

# “A Day in the Life of an Operational Energy Manager”

Nick Easton

Operational Energy Manager

A-Team, Operations & Trading

**An Evening With The A Team**

# Energy Balancing Team Structure

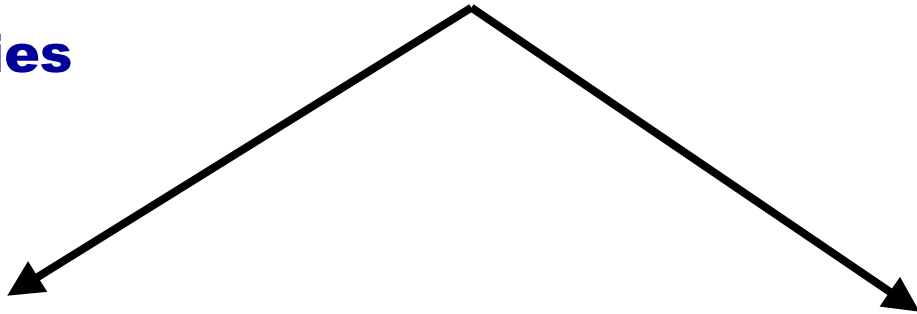
**Operational Energy Manager**



**National Balancing Engineer**

**Responsibilities**

**Interfaces**  
- Internal  
- External



**Zonal Balancing Engineer**

**(North)**

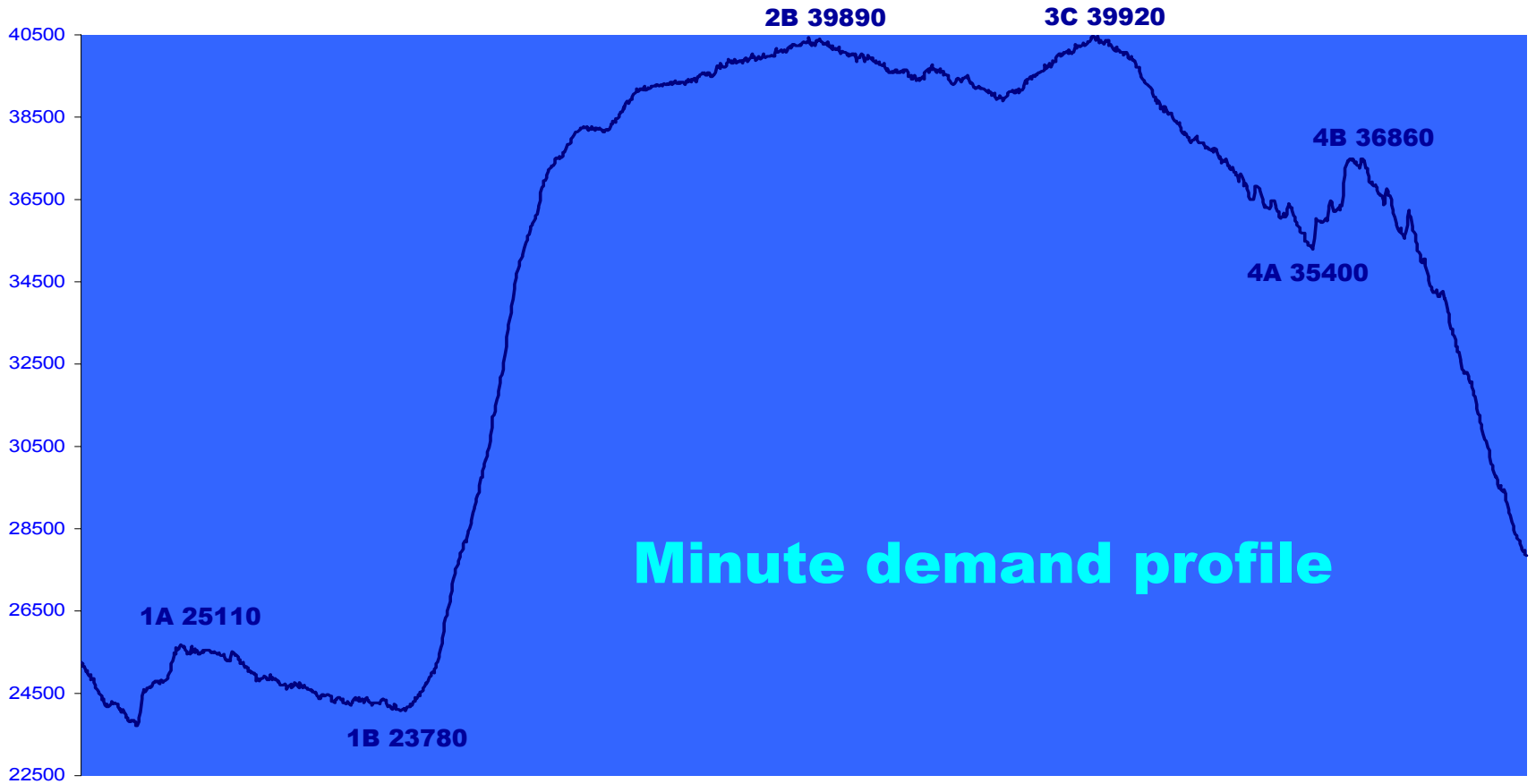
**Zonal Balancing Engineer**

**(South)**

# Control Room Structure



# Monday 12 May 2003



## Evening Shift - Key Tasks of Balancing Team

- Balance system 3B, 3C, 4A, 4B (1430 - 2130)
- Implement Strategy Team plans for peaks and troughs
- Plan approach to TV pick-ups
- Hold overall commercial and operational responsibility for real time energy balancing

***Must be flexible & adapt our plan to meet changing circumstances***

# Review of Operating Plan for 3C Peak

System Operating Plan - 3C\_120503\_1655\_REVISIED.xls

File Edit Tools

## NETA SYSTEM OPERATING PLAN

Final Operating Plan for 3C at 16:55 on 12/05/2003 from 05:13 D&C

| Demand / Reserve   | Plant Modifications  | Contingency  | Additional Decs |
|--|--|--------------|-----------------|
| <b>Demand Estimate</b>   |  |              |                 |
| Demand Estimate  |  |              | 39232           |
| Station Demand   |  |              | 400             |
| Interconnector Demand - France   |  |              | 700             |
| Interconnector Demand - Scotland   |  |              | 44              |
| Notified CDM (enter as -ve)  |  |              | 0               |
| Pumping Demand   |  |              | 0               |
| <b>Total Demand</b>  |  |              | <b>40376</b>    |
| <b>Plant Modifications</b>   |  |              |                 |
|  | <b>PMX</b>   | <b>CCL</b>   | <b>PMI</b>      |
| NO1  | 20484  | 20016        | 13329           |
| NO2  | 126  | 126          | 126             |
| SO1  | 20030  | 19384        | 13489           |
| SO2  | 75   | 75           | 75              |
| Scotland   | 1178   | 1049         | 441             |
| France   | 0  | 0            | 0               |
| Hydro  | 493  | 460          | 355             |
| <b>Totals</b>  | <b>42386</b>   | <b>41110</b> | <b>27815</b>    |
| <b>Contingency</b>   |  |              |                 |
| <b>Residual Above Positive Scheduled Reserve</b><br>(PMX - (Demand+Sched Res))       | 30   |              |                 |
| <b>Imbalance</b><br>(Total Demand - CCL)   | 395  |              |                 |
| <b>Residual Below Negative Scheduled Reserve</b><br>(Total Demand - (PMI + Neg Res)) | 11032  |              |                 |
| <b>Offer Price Stack</b>   |  |              |                 |
|  | 66   | < 25         |                 |
|  | 153  | 25 To 37     |                 |
|  | 472  | 37 To 351    |                 |
|  | 349  | >= 351       |                 |
| <b>MW OF BIDS REQUIRED</b>   |  |              |                 |
| <b>Bid Price Stack</b>   |  |              |                 |
|  | -2853  | >= 10        |                 |
|  | -4052  | 9 To 10      |                 |
|  | -830   | 8 To 9       |                 |
|  | -5640  | < 8          |                 |
| <b>Positive Reserve</b>  |  |              |                 |
| Total Requirement  |  |              | 1000            |
| Add'l steam for amb. Temps   |  |              | 0               |
| <b>Net Reg Res Requi't</b>   |  |              | <b>1000</b>     |
| Net Resp Reserve   |  |              | 708             |
| SR Shortfall   |  |              | 0               |
| <b>Scheduled Reserve Requi't</b>   |  |              | <b>1708</b>     |
| <b>Negative Reserve</b>  |  |              |                 |
| Negative Regulating Reserve  |  |              | 900             |
| High Frequency Response Res  |  |              | 1021            |
| <b>Negative Reserve Require't</b>  |  |              | <b>1921</b>     |
| Additional Negative Reserve  |  |              | 0               |
| <b>Scheduled Neg Res Require't</b>   |  |              | <b>1921</b>     |
| Max Loss - Infeed  |  |              | 1260            |
| <b>Notes</b>   | Operating summary saved as <span style="border: 1px solid black; padding: 2px;">3C1205REV</span> |              |                 |

# Review of Operating Plan for 3C Peak

## *Things for OEM to Consider -*

- Confidence in profile & demand estimate - 39,900MW and actual was 39,920MW
  - Basis of demand estimate
  - Variables such as weather, day of week
  - Mostly dry, but some lightening activity
- Response Reserve and Regulating Reserve levels

# Review of Operating Plan for 3C Peak

## *Things for OEM to Consider*

- Maximum Availability of Plant Operating - Planned Maximum Level
- Additional plant running in BM - SEAB-1, SEAB-2, & PETEM-1
- Plant uncertainty
- Transmission management aspects
- Contingency - none at “Final” programme stage

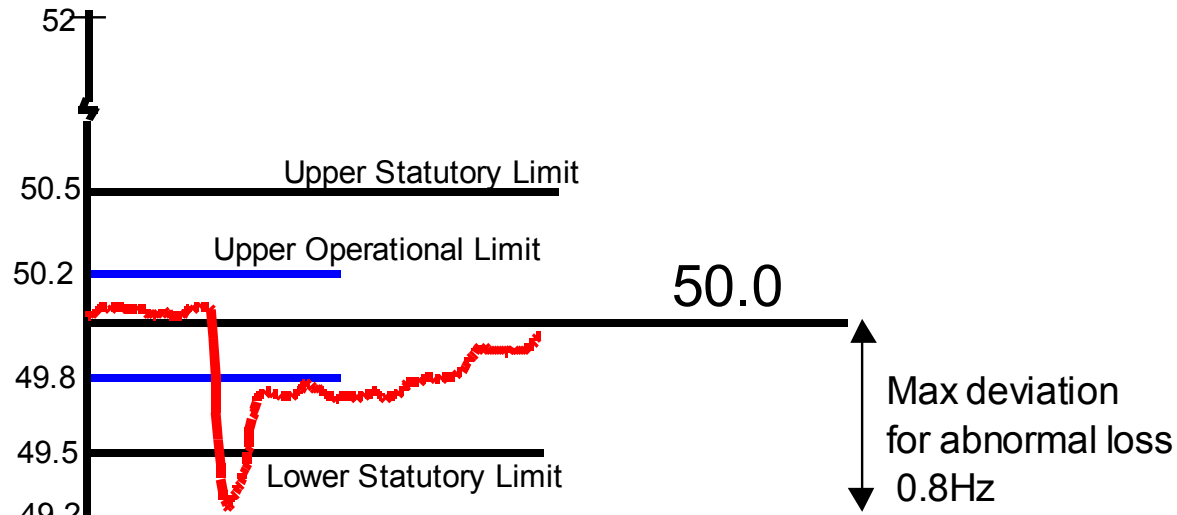
***How does the peak look in the balancing computer systems?***



# Approach to 3C Peak - What If ?

- What if:
  - Demand looks like it may undershoot 3C estimate of 39,900MW?
  - Shutdown additional units subject to later requirements & dynamics
- What if:
  - Demand looks like it may exceed 3C estimate ?
- & lose 500MW BMU
- & another !! (remember 10th December 2002)
  - Review residual MWs on synchronised BMUs
  - Consider short notice BMUs (Are they economic given MNZT?)
  - Standing Reserve

# Plant Loss - What we like and why !



- What ?
  - Early re-declaration of MEL
- Why ?
  - To help NGC assess Plant Margins & use Despatch Tools to economically balance the system

# PN Following - What we like & why !

- What we like
  - BMU to follow PN + BOAs, subject to MEL
- Why
  - To allow NGC to economically balance the system

**100 BMUs 20MW over target = 2000MW = 0.6Hz = 50.6Hz = ANARCHY !**

## Planning for Demand Troughs - considerations

**Must consider 'Negative Reserve Active Power Margin'**

**Confidence in Demand Estimate**

**Ability of the synchronised plant to regulate down to the trough demand**

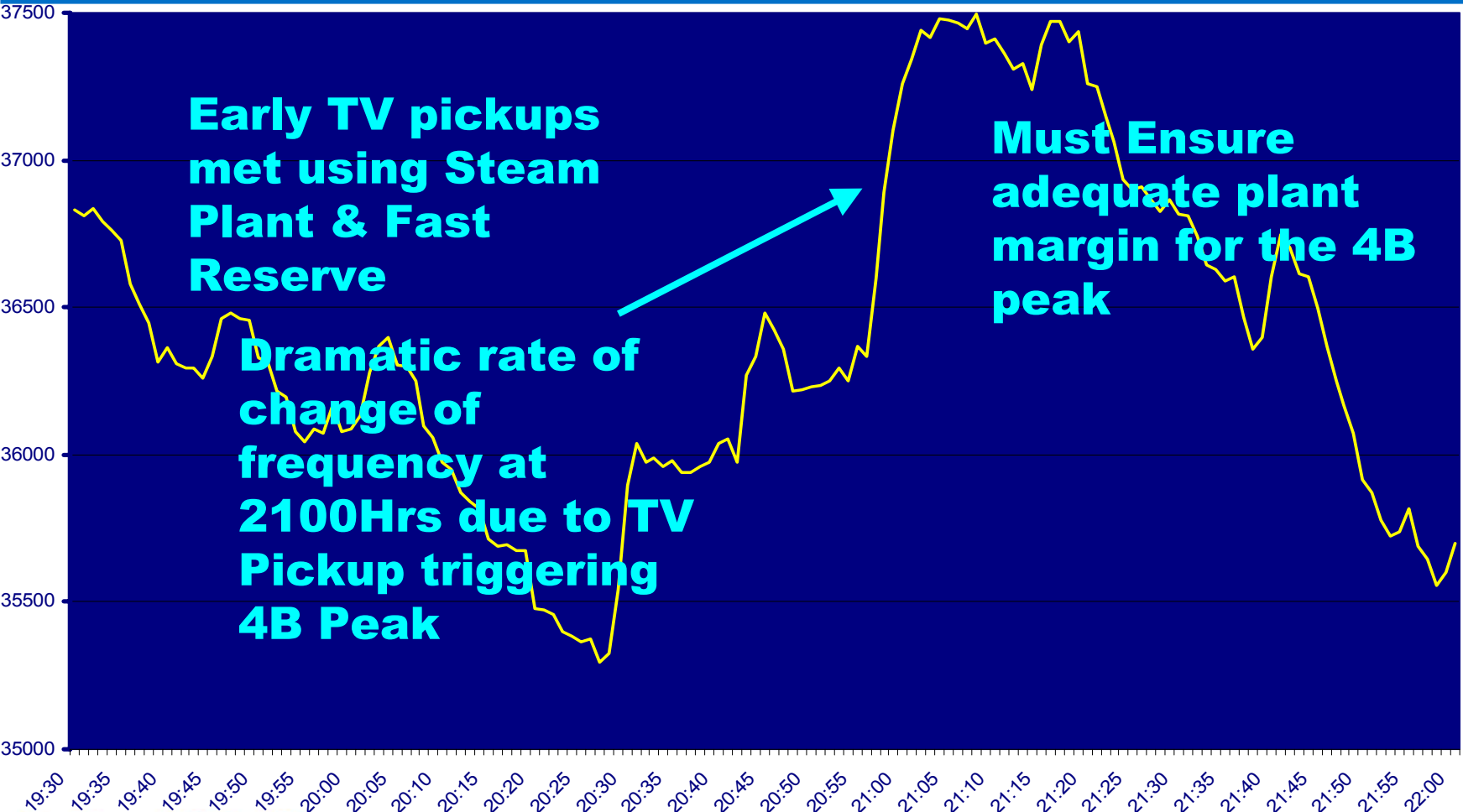
**Planned Margin Includes Negative Regulating Reserve & High Frequency Response Reserve**

**Particular issue for 1B  
trough 0430 - 0530 & may  
require BMUs to be  
desynchronised**

# TV Pickups & 4B Peak

| Time             | TV Programmes                          | Estimated TV Pickup | Lighting Up | Total Estimated |
|------------------|--|---------------------|-------------|-----------------|
| 17:55 / 17:56:13 | Neighbours END                         | 100                 | 0           | 100             |
| 19:13:25         | Emmerdale CB                           | 150                 | 0           | 150             |
| 19:29:05 / 19:30 | Emmerdale END / Holiday END            | 300                 | 0           | 300             |
| 19:44:39         | Coronation Street CB                   | 250                 | 0           | 250             |
| 20:01:22 / 20:00 | Coronation Street END / Real Story END | 650                 | 0           | 650             |
| 20:13:20         | Tonight With Trevor McDonald CB        | 50                  | 0           | 50              |
| 20:30?? / 20:30  | Tonight CB / Eastenders END            | 550                 | 0           | 550             |
| 20:41:43         | Coronation Street CB                   | 250                 | 50          | 300             |
| 20:56:41         | Coronation Street END                  | 800                 | 400         | 1200            |
| 21:11:15         | I'm A Celebrity - The Finale CB        | 100                 | 100         | 200             |
| 21:25:25         | I'm A Celebrity - The Finale CB        | 100                 | 50          | 150             |
| 21:39:15         | I'm A Celebrity - The Finale CB        | 100                 | 0           | 100             |
| 21:53:25 / 22:00 | I'm A Celebrity CB                     | 300                 | 0           | 300             |
| 22:31:05         | I'm A Celebrity - The Finale END       | 250                 | 0           | 250             |

# TV Pickups and 4B



# 21:00 Hrs TV Pickup & 4B Peak



**How large will the 21:00hrs demand pull be ? - estimate 1200MWs**

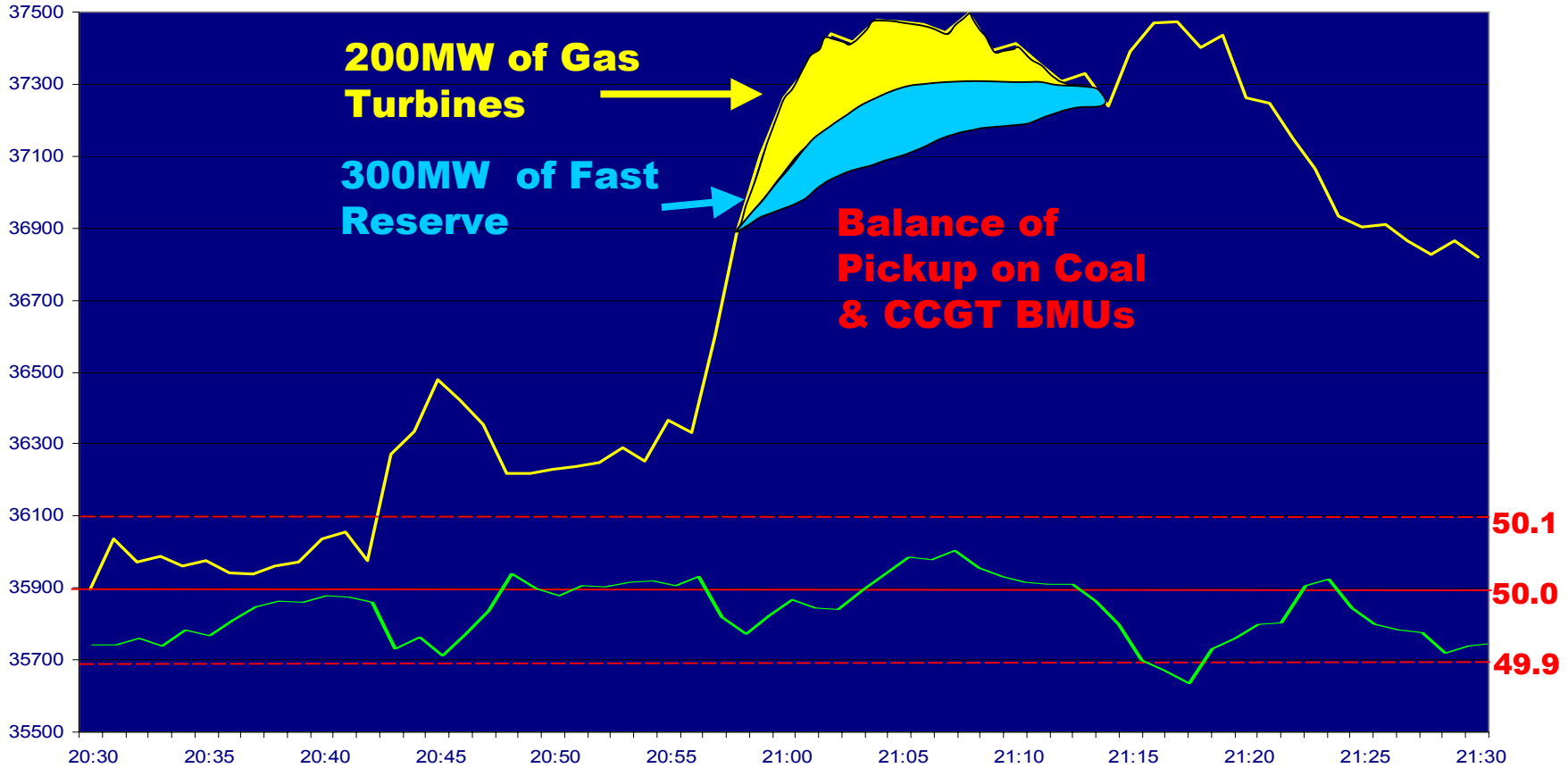
**Could be larger or could be smaller**

**How much plant to commit to the pickup & how much to hold back**

**How to meet the rate of change of demand**

**Timing of any BOAs to be issued**

# 21:00 Hrs TV Pickup & 4B Peak





# Monday 12th May - TV Pickups

| Time             | TV Programmes                          | Estimated TV Pickup | Lighting Up | Total Estimated | Actual |
|------------------|--|---------------------|-------------|-----------------|--------|
| 17:55 / 17:56:13 | Neighbours END                         | 100                 | 0           | 100             | 40     |
| 19:13:25         | Emmerdale CB                           | 150                 | 0           | 150             | 150    |
| 19:29:05 / 19:30 | Emerdale END / Holiday END             | 300                 | 0           | 300             | 330    |
| 19:44:39         | Coronation Street CB                   | 250                 | 0           | 250             | 210    |
| 20:01:22 / 20:00 | Coronation Street END / Real Story END | 650                 | 0           | 650             | 330    |
| 20:13:20         | Tonight With Trevor McDonald CB        | 50                  | 0           | 50              | 20     |
| 20:30?? / 20:30  | Tonight CB / Eastenders END            | 550                 | 0           | 550             | 640    |
| 20:41:43         | Coronation Street CB                   | 250                 | 50          | 300             | 480    |
| 20:56:41         | Coronation Street END                  | 800                 | 400         | 1200            | 1220   |
| 21:11:15         | I'm A Celebrity - The Finale CB        | 100                 | 100         | 200             | 180    |
| 21:25:25         | I'm A Celebrity - The Finale CB        | 100                 | 50          | 150             | 20     |
| 21:39:15         | I'm A Celebrity - The Finale CB        | 100                 | 0           | 100             | 350    |
| 21:53:25 / 22:00 | I'm A Celebrity CB                     | 300                 | 0           | 300             | 640    |
| 22:31:05         | I'm A Celebrity - The Finale END       | 250                 | 0           | 250             | 30     |

**Monday 12th May 2003**

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Manager”**

**The End .... Until the next shift**