

Investment planning with incentives

Lewis Dale 6 May 2010 Florence School of Regulation



nationalgrid

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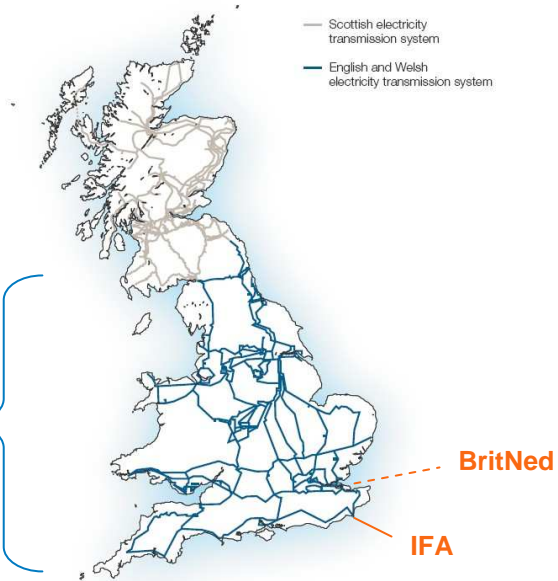
- ◆ Introduction to National Grid
- ◆ RPI-X investment incentives
 - ◆ Company exposure to financing costs
 - ◆ Company exposure to investment consequences
- ◆ Incentive outcomes
- ◆ Future challenges

National Grid Transmission

Elec Tx

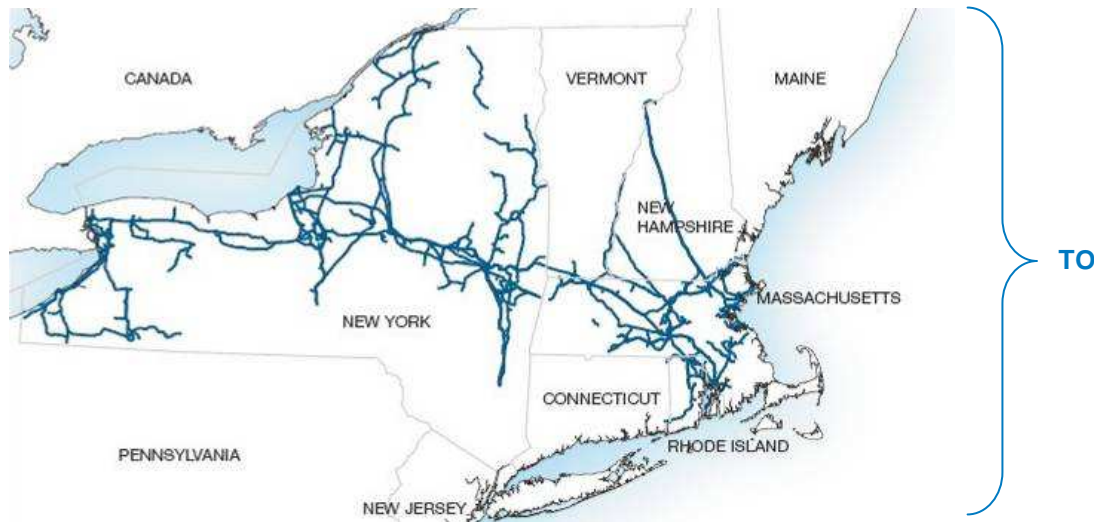
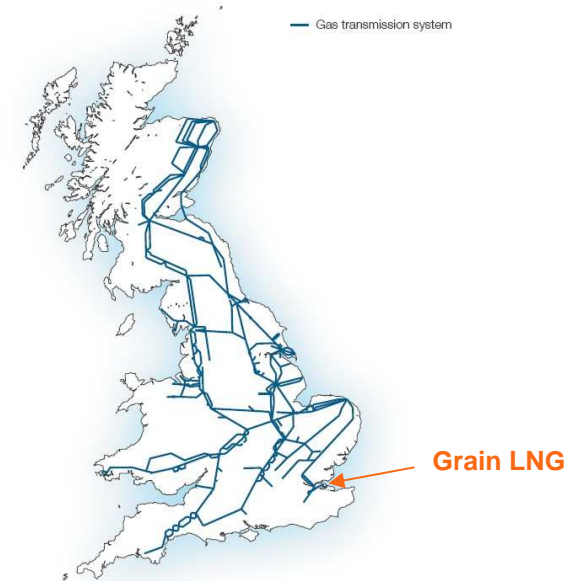
SO

TO



Gas Tx

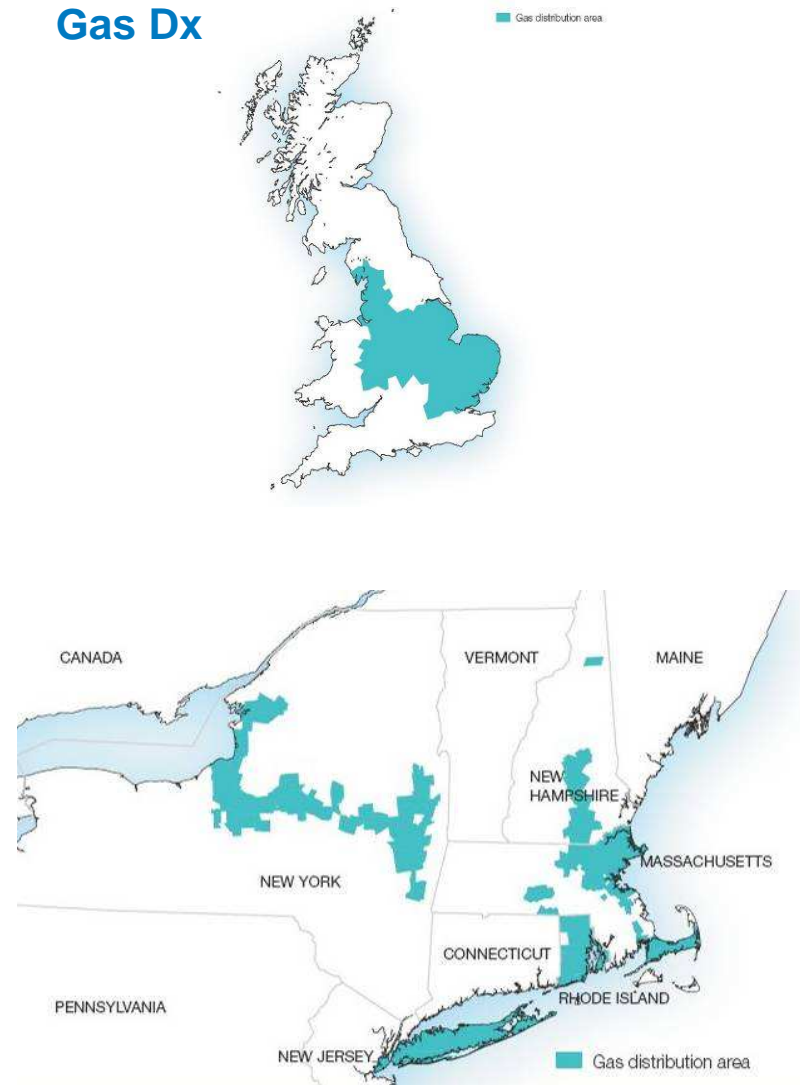
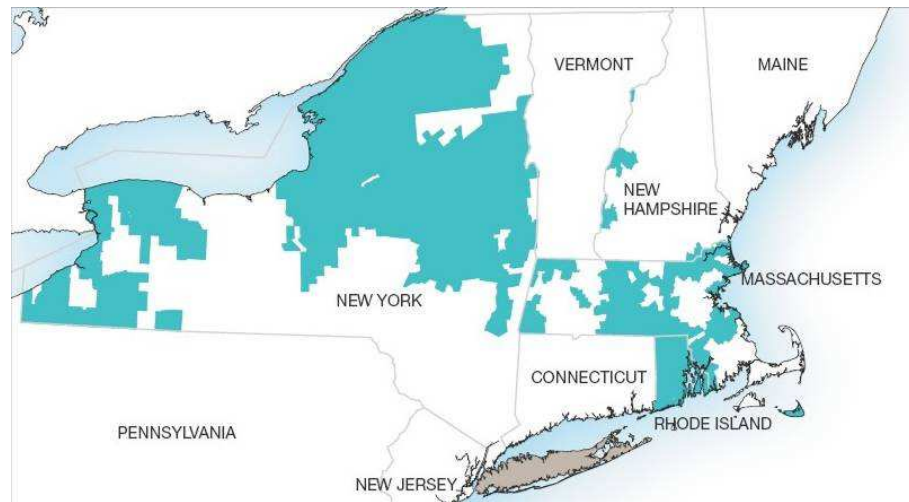
SO & TO



National Grid Distribution

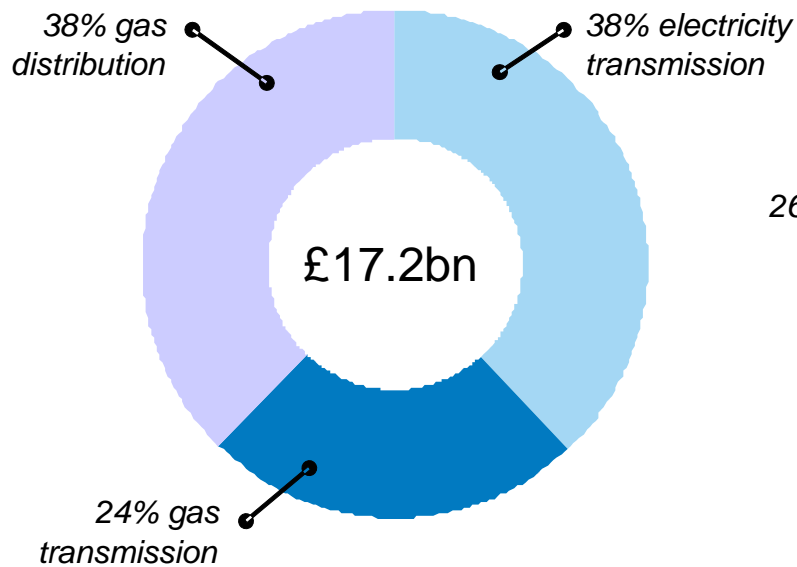
Elec Dx (+ generation in Long Island)

Gas Dx



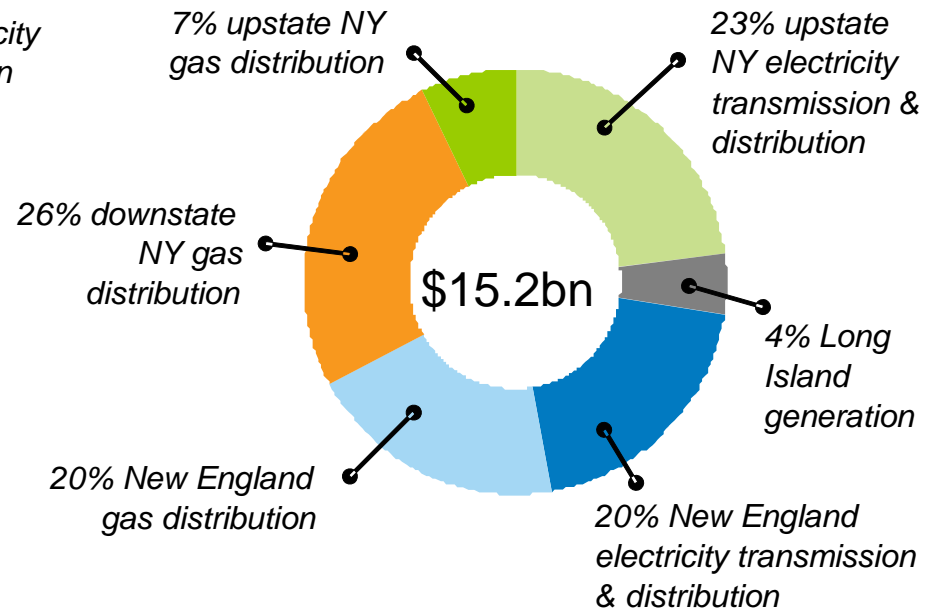
Network asset values

UK regulated asset value ...



UK regulatory asset value as at 31 March 2008.

US regulated rate base ...



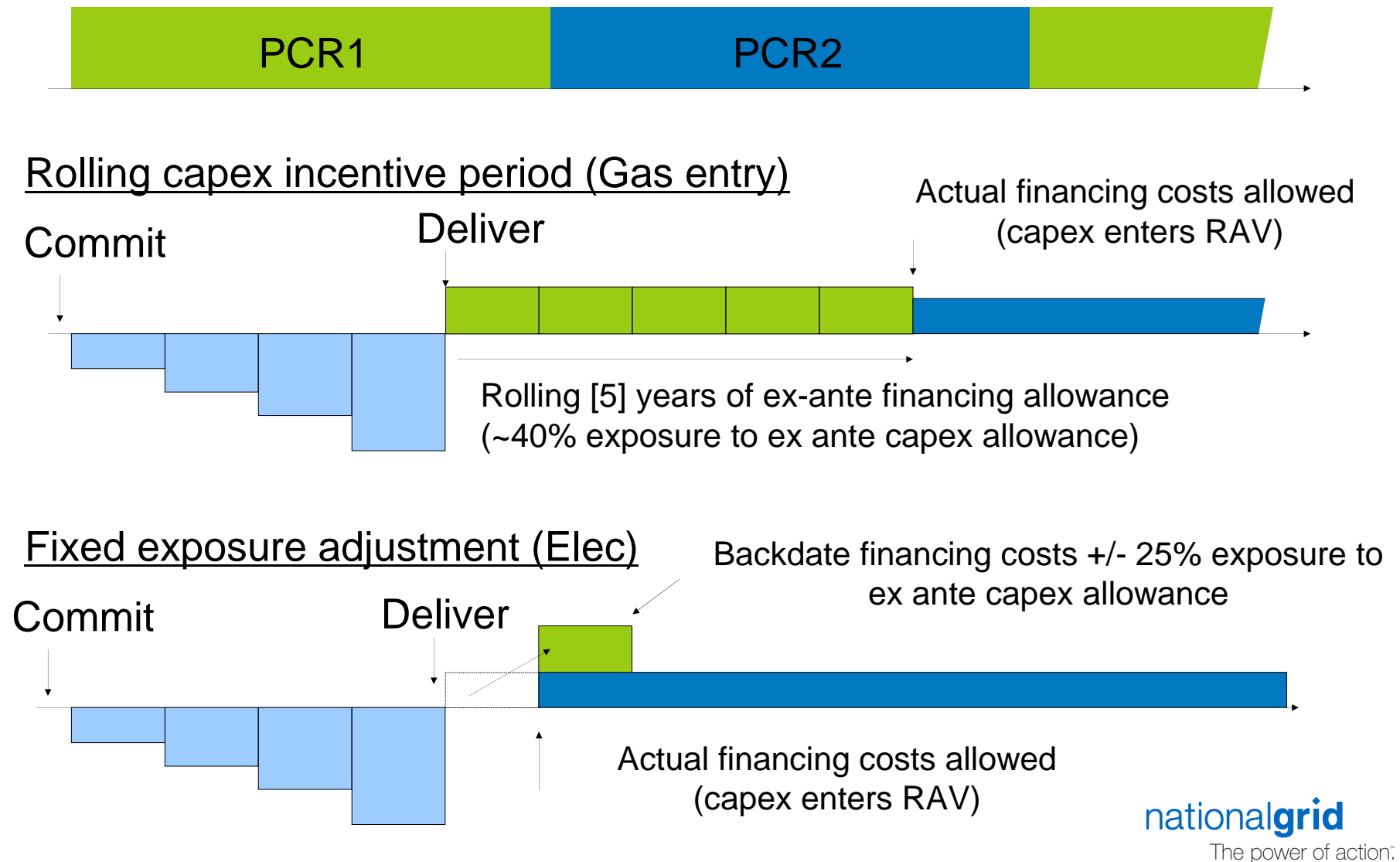
US rate base as at 31 December 2007. Excludes stranded cost recoveries

RPI-X investment incentive

- ◆ Revenues set for [5] years to fund:
 - ◆ Efficient level of expected operating costs
 - ◆ Financing costs on efficient past investments
 - ◆ Financing costs on efficient level of expected future investment
- ◆ Company has incentive to seek opex, capex and financing efficiencies to improve shareholder returns
- ◆ Regulator can observe efficiency improvements and pass to customers at next review

- ◆ Regime refinements:
 - ◆ Company internalisation of external impacts (e.g. constraints & unreliability)
 - ◆ Reduction of periodicity effects (especially on capex)
 - ◆ Revenues linked to delivery of load-related outputs

Alternative 'constant exposure' capex mechanisms



SO Incentives

◆ Electricity

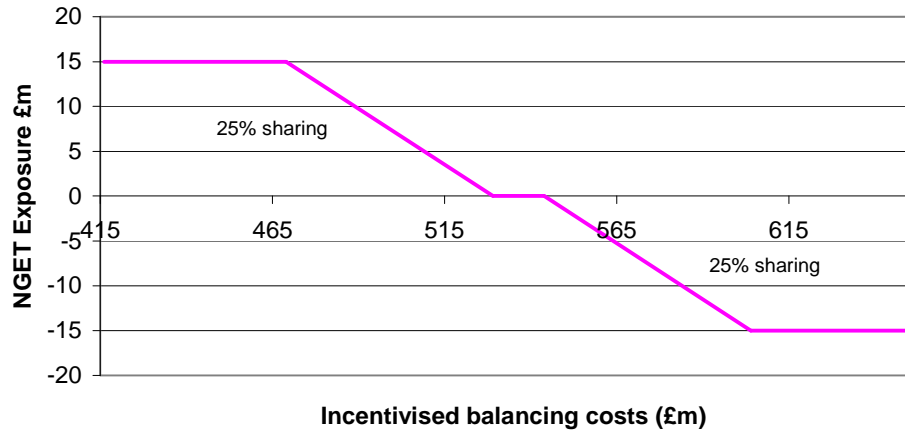
- ◆ Bundled scheme
 - ◆ Balancing energy
 - ◆ Reserve & freq response
 - ◆ Constraints
 - ◆ Loss volume
 - ◆ Black start
- ◆ Market length adjuster
- ◆ 1 year duration (volatility)

◆ Gas

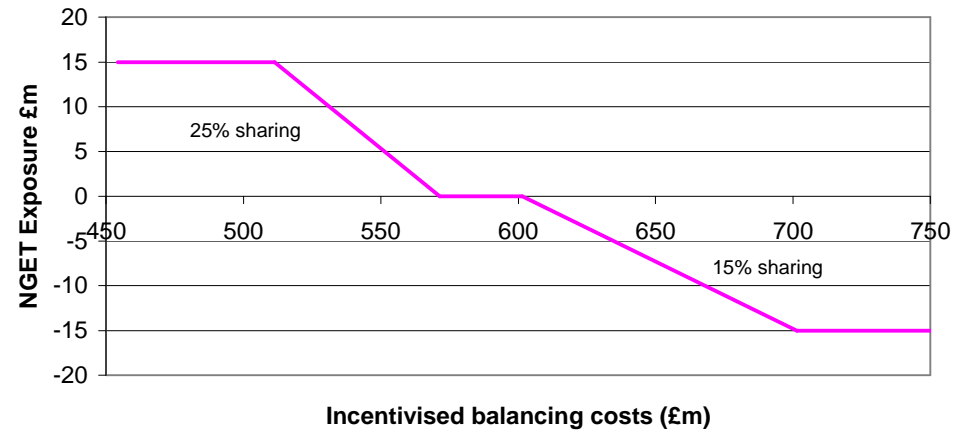
- ◆ Unbundled (short-period):
 - ◆ Residual balancing
 - ◆ Forecasting
 - ◆ Environmental
 - ◆ Operating margins
 - ◆ Shrinkage
 - ◆ Data accuracy/publication
- ◆ Unbundled (5 year period):
 - ◆ Entry buy-back
 - ◆ Exit buy-back

NGET SO external cost exposure

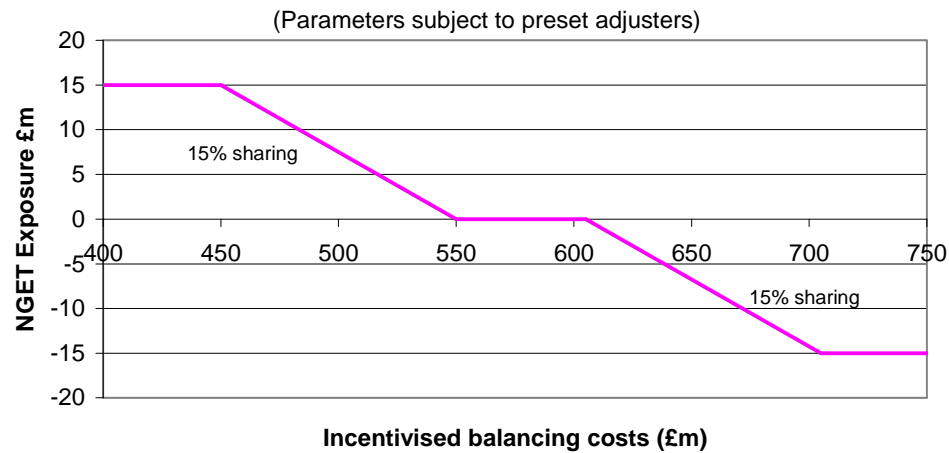
BSIS 2008/09



BSIS 2009/10



BSIS 2010/11

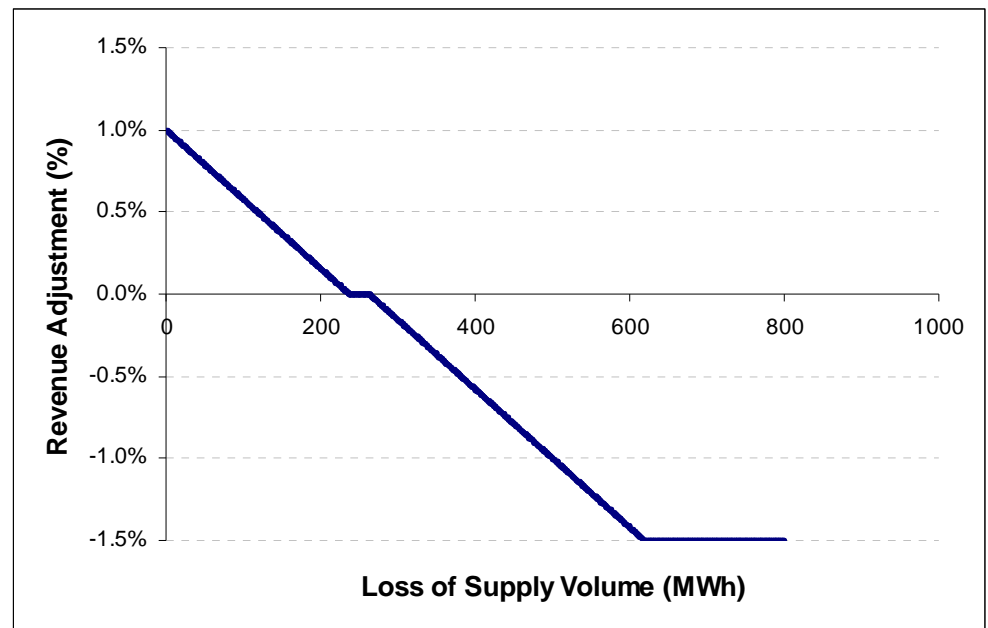


Transmission network reliability incentive

Introduced following high profile interruptions in London & Birmingham in 2003:

- ◆ Opportunity to earn up to 1% additional revenue (£11-12m) for annual loss of supply below the annual average
- ◆ Potential to lose up to 1.5% revenue (£17-18m) for annual loss of supply above the annual average

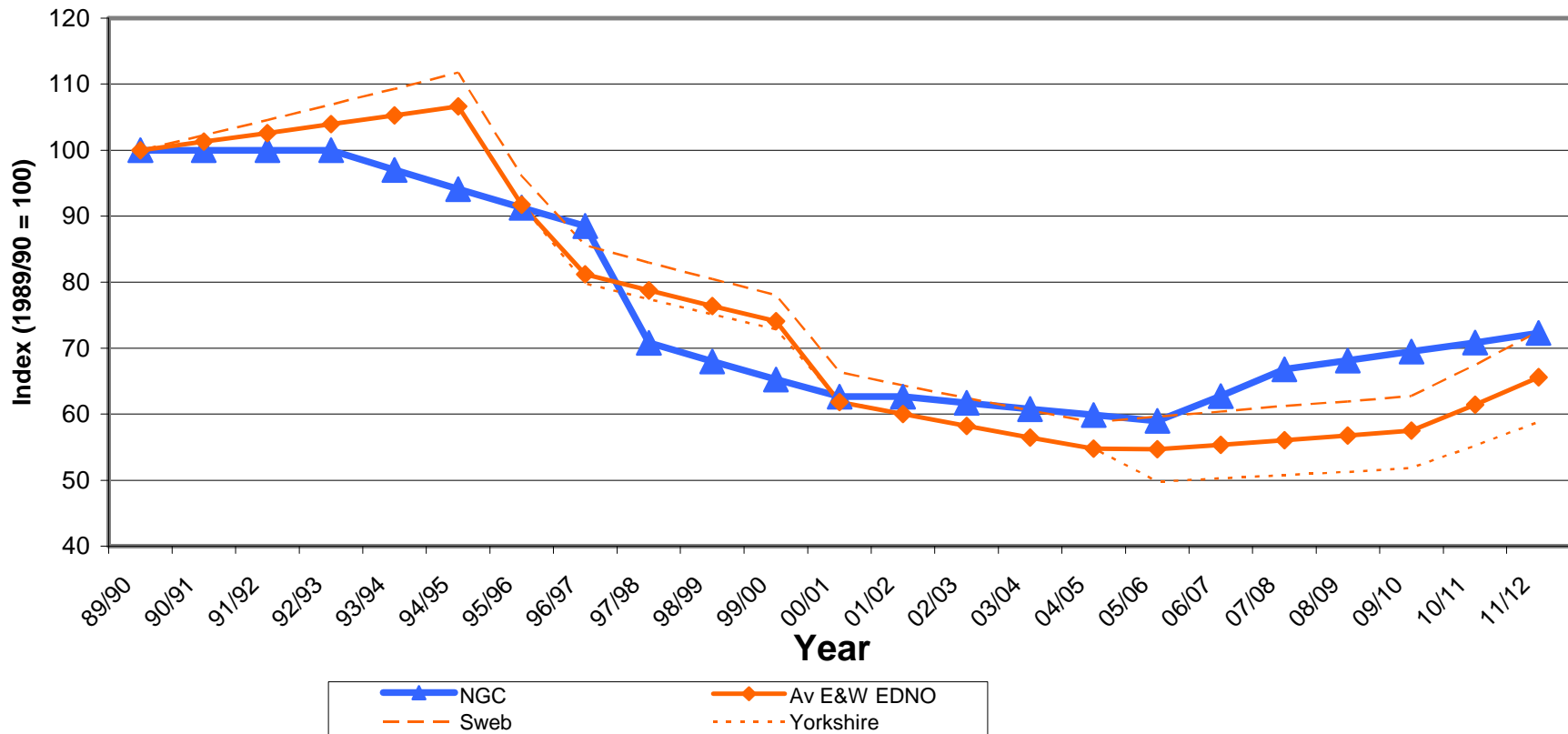
08/09 Reliability Incentive Scheme



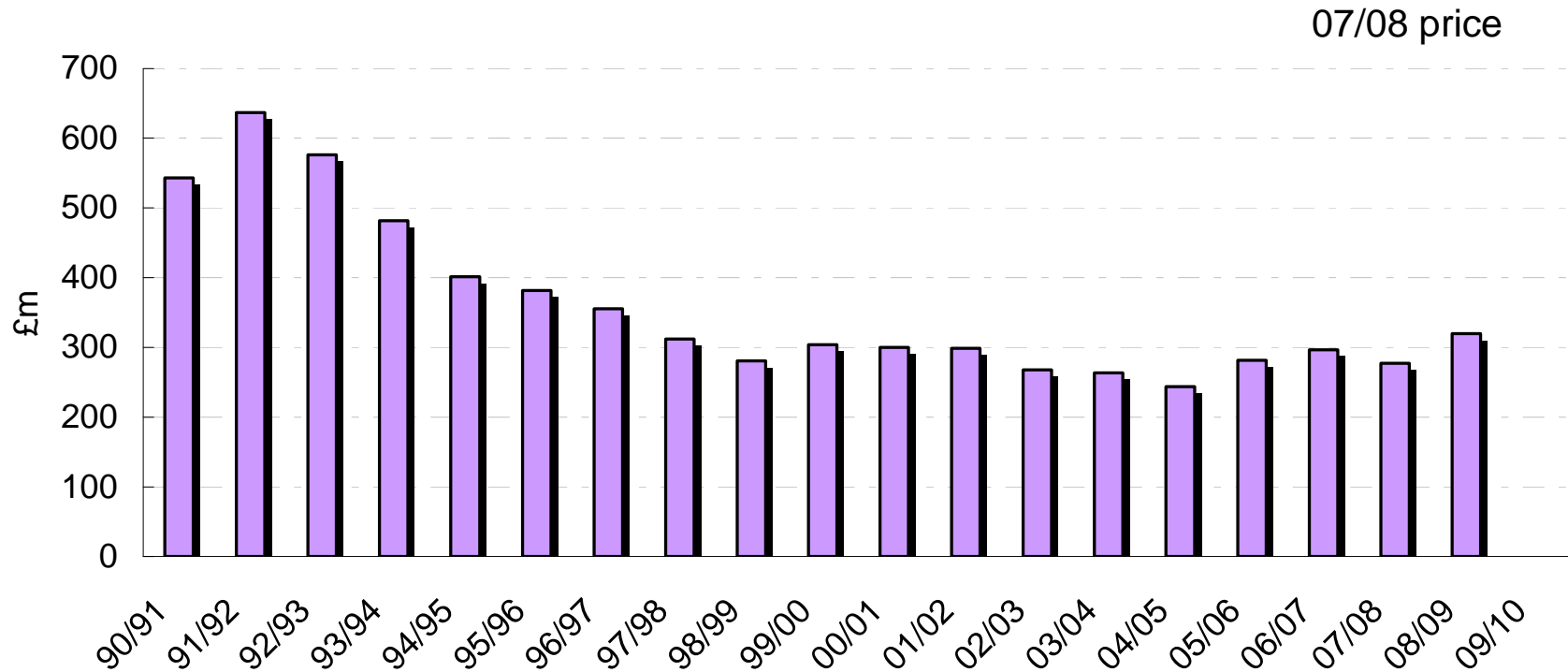
Effective value of lost load ~ £50/kWh

Trajectory of successive RPI-X controls

Real Movement in Electricity Network Prices since Privatisation

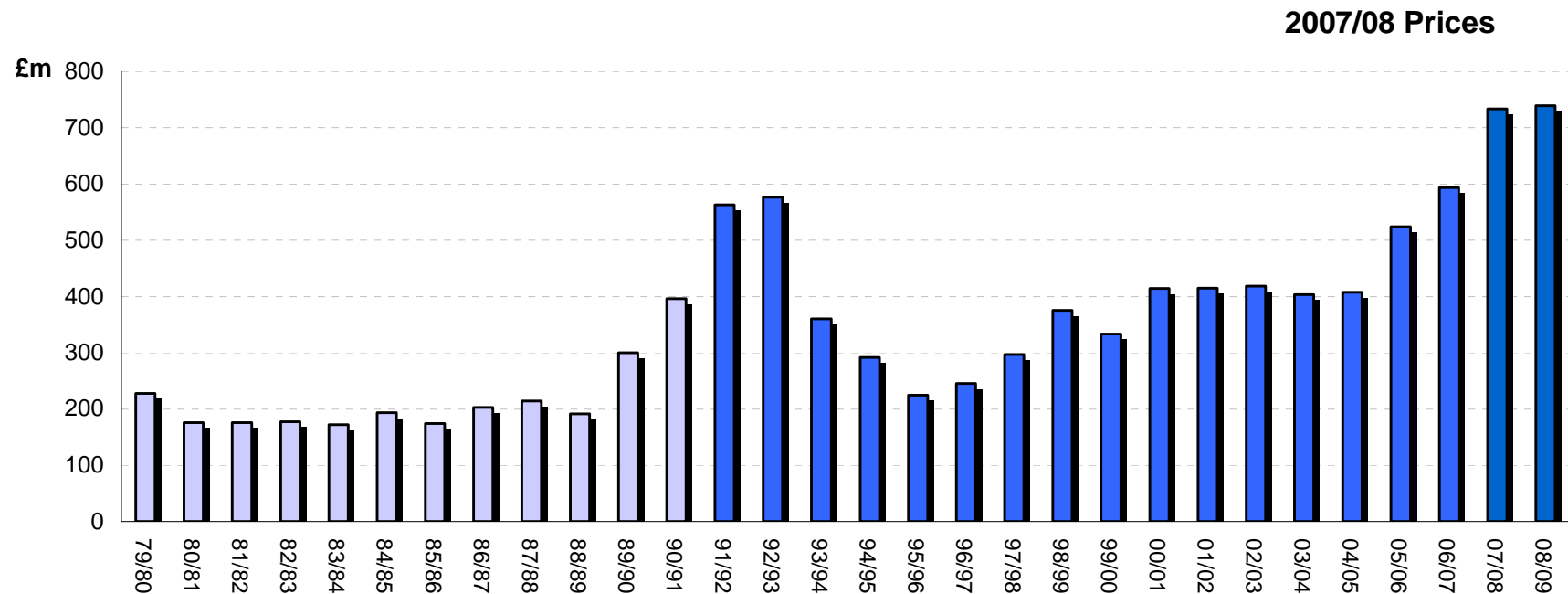


NGET controllable cost performance



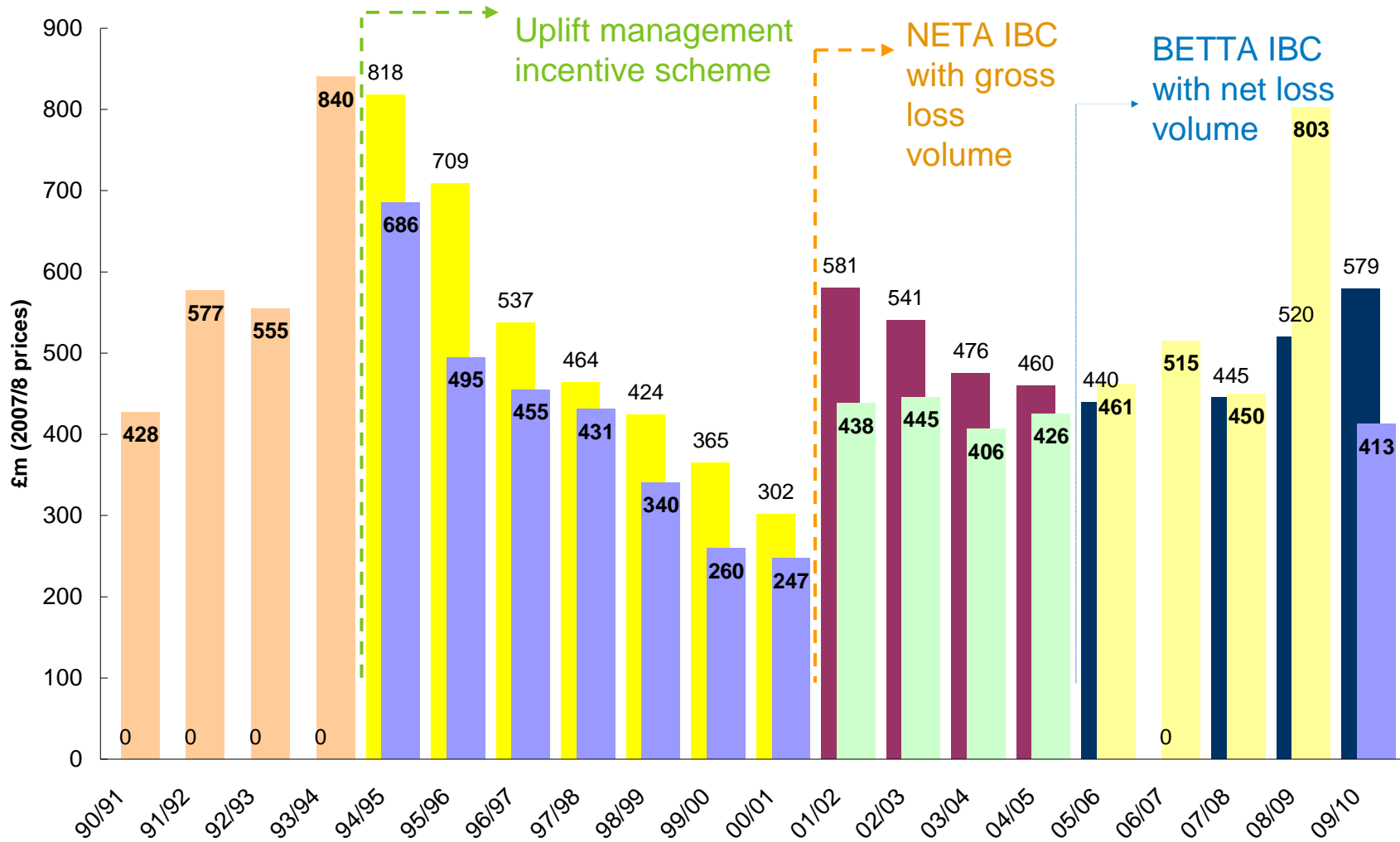
Electricity transmission network investment

- ◆ Post-privatisation investment has generally exceeded pre-privatisation levels



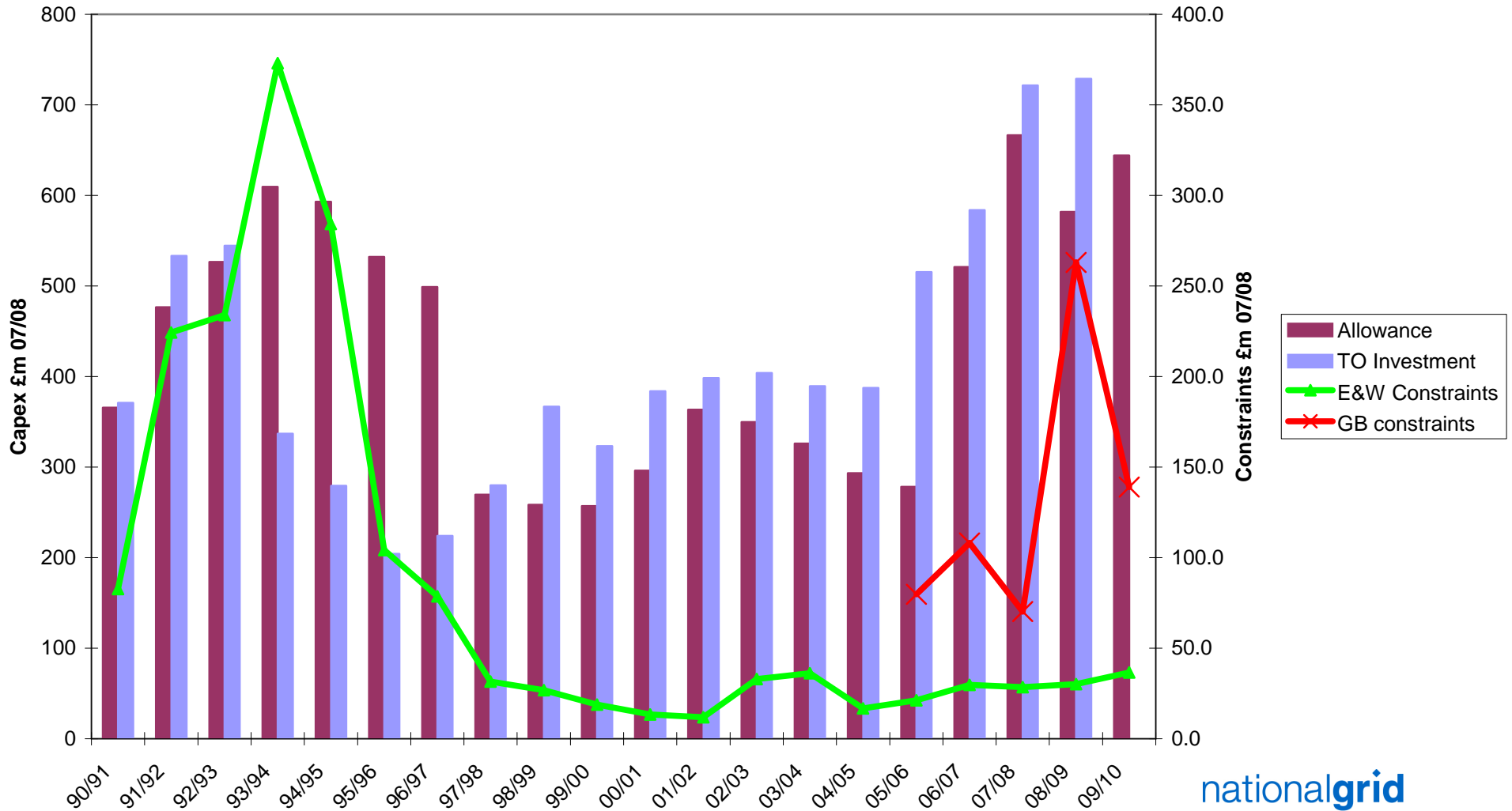
Pre-Vesting figures are based on CEGB information sources, and are adjusted to reflect one-off investment in the DC French interconnector.

Electricity transmission SO external costs



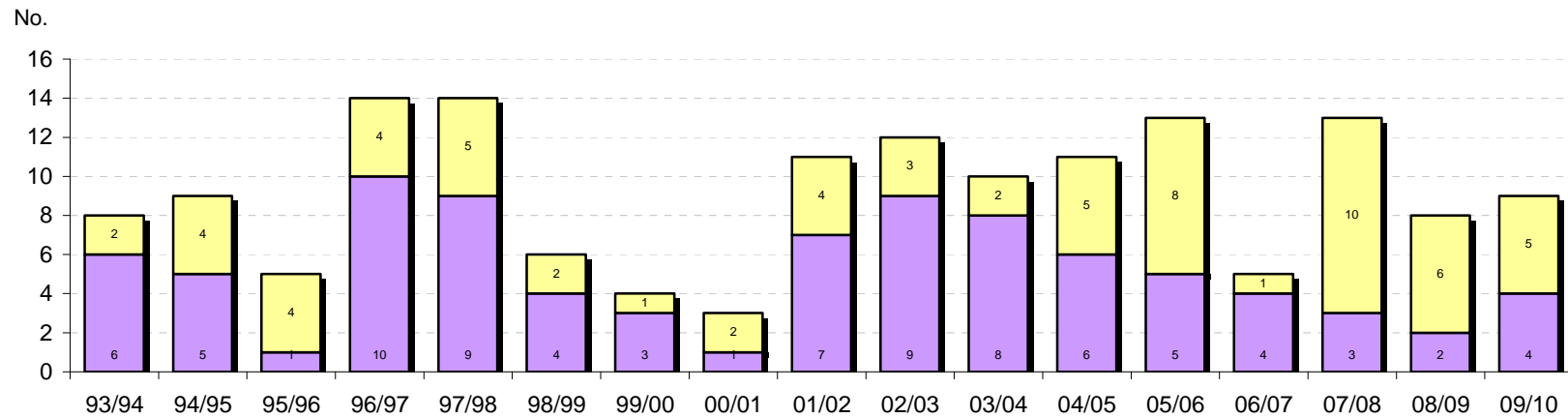
Constraints/congestion in GB market

Capex, Allowances & Constraints

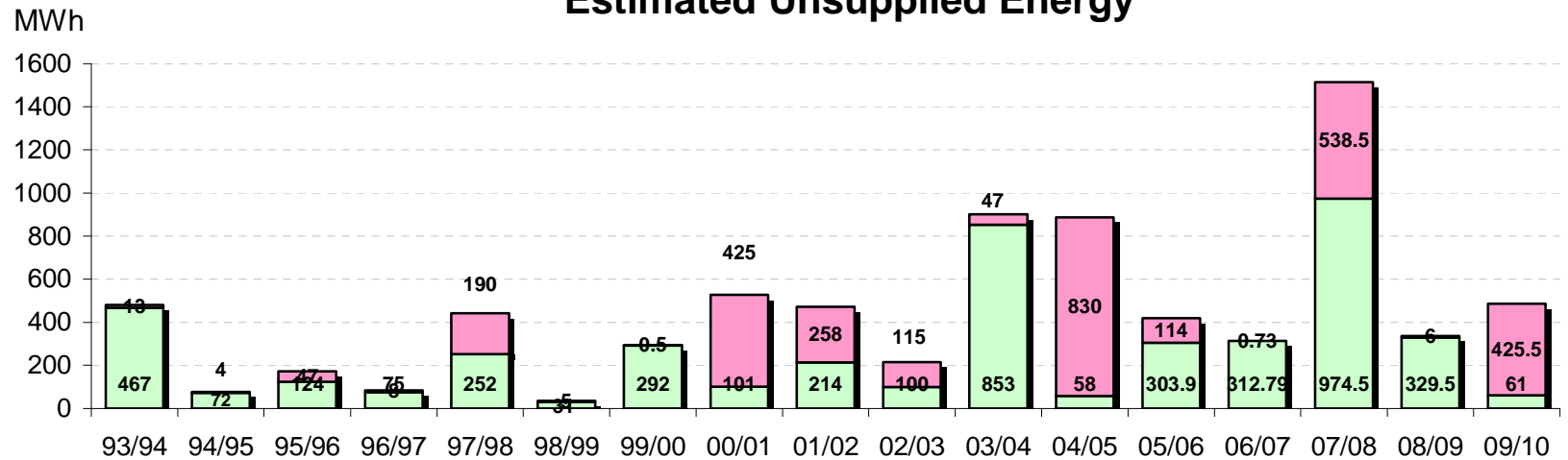


NGET reliability performance 1993 – 2010

Loss of Supply Incidents



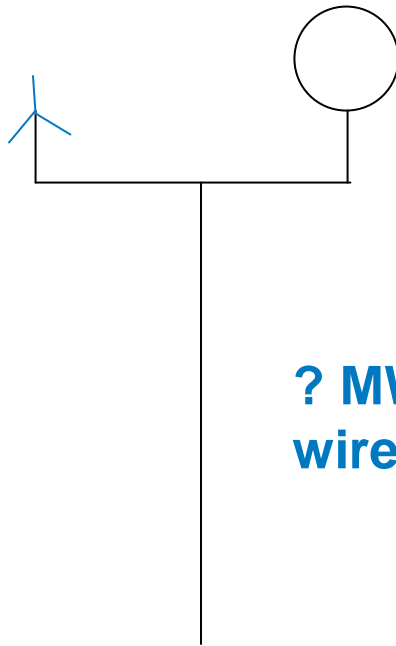
Estimated Unsupplied Energy



Future challenges

- ◆ How much wire capacity is needed? Anticipation or responsiveness?
- ◆ Who shares oversize/undersize risks? (Integrated SO/TO helpful?)

**1000MW
wind**



**1000MW
conventional**

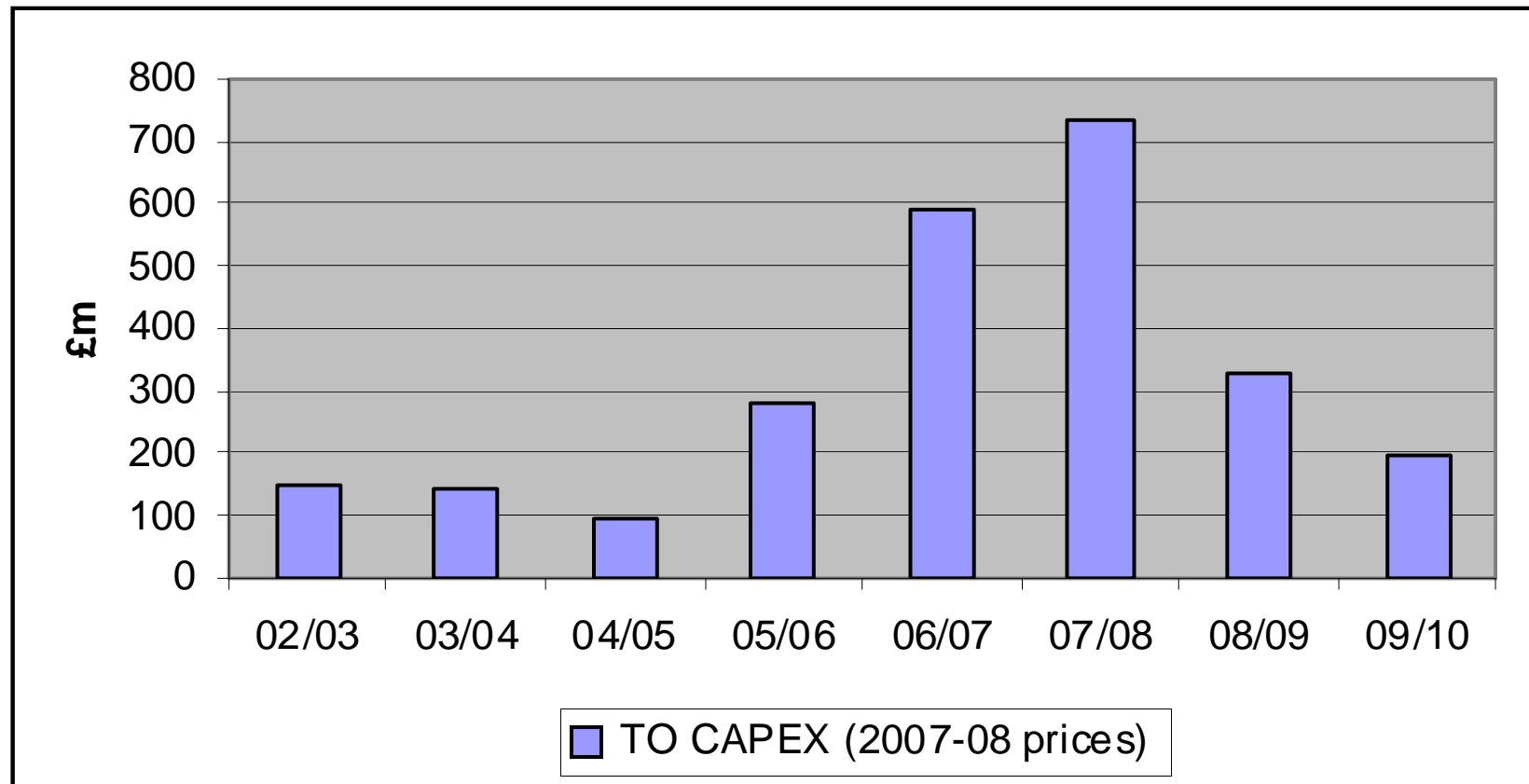
**? MW
wire capacity**

- ◆ How will increasingly responsive demand impact? (smart meters, new loads such as electric vehicles)
- ◆ How will revised market arrangements impact? (European harmonisation, stronger sustainability & security interventions)

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Gas TO capital investment



NB – comparable data not available before 2002 due to changes in company structures (demergers, sales etc...)

External gas SO cost performance (bundled)

