

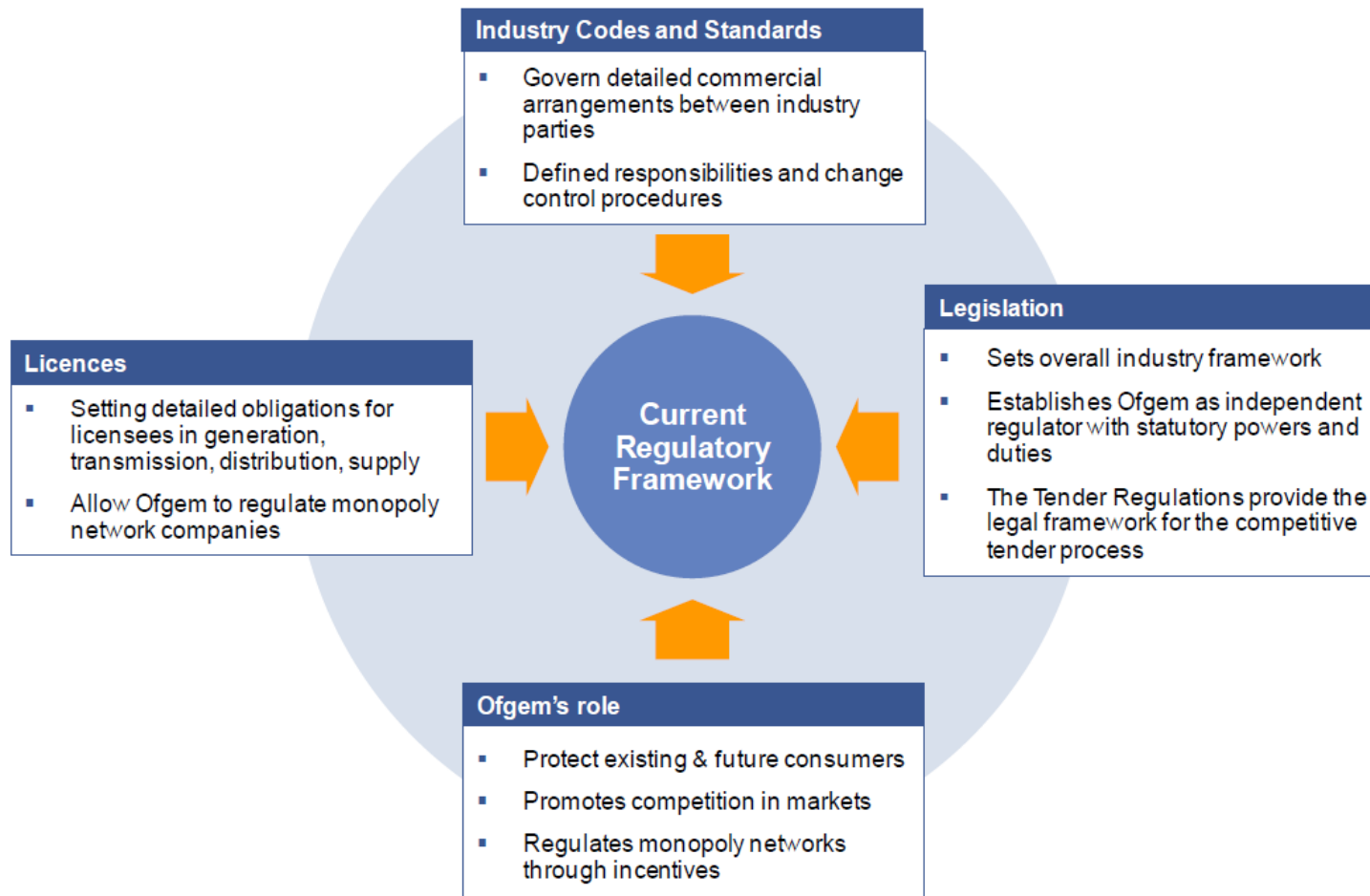
# *GLIO/Imperial College seminar*

## **Regulating UK energy infrastructure**

**Simon Wilde**  
*Senior Financial Adviser*



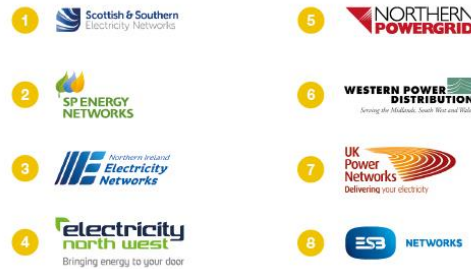
21 November 2018



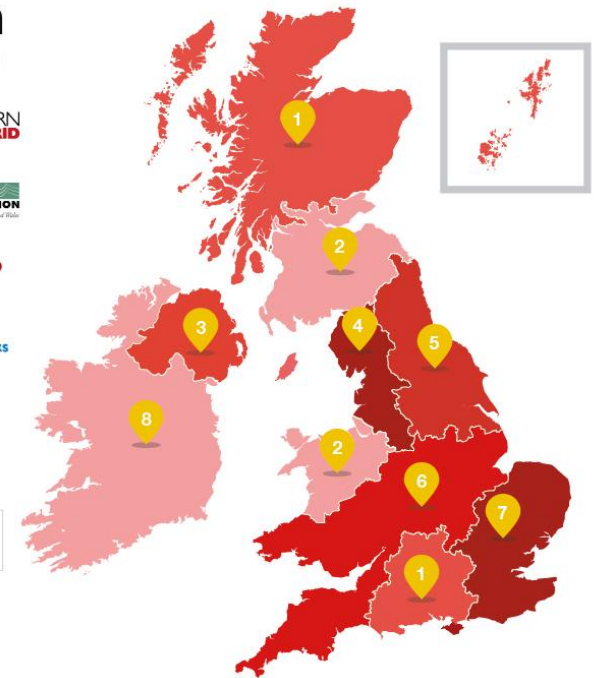
Source: Ofgem



## Electricity Distribution



**gto** Independent distribution network operators



Source: National Grid

- Three GB transmission companies; National Grid Electricity Transmission, Scottish Power Transmission, Scottish Hydro-Electric Transmission
- Fourteen GB distribution network operators; Electricity North West, SSE (Scottish Hydro Electric Power Distribution, Southern Electric Power Distribution), ScottishPower Energy Networks (SP Distribution, SP Manweb), UK Power Networks (London Power Networks, South Eastern Power Networks, Eastern Power Networks), WPD (WPD East Midlands, WPD West Midlands, WPD South West, WPD Wales)

## Gas Transmission

- 1 **nationalgrid**
- 2 **Gas Networks Ireland**
- 3 **mutualenergy**



## Gas Distribution

- 1 **SGN**  
Your Gas Network
  - 2 **Northern Gas Networks**
  - 3 **Cadent**  
Your Gas Network
  - 4 **Gas Networks Ireland**
  - 5 **WALES & WEST**  
Utilities
- gta** Independent Gas Transporters  
backing utility networks

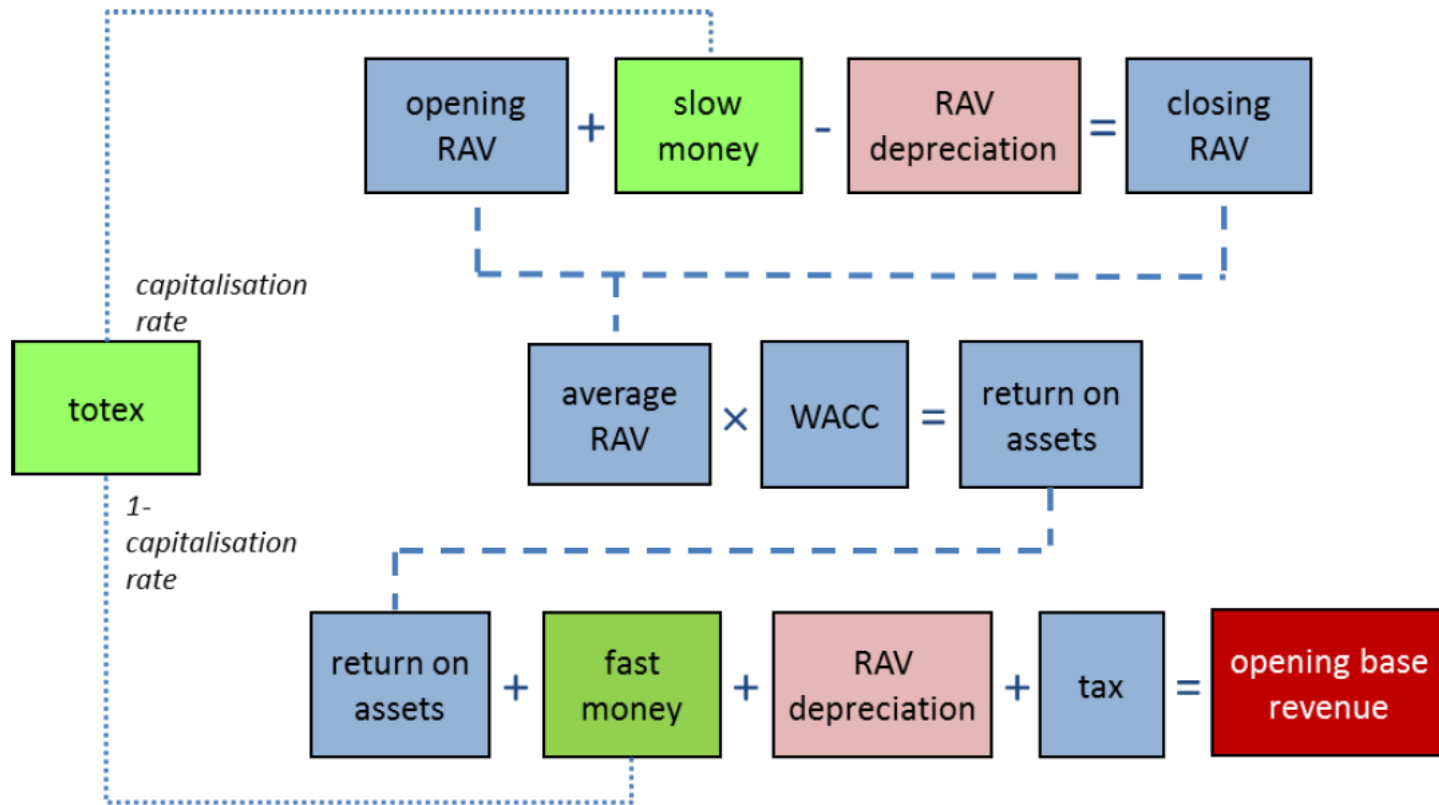


Source: Energy Networks Association, National Grid

- One GB transmission company; National Grid Gas Transmission
- Eight GB distribution network operators; Cadent (East of England, North London, North West, West Midlands), SGN (Scotland Gas Networks, Southern Gas Networks), Wales and West, Northern Gas Networks

- RIO – **R**evue = **I**ncentives + **I**nnovation + **O**utputs
- RIO-1 comprises four separate eight year price controls:
  - Electricity transmission (RIO-ET1), gas transmission (RIO-GT1), and gas distribution run from 1/4/2013 to 31/3/2021
  - Electricity distribution runs from 1/4/2015 to 31/3/2023
  - £96bn revenue (2015/16 money, ET1 £18bn, ED1 £42bn, GT1 £6bn, GD1 £29bn) over eight years
- Ex-ante revenue cap regulation, with **Allowed** Revenue comprising
  - Base Revenue that a network company can earn on its regulated business in order to recover the efficient costs of carrying out its activities
  - Mechanisms for funding elements not set upfront (uncertainty mechanisms)
  - Incentive rewards or penalties for over/under delivery outputs
- **Base** Revenue
  - Covers the cost (including financing) of delivering outputs & is ~80-90% of allowed revenue
  - Includes a totex allowance set upfront, an allowance for depreciation and a fair return on assets, and tax
  - Some uncertainty mechanisms, historical pension liabilities and legacy items are amended annually
- Totex
  - Made up of fast money and slow money
  - Fast money is funded in the year incurred & is equivalent to opex
  - Slow money is equivalent to capex & added to the regulatory asset value (RAV) and is funded via depreciation and a return on capital (vanilla WACC, post-tax cost of equity, pre-tax cost of debt)
  - Totex is divided into fast money and slow money using the totex capitalisation rate

## Calculating opening base revenue



Source: Ofgem guide to the RIIO-ED1 electricity distribution price control

**Opening revenue set at the start of the regulatory period calculated for each of the eight years**

- The financial return achieved by shareholders in a licensee during a price control period from its out-turn performance under the price control
- RoRE is measured using income and cost definitions contained in the price control regime (as opposed to accounting conventions), and is expressed as a percentage of equity in the business
- Gearing, and cost of debt figures used are those given as the 'assumed' levels in the relevant price control final proposals
- The aim of the RoRE measure is to provide an indication of the return achieved by the owners of a licensee
- This can be compared to the cost of equity originally allowed in the price control settlement and to the return achieved by other licensees on an equivalent basis
- A mixture of actual & forecast performance, and for the TIM, entire control period forecasts are used

## RAV at 31<sup>st</sup> March 2017 (£m 2016/17)

Company	RAV	Company	RAV
NGET TO	12,163	ENWL	1,661
NGET SO	158	NPgN	1,272
SHET	2,653	NPgY	1,671
SPT	2,421	WMID	2,220
<b>Electricity Transmission</b>	<b>17,395</b>	EMID	2,214
		SWALES	975
EoE	3,040	SWEST	1,438
Lon	2,090	LPN	1,553
NW	2,124	SPN	1,600
WM	1,602	EPN	2,494
NGN	1,992	SPD	1,687
SGN Sc	1,606	SPMW	1,769
SGN So	3,554	SSEH	1,045
WWU	2,012	SSES	2,203
<b>Gas Distribution</b>	<b>18,020</b>	<b>Electricity Distribution</b>	<b>23,802</b>
NGGT (TO)	5,857		
NGGT (SO)	131		
<b>Gas Transmission</b>	<b>5,988</b>	<b>Total RAV</b>	<b>65,205</b>

Source: Ofgem RIIO-ET1, RIIO-GT1, RIIO-GD1, RIIO-ED1 annual reports 2016/17 & associated data



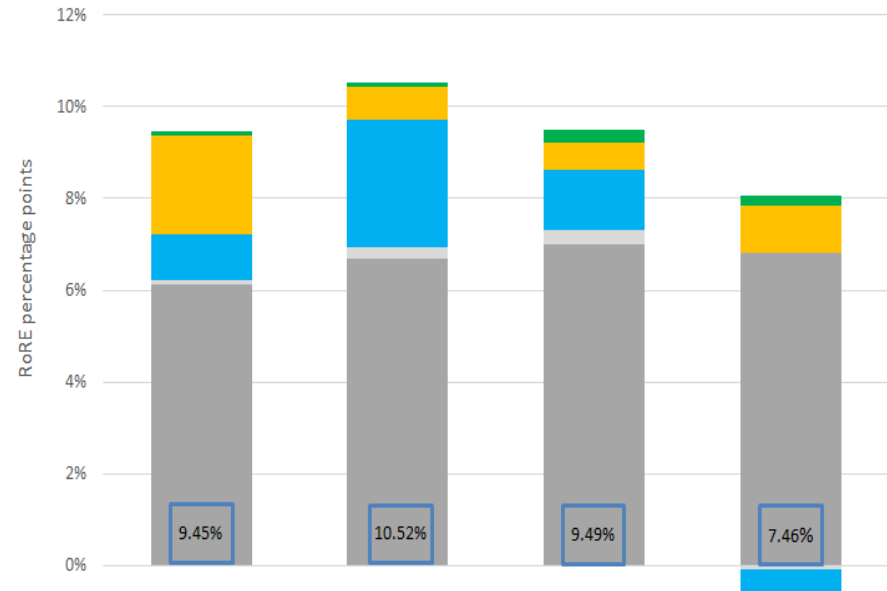
- By and large, network companies are delivering well for customers
  - Increase in distribution connected generation
  - Increased reliability
  - Number and length of power cuts almost halved since 2001
  - Customer satisfaction at record levels
- Returns have been higher than expected – some of this has been delivered through genuine innovation and efficiency, but companies have also benefitted from risks that were outside their control
- Sharing mechanisms have benefitted customers and some network companies have made voluntary contributions
- RIIO-2 needs to build on RIIO-1, learn lessons, and address the balance of risk between network companies and consumers

**8-year RoRE (2016/17) by sector**

RoRE performance v baseline:

ED: 3.23%  
GD: 3.58%  
ET\*: 2.32%  
GT\*: 0.66%

\*includes SO



	ED	GD	ET*	GT*
Other	0.09%	0.08%	0.26%	0.23%
Performance against other incentives	2.15%	0.72%	0.62%	1.04%
Performance against Totex Incentive Mechanism	0.99%	2.78%	1.29%	-0.54%
Baseline: IQI	0.10%	0.24%	0.32%	-0.07%
Baseline: Cost of Equity	6.12%	6.70%	7.00%	6.80%

Source: Ofgem

- Firm decisions
  - Enhanced engagement model for RIIO-2; open hearings to focus on areas of disagreement/contention
  - Five year default length for the price control
  - No alignment of electricity transmission and electricity distribution price control start and end dates
  - Separate Electricity System Operator price control
  - Retention of an innovation stimulus package, albeit reformed
  - Extending the role of competition
  - Greater use of uncertainty mechanisms, and more up-to-date setting of outputs
  - No early settlement for electricity transmission, gas transmission, and gas distribution
  - CAPM to be used to estimate cost of equity
  - Shift from RPI to CPIH in calculating RAV and allowed returns
  - Economic asset life approach retained for depreciation
- Narrowing down options
  - Debt pass-through ruled out; examining recalibrating the existing model, or moving to partial indexation
  - Ruling out nominal RAV; exploring the two remaining options to address financeability
  - Ruling out hard cap and floor returns adjustment mechanism; continuing to explore other fair returns options

- Cost of debt
  - Full debt pass-through option ruled out
  - Further examination of a recalibration of current full indexation model, and a move to partial indexation
  - High bar of evidence for a material change in approach
- Cost of equity
  - CAPM used to estimate the cost of equity, and setting its key parameters
  - Continuing to review the evidence submitted
  - Not ruling out cost of equity indexation at this stage
  - No update to the indicative 3%-5% RPI real range communicated in March – update in December
- Financeability
  - Move to nominal RAV ruled out
  - Further work to develop remaining options:
    - Putting the onus on the companies to address through their business plans
    - Establishing the concept of a debt floor
- Ensuring fair returns
  - Hard cap and floor ruled out as a return adjustment mechanism option
  - Further assessment of remaining four options
  - We will consult in December

**Our core purpose is to ensure that all consumers can get good value and service from the energy market. In support of this we favour market solutions where practical, incentive regulation for monopolies and an approach that seeks to enable innovation and beneficial change whilst protecting consumers.**

**We will ensure that Ofgem will operate as an efficient organisation, driven by skilled and empowered staff, that will act quickly, predictably and effectively in the consumer interest, based on independent and transparent insight into consumers' experiences and the operation of energy systems and markets.**