

Winter 2004/05 Outlook

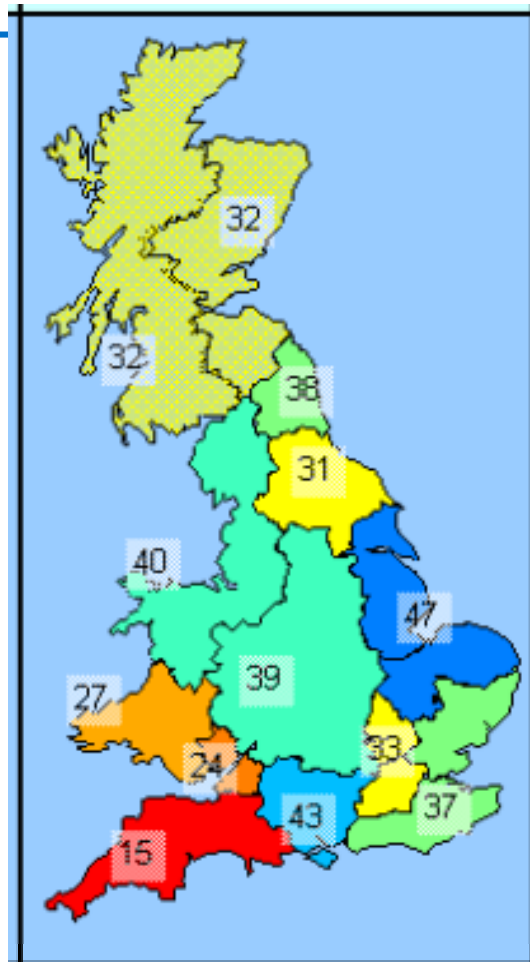
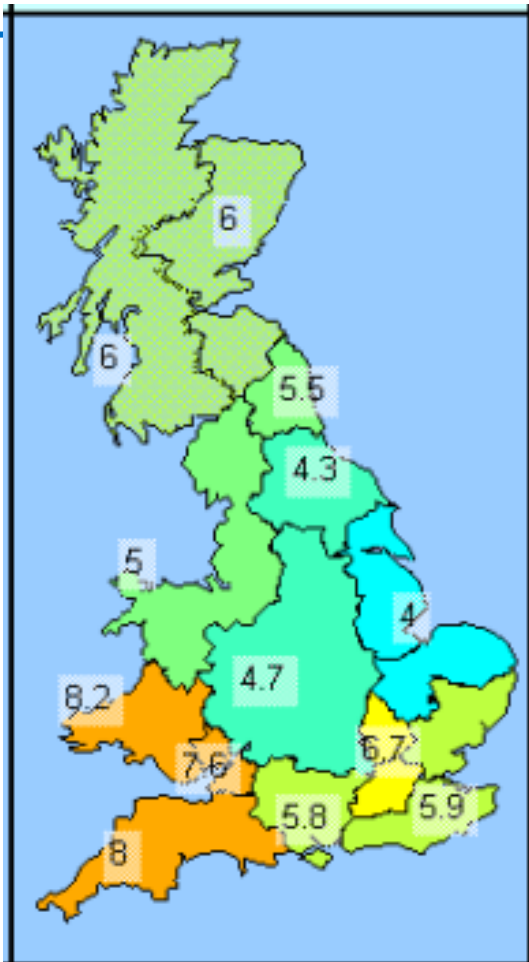
Phil Sheppard

Winter 2004/05 Outlook

- Winter 2004/05 Demand Forecasts
 - Normal, Average Cold Spell and 1 in 20
- Winter 2004/05 Generation Available to the Market
 - Plant Margin, declared unavailable, mothballed (TEC), availability
- Winter 2004/05 Demand / Supply Balance
 - Under ACS conditions and under extreme conditions

Winter 2004/05 Demand Forecasts

Winter Peak Demand, Normal



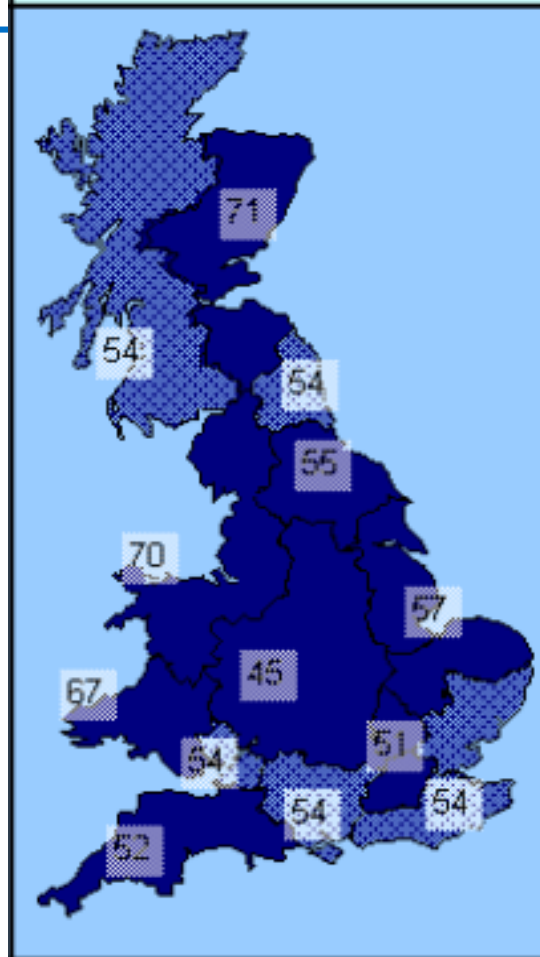
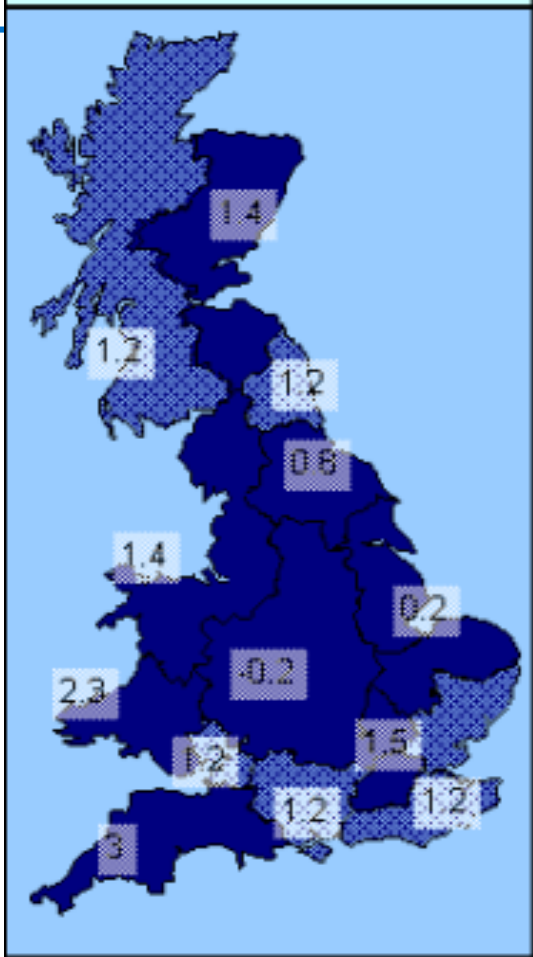
- Effective Temperature
4 to 8.2 °C
Average 5.9 °C
- Cooling Power
15 to 47

Forecast Demands

- Normal **53.3 GW**

Winter 2004/05 Demand Forecasts

Winter Peak Demand, ACS (NGT)



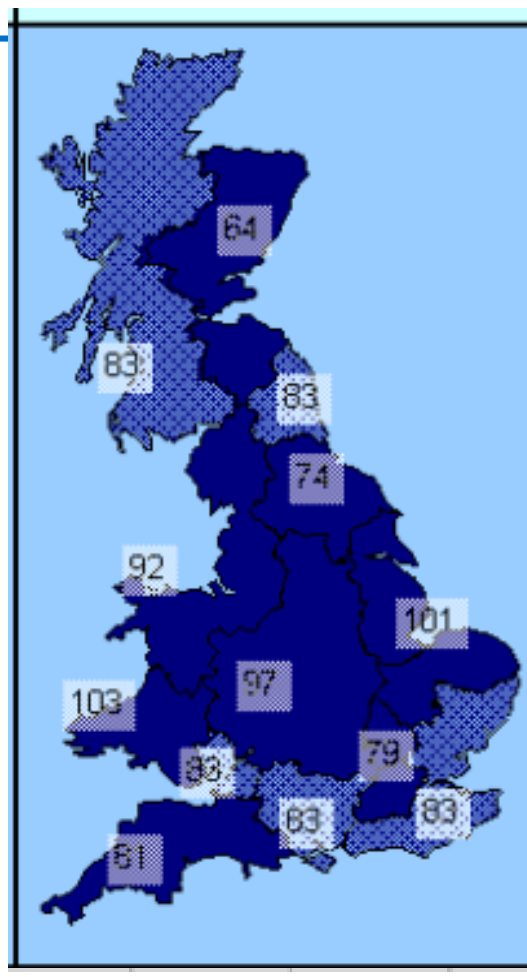
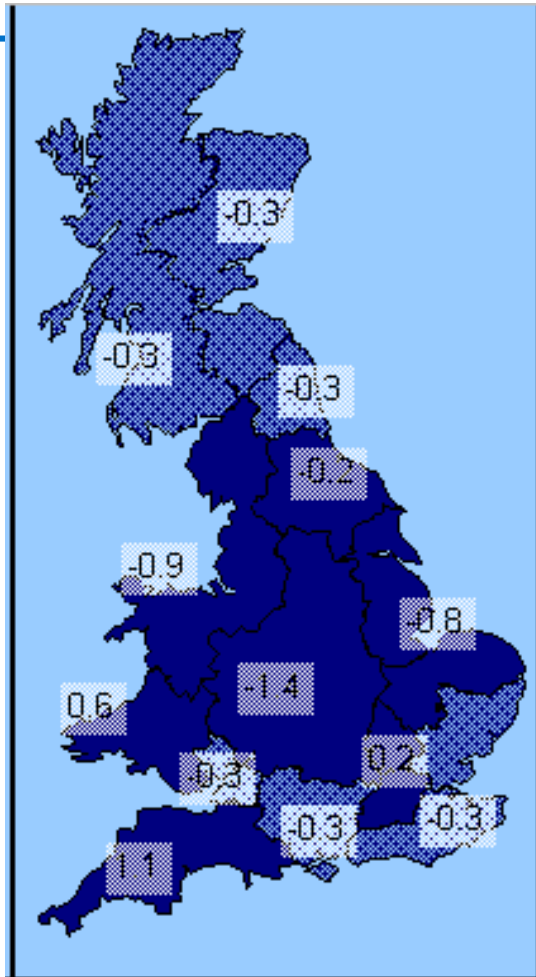
- Effective Temperature
-0.2 to 3 °C
Average 1.1 °C
- Cooling Power
45 to 71

Forecast Demands

- Normal **53.3 GW**
- ACS **55.4 GW**

Winter 2004/05 Demand Forecasts

Winter Peak Demand, 1 in 20



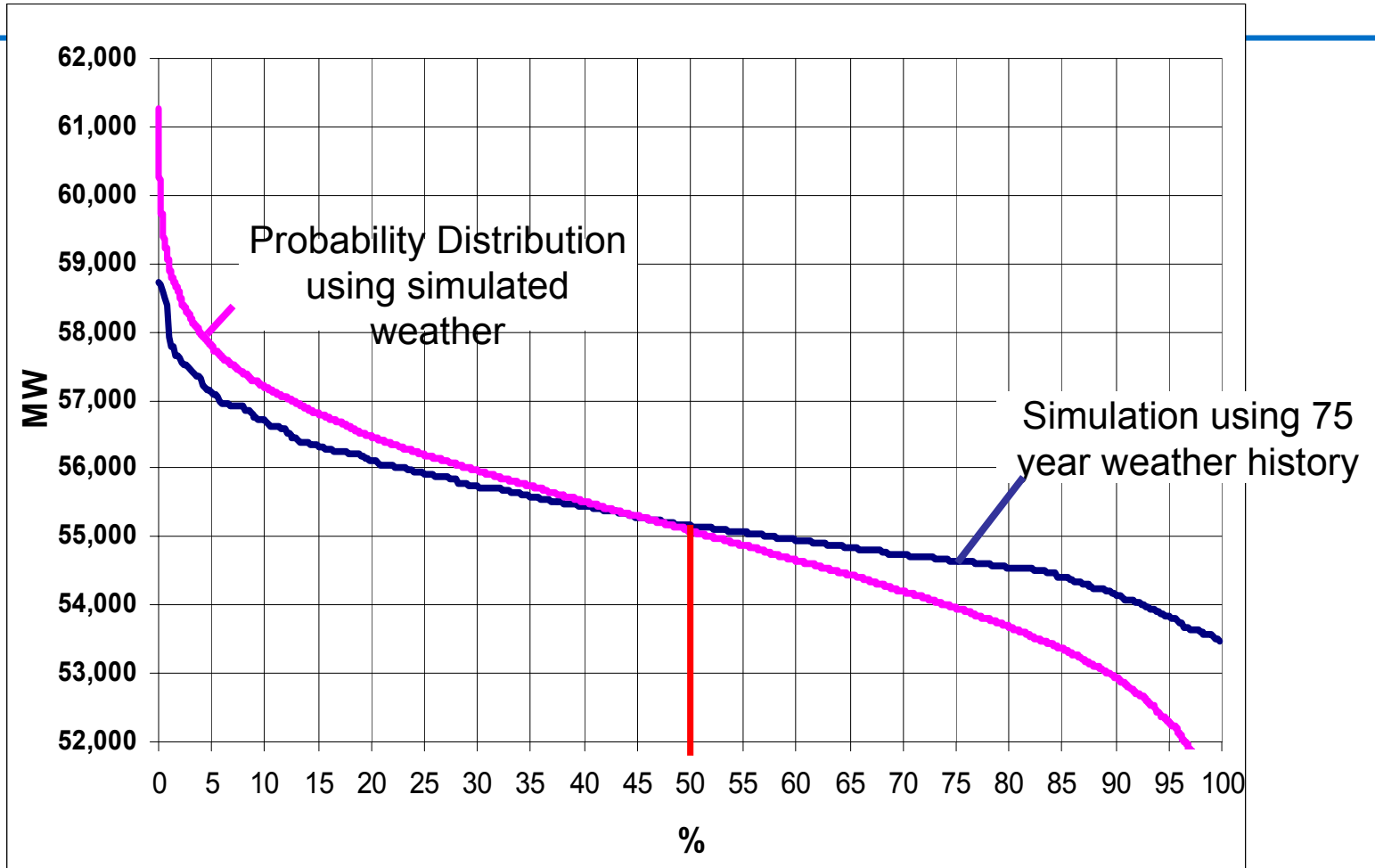
- Effective Temperature
-1.1 to 0.6 °C
Average -0.3 °C
- Cooling Power
61 to 103

Forecast Demands

- Normal 53.3 GW
- ACS 55.4 GW
- 1 in 20 56.9 GW

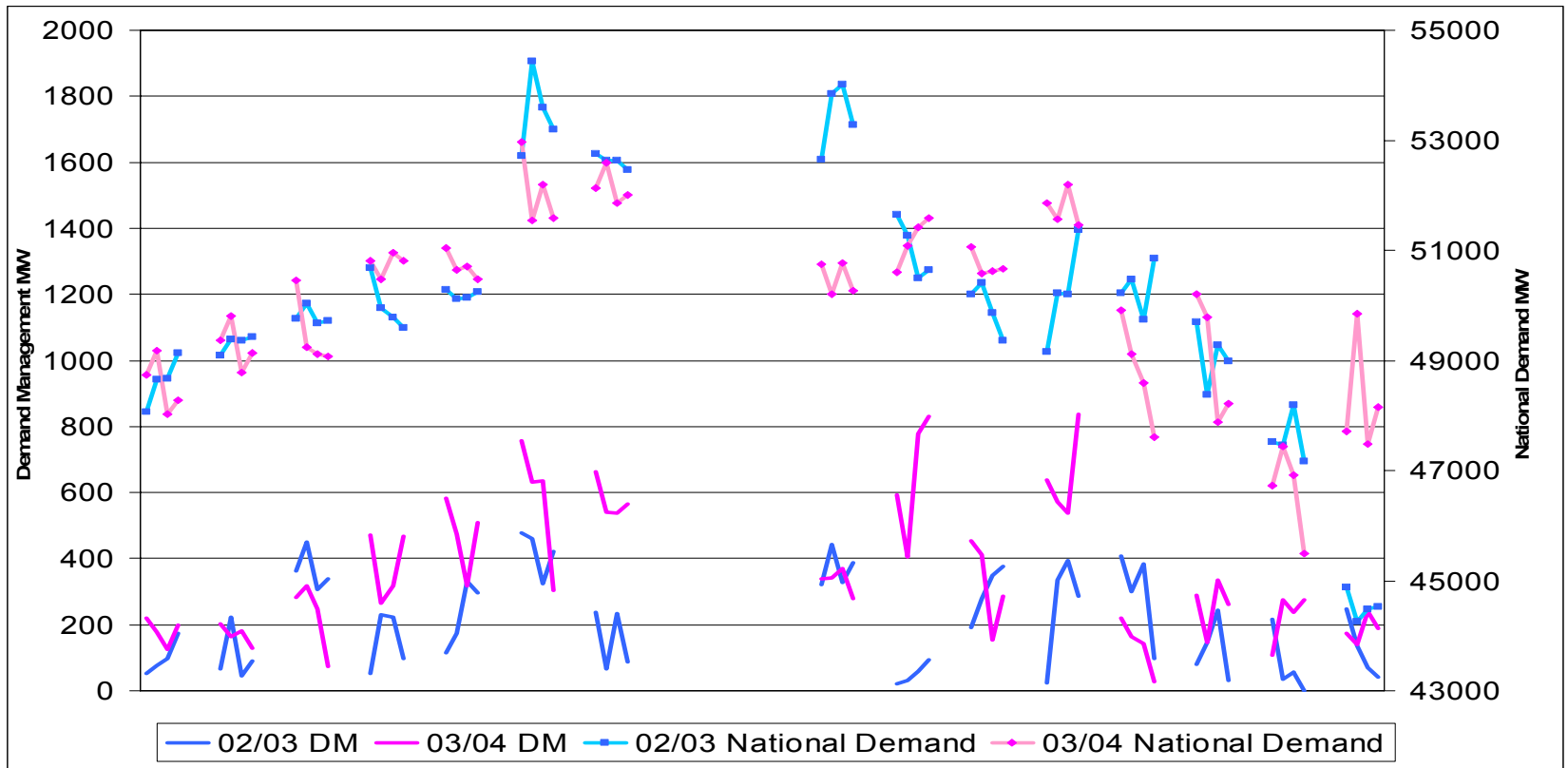
Winter 2004/05 Demand Forecasts

Winter Peak Demand Probability Distribution



Winter 2004/05 Demand Reduction

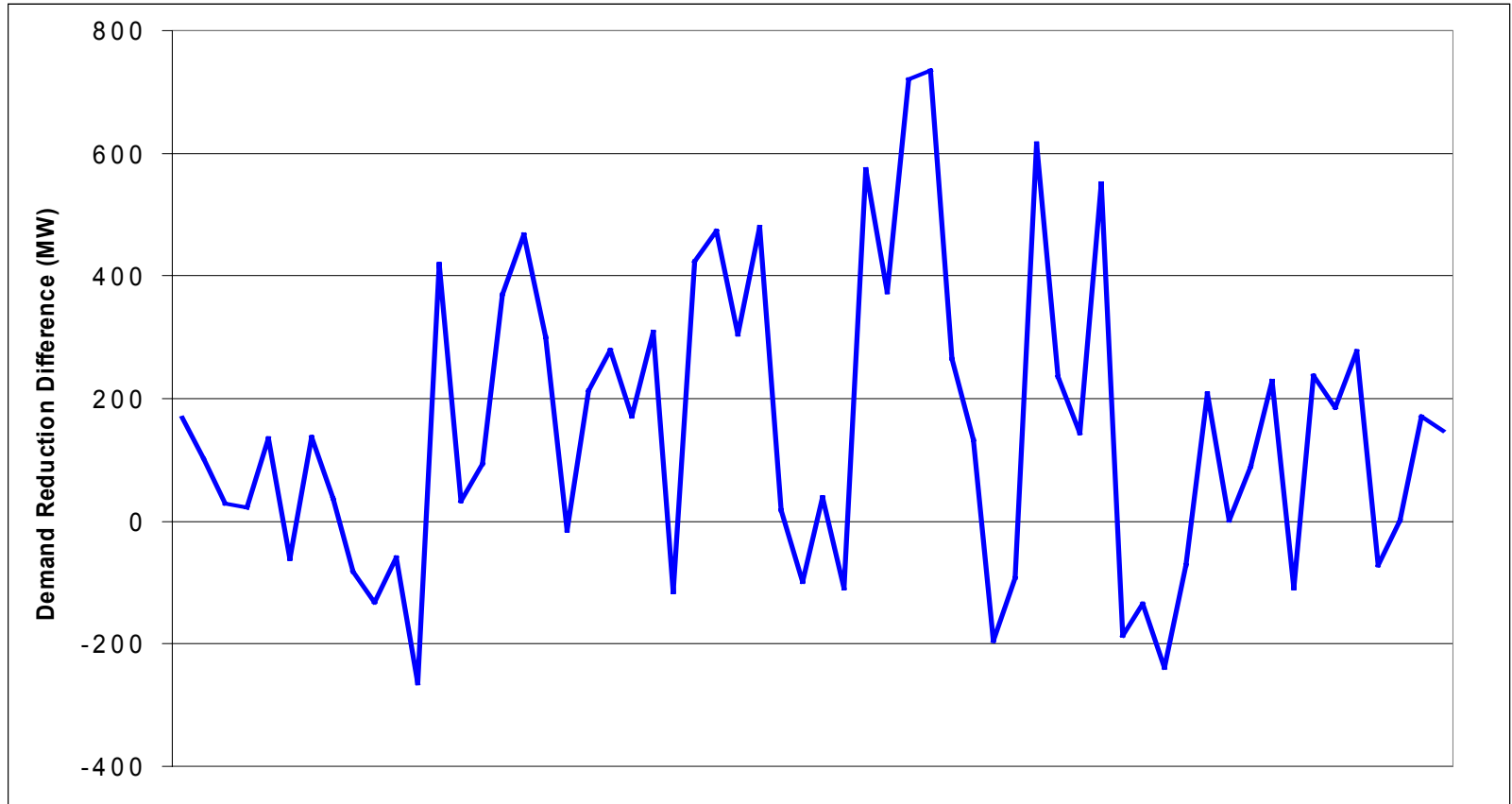
Review of Winter 2003/04 Demand Reductions



November - February, Monday - Thursday

Winter 2004/05 Demand Reduction

Demand Reduction Difference between Winter 02/03 & Winter 03/04



November - February, Monday - Thursday (Friday to Sunday removed)

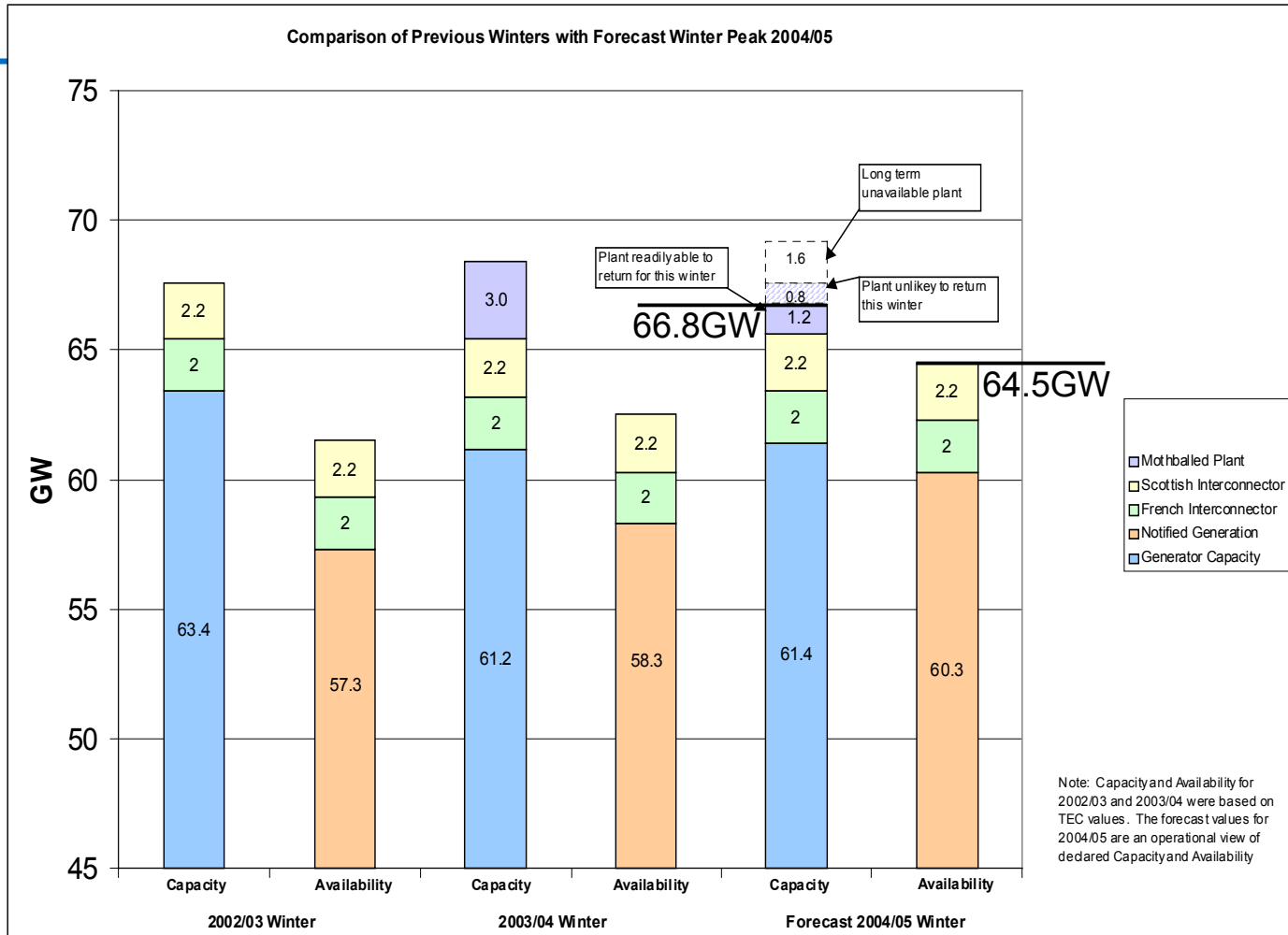
Winter 2004/05 Demand Forecasts Summary

- Winter Peak Demand Forecast (Unrestricted)
 - 53.3 GW Normal
 - 55.4 GW ACS
 - 56.9 GW 1 in 20
- Uncertainty over very high demands
 - Demand management over mild winters
 - Up to 800 MW observed, 300 MW average, 200 MW Notified
 - No experience of market response under very high demands / prices
 - difficult to assess how the market will respond based on the observable behavior to date

Winter 2004/05 Generation Available to the Market

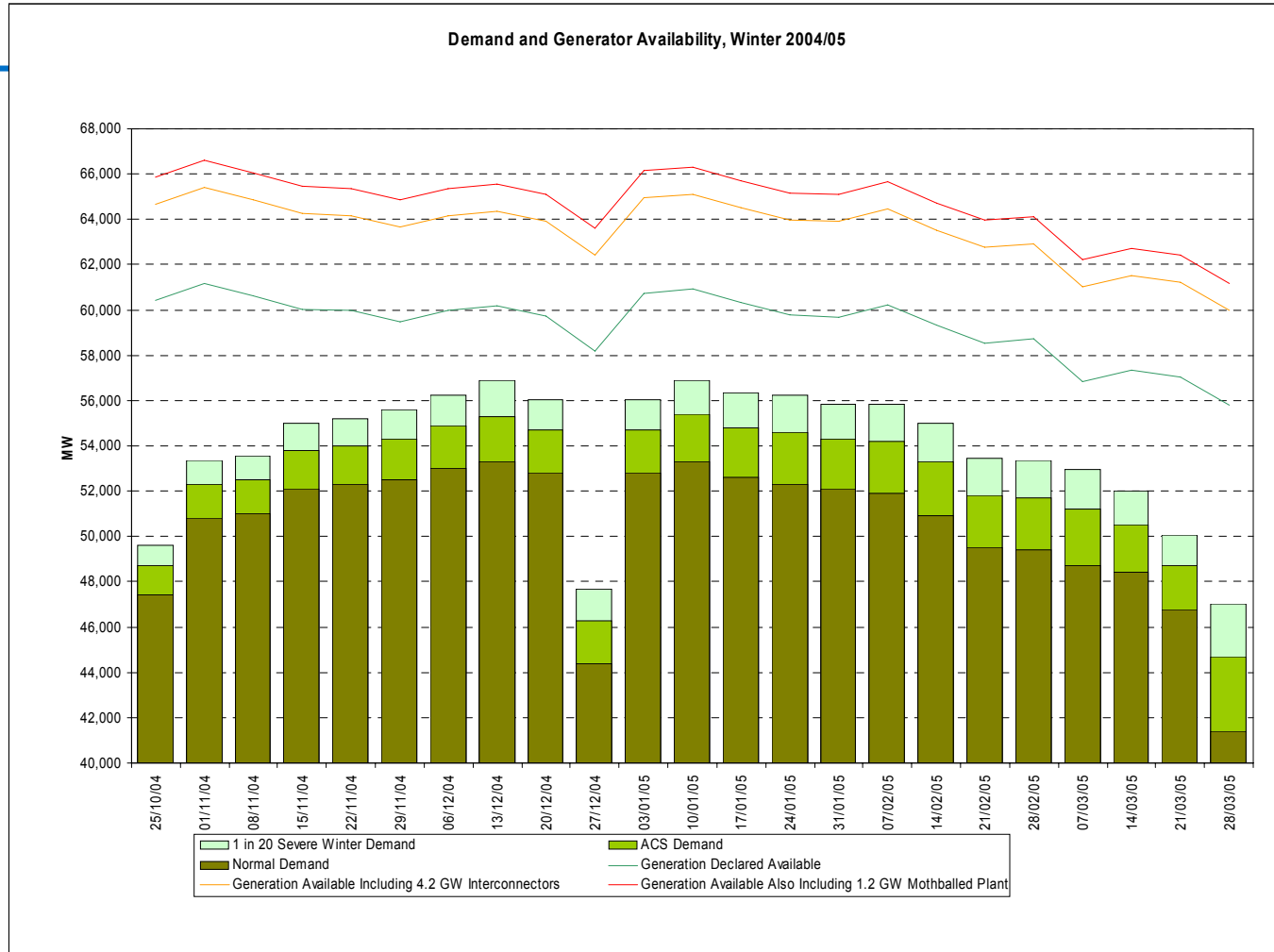
- Current Transmission contracted Generation Capacity is 67.2 GW
- Current Plant Margin (SYS 2004 July Update) is 20.2%
- 2 GW of plant has been mothballed (i.e. released TEC) but can choose to return by applying for TEC, increasing the plant margin to 23.8%
- On this basis the total Generation Capacity available to the Market is 69.2 GW
- Of the 2 GW of plant in mothballs, some 1.2 GW could reasonably be expected to return for this winter under appropriate market conditions
- The NGT forecast of generation capacity available operationally is 65.6 GW, rising to 66.8 GW should market conditions promote the return the 1.2 GW of plant in mothballs

Winter 2004/05 Demand / Supply Balance Generation Capacity & Availability



Winter 2004/05 Demand / Supply Balance

Peak Demand / Notified Generation Availability

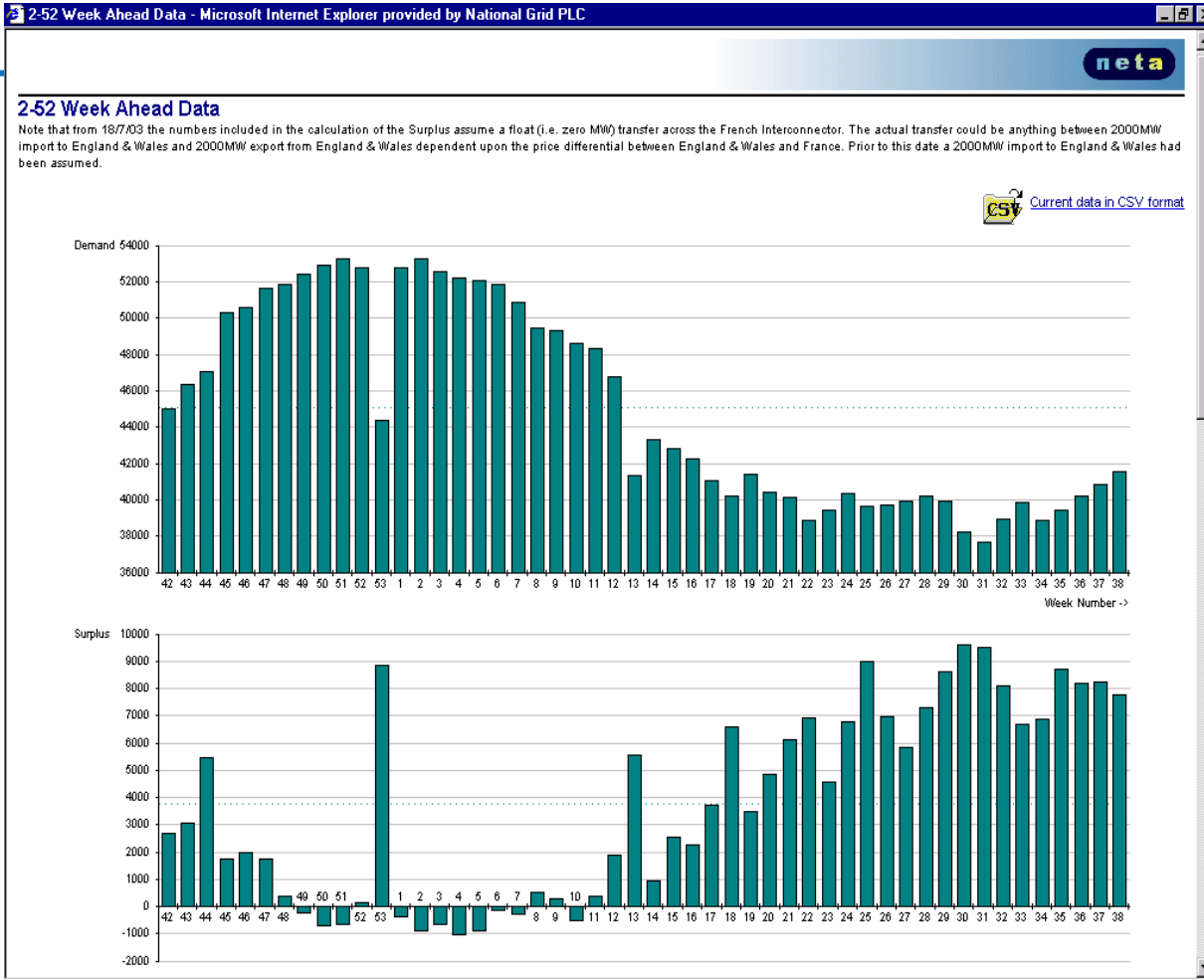


Winter 2004/05 Demand / Supply Balance

Notified Generator Availability

- Minimum margin of notified generation availability above forecast ACS Demand is around 9 GW in mid December
- This includes allowing for 4.2 GW of imports and 1.2 GW of returned mothballed plant
- NGT securing 6 GW of Day Ahead Operating Reserve Requirement from this capacity reduces the margin to 3 GW
- The notified generation availability does not include a full allowance for breakdowns (REMI)
- Availability updated weekly by Generators - subject to change!

Winter 2004/05 Demand / Supply Balance Notified Generator Availability



(28th September)

Winter 2004/05 Demand / Supply Balance Generator Capacity

- Maximum generation capacity available to the market of 69.2 GW
- Provides a maximum margin of 13.8 GW over the 55.4 GW ACS forecast
- NGT securing 6 GW of Day Ahead Operating Reserve Requirement from this capacity reduces the margin to 7.8 GW
- Typical winter 03/04 generator outages (planned and unplanned) was around 7 GW
- Under most scenarios there should be sufficient generation to meet ACS demands

Winter 2004/05 Demand / Supply Balance

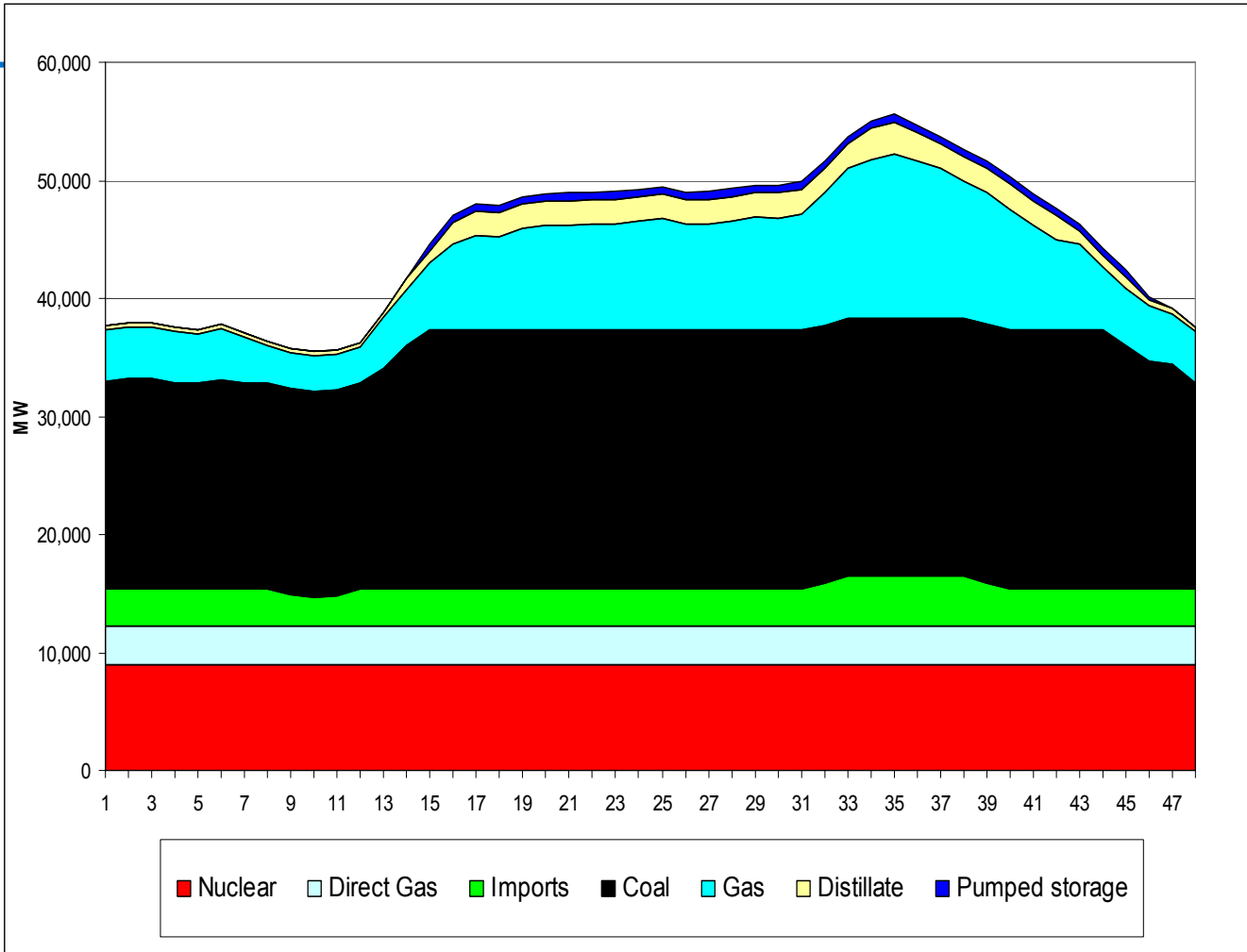
Extreme Conditions

- Low probability severe winter conditions (say, a national average of -1°C at 17:00, compared to $+1$ or 2°C for ACS temperatures in mid-winter)
- Under these conditions demand may increase by 2 GW above ACS
- Increased reliance on CCGTs running on either gas or distillate
- High gas demands - increased likelihood of CCGT Interruptions to support the gas market
- Under these extreme conditions electricity demand / supply balance relies upon appropriate response from both the electricity and gas markets
- Demand Reduction (Voltage Reduction) will provide a short term additional margin of 3 - 4 GW

Winter 2004/05 Demand / Supply Balance Gas / Electricity Market Interaction

- Sufficient flexibility is available in the electricity market to provide gas demand side response from firm CCGT gas demand to contribute to 1 in 50 security for the gas market
- Key assumptions:
 - Strong price signals and an efficient market allowing a switch between coal and gas
 - Availability of coal and alternative fuel for CCGTs
 - Full imports of 4.2 GW from Scotland and France (compared to 3 GW over recent winters)
- 40% - 50% of CCGTs would run as baseload, 20-30% would run only over the electricity peaks (say 15:00 to 21:00) and the remaining CCGTs may only be needed on the the coldest days
- These assumptions are largely untested given the recent run of mild winters

Winter 2004/05 Demand / Supply Balance Gas / Electricity Market Interaction



Winter 2004/05 Demand / Supply Balance Summary

- Current Plant Margin is 20.2%, which can increase to 23.8%
- Sufficient generation is available to the market to meet ACS demands
- In low probability severe winter conditions demand / supply balance relies upon appropriate response from both the electricity and gas markets
- There is sufficient generation capacity and flexibility in the electricity market to provide gas demand side response from firm CCGT gas demand to contribute to 1 in 50 security for the gas market
- In a cold winter (near ACS conditions), low probability high generation failure rates may require use of the existing operational arrangements for voltage reductions to be instructed to maintain demand / supply balance

Winter 2004/05 Outlook Summary

- Winter 2004/05 Demand Forecasts
 - ACS Demand Forecast - 55.4 GW
- Winter 2004/05 Generation Available to the Market
 - Transmission Contracted Generation - 67.2 GW (Plant Margin 20.2%)
 - Total Generation Capacity available to the market - 69.2 GW (23.8%)
- Winter 2004/05 Demand / Supply Balance
 - The generation capacity available to the market is sufficient to maintain demand / supply balance under ACS conditions
 - Under low probability extreme conditions demand / supply balance is dependant upon appropriate response from both the electricity and gas markets
 - Flexibility is available in the electricity market to support the gas market