

# Electricity Market Reform



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21 January 2014, Wokingham

# Cautionary statement

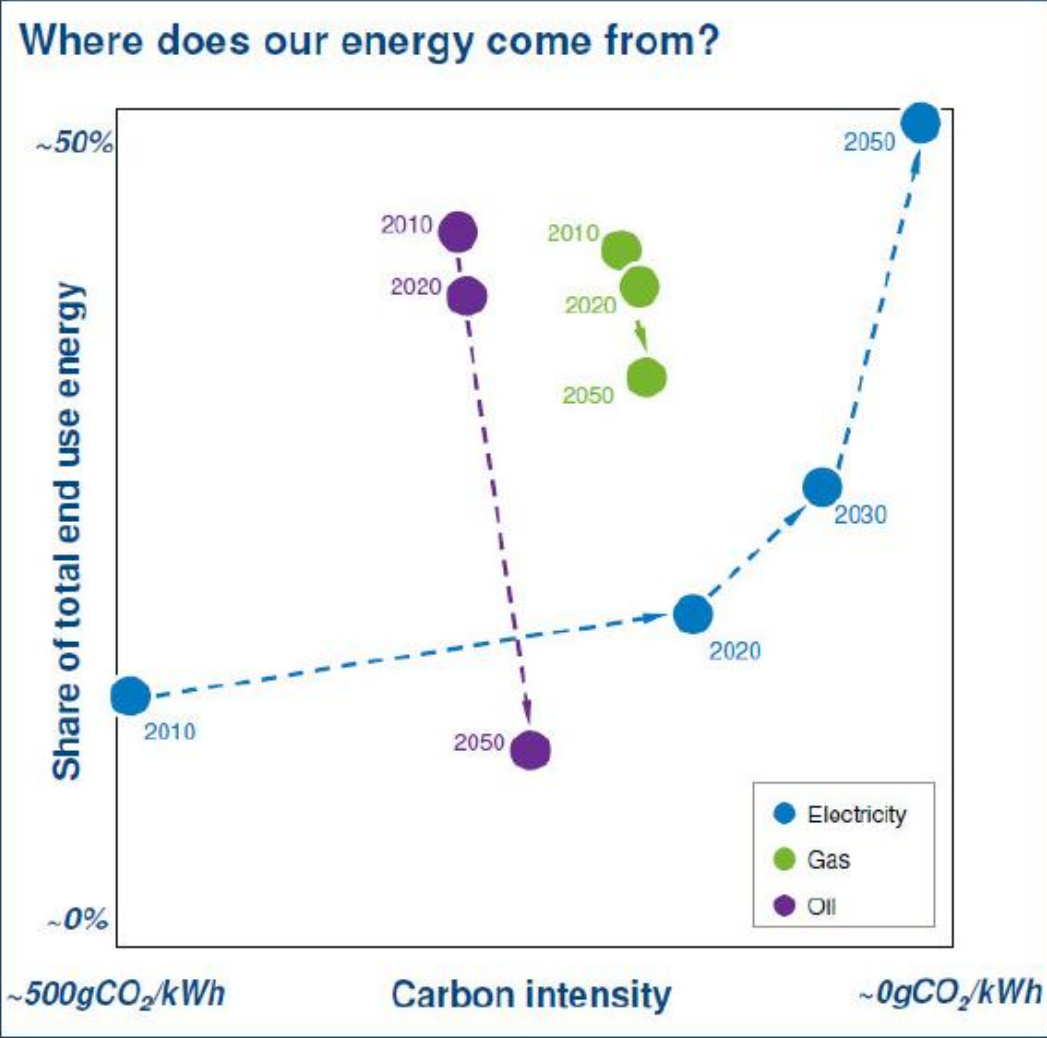
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# Why EMR?

## The changing energy landscape

Where does our energy come from?



Power station closures  
**~25%**  
of total capacity by 2020  
vs 2010 levels



Decarbonise electricity  
**80%**  
CO2 reduction by  
2050



Energy from renewables  
**~15%**  
of total supplies by 2020



# EMR Mechanisms

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- **Carbon floor price (implemented 2011)**
- **Emissions performance standard**
- **Capacity Mechanism**
  - Provide security of supply in medium term
  - Market wide participation
  - Open to Generation and demand Side response
- **FiT CfD**
  - Provides investment certainty for high capital cost generation
  - Supports low carbon generation
  - Hedges consumers against future price volatility

# EMR Delivery Body

## What National Grid will do....

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- Provide analysis and modelling information
- Develop scenarios



- Assess eligibility for contracts
- Allocate CfD contracts



- Run capacity auctions
- Administer capacity contracts

Report progress against expected outcomes

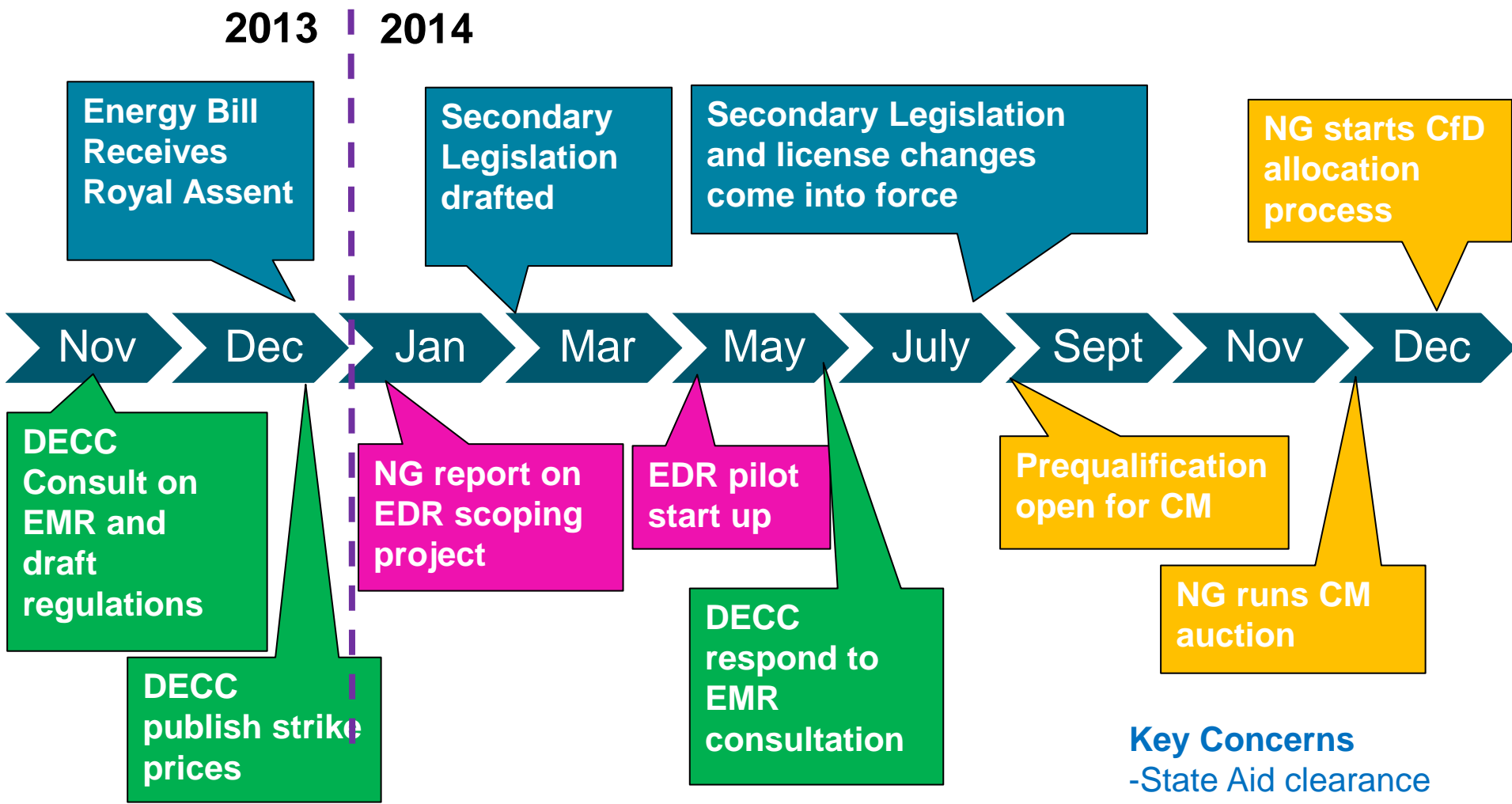
## What National Grid will not do...

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- **Set energy policy**
- **Set the Security of Supply Standard**
- **Set CfD Strike prices**

# Timeline 2013 - 2014



- Key Concerns**
- State Aid clearance
  - Late policy changes
  - Industry readiness

# CfD Delivery Body Role

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- **Modelling and analysis**
  - CfD strike price range by technology
  - Low Carbon rollout scenarios
  - Network operability / cost implications
- **Eligibility test criteria**
- **Process Applications and allocate CfDs**
  - First Come / First Served
  - Constrained allocation / auctions
- **Interfaces**
  - Counterparty Body, Generators / Developers, Elexon



Final Delivery Plan	Draft Strike Prices (£/MWh) (2012 prices)			Potential 2020 Deployment (GW)
	2016/17	2017/18	2018/19	
Renewable Technology				
Biomass Conversion	105	105	105	1.7-3.4
Offshore Wind	150	140	140	8.1-15.0
Onshore Wind	95	90	90	10.9-13.0
Scottish Islands	115	115	115	0.4-0.7
Large Solar	115	110	100	2.4-4.0

Draft Delivery Plan	Draft Strike Prices (£/MWh) (2012 prices)			Potential 2020 Deployment (GW)
	2016/17	2017/18	2018/19	
Renewable Technology				
Biomass Conversion	105	105	105	1.2-4.0
Offshore Wind	150	140	135	8.0-16.0
Onshore Wind	100	95	95	9.0-12.0
Large Solar	120	115	110	2.4-3.2

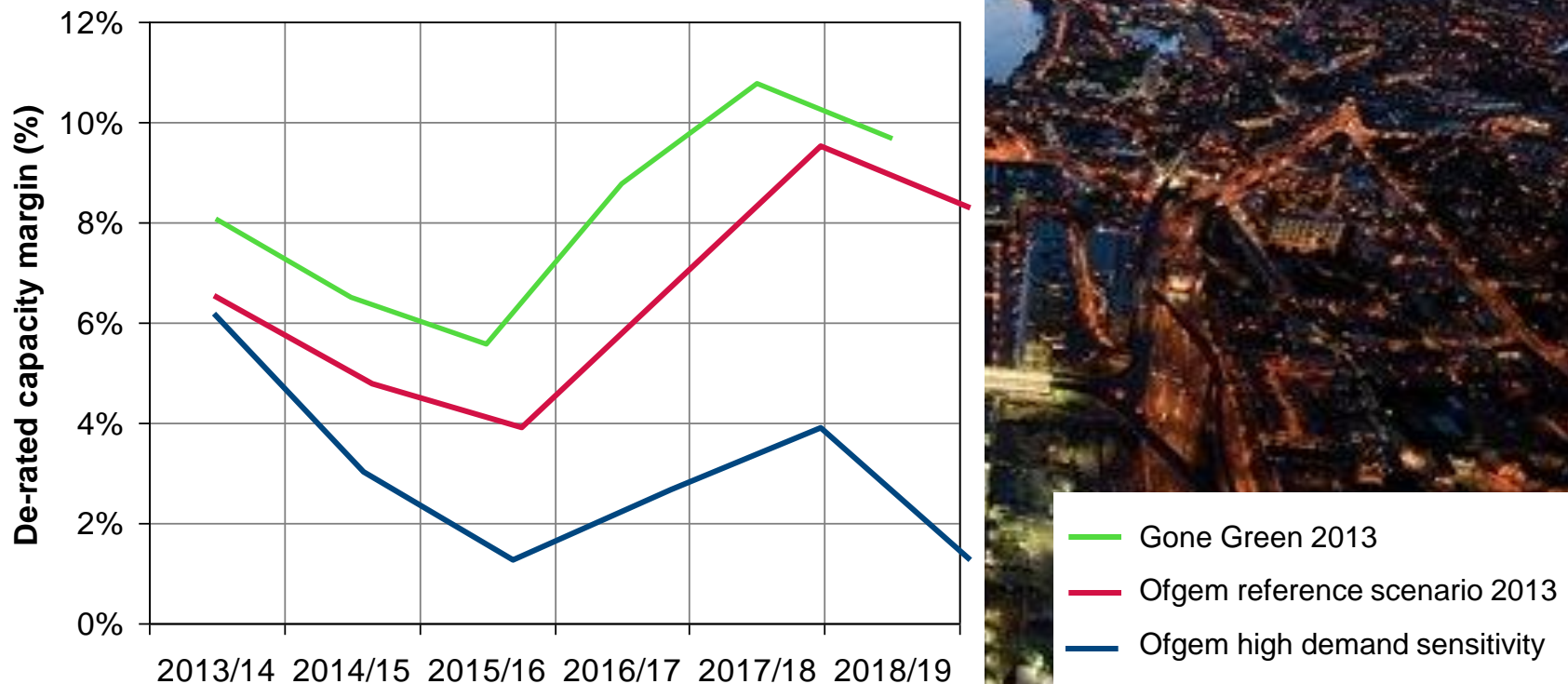
- Offshore higher in 18/19 reflecting feedback that costs wouldn't fall as much in this timeframe.
- Onshore and solar lower reflecting lower cost assumptions.

## 2020 metrics

	LCF spend £2011/12 m	UK Renewable %
S1 – Scenario 1	£7,000	33%
S2 - Higher Technology costs (+10% increase on Ref Case)	£6,500	30%
S3 - Lower Technology costs (-10% increase on Ref Case)	£7,600	36%
S4 – High fossil fuel prices	£6,500	34%
S5 – Low fossil fuel prices	£7,400	31%
S6 – High Demand	£7,600	31%
S7 – Low Demand	£6,800	35%
S8 – Offshore Corner	£7,600	36%
S9 – Higher Biomass conversions	£7,500	36%

# Capacity Margin Challenges

- Ofgem Reference Scenario (Base Case) again results in 4% minimum for 15/16
- All scenarios exposed to a number of other sensitivities e.g. interconnection, wind



## Capacity Mechanism Developments –Medium Term

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- CM decision announced in July 2013
  - Auction 2014 for delivery 2018/19
  - Demand Side Response (DSR) participation from 2016
  - GB reliability standard consultation: 3 hours Loss of Load Expectation (LOLE) /annum
- Auction Design
  - Pay as Clear
  - Descending clock

## How much capacity to buy

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- Government Reliability standard set as a Loss of Load Expectation (LOLE) - 3 Hours in any delivery year
- Delivery body analysis to inform target demand level
- Annual capacity adequacy work to determine level of 'capacity gap'
- Industry feed in to analysis via Future Energy Scenarios Consultation process
- SoS to take account of amount of renewable energy due to connect and impact on capacity gap

# Mid Decade capacity contingency

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- Demand Side Balancing Reserve
  - Non domestic consumers reduce peak load in return for payment
- Supplemental Balancing Reserve
  - Generation not available to the market (“mothballed” or due to close) funded through, and dispatched by, SO
- Ofgem approved development of both products
- Next steps:
  - Agree methodology of how much to buy
  - Finalise treatment of costs
  - If required, run tender in early 2014

# Challenges affecting future grid operation

<b>Change</b>	<b>Challenge</b>	<b>Solutions in progress</b>
<i>New coastal generation e.g . wind, &amp; nuclear</i>	Shifting electricity and gas to the right location	✓ Investing in network upgrades and new connections e.g. to Hinkley Point C & mid Wales Connection
<i>Shift to Electricity e.g. heating, electric vehicles</i>	Ensuring enough supply to meet shifting peak demand times from electric vehicle charging	✓ Consulting with Ofgem on new system balancing tools. ✓ Modelling using Future Energy Scenarios
<i>Greater interconnection with Europe</i>	Technological and regulatory challenge to best utilise capacity	✓ Working on new European Electricity Codes
<i>Increase in Renewables e.g wind and solar</i>	Increase in variability of supply  Less synchronous generation on the grid	✓ Working with the Met office on improved forecasting of weather and resulting generation forecasts ✓ Co-chairing research group into Solar PV with DECC
<i>Demand Side Management from consumers and industry</i>	Configuring system to account for demand changes from greater DSR	✓ New system balancing tools ✓ Modelling using Future Energy Scenarios

## Location of Electricity Sources

Building the network to transport energy from new locations

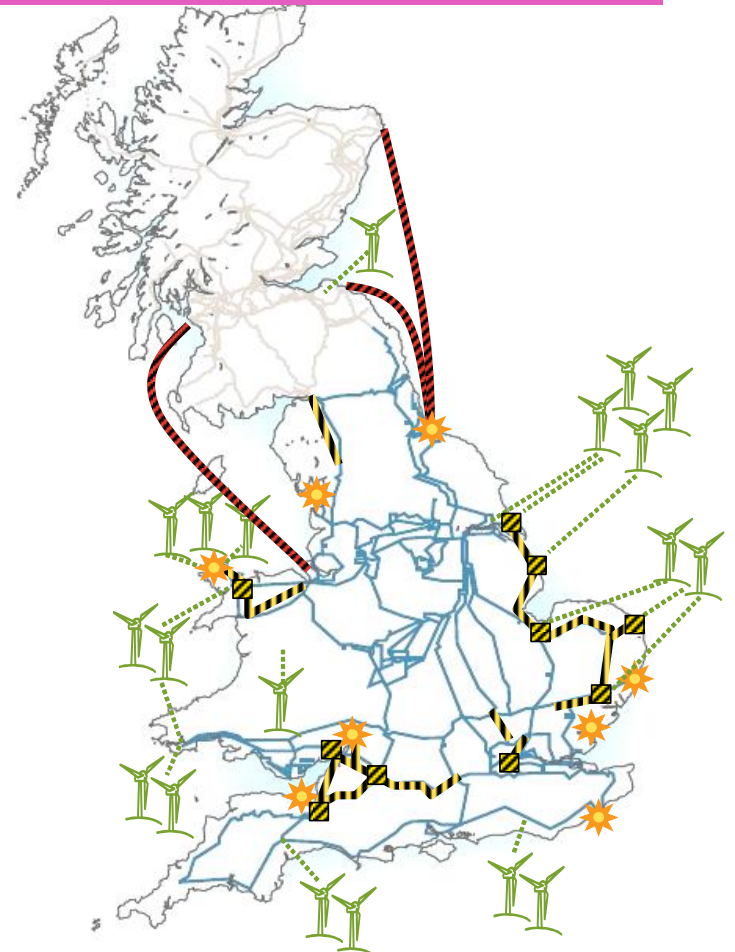
New Generation increasingly located on coast

Wind power from Scotland

Wind power from the North & Irish Sea

Wind power from Wales

Nuclear power





# Avoid Constraining Renewables

Need active demand to "harvest" available energy

