

Regulatory Drivers for Biomass in the United Kingdom

BREA 2016 International Conference and Exposition
Panel Discussion
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8:30 AM

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Power, Stantec

UK Renewable Energy Directive –

Issued by the government in 2009

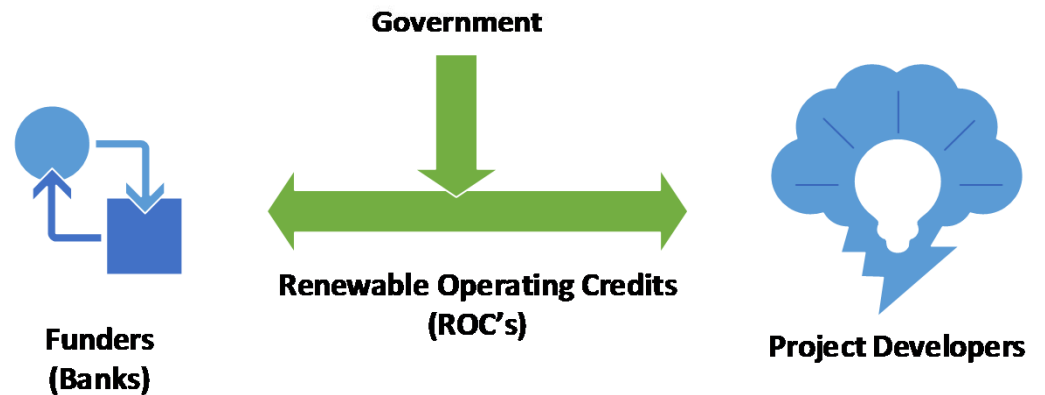
Components of the UK's program:

- Fuel diversification from fossil fuels
- Security of energy supplies in the UK
- Investment in new technologies and industries
- Use a wide range of levers to decarbonize the economy
- Obtain 15% renewable generation resources by 2020
- Fund subsidies through the Climate Change Levy (CCL)

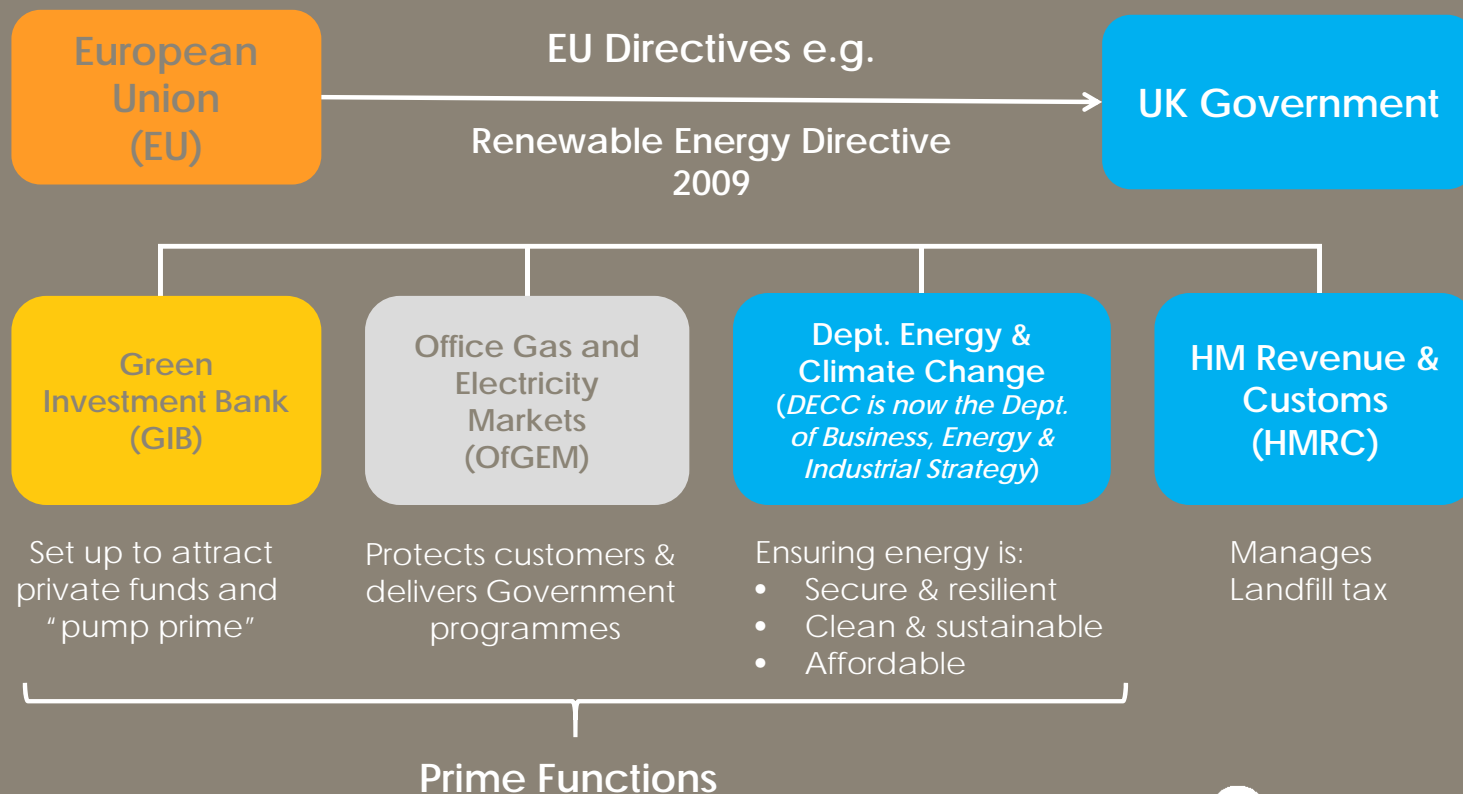
UK Framework for action

Three key components:

- ✓ Financial support for renewables;
- ✓ Unblocking barriers to delivery; and
- ✓ Developing emerging technologies

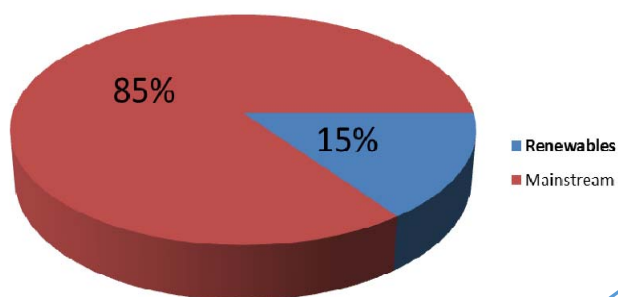


Some of the Players (before Brexit)

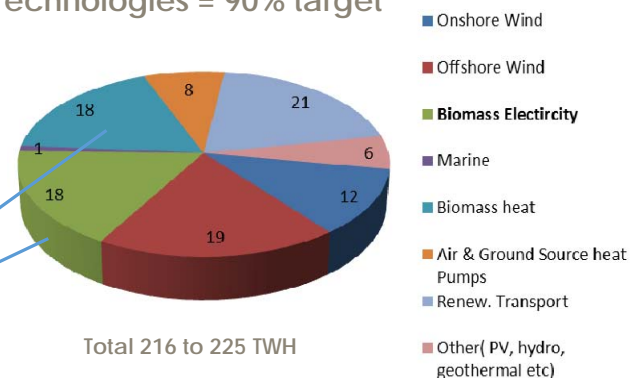


UK Renewables Market

2020 UK Renewable Energy Target



Eight Technologies = 90% target



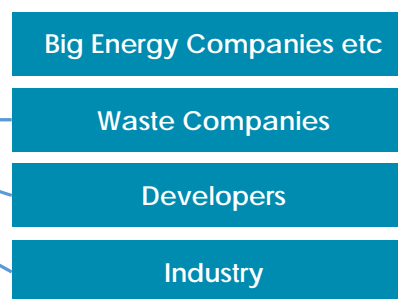
Total 216 to 225 TWH

Feedstock



MWH Projects
5 to 25 MWe

Players



Financial Support for Renewables

- Certainty of Payments of Renewable Operating Credits (ROCs)
- For electricity, incentive payments monies come out of the Levy Control Framework (LCF) budget which is authorized annually
- Allows for third party ownership
- Allows for third party funding
- Provides capital investment, jobs and green generation assets in the next ten years to replace aging generations assets

Objectives of ROC incentives

Incentive Mechanisms have:

- ✓ Reduced costs over time for all technologies
- ✓ Encouraged innovations both technical and financial
- ✓ Stimulated employment in the UK renewables sector
- ✓ Ensured the UK will meet its 2020 targets for the renewable power

Development of Incentive Mechanisms

Original ROCs 2002

- Each renewable technology got same incentive, this favoured established technologies and did not drive the market forward.
- Mechanism simply further rewarded the status quo
- Reviewed in 2003 to 2006 leading to amended ROCs, see below

Amended ROCs 2009

- Banding introduced whereby less established technologies receive more incentives and vice versa
- Steers industry towards investment in less well developed technologies, improving the “mix” contributing to the overall renewables target
- Incentives for each technology reduced over time in anticipation of cost reduction & efficiencies.
- Scheme closes after March 2017

EMR & CfDs 2017

- As part of the Energy Market Reform (EMR) the Renewable Operating Credits (ROCs) are being phased out and replaced by a Feed in Tariff that operates on a Contracts for Difference basis (CfDs)
- This change took the opportunity to modify some of the ROCs terms, which some considered over generous.
- The new CfD approach also applies to nuclear power
- The CfDs are allocated by auction on ca 12 to 18 month intervals introducing a competition element

Renewable Operating Credits (ROCs) payments

Under the ROCs regime generators were paid at a rate of:

$$\text{Payment per MWh exported} = A \times B + C$$

Where A = banding multiplier for the technology in question

B = value of a ROC at the time in question, these are a traded entity

C = value of electricity at the time in question, Market Reference Price

For waste wood gasification projects, accredited before March 2016

A = 2, B for April 2016 was ~ £41.80/MWh and C was ~ £45/MWh

Therefore payment per MWh exported = £128.60, 20 year term

- Compare this with the CfD auction strikeprices in February 2015 of £114 to £120/MWh, for gasification, 15 year term

Unlocking barriers to delivery

- Simplify Environmental Approvals
 - Use existing environmental standards
 - Local consent for planning approvals
- Standard Terms for Grid contracts for interconnection with electric distribution companies
- OFGEM certification and monitoring of ROC's
- Revenue backed by long term contracts (15 -20 years)

Oversight of ROC Sustainability Guidelines administered by OFGEM

- Fuel classification
- Land Criteria
- GHG criteria
- Mass balance (including supply chain)

<https://www.ofgem.gov.uk/publications-and-updates/uk-solid-and-gaseous-biomass-carbon-calculator>

Promoted developing emerging technologies

- Advanced Thermal Technology
- Gasification
- Pyrolysis
- Plasma/Hydrogen Syngas
- Combined Heat & Power
- Other controlled thermal process applications



Successful Program in the UK

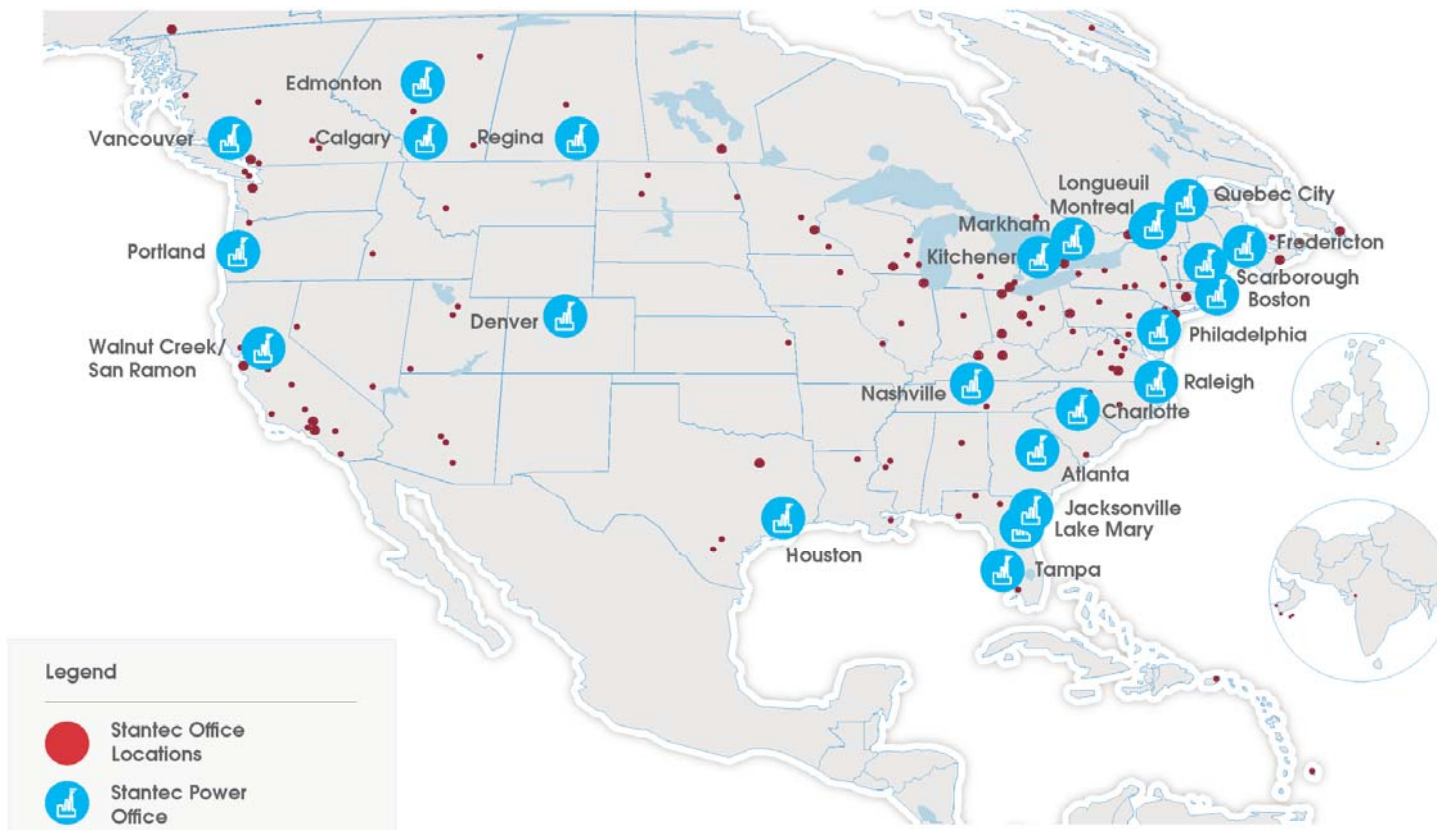
(Existing and Planned Biomass
Projects Exceeding 5 Mwe)

- **Black**=Operating Plants
- **Red**=Approved Projects
- **Yellow**=Proposed Projects
- **Orange**=Projects in Advance Planning

<http://www.biofuelwatch.org.uk/wp-content/maps/uk-biomass.html>



Stantec/MWH...Where we are



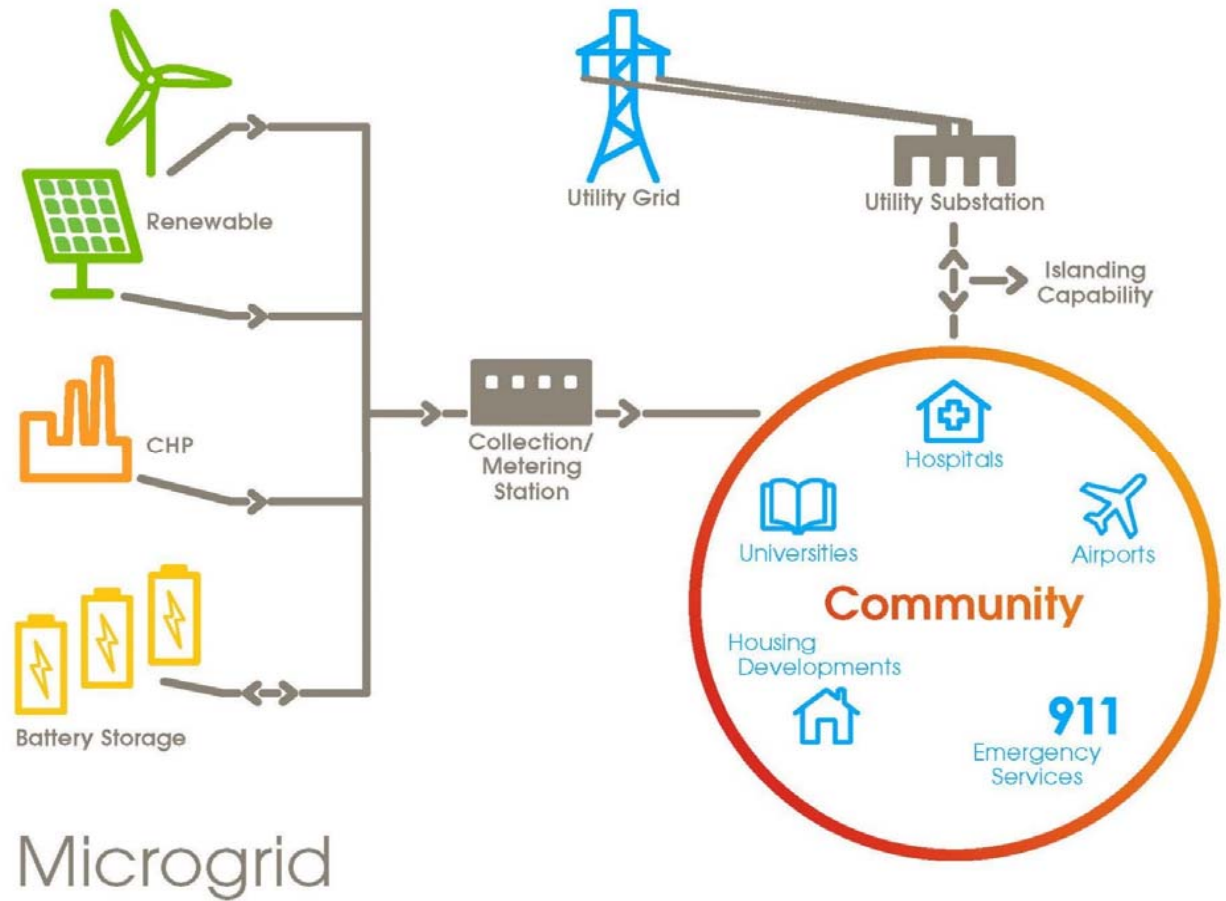
1500+
PEOPLE

57
OFFICES

350K+MW
POWER
DELIVERED

50M+
FIELD HOURS

How can
we help?





Renewable Energy Experience

Biomass, Solar, Wind, Energy Storage, Landfill Gas



MWH[®] now part of



Stantec

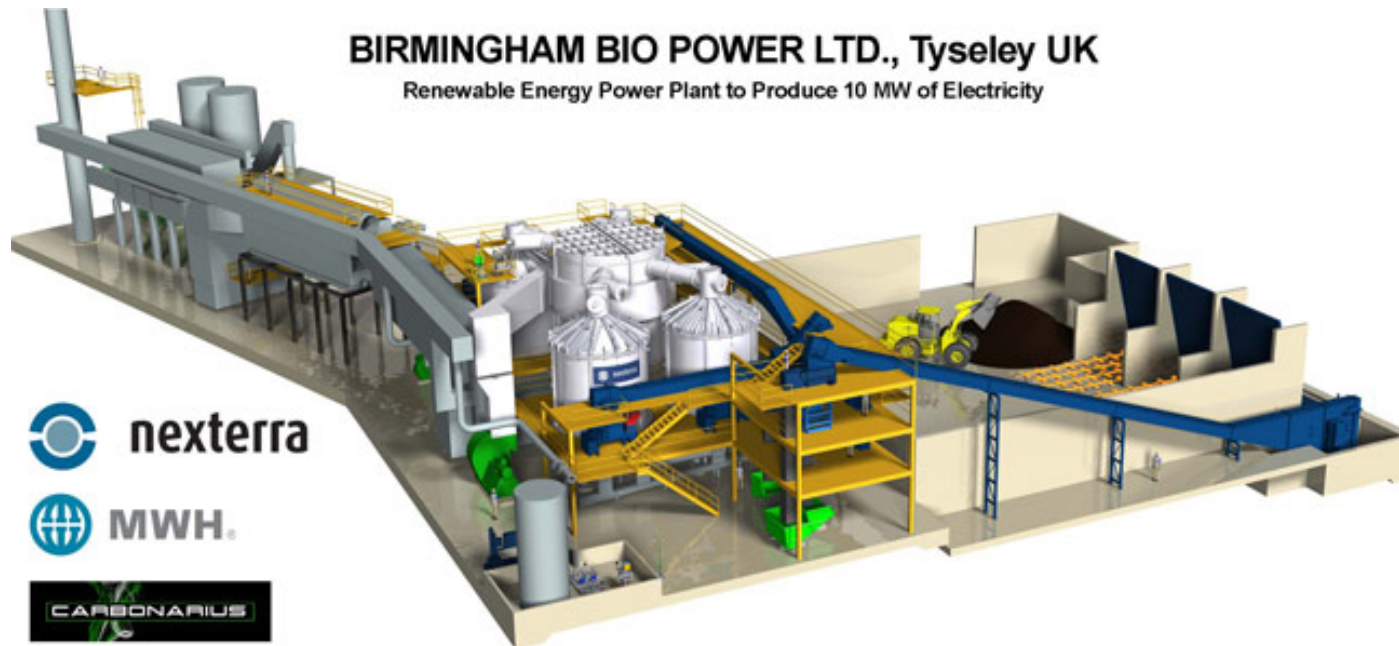
Active “Small” Projects in the United Kingdom- Tyseley & Welland

- 10 MW power production
- Fuel is construction waste wood and fibreboard diverted from landfill
- Deploying Nexterra upflow gasification technology
- Produces power equal to circa 17,000 local homes
- Circa £50m capital investment
- 100 construction jobs and 19 full time jobs
- UK accepted as carbon neutral plants



Tyseley -10 MW waste to energy plant-

Commenced operation January 2016



Tyseley-Waste To Energy



Top of the Gasifiers



Boiler and Gasifiers inside



MWH® now part of



Stantec

Steam Turbine inside



Thank
You!

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Reference sites:

www.mwhconstructors.com

www.stantec.com

www.cogenuk.com