



# Climatology and climate change -

Dave Parker – the  
business case

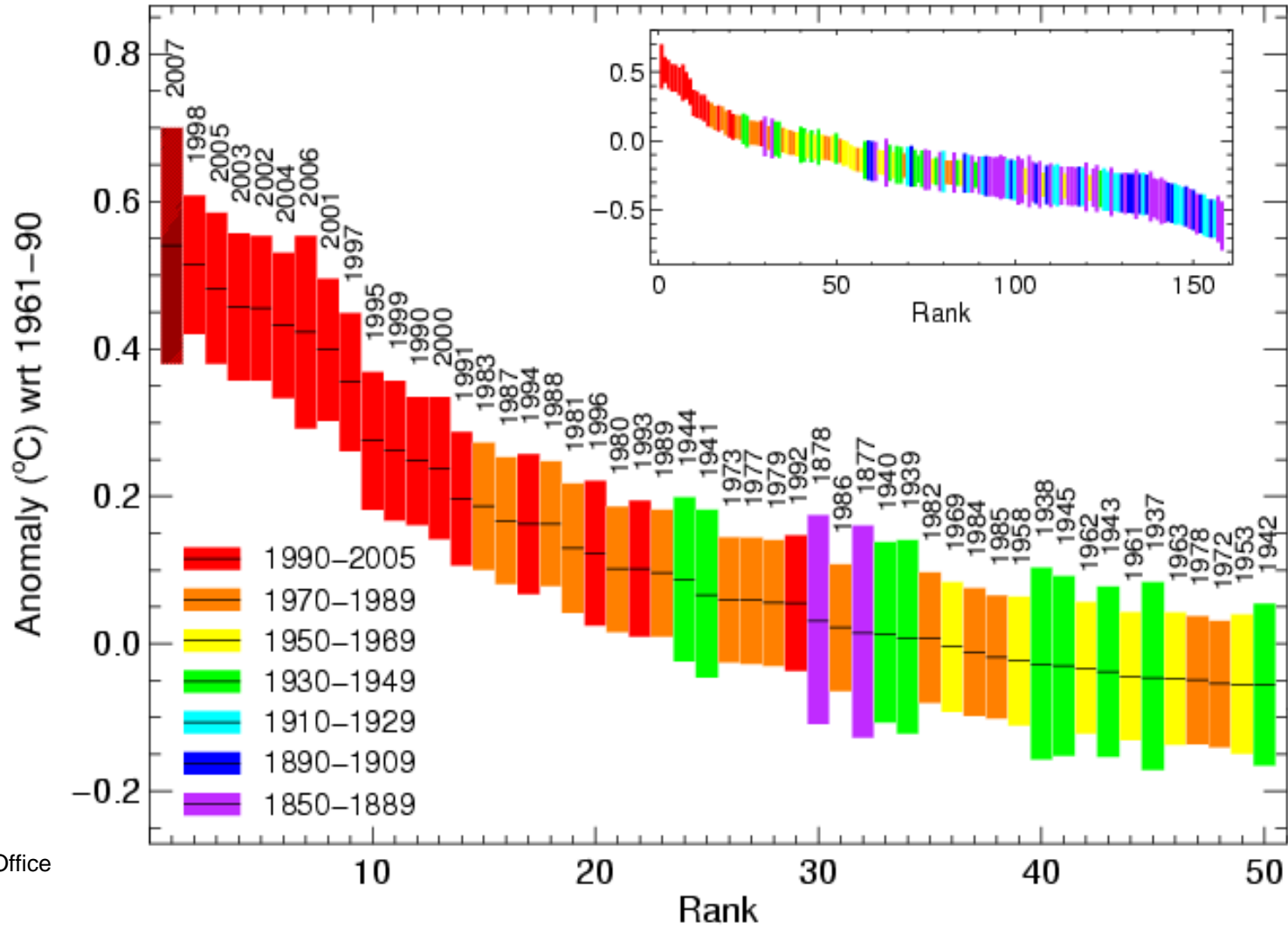
Richard Graham – a  
solution



# Climatology and Energy utilities

- Climatology “is the study of climate, scientifically defined as weather conditions averaged over a period of time” (Wikipedia)
- But if climate is shifting, an average of historical weather may not be the best basis to base future demand predictions on ...
- Met Office website quotes 1971 – 2000
- World Meteorological Organisation use 1961 – 1990
- Energy demand forecasts are based on weather (in the short term) and climate (in the longer term)
- My company used two ‘climatologies’, one for gas and one for power
- UK’s main transporter still uses different climatologies, for gas and electricity.
  
- And meteorologists still use this definition to verify their seasonal forecasts!
- A new way is needed!

# Changing climate?



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# Demand forecasting

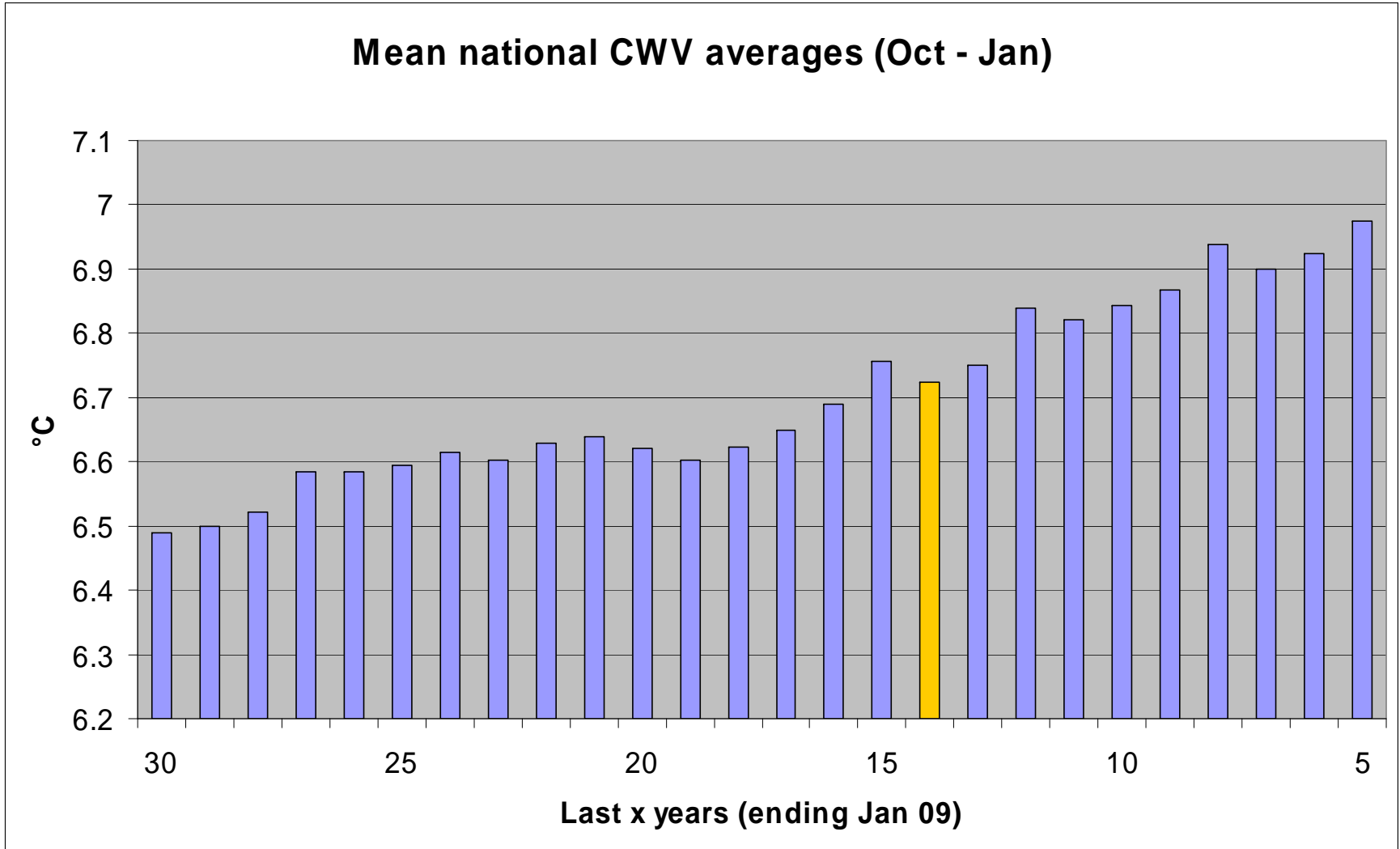
- Energy companies need to purchase energy (in our case gas and electricity).
- We use a hedging strategy to minimise price risk
- Our hedging extends three (sometimes five) years ahead.
- For this to work, we need to know what our demand is likely to be – the key uncertainties are:
  - How many customers will we have?
  - What will the economy do?
  - Will a typical customer use the same amount of energy as they do today?
  - What will the weather be – or at least what is the central climate?



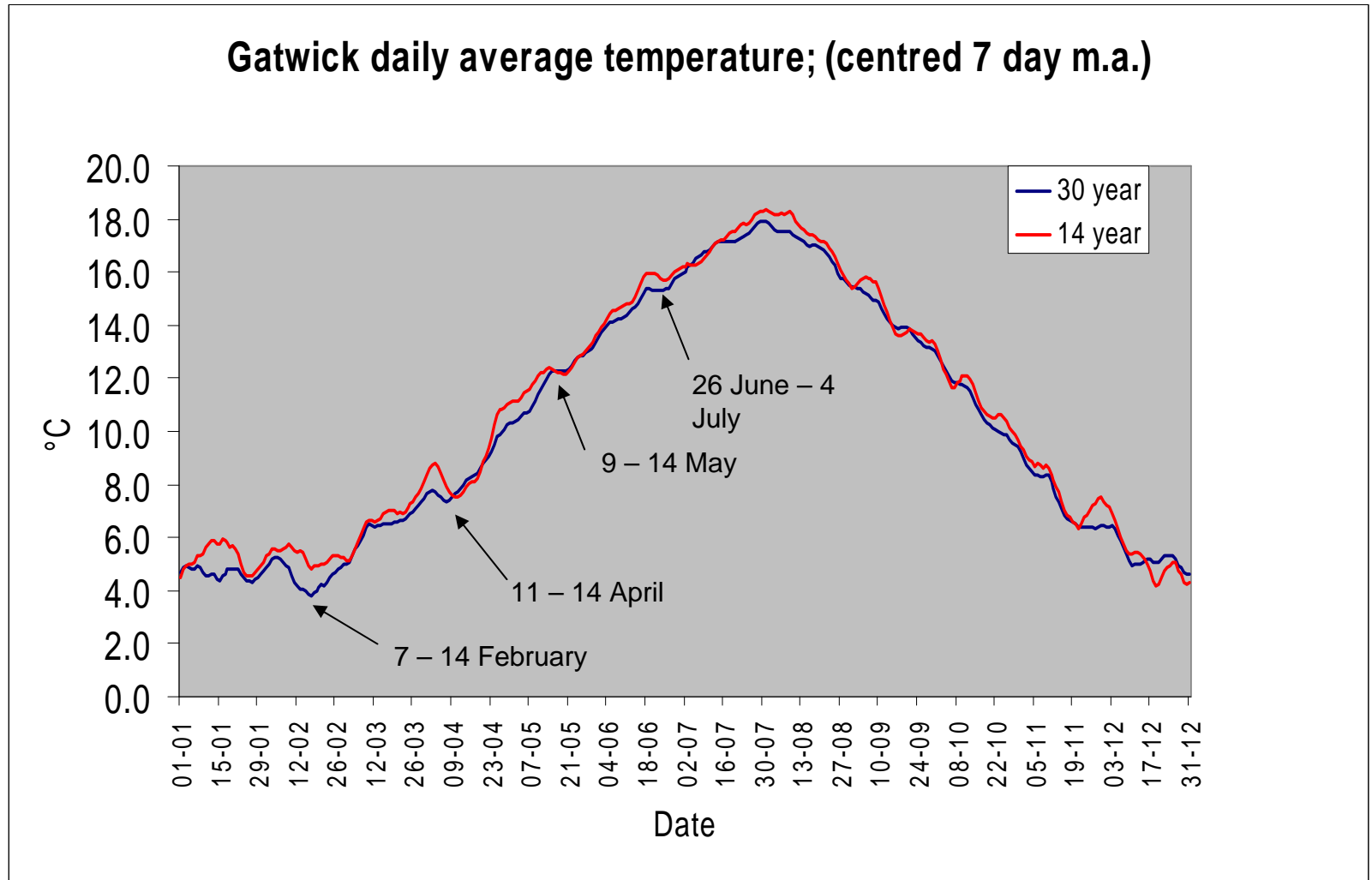
# Specification

- Climatology required at weather stations (used to calibrate our statistical models of energy demand, and verify accuracy after the event).
- Ideally data required hourly.
- Compatible with gas industry's CWV (composite weather variable) approach
- And without loss of important climate detail
- Use of 30 year climate has:
  - Provided a smooth trend
  - Preserved climatic detail

## ❖ Climatology changes with sample length!



# ❖ Noise abatement & Buchan Spells!





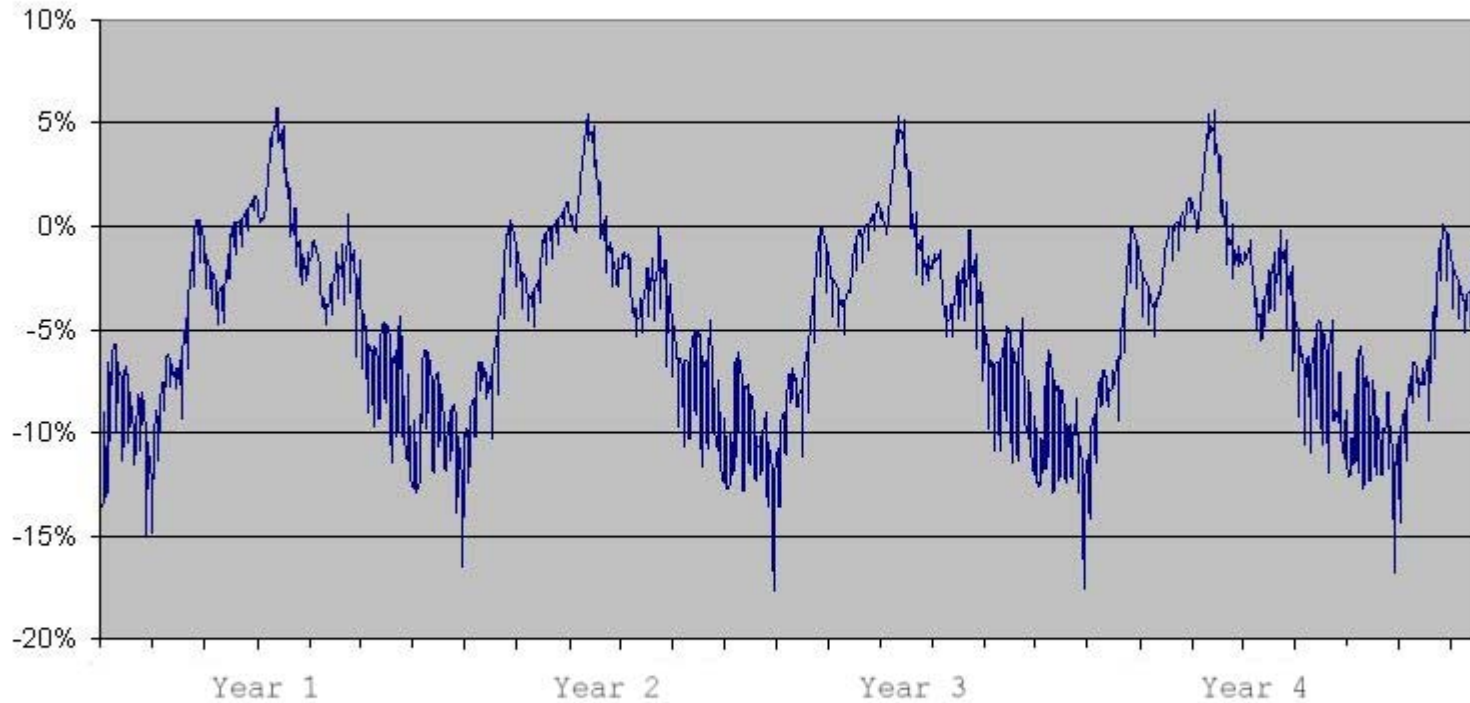
## Very simply

- 30 year average approach retained.
- All generated at climate model grid points
- And then converted to weather stations based on statistical correlations with nearby grid points.
- Verification shows good skill (details to follow in 2<sup>nd</sup> part of this presentation)
- Anecdotally, traders see no bias with transition from climate to weather
- Extreme weather and periods of extended bias all but disappear!



3% overall difference in domestic energy demand using new climatology.

Impact of revised climatology on Demand Forecast



## ❖ Common approach

- EDF Energy later shared the approach with other utility companies via the EP2 climate impact project. EP2 improved the seasonal detail and assessed the desirability of applying the methodology to other aspects or weather (e.g. wind speed)





## How was it done?

- Richard Graham from the Hadley Centre will explain how in part 2 of this talk .....

