



# Biomass to Megawatts Presentation to USEFE

4<sup>th</sup> June 2015

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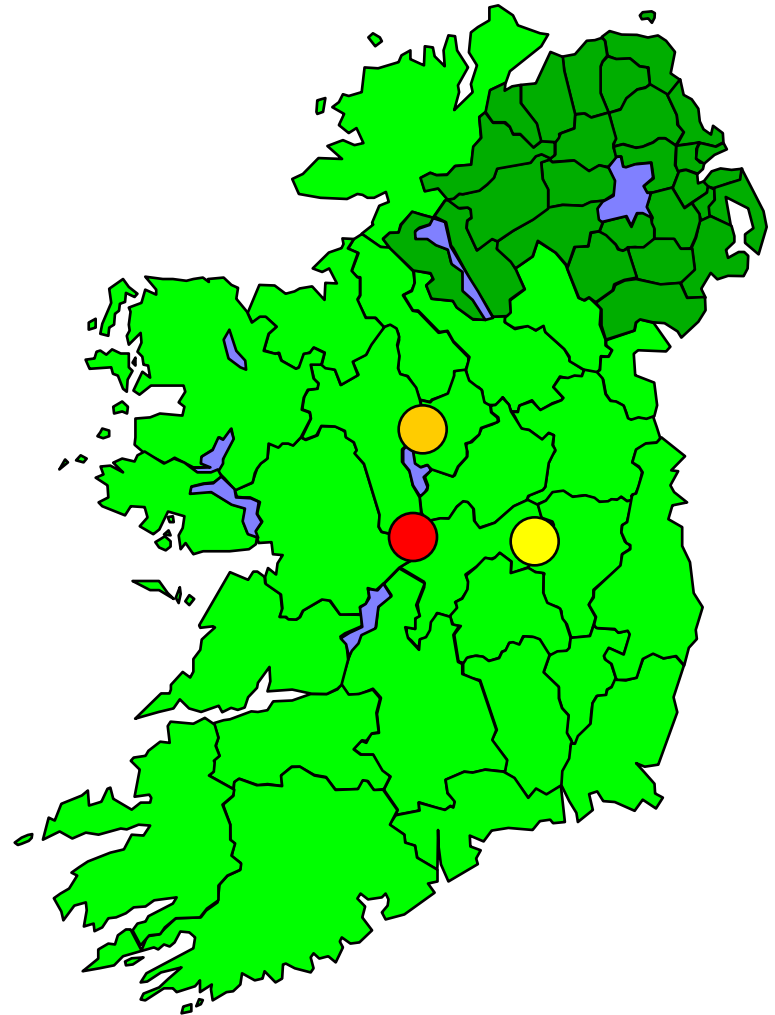
Bord na Mona



# Peat-Fired Stations

## 3 Peat-fired Stations

- Edenderry Power (2000)  
128 MWe - BNM
- Lough Ree Power (2004)  
100 MWe - ESB
- West Offaly Power (2005)  
150 MWe - ESB
  
- 3 Mt milled peat – 23.7 PJ/a
- 30% co-firing – 7.1 PJ/a
- Need  $\equiv$  1 Mt green biomass

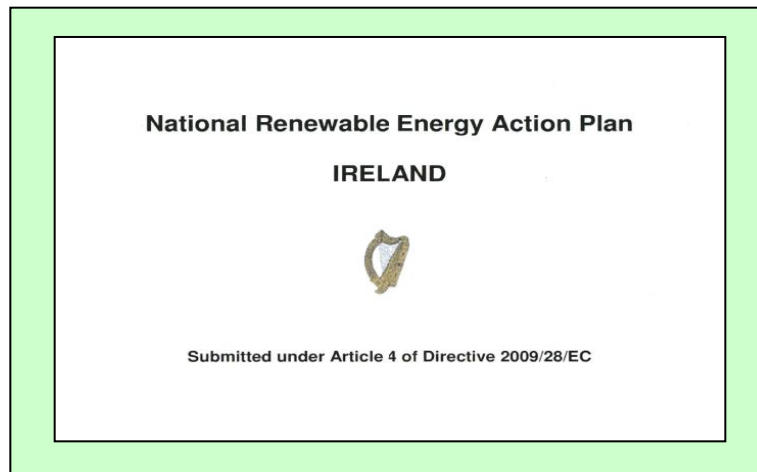


# Irish Government Policy



## White Paper, March 2007

- Set a target of 30% co-firing in the 3 peat stations by 2015.



## NREAP, July 2010

- Generation of 1,006 GWh from bioenergy in 2020, of which 687 GWh from solid biomass

# Why Co-fire with Biomass (EPL)

1. Co-firing is Governmental policy
2. Leads to reduced carbon intensity
3. Planning consent only to 2015  
– ABP Mayo Power refusal
4. Priority dispatch as a Hybrid Plant, with >40% biomass
5. IED – lower SO<sub>2</sub>, NO<sub>x</sub> and dust emission limits from 2016



# Edenderry Volumes & Specification

## Biomass Required

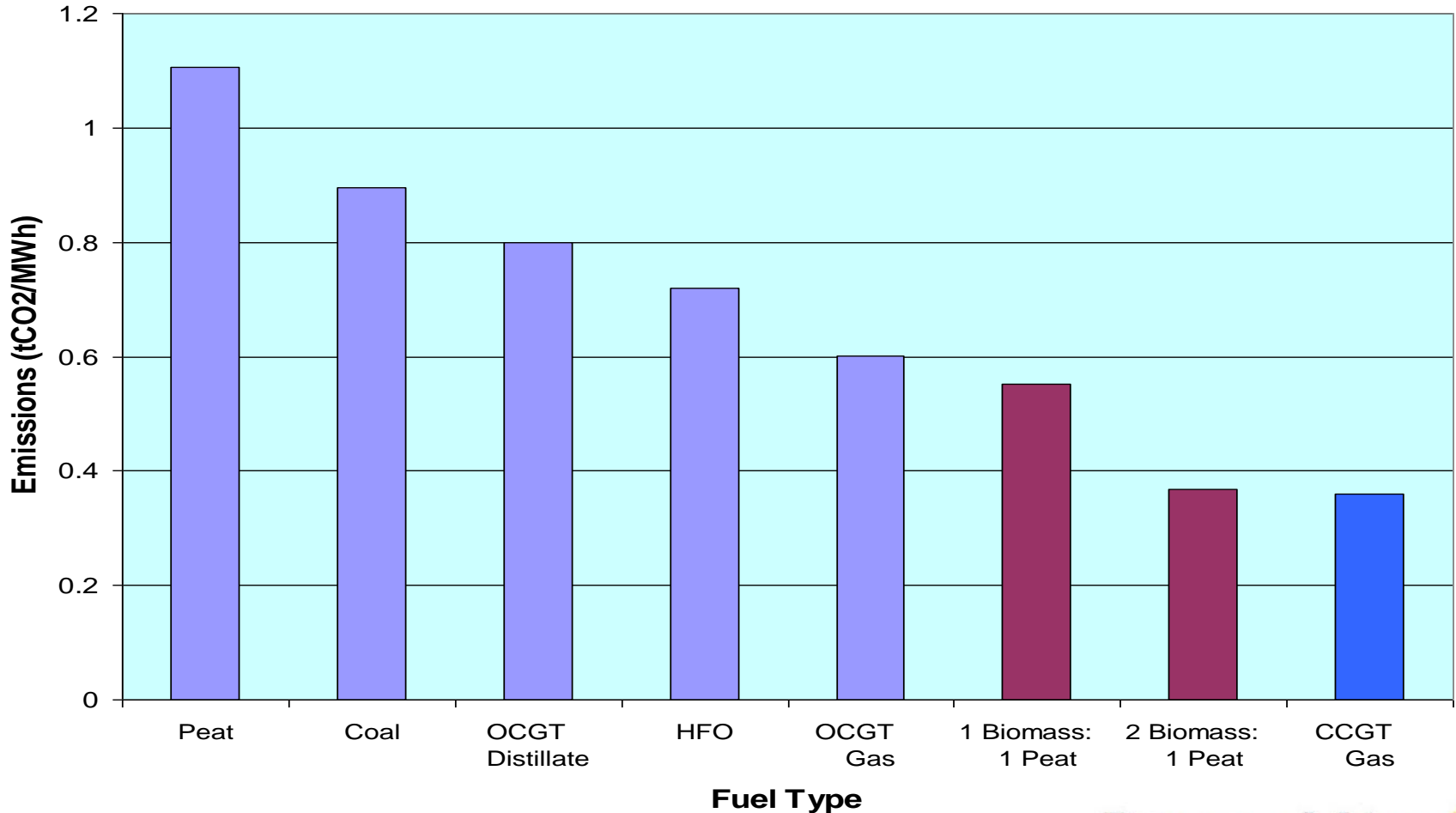
	<u>(kt)</u>
2008	20
2009	72
2010	110
2011	156
2012	220
2013	240
2014	280
2015	300
2020	400

## Quality Specification

Moisture	10 – 60%
Wt. Av. m.c.	>45%
Ash	<5%
Size	<40mm
Gross CV	>18 GJ/t
Chlorine	<0.1%
Ash Deform.	>1000 °C

# Carbon Emissions per MWh

## Carbon Intensity of Electricity Produced



# Suitable Biomass Types

Laboratory Tests  
Handling Trials



## Forest Materials

- Wood Chips
- Sawdust
- Pulpwood/Residues

Combustion and  
Corrosion Tests



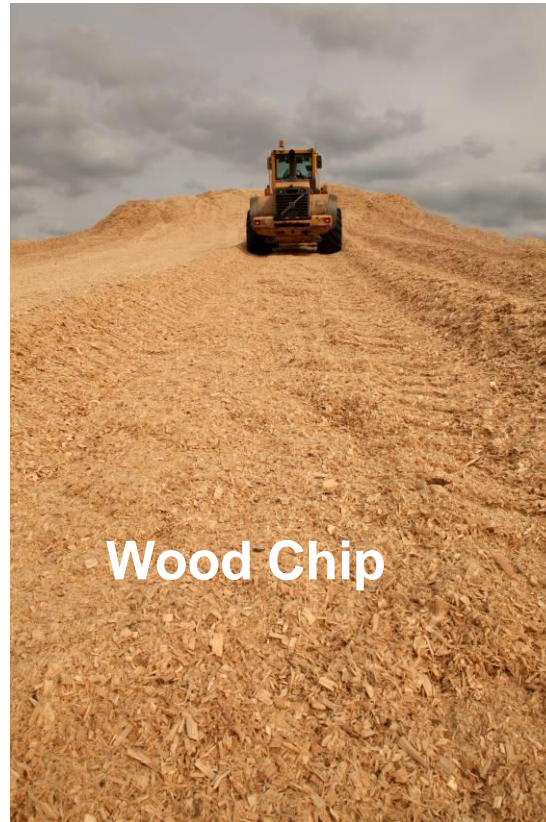
## Energy Crops

- Willow
- Miscanthus

## Dry Materials

- Wood Pellets
- Palm Kernel Shells
- Almond Shells
- Sunflower pellets

# Irish Timber Growers





# Energy Crops

- Launched “Farming Energy from the Land” Initiative in 2010
- Limited successes 650ac of willow planted
- Limited use for Miscanthus due to high Chlorine

# Dry Materials (<10% mc)

- Tested many products
- Suitable to date:
  - Wood Pellets
  - PKS
  - Almonds
  - Sunflower pellets
  - Shea nut pellets
- To be tested:
  - Lignin
  - Crushed Grape Seed
  - Cycloned Olive Stone

# Current Situation with ESB Peat Stations

- ESB will continue post 2019 with co-firing if sufficient biomass and business case
- Peat usage
  - WOP – 1.245m tonnes
  - LRP – 835kt

# Why Co-fire at WOP/LRP

- Plants only 50% through design life
- Sufficient peat to co-fire to 2035
- Supply chains for biomass in place
- After use potential if bogs are cut away
- 1200 jobs in peat production; 100 in power plants

# Opportunities for Leitrim, Roscommon, Cavan & Longford

- At 40% co-firing LRP requires 300Kte of biomass
- Objective is to maximise indigenous biomass - forestry and energy crops
- Coford report - forestry reserves
- New willow scheme proposed to Dept of Agriculture

# Barriers to Development of Indigenous Willow

- Previous scheme unsuccessful due to
  - Wait & see approach by Farmers
  - Land rental prices of €150 - €180/acre
  - Aversion to “locking in” good land
  - No income for 3 years
  - Income from forestry on “bad land” much better
  - Bureaucracy in the Government grant system
  - Demise of the Miscanthus Crop

# Solution

- New proposal under review with Dept of Agriculture
- Greater gross margin for farmers
- 15,000 Ha of willow will yield 300Kt of chips/annum and create 1,000 jobs
- Garner support from all stakeholders, those being:
  - Department of Agriculture, Food and the Marine
  - Department of Communication, Energy and Natural Resources
  - Department of Environment, Heritage and Local Government
  - Teagasc
  - Irish Farmers Association
  - Marketing program from ‘Top Down’

# Barriers to Accessing Private Forestry Reserves

- Small owned tracts of land
- Harvesting costs high if individually approached
- Grant support for infrastructure
- Lack of understanding of the biomass market



# Solution

- Set up co-ops/groups
- Education re the biomass market
- Build trust
- Lobby Government for appropriate grant scheme
- Create support for home grown solution