

Energy policy-making in a time of rapidly changing technologies and social preferences

DECC, 17 May 2016

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New Thinking For Energy

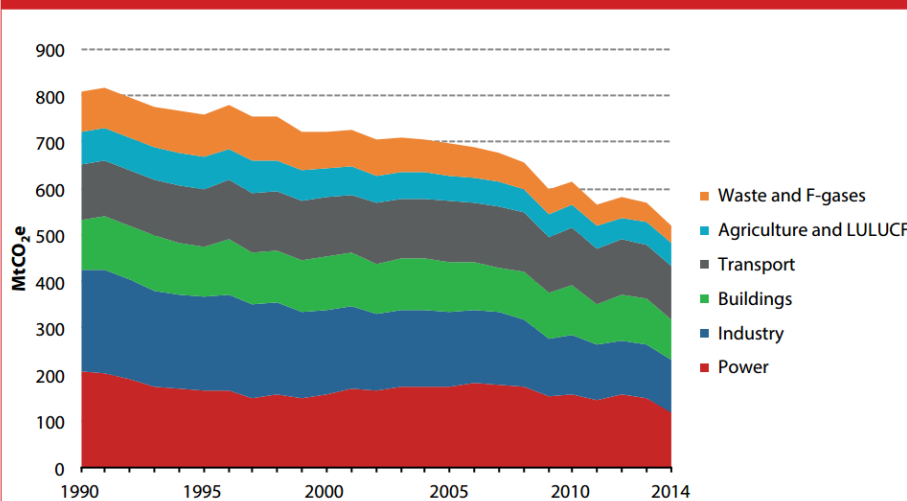


Overview

- The energy world is undergoing rapid change:
 - Energy technologies (supply, demand and operation) are decentralising
 - New means, and requirements, of system operation and integration are occurring
 - Global investment patterns are moving to RE from FF
 - Social preferences and ownership
 - Public policy momentum around the world to ‘clean’ away from ‘dirty’
- There are considerable energy system challenges which are difficult to meet with current governance system BUT opportunities to capture as well
- There has been lots of change in some countries but needs to spread those changes to more countries, and at a quicker rate
- GB has a governance system which is not fit for purpose and has to be altered to provide value for the ‘new’ ways of doing things
- If the governance changes (institutions and the sources of value within the system) then economics and costs of transformation change and opportunities are opened up – the NY REV argument

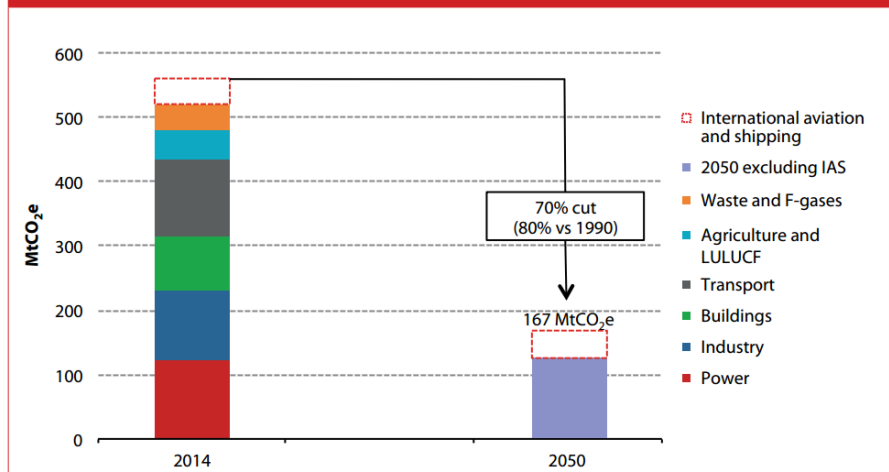
What's the problem? How well have we done over the last 25 years?

Figure 3.3: Historical UK emissions of greenhouse gases (1990-2014)



Source: DECC (2015) *Final UK greenhouse gas emissions national statistics: 1990-2013*; DECC (2015) *Provisional UK greenhouse gas emissions national statistics*; CCC analysis.

Figure 3.5: The 2050 challenge



Source: DECC (2015) *Final UK greenhouse gas emissions national statistics: 1990-2013*; DECC (2010) *Final UK greenhouse gas emissions national statistics: 1990-2008*; CCC analysis.

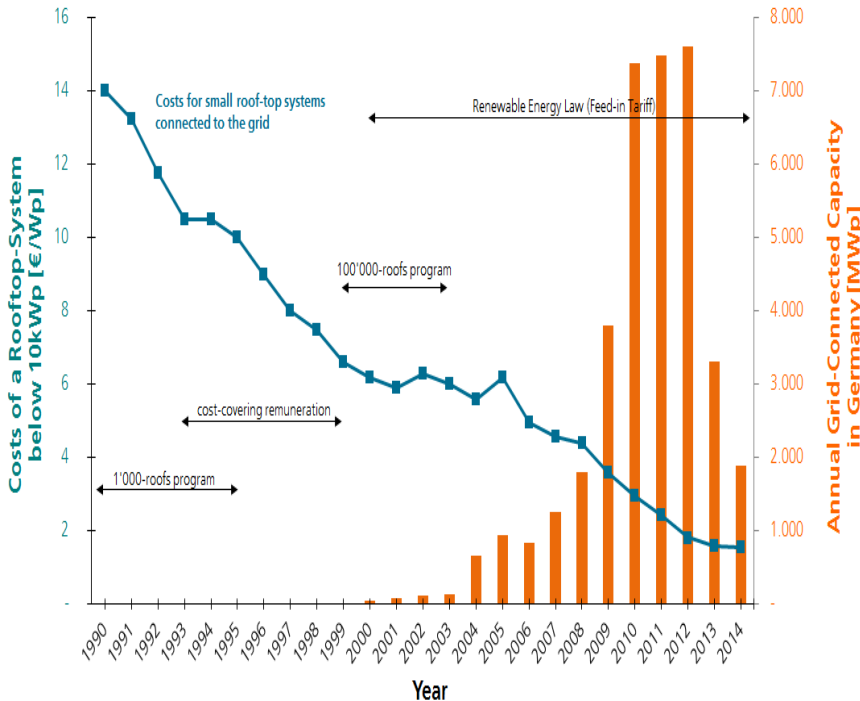
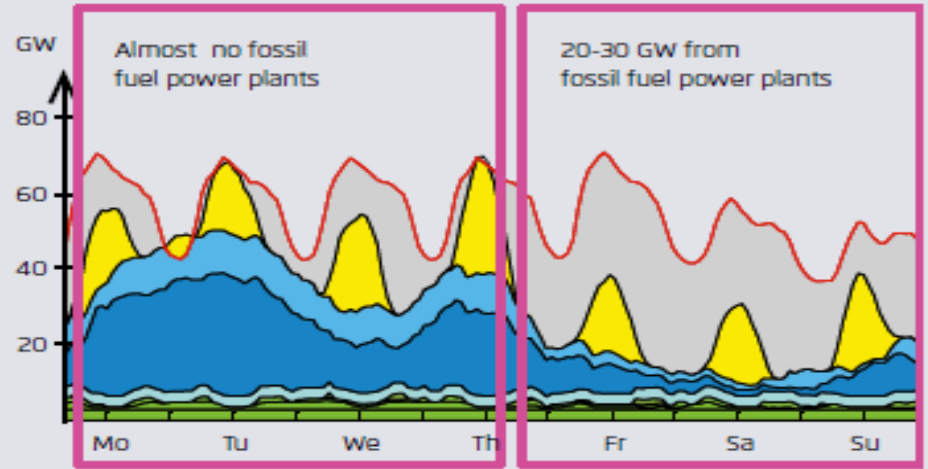
Notes: International aviation and shipping data are for 2013.

Source: CCC (2015) <https://documents.theccc.org.uk/wp-content/uploads/2015/11/Committee-on-Climate-Change-Fifth-Carbon-Budget-Report.pdf>

Current Challenges to be met	Opportunities of Change to be Captured
<ul style="list-style-type: none"> • To transfer from the current energy system to a decarbonised one <ul style="list-style-type: none"> ◦ requires ‘new’ energy system which implies new roles (institutions, utilities, customers, providers, intermediaries, business models, etc), new governance and regulatory environment, new value propositions; speeding up 	<ul style="list-style-type: none"> • New technologies (supply, demand, ICT) enable a more efficient energy system through greater coordination: utilise infrastructure assets more fully; reduce total infrastructure needs; and reduce costs
<ul style="list-style-type: none"> • Infrastructure (including ICT) has to be upgraded, and paid for 	<ul style="list-style-type: none"> • Ability to meet customer wishes and develop new business models to do so
<ul style="list-style-type: none"> • Need to keep prices as low as possible for customers 	<ul style="list-style-type: none"> • New institutional ops to keep prices as low as possible for customers
<ul style="list-style-type: none"> • Have to keep up with change: decentralisation, rapidly changing technology costs, system economics and operation enabled by ICT, customer and civil society preferences, varying incumbent v new entrant wishes 	<ul style="list-style-type: none"> • Ability to be more resilient to change – whether weather, technologies, customer preferences, policy requirements – and to be more flexible and nimble
<ul style="list-style-type: none"> • Altering where value currently is in system to where we need it to be to enable innovation 	
<ul style="list-style-type: none"> • Attracting appropriate investment 	

Germany is an example of change & where opportunities have been captured - but still only in a few countries

Demand for Fossil Fuel Power Plants in 2022: Example of a Week in August



EnBW

e.on

RWE

edp

edf

Enel

ENGIE

VATTENFALL

IBERDROLA

Speeding up GHG reduction requires transformative governance

- There has (arguably) been very few transformative energy policies / governance since 1970's:
 - RE and CHP policies in Denmark in response to oil crises in 1970s
 - PURPA Act in CA in 1970's again in response to oil crises
 - FITs in Germany in 1990/1;
 - Nuclear phase out in Germany?
 - NEM and / or DSR in some US States?
- Leading to structural, dynamic change which better meets policy goals and society's preferences

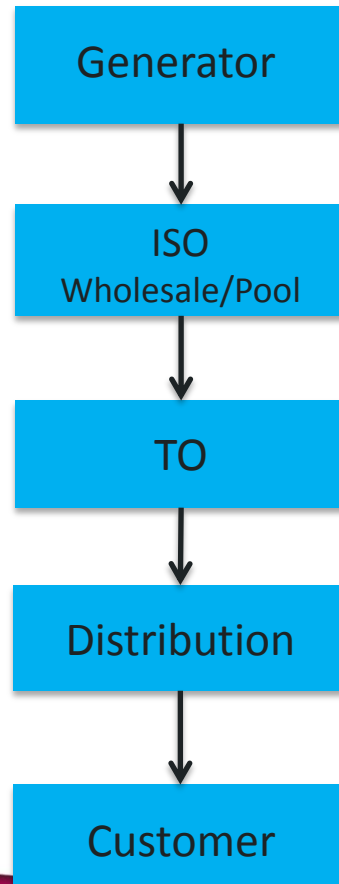
What characterises those transformative measures?

- The decision-makers understood the energy system challenges they were dealing with at the time, then
 - Knowingly dealt with the current challenges
 - Enabled more choice for customers (all types) / new entrants, and thereby gave them more influence
 - Overcoming inertia
 - Kept up with technological and social change and preferences
 - Assessed cost/benefits in ways beyond straight CBA
 - **Enabled the means to capture the new opportunities ie provided value or removed barriers**

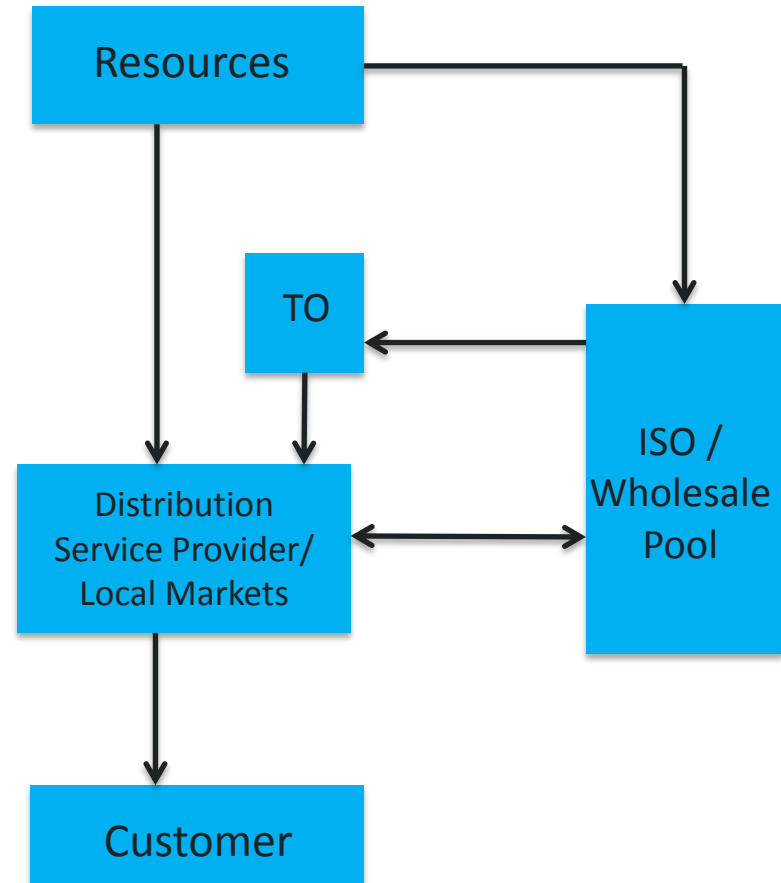
Is the NY State governance reform the latest example of Transformative Governance? It appears to meet the challenges. Too early to say?

<http://projects.exeter.ac.uk/igov/new-thinking-distribution-service-providers/>

Traditional



NY REV

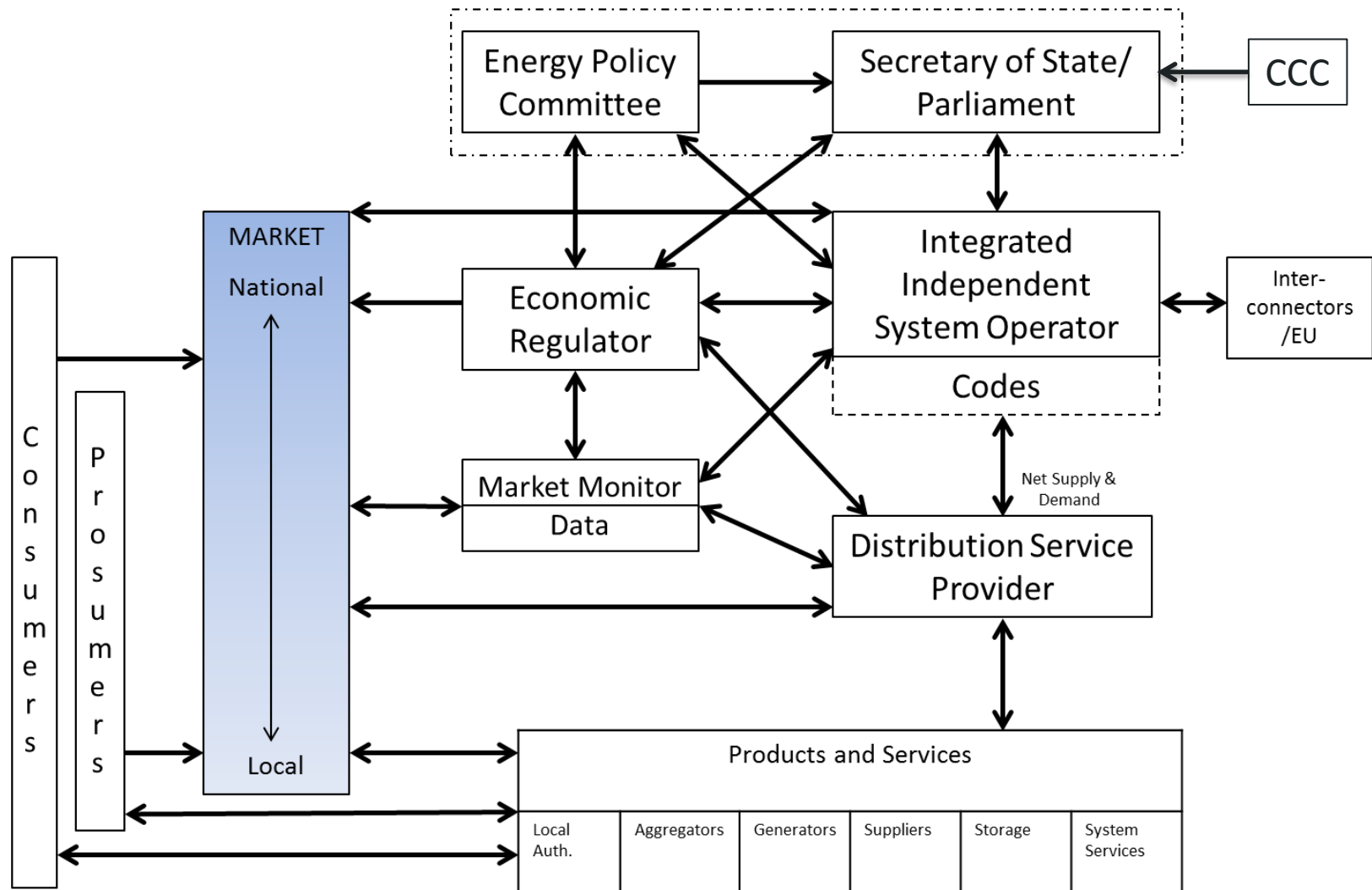


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The key new 'value' enablers for decarbonised, affordable and secure GB energy system

1. A fit-for-purpose governance framework
 - Deals with challenges, opens up opportunities, provides value where it should be, is flexible
 - Sets framework rather than piecemeal development
2. ICT as enabler of system operation and management
3. New regulatory basis – ie a move to performance based regulation where majority of DSP revenue is related meeting various performance requirements
 - PBR of the DSP is the new transformational value proposition

The IGov Fit-for-Purpose Governance Framework



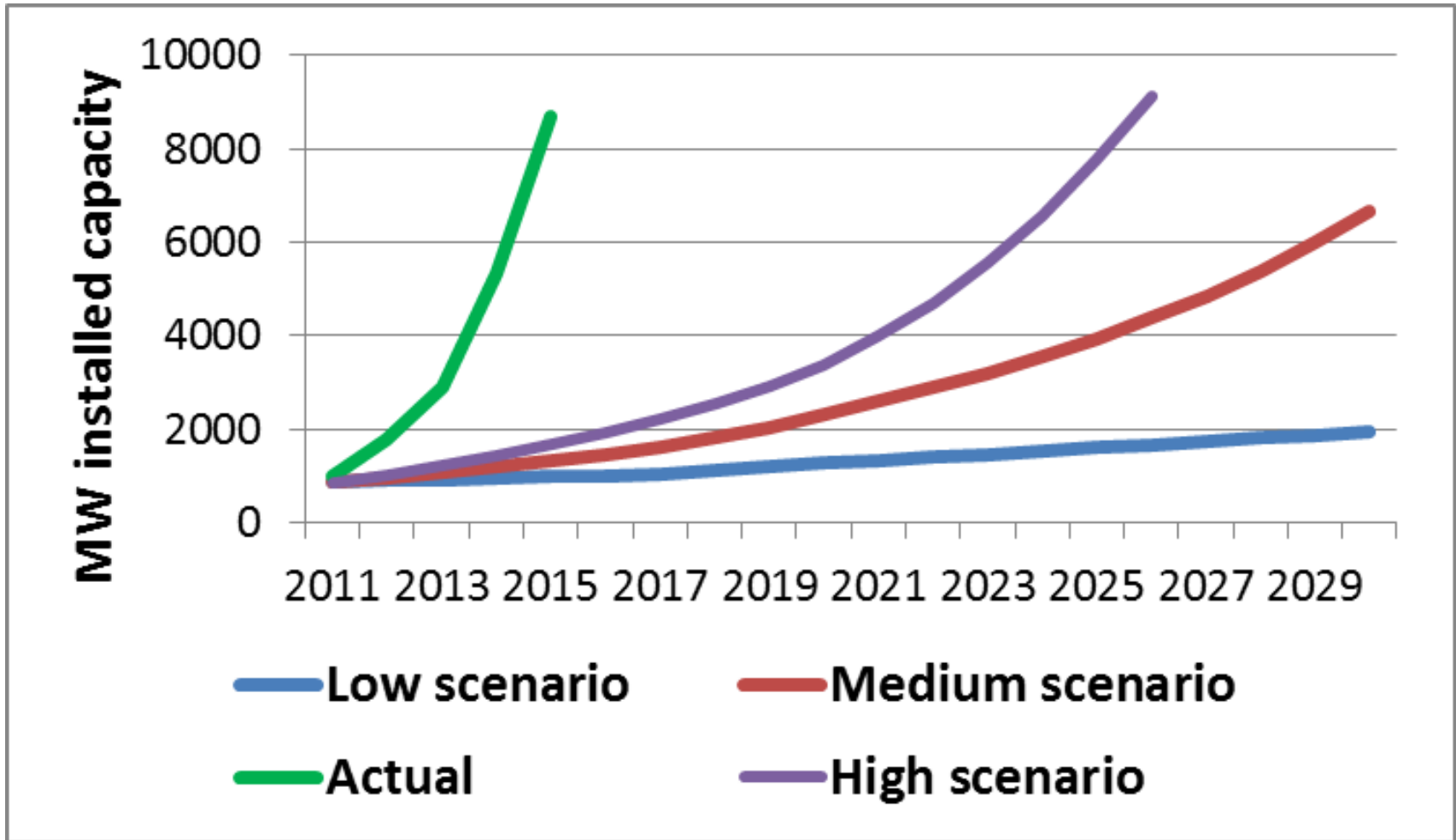
What does this mean for GB energy (and RE) policy?

- Governments should always try to be transformative
- We need to do the sums but NY REV argument is that the restructuring is cheaper than BAU so GB can think about doing things differently
 - <http://projects.exeter.ac.uk/igov/new-thinking-restructuring-gbs-energy-institutions/>
- Greater governance direction / strategic framework enabling a move back to markets, and meeting goals
 - It is NOT that support is unnecessary but returns to more traditional innovation arguments
 - Strategic framework not piecemeal
 - Bottom Up not Top Down system optimisation
- Ensure value goes to the things we want

THANKYOU

[http://projects.exeter.
ac.uk/igov/](http://projects.exeter.ac.uk/igov/)

Solar and storage – glass half full or empty?



Source: Lockwood (2016): <http://projects.exeter.ac.uk/igov/new-thinking-solar-surprise-revisited/>