

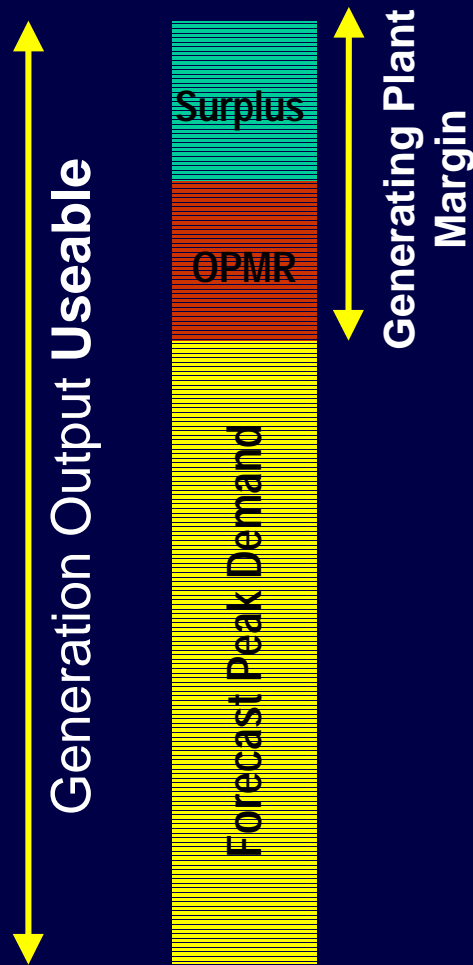
Winter Preparedness

Rachel Morfill

Introduction

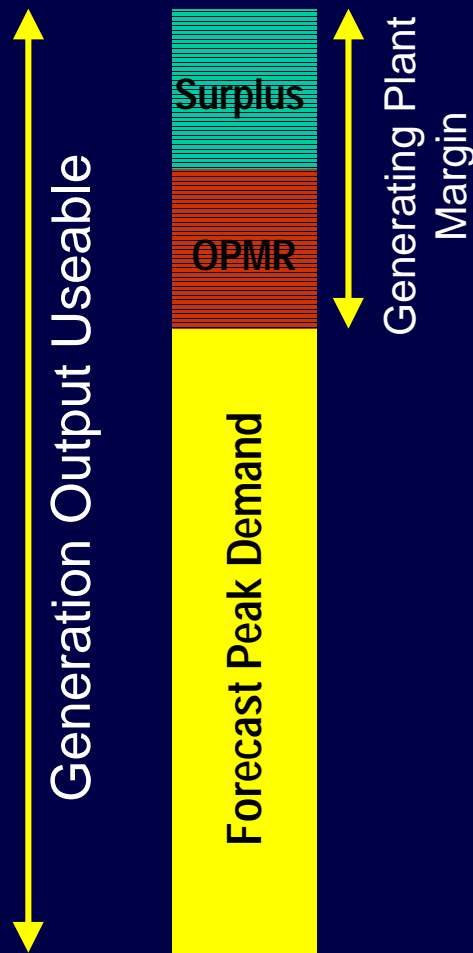
- ◆ **Winter Demands/System Margin**
- ◆ **Gas Effects**
- ◆ **Managing the risks**

OC2 Plant Margin Process



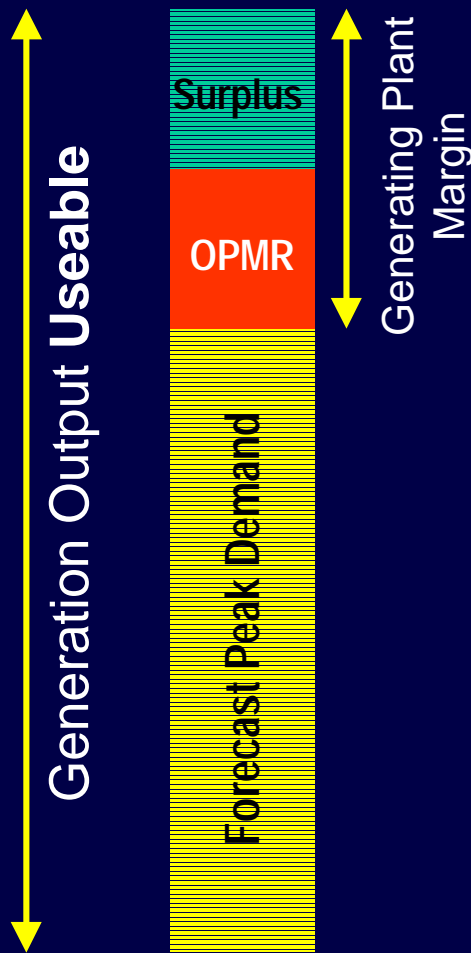
- ◆ OC2 process is an Information exchange
- ◆ Provides valuable plant information to National Grid
- ◆ Allows market to respond appropriately

Peak Demand



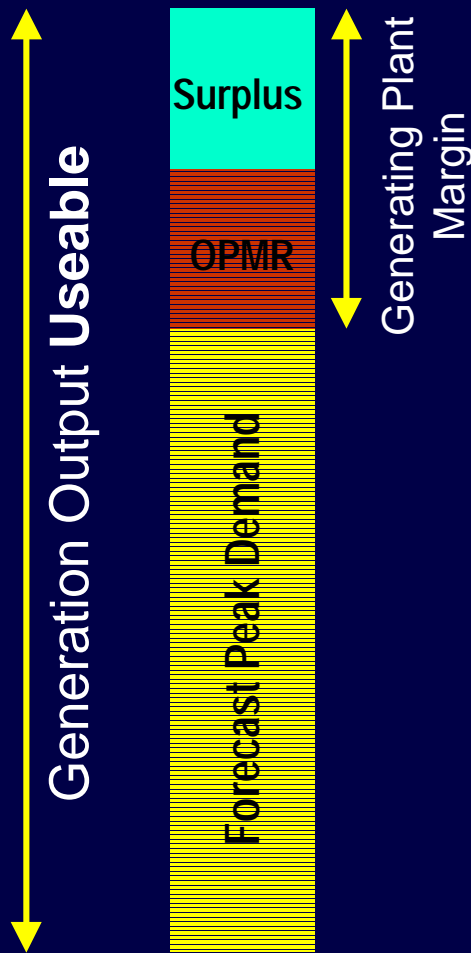
- ◆ Normal demand forecast is based on “normalised weather conditions” - based on average weekly temperatures over last 22 years - 50% chance of being exceeded in any winter
- ◆ Average cold spell demand forecasts have a 12% chance of being exceeded in any one week in Dec/Jan and typically occur at temperatures of 1°C

Operational Planning Margin



- ◆ **OPMR is the amount of extra generation over and above forecast demand required to meet a Loss of Load Expectation (LOLE) of one occasion per year**
- ◆ **It is based on**
 - the day ahead forecasts supplied by generators and the standard deviation of these forecasts
 - our demand forecasts and the standard deviation of these forecasts

Plant Surplus



- ◆ Difference between available capacity and forecast requirements at peak
- ◆ Published 'surpluses' take account of the Operational Planning Margin Requirement (OPMR)
i.e. surplus + planning margin
- ◆ Usually referred to as "Plant Margin"

Winter Demand

- ◆ **Plant Surpluses over this winter's peak demand period are approximately 1000MW (as published on BMRA website)**
- ◆ **This financial year's energy outturn is forecast to be 304TWh; 1.3% growth on the previous year**
- ◆ **Average Cold Spell (ACS) peak demand forecast 54.2GW**
- ◆ **Allowing for 800MW of Customer Demand Management forecast metered peak demand is 53.4GW ("Restricted ACS Demand")**

Winter Peak Operating Margin

Last winter:

- ◆ 68GW installed generation capacity
- ◆ 57.5GW declared available at peak
- ◆ 51.5GW peak demand
- ◆ Operating margin on the peak day ~ 6GW

Nearly 10GW of installed plant was unavailable at peak

This winter:

- ◆ 64.9GW installed generation capacity
- ◆ 61GW currently available (from OC2 submissions)
- ◆ 53.4GW restricted ACS demand
- ◆ Current operating margin over peak ~ 7GW

However if 10GW of installed plant is unavailable at peak this year, there could be difficulty in meeting peak demand

Winter Peak Demand & Plant Margin

$$\text{Plant Margin} = \frac{\text{Generation Capacity} - \text{ACS demand}}{\text{Peak demand}} * 100$$

Using **DNO Notified** ACS demand (as per SYS October update)

- ◆ Last winter... Installed Capacity 68GW, ACS Demand 53.7GW
Plant margin = 26.6%
- ◆ This winter... Installed Capacity 64.9GW, ACS Demand 55.3GW
Plant margin = 17.4%

Using **National Grid's** restricted ACS demand forecast

- ◆ This winter... Installed Capacity 64.9GW, restricted ACS Demand 53.4GW
Plant margin = 21.5%

Managing Uncertainty

- ◆ **Accurately forecasting electricity demand and plant margins help manage uncertainty**
- ◆ **Increasing interaction with gas market**
 - ◆ **Presents additional risk - availability of fuel supplies**
- ◆ **Requirement to monitor and manage these effects**

Electricity and Gas this Winter

Report published entitled 'Interaction Between Gas & Electricity Networks Winter 2002/2003'

Couple of headlines:

- ◆ Adequate gas supplies forecast to meet power station demand except in extreme demand circumstances.
- ◆ Generation on secondary fuels may be required to ensure that electricity demand management measures are not considered.

But the press reported the following...

“Network firms warn of supply failure”

Utility Week

Published November 15 2002

“Gas and power distributors have warned Ofgem that security of supply could be threatened this winter under special circumstances. The transmission companies warned that the voluntary market for balancing services on the power system could leave the operator exposed, and failure to use back-up fuels when gas distribution failed might jeopardise security.”

The true picture is as follows...

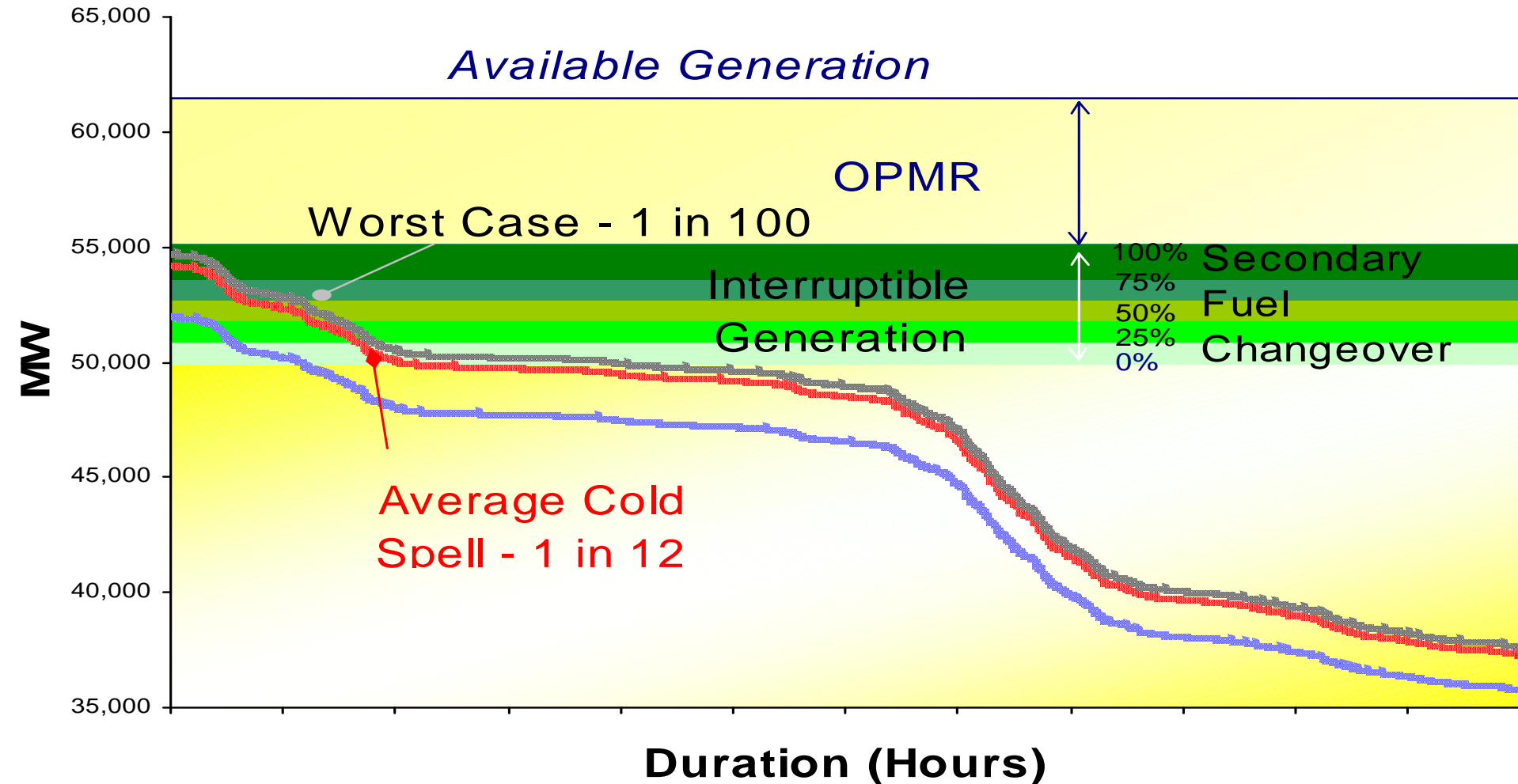
Gas Effects

- ◆ **During periods of high gas demand some CCGTs may be interrupted**
- ◆ **~ 6 GW is interruptible**
- ◆ **~15½ GW is firm**

Gas Effects

- ◆ Majority of interruptible CCGTs have secondary fuel sources to guard against interruption
- ◆ Approximately 1365MW of interruptible CCGTs do not have secondary fuel capability

Winter Peak Electricity Demand Daily Load Duration



— Winter 2002/03 Peak Day Forecast — 2002/03 ACS Forecast
— 2002/03 Worst Case Forecast

Effects on Electricity

- ◆ **For the predicted normalised peak, with average availability of other generation...**
- ◆ **...if all gas interruptible stations are interrupted THEN...**
- ◆ **...50% of gas fired generation is required to successfully switch over to secondary supplies to avoid demand management**

Localised Effects

- ◆ **All interruptible stations within localised constraints have secondary fuel capability**
- ◆ **We believe that sufficient notice will allow changeover to secondary supplies**

Gas Risk Management

- ◆ **Regular discussion on (publicly available) information and the likelihood of interruptions**
- ◆ **Daily notices on likelihood of Transco Interruptions**

Gas Risk Management

- ◆ **Any increased risk is factored into margin analysis**
- ◆ **Additional reserve may be sourced against risk**
- ◆ **NISM may be issued**

Summary

- ◆ **Plant Margin for Winter 02/03 is lower than last year - currently 20%**
- ◆ **Signals are continuously sent to the market to allow it to react to changing forecasts (OC2)**
- ◆ **National Grid Transco is best placed to manage this winter's electricity and gas requirements**