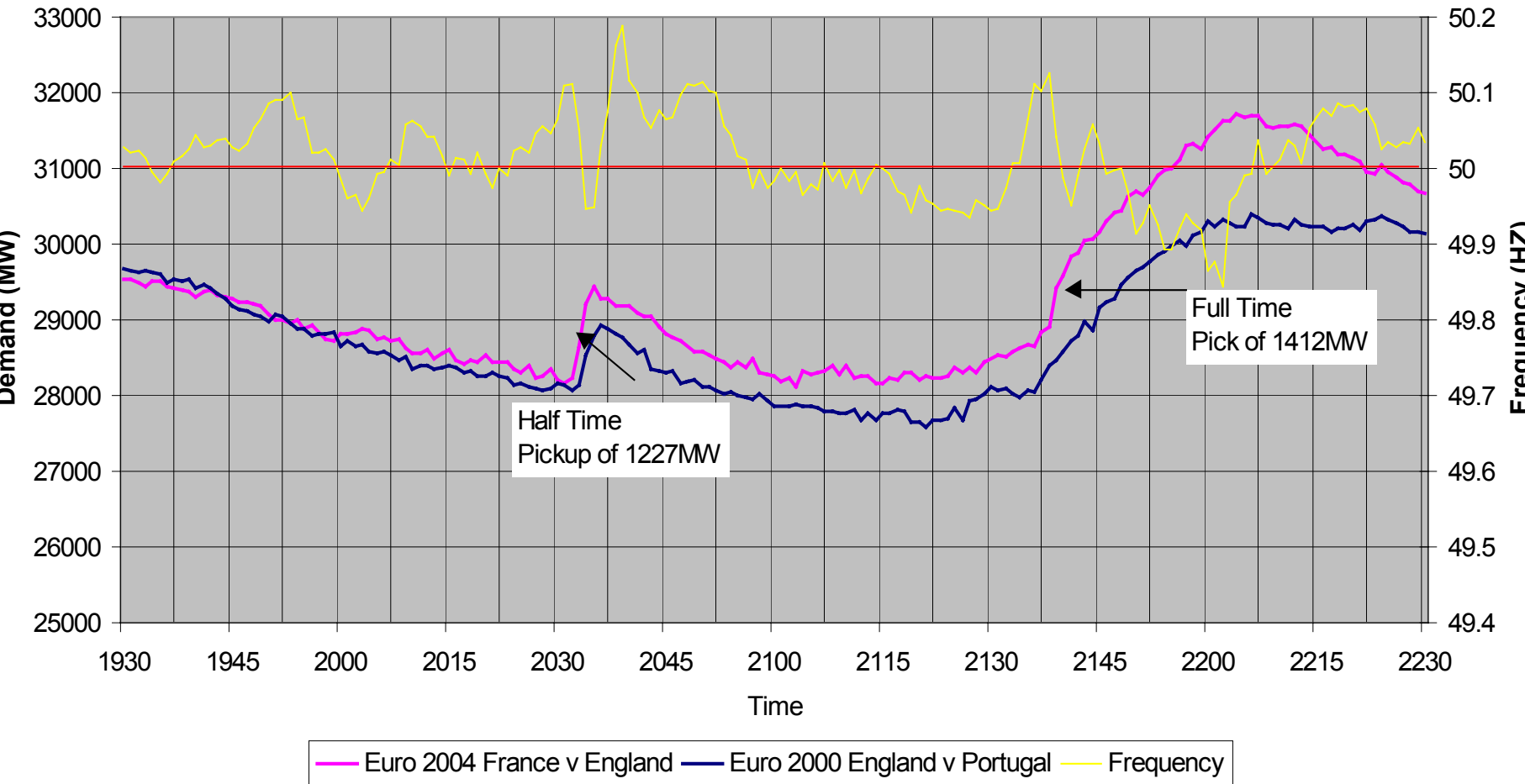
	HT	FT	END
England v ??????	1100	1700	500

## Scenario 4

England win their Semi-Final and qualify for the final in Lisbon on Sunday 4th July.

	HT	FT	END
England v ??????	1200	2000	600

# France v England - Sunday 13th June 2004



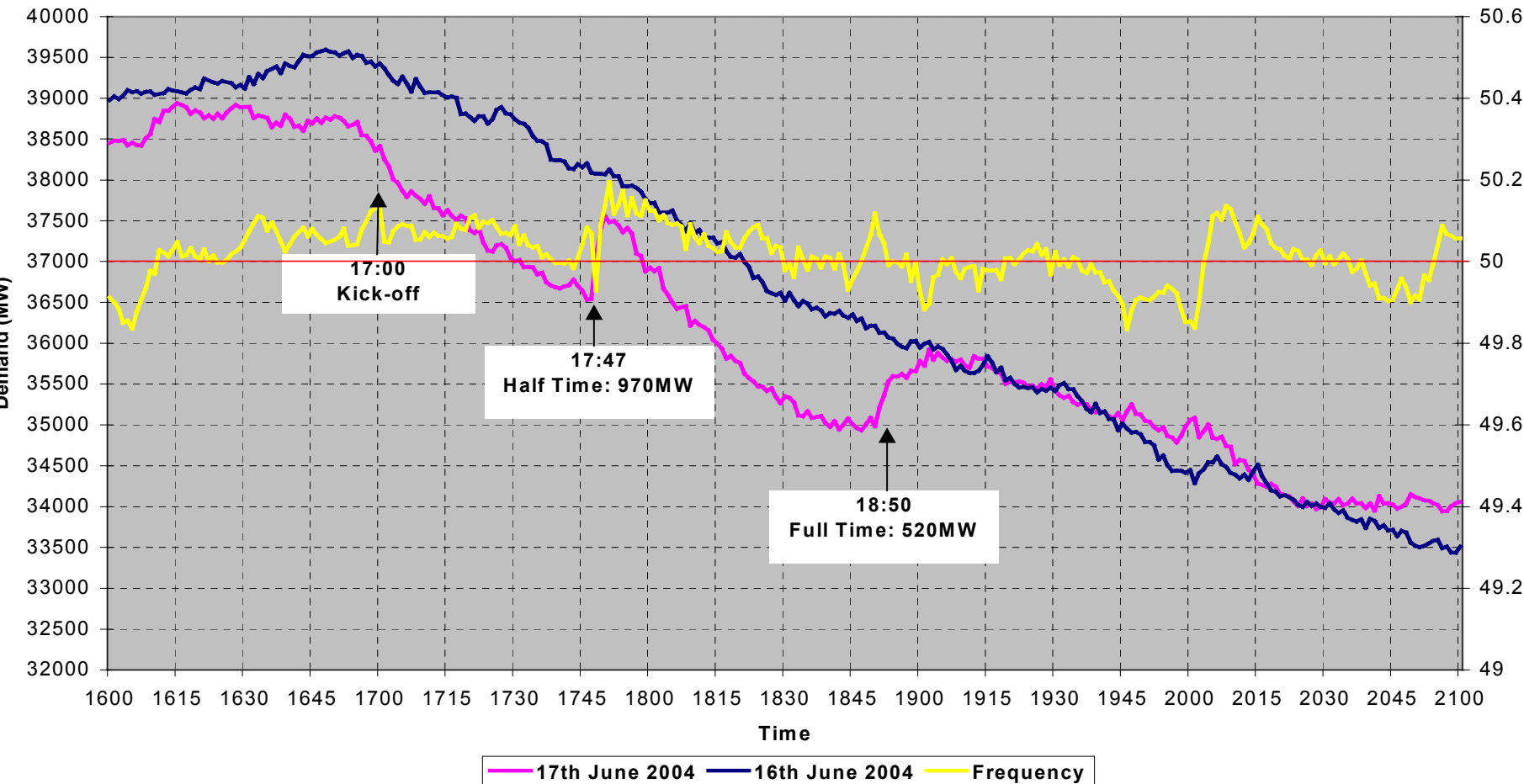
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*Within forecast ranges - no major surprises. Note: pickups are normally just first 5 minutes or to a point where the gradient changes.*

# France draw level with Zidane free kick in injury time



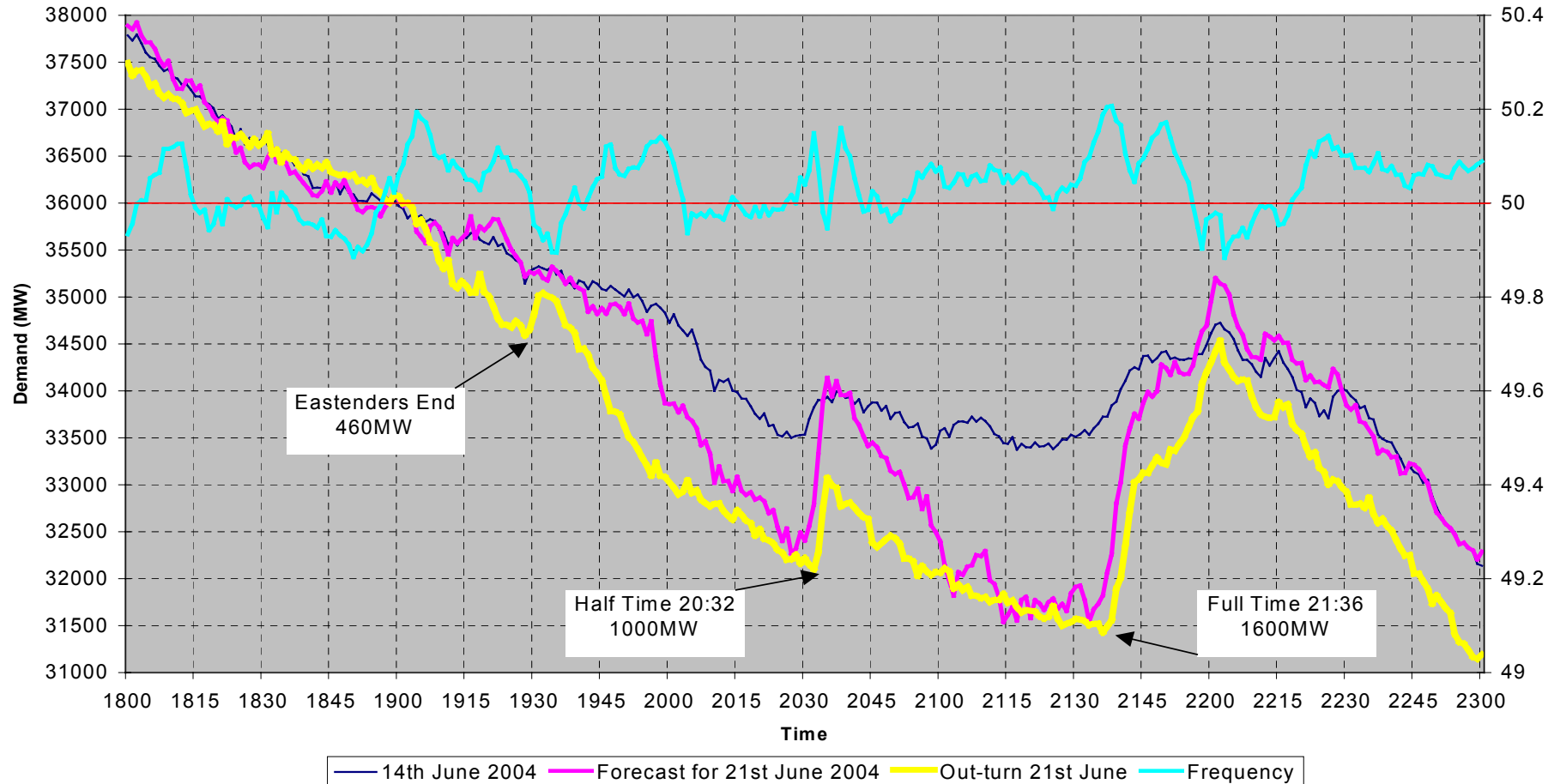
# England v Switzerland - Thursday 17th June 2004



# Rooney opening goal - 23 minutes



# England v Croatia - Monday 21st June 2004



# Lampard scores 3rd England goal in 80th minute



# Control Room planning for England vs Portugal

- Volatility of the forecast is the main consideration. If more people watch the game in the pub, then the TV pickup will be lower.
- For football matches, there is far greater volatility than for any other category of pickup (soaps, films, state occasions etc.)
- Control assume some margin of error and plan for the worst case i.e. above the forecast level. Normally our forecasts are within 300MW.
- Not all plant will actually be committed in case the forecast is too high.
- Classic case of this was England Argentina - World Cup 2002. The TV pickup was delayed and a lot lower than estimated. If all plant had been committed to the forecast, the frequency could have risen above 50.4Hz.

# Silver Goal rule

- Because this game was subject to the silver goal rule, there were 4 possible scenarios:
  - winner at the end of normal full time
  - winner at the end of the first period of extra time
  - winner at the end of the second period of extra time
  - winner at the end of the penalty shoot out
- Control room forecasts were as follows:

Time		Option			
		1	2	3	4
20:33	Half Time	1200	1200	1200	1200
21:35	Full Time	1800	1400	1400	1400
21:55	1st Period		1600	400	400
22:12	2nd Period			1600	400
22:25	Shoot Out				1600
?????	END	400	400	400	400

# Reserve strategy

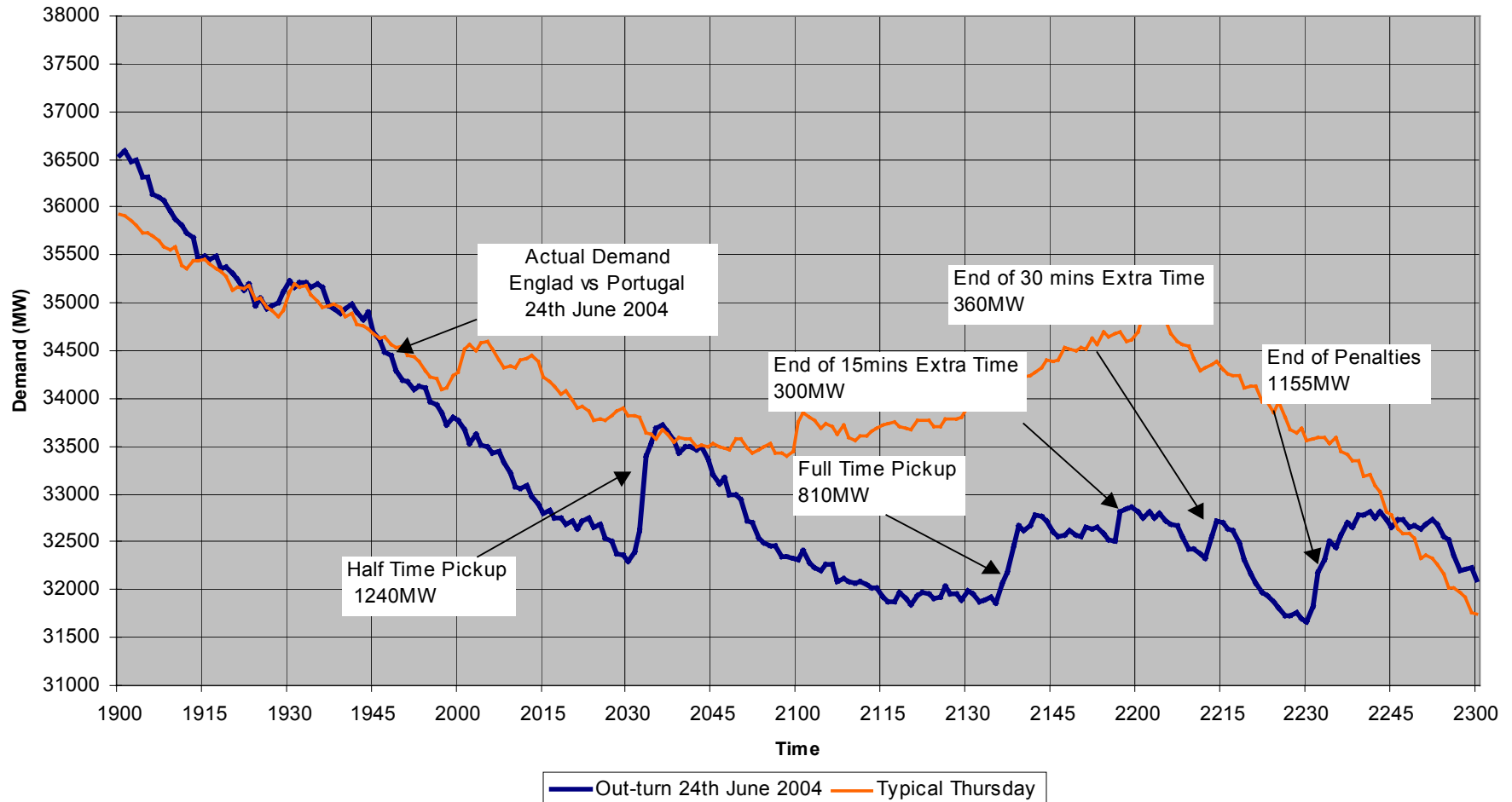
- The largest pickup from these scenarios was 1800MW for a result after normal time (option 1)
- A worst case requirement for 2700MW of fast reserve was using a 50% error assumption
- To achieve this level, a combination of providers were available to be called in the BM, including interconnectors, pumped storage, and conventional plant with fast ramp rates.
- The plan was to use these providers in cost order, with the most expensive retained as backup.

# Comparison of demand profiles

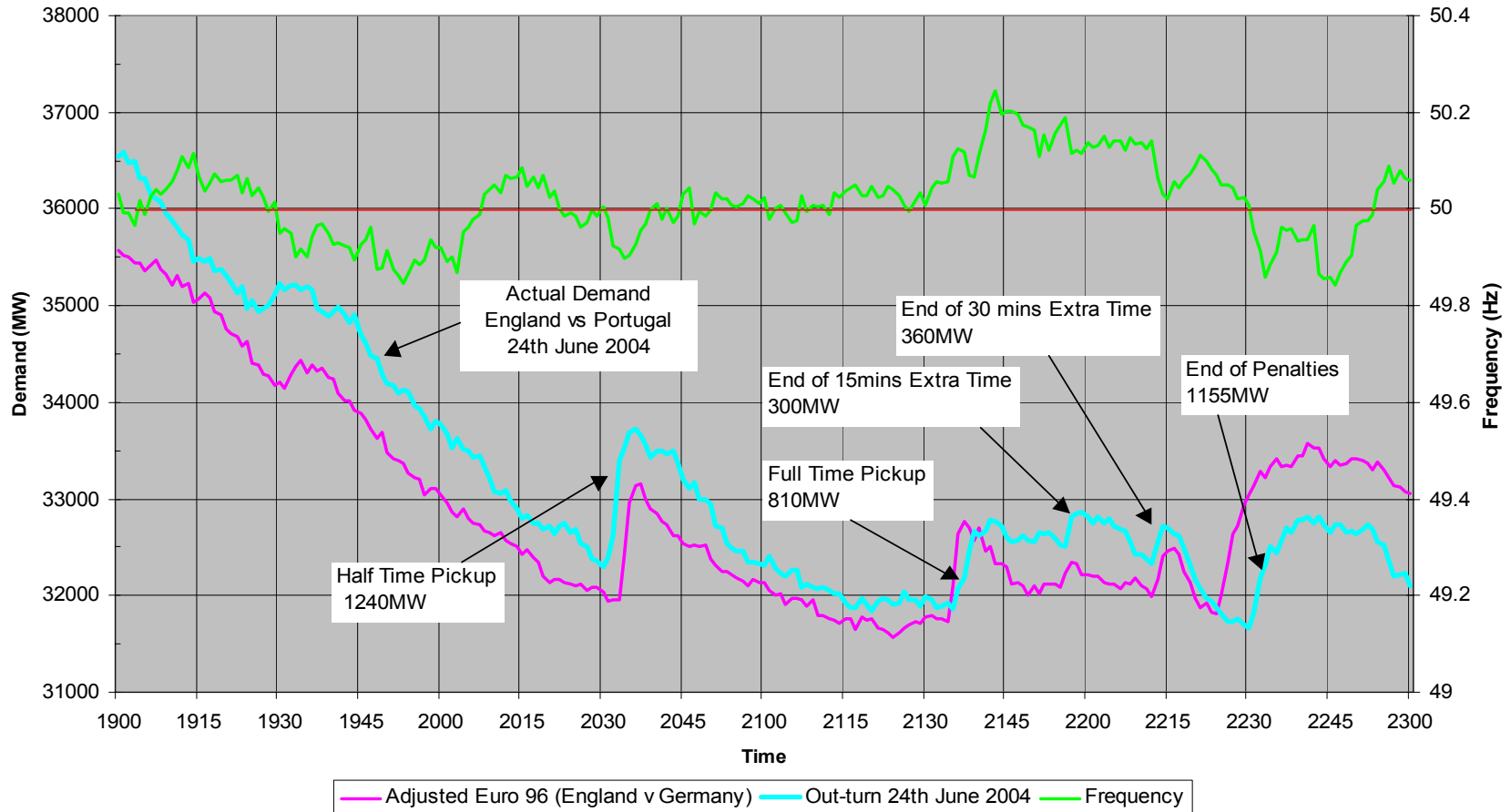
## England Portugal 2004 / England Germany 1996

- For the “penalties” scenario, a similar situation arose during Euro 1996 where the match with Germany went to penalties.
- The demand profile from this day 8 years ago was actually adopted for the England Portugal quarter final match.

# England v Portugal - Thursday 24th June 2004



# Demand and Frequency England Portugal - 24 June



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*Shock factor - after the penalties, were people too stunned to even make a cup of tea! Almost an hour of uncertainty from 21:35 - 22:25 - on hol*

# Portugese Goalkeeper Ricardo celebrates after Beckham misses penalty



# BM Offers accepted to meet the pickup following the penalty shoot out (1150MW)

BMU_ID	Offer Volume MWh	Offer Price		BMU_ID	Offer Volume MWh	Offer Price
COSO-1	6.733	14.5		EGGPS-3	33.024	26.59
DRAXX-4	6	16		EGGPS-3	3.143	27.51
DRAXX-6	6	16		COSO-1	0.708	28.55
DRAXX-1	3.375	18		SUTB-1	2.548	31.03
DRAXX-2	6.875	18		WBUPS-1	10.25	34.34
DRAXX-2	7.292	18		COTPS-2	33.333	37.2
DRAXX-1	7.292	18		COTPS-4	0.067	38.1
DRAXX-3	7.5	19		COTPS-4	0.066	38.11
DRAXX-3	14.073	19		RATS-3	6.667	41.95
FIDL-2	2.833	20		RATS-2	4.833	45
DAMC-1	3.667	21		COTPS-4	1.769	51.84
TILB-9	7.077	21.1		DRAXX-4	5.384	60
TILB10	6.519	21.2		DRAXX-3	5.948	75
DRAXX-3	0.145	21.5		ISG-SSTH	84.842	110
DRAXX-4	0.158	22		ISG-SSTH	33.158	110
TILB-9	4.172	23.35		ISG-SPOV	21.667	130
TILB10	4.16	23.36		SHESD-1	6.25	150
EECL-1	0.85	25		DINO-6	115.4	170
TESI-1	2.454	26.35		FFES-1	37.5	175
				FFES-2	39	175
					542.732	

# Actual TV pickups for all England matches

Actual TV pickups for the England matches:

<b>England vs:</b>	<b>Half Time</b>	<b>Pickup (MW)</b>	<b>Full Time</b>	<b>Pickup (MW)</b>
France	20:30	1200	21:30	1400
Switzerland	17:45	970	18:45	520
Croatia	20:30	1010	21:30	1600
Portugal	20:30	1240	21:30 (Penalties)	810 (1150)

# Viewing figures

## **SOCCER AUDIENCES SINCE 1981**

- World Cup 90: England vs Germany - **26.2m** (BBC One & ITV)
- Euro 96: England vs Germany - **23.8m** (BBC One & ITV)
- World Cup 98: England vs Argentina - **23.8m** (ITV)
- Euro 2004: England vs Portugal - **20.7m** (BBC One, unofficial figures)

*Figures are match averages. Source: BBC*

- Some 23.9m tuned in from 2215-2230BST, according to unofficial figures.
- The 20.7m game average - from the first whistle to the conclusion - was the highest average for a BBC football broadcast since records began in 1981.
- Other matches have had higher audiences - but they have either been on just ITV or split between BBC One and ITV.

# Summary

- Planning the operation of the system for major events starts many weeks ahead - in March for Euro 2004.
- Historic data was analysed from previous tournaments, and many different scenarios were considered. Plans were drawn up based on discussions and meetings between control and planning departments.
- The system was operated with sufficient flexibility and contingency to cover any of the potential scenarios, allowing for the volatility of these sort of events
- By careful planning, the system was managed in a secure and economical manner throughout Euro 2004, with no significant frequency or voltage deviations or system incidents.
- Your accurate data submissions, close CCL following and reserve delivery all played an important role in helping us manage the system during this tournament - thanks for all your efforts!

# The End



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Any questions?