Whole-System Modelling: applications in network investment

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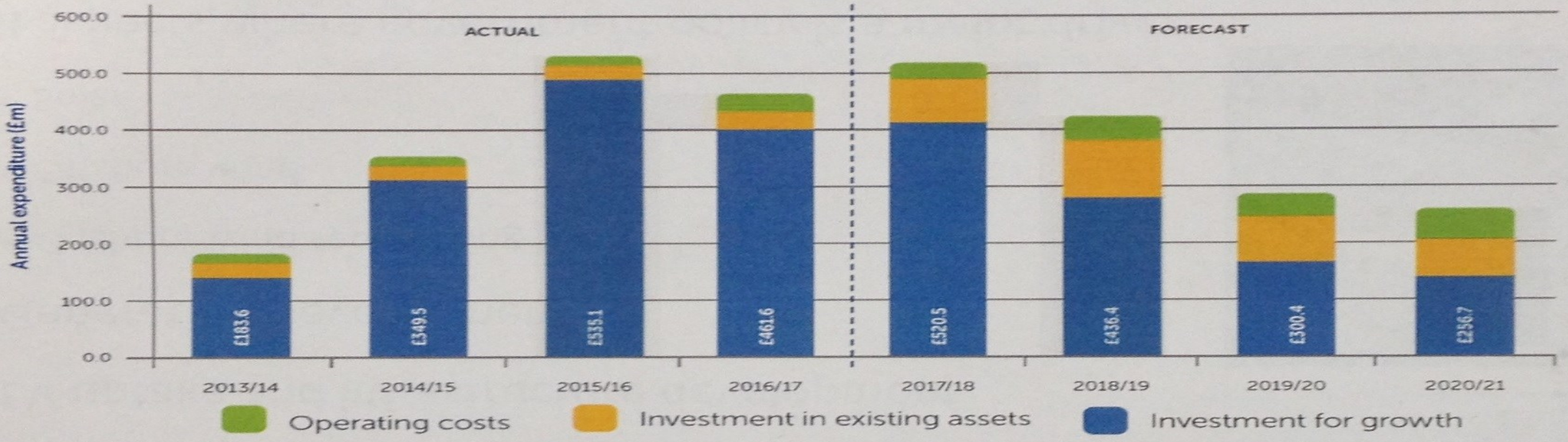
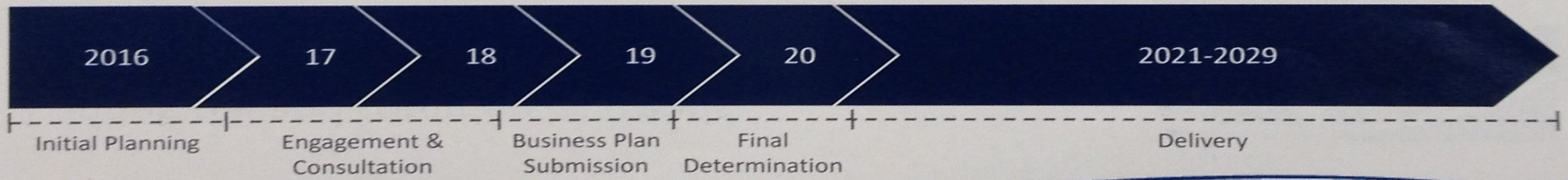
Scottish & Southern Electricity Networks

RIIO Price Control

RIIO-T1 Expenditure*



RIIO-T2 – Estimated timeline



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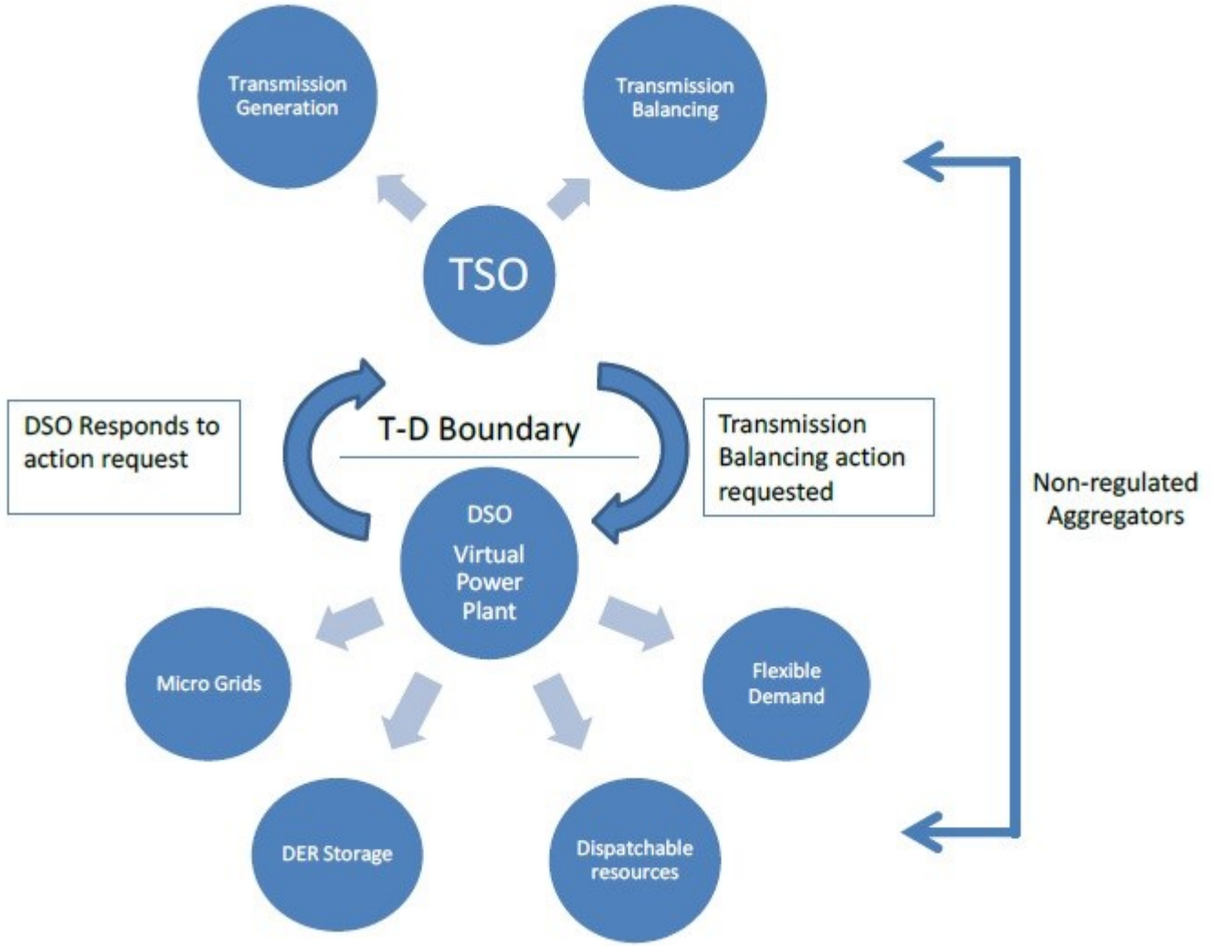
* Excluding Transmission Investment for Renewable Generation (TIRG) scheme

The DSO transition



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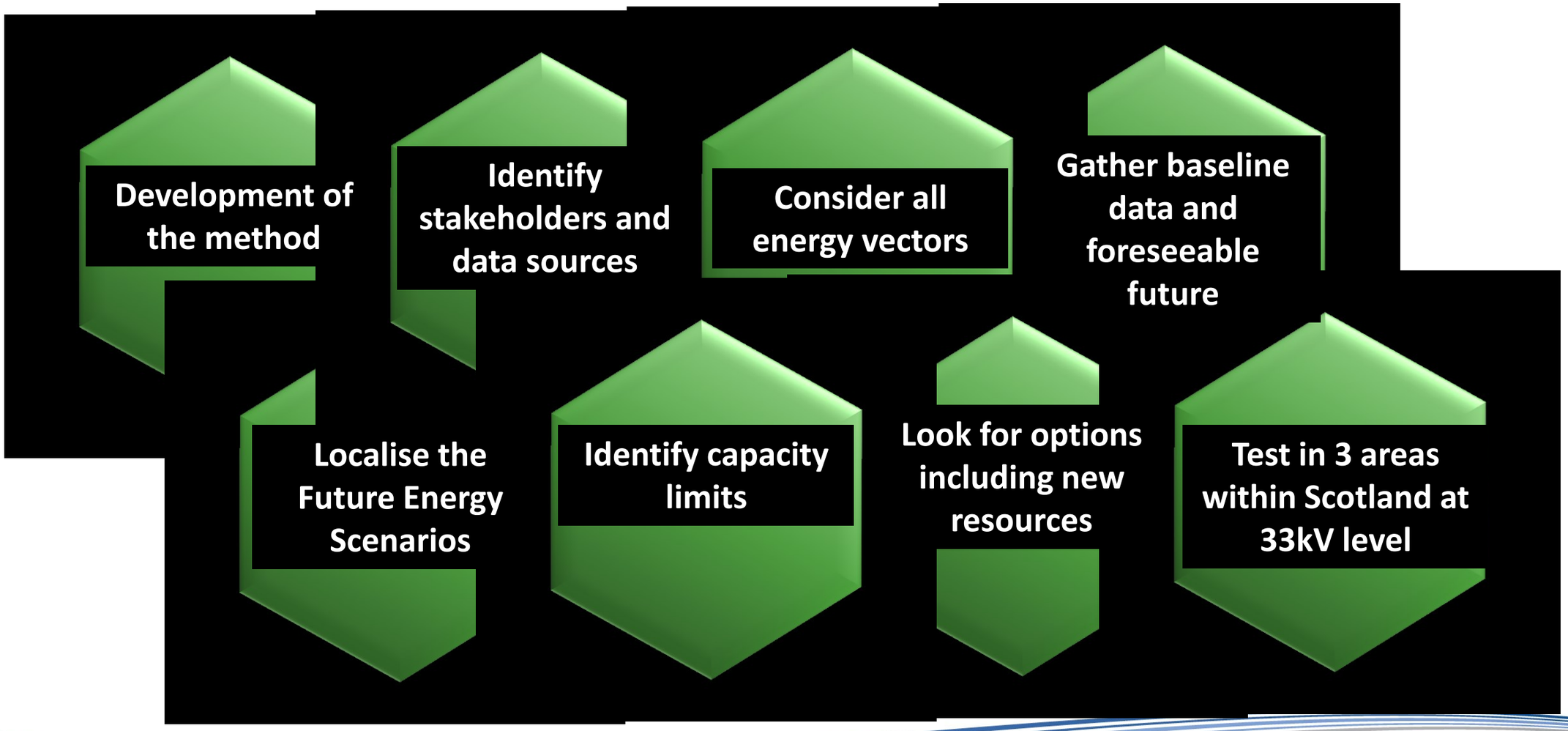
Whole System Growth Scenario Modelling Project



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The basic problem

Our scenarios

Consumer Power

In a **Consumer Power** world there is high economic growth and more money available to spend. Consumers have little inclination to become environmentally friendly. Their behaviour and appetite for the latest gadgets is what drives innovation and technological advancements. Market-led investments mean spending is focused on sources of smaller generation that produce short- to medium-term financial returns.

Two Degrees

Two Degrees has the highest level of prosperity. Increased investment ensures the delivery of high levels of low carbon energy. Consumers make conscious choices to be greener and can afford technology to support them. With highly effective policy interventions in place, this is the only scenario where all UK carbon reduction targets are achieved.

Steady State

In **Steady State** business as usual prevails and the focus is on ensuring security of supply at a low cost for consumers. This is the least affluent of the scenarios and the least green. There is little money or appetite for investing in long-term low carbon technologies, therefore innovation slows.

Slow Progression

In Slow Progression low economic growth and affordability compete with the desire to become greener and decrease carbon emissions. With limited money available, the focus is on cost-efficient longer-term environmental policies. Effective policy intervention leads to a mixture of renewable and low carbon technologies and high levels of distributed generation.

The 2017 scenario matrix

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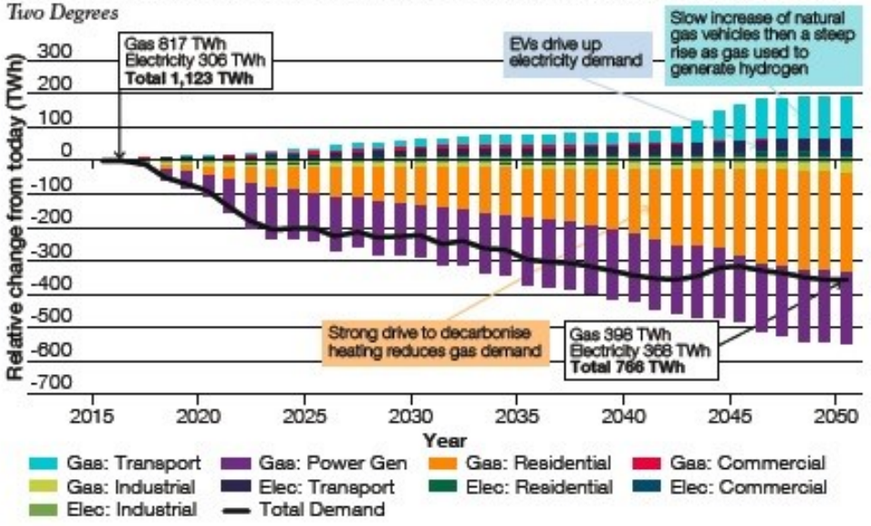
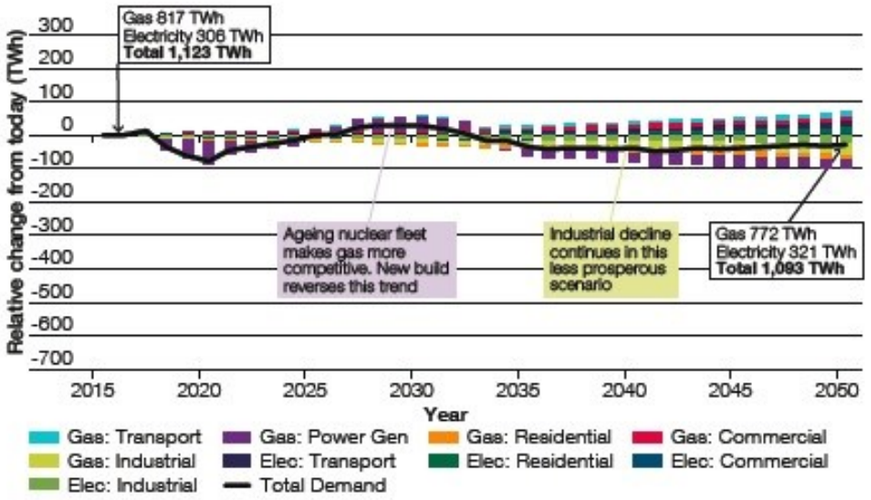
Energy demand

Figure 3.1
Scenarios: Gas and electricity annual demand and sector variation from today; excluding losses

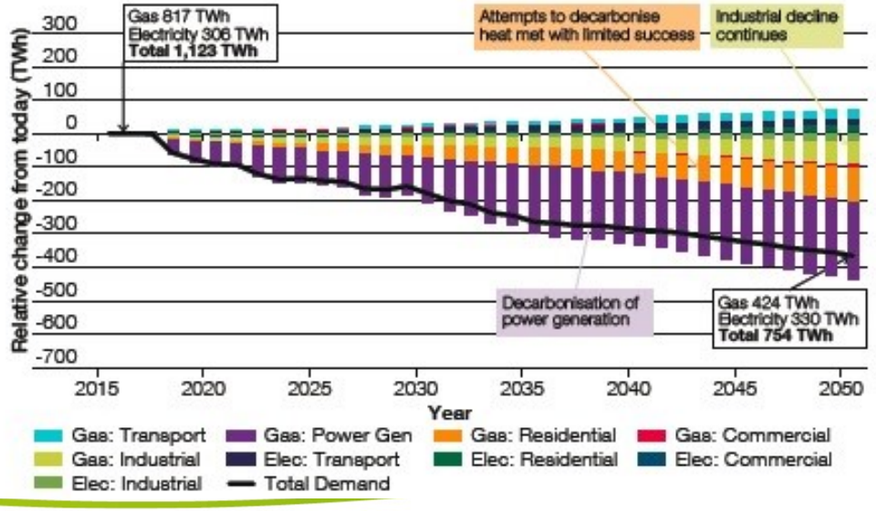
Two Degrees



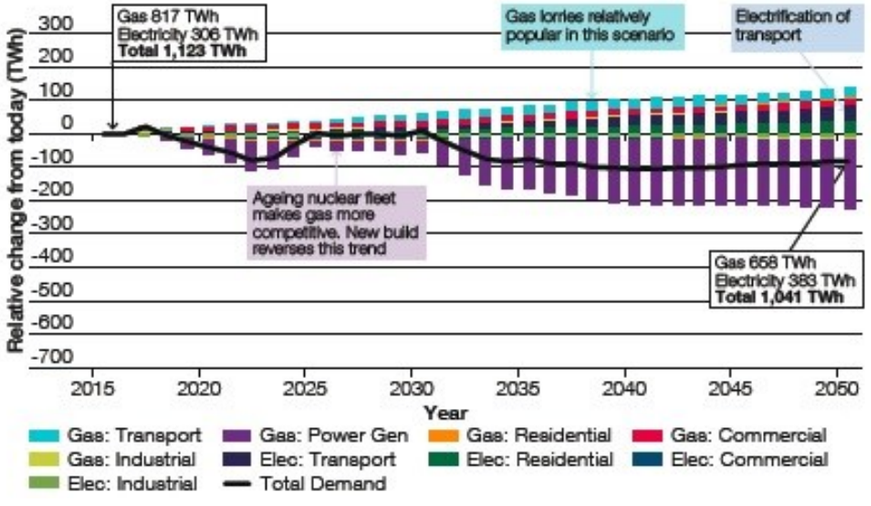
Steady State



Slow Progression



Consumer Power



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Localising the scenarios

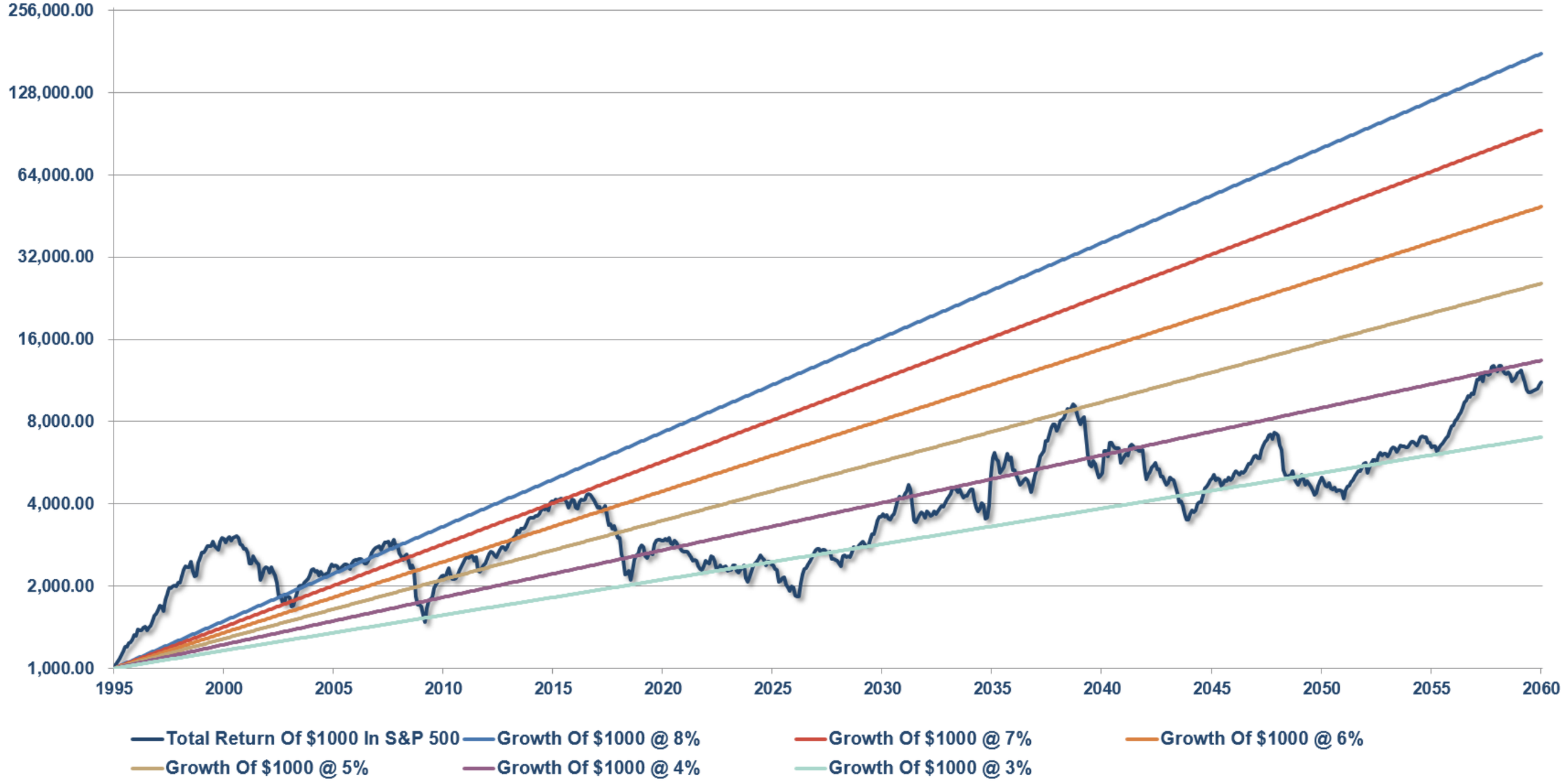
- Industrial and commercial trends
- Housing growth
- Heating types and energy efficiency potential
- EV uptake and infrastructure development
- Generation development – onshore wind repowering, offshore wind, solar, microgeneration
- For all of the above, government policy is a driver

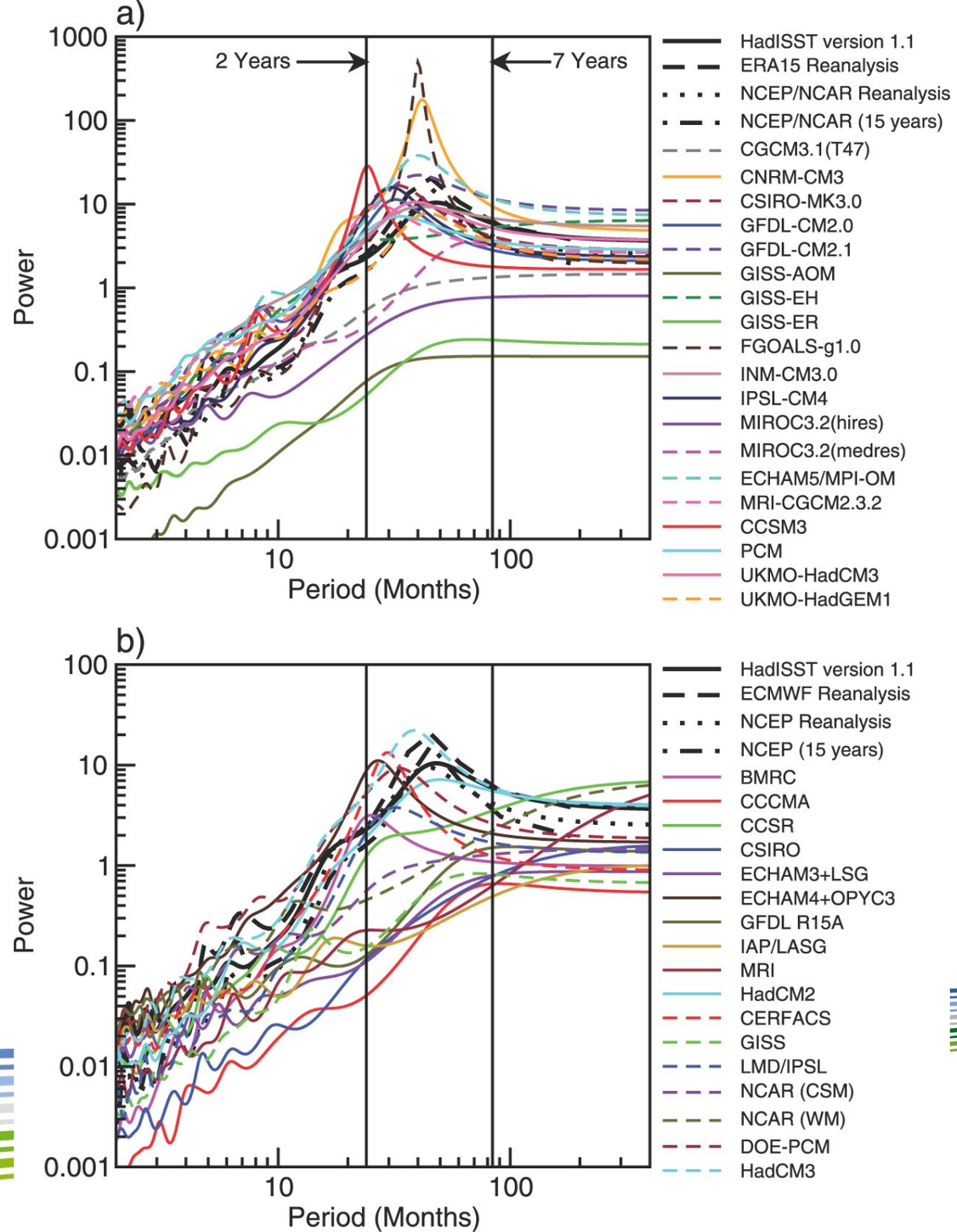
What it’s not

- Optimisation
- Forecasting outcomes
- Economic modelling

The Problem With Pension Projections

REAL INVESTMENT ADVICE





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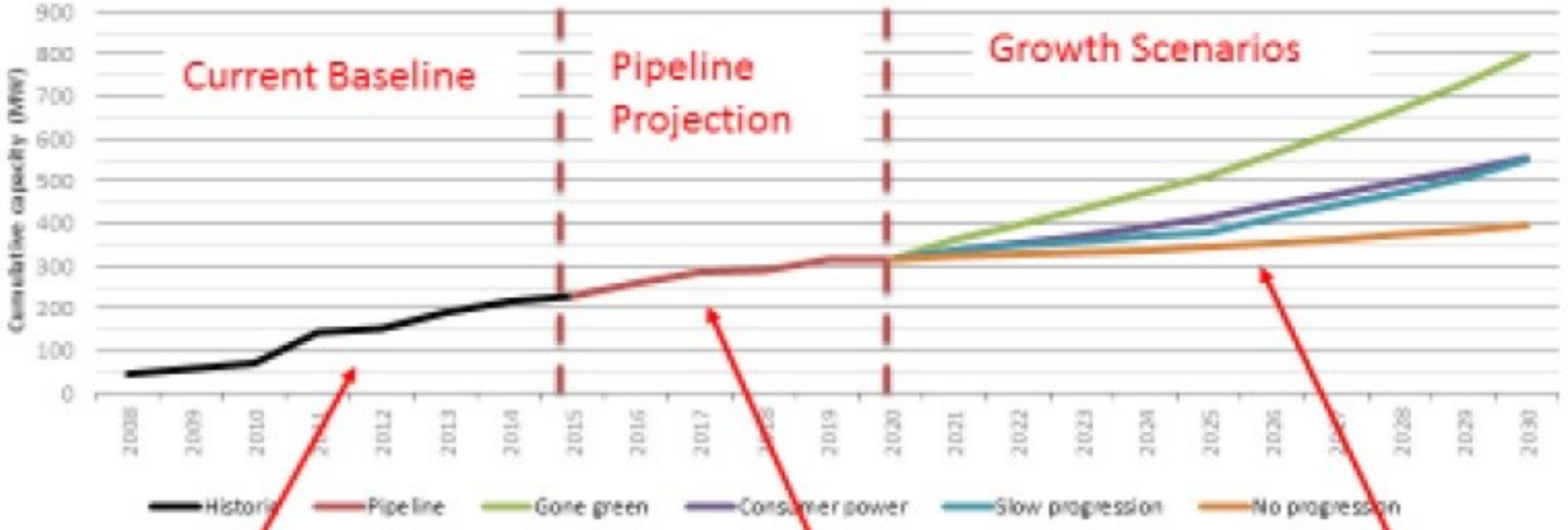
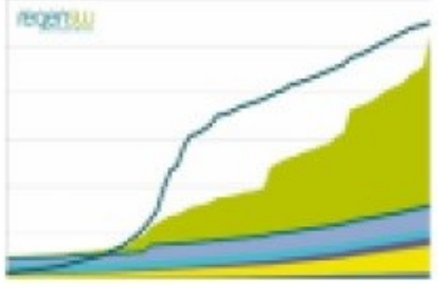
Onshore wind WPD South West licence area capacity growth scenarios 2015-2030



Current Baseline - progress to date taken from extensive Regen SW DG project database



Pipeline Projection (to 2020) Analysis of current projects in the planning system and with grid connection agreements. Uplift on additional smaller projects estimated.

Growth Scenarios (to 2030) - Growth dependent on FES scenarios:

- **Consumer Power**
- **Gone Green**
- **Slow Progression**
- **No Progression**

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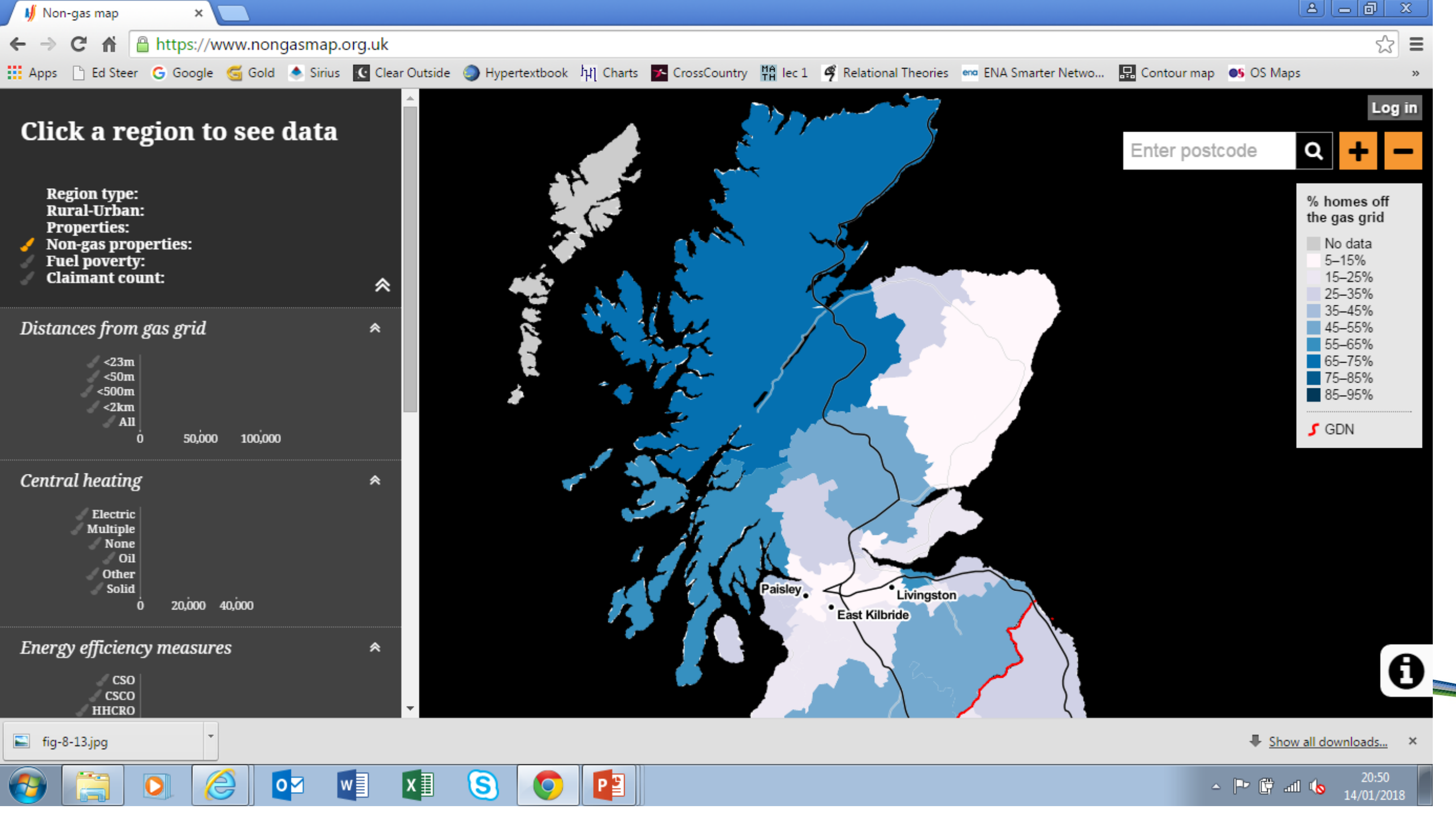
Non-gas map
https://www.nongasmap.org.uk
Apps
Ed Steer
Google
Gold
Sirius
Clear Outside
Hypertextbook
Charts
CrossCountry
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Relational Theories
ENA Smarter Netwo...
Contour map
OS Maps
Click a region to see data
Region type:
Rural-Urban:
Properties:
Non-gas properties:
Fuel poverty:
Claimant count:
Distances from gas grid
<23m
<50m
<500m
<2km
All
0
50,000
100,000
Central heating
Electric
Multiple
None
Oil
Other
Solid
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40,000
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HHCRO
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