

GreenGas

CERTIFICATION SCHEME

RHI and RTFO: Enough to sustain a
continuing biomethane market in
the UK?

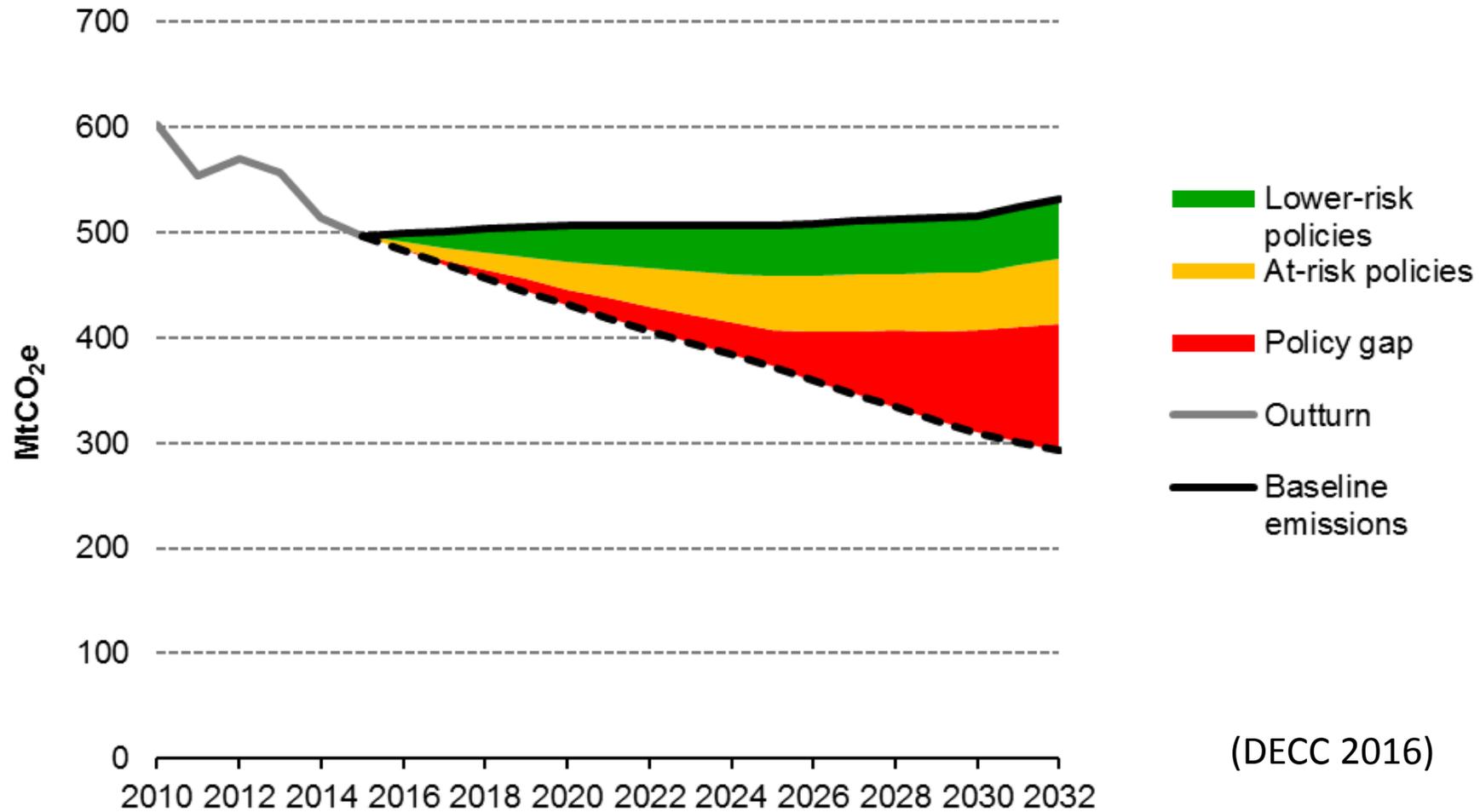
Ciaran Burns

European Biomethane Conference

1 June 2017

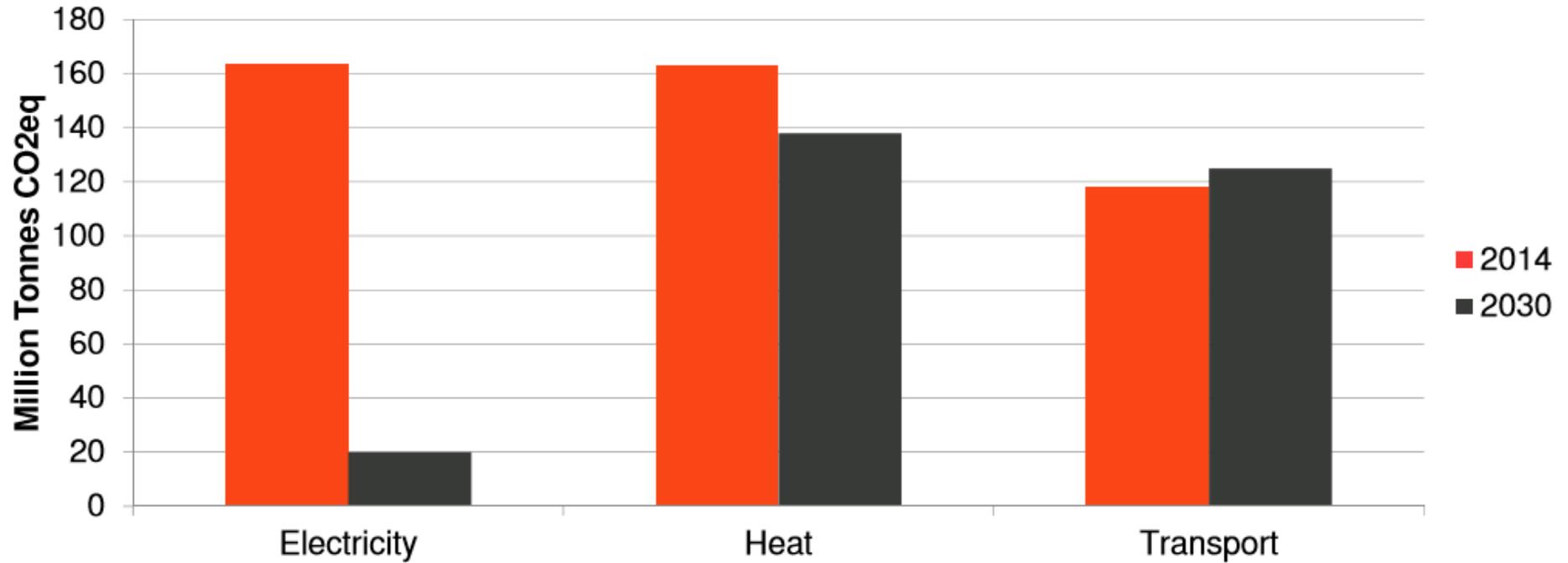


UK energy and emissions projections



(DECC 2016)

UK energy emissions projections by sector



Biomethane in the UK

- First plant operational in 2012;
- 3 in operation in 2013; 28 in 2014;
- 89 in April 2017 with injection capacity of around 4.5 TWh
- All supported under the Renewable Heat Incentive (RHI);
- Which pays the producer per kWh of biomethane injected
- ...for 20 years from first injection and linked to inflation (RPI or CPI)
- The RHI has a total budget spend of £1,150 million across all technologies in April 2021....

Governments predicted spend under new RHI

| | Nominal Expenditure in Year (£m) | | | | |
|-----------------------------|----------------------------------|---------|---------|---------|---------|
| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
| Biomass | £38m | £75m | £100m | £127m | £154m |
| Anaerobic Digestion | £31m | £93m | £165m | £219m | £274m |
| Heat Pumps | £4m | £18m | £38m | £59m | £81m |
| Other | £0m | £2m | £4m | £6m | £9m |
| Total this SR period | £74m | £188m | £307m | £411m | £518m |
| Existing Scheme | £522m | £534m | £550m | £568m | £585m |
| Total RHI | £596m | £722m | £857m | £979m | £1,103m |

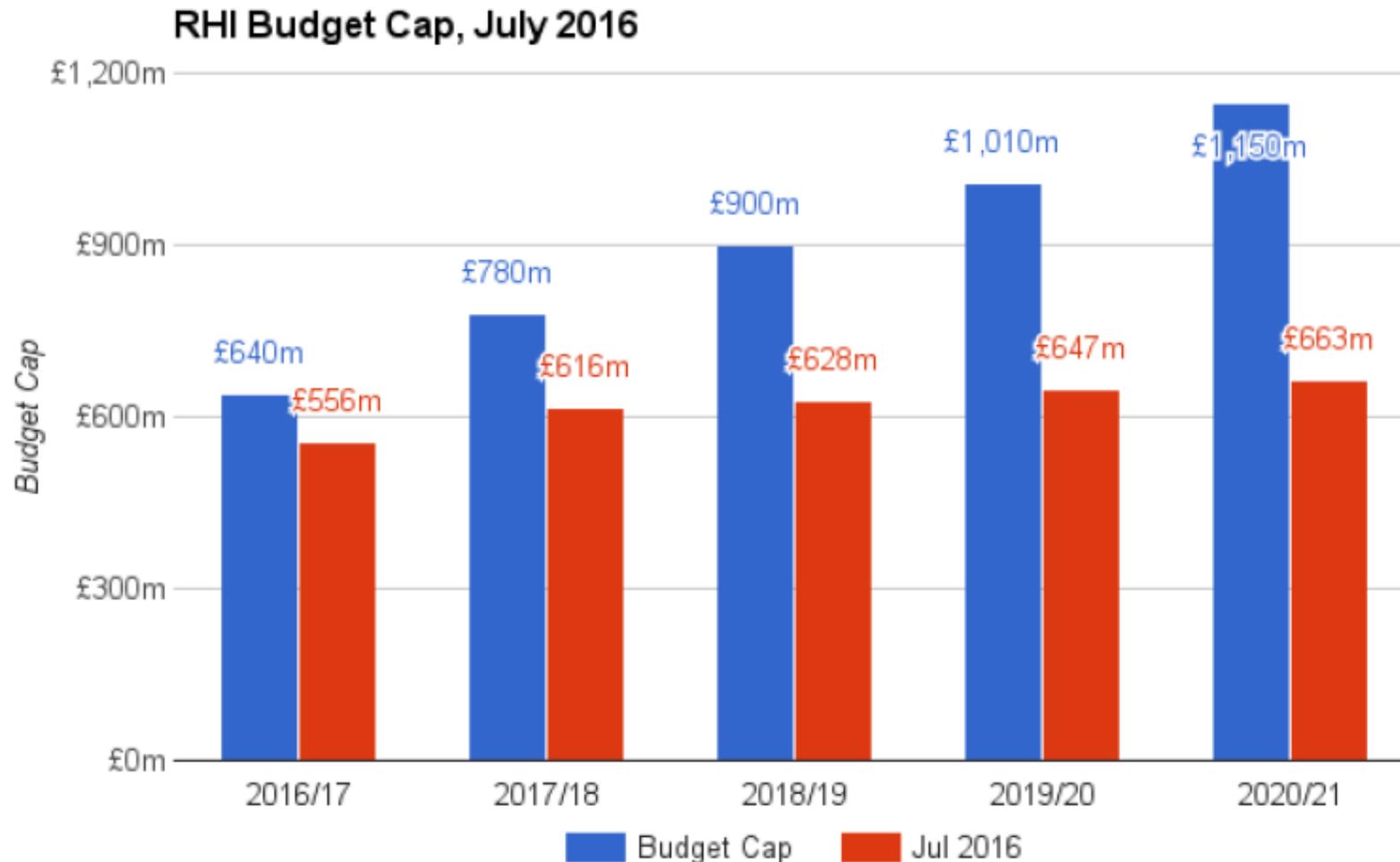
Expenditure is cumulative from year to year

Note it's £50m below total budget

Existing scheme costs increase with inflation

Biomethane seen as a strategic technology due to versatility and CO2 abatement from wastes

RHI budget and predicted spend.



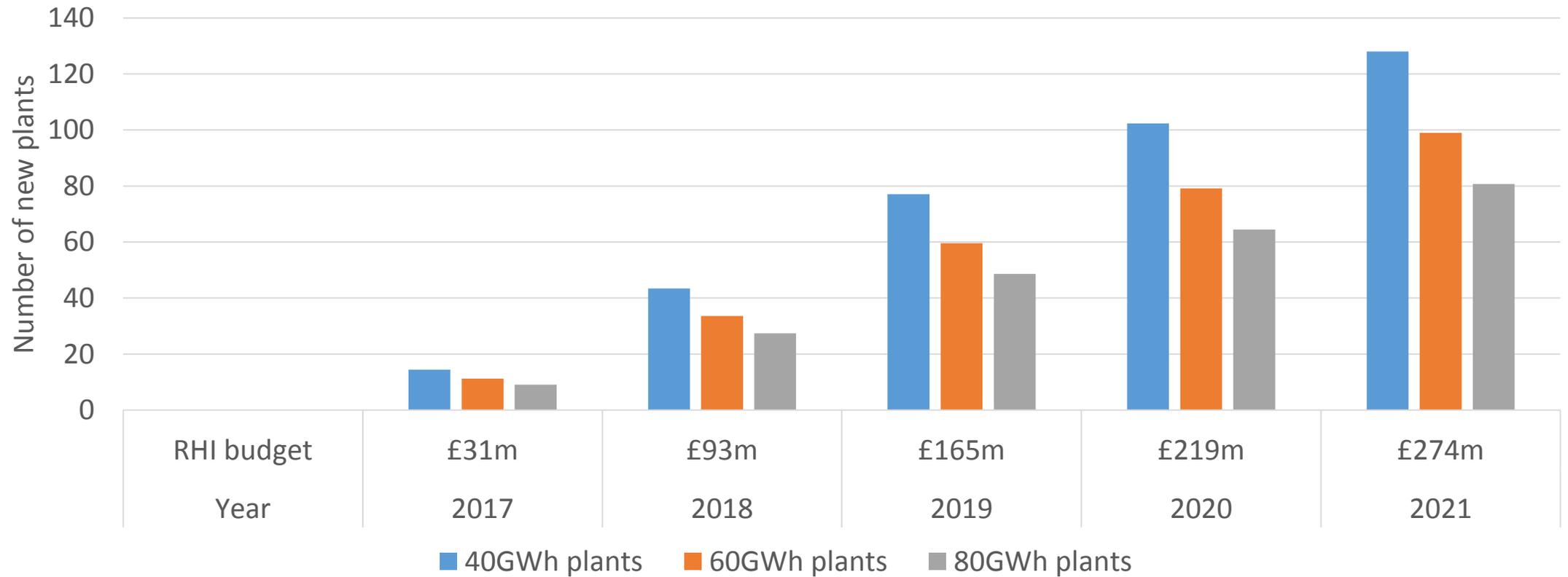
- High levels of deployment have triggered reductions in the tariff rates.
- The result is that the tariff rates are now too low to support any new deployment
- This across most technologies as investors pursue the best investments, i.e. biomass at different scales and biomethane.

Government response to low deployment

- Following recommendations from a report by the Committee on Climate Change (CCC) the Government consulted on increasing the RHI tariff rates that would support new deployment.
- In the case of biomethane they consulted on returning the tariff rate to that which was available to new installations between April and June 2016

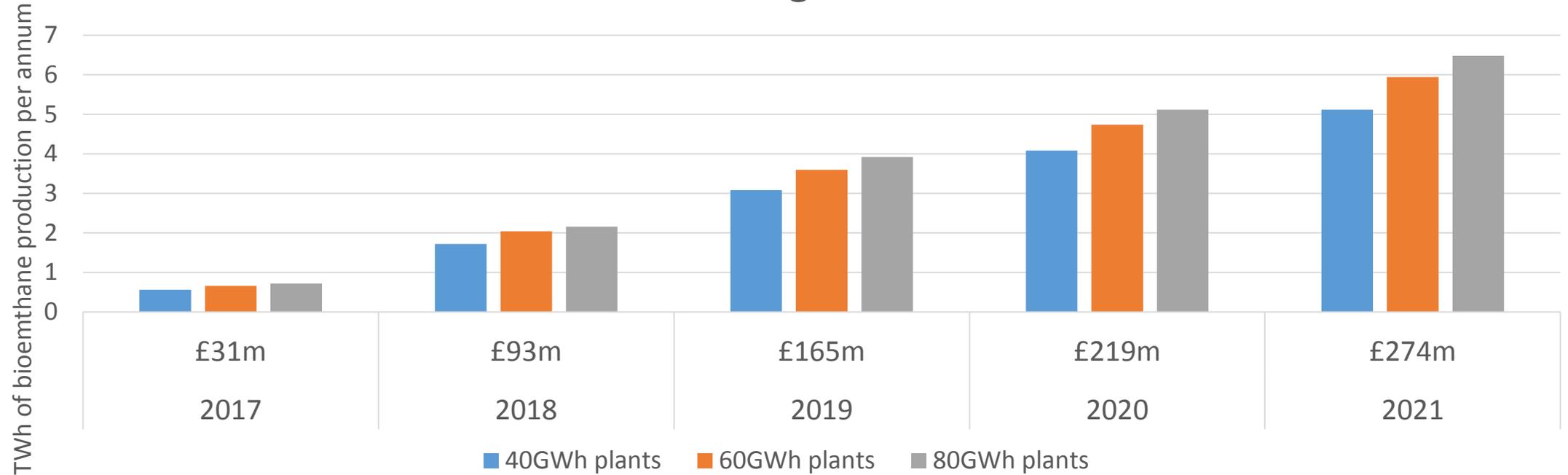
| | Current Rate (p/kWh) (April 2016) | Proposed Rate (p/kWh) |
|----------------|-----------------------------------|-----------------------|
| Tier 1 <40 GWh | 3.56p | 5.35p |
| Tier 2 >40 GWh | 2.10p | 3.14p |
| Tier 3 >80 GWh | 1.61p | 2.42p |

Number of new biomethane plants possible within RHI budget between 2017 and April 2021



| Year | RHI budget | No. of 40GWh plants | No. 60GWh plants | No of 80GWh plants |
|------|------------|---------------------|------------------|--------------------|
| 2017 | £31m | 14 | 11 | 9 |
| 2018 | £93m | 43 | 34 | 27 |
| 2019 | £165m | 77 | 60 | 49 |
| 2020 | £219m | 102 | 79 | 64 |
| 2021 | £274m | 128 | 99 | 81 |

Possible TWh of biomethane production possible within RHI budget



| Year | RHI Budget | 40GWh plants | 60GWh plants | 80GWh plants |
|------|------------|--------------|--------------|--------------|
| 2017 | £31m | 0.56 | 0.66 | 0.72 |
| 2018 | £93m | 1.72 | 2.04 | 2.16 |
| 2019 | £165m | 3.08 | 3.6 | 3.92 |
| 2020 | £219m | 4.08 | 4.74 | 5.12 |
| 2021 | £274m | 5.12 | 5.94 | 6.48 |

Proposed RHI changes

- Tariff Guarantees – developers can guarantee a tariff rate before construction. Milestones required include planning permission and network entry agreement
- Feedstock requirements – Payments for biomethane from energy crops capped at 50%. Promote the use of wastes and residues
- Biomethane from energy crops continue to be subject to the sustainability requirements of 60% GHG savings vs European heat average (emit no more than 125g CO₂ per kWh)
- ***This legislation was not laid in parliament before the election was announced so it will not be implemented without approval from the new ministers and new Government!***

Renewable Transport Fuel Obligation (RTFO)

- Obligation on suppliers of transport fuel to supply a percentage (4.75%) from sustainable renewable sources
- Obligation falls on organisations supplying over 450,000 litres of fuel per annum
- Covers road and non-road mobile machinery (NRMM)
- Obligated suppliers can either:
 - Produce their own biofuels
 - Purchase RTFO certificates (RTFC's) from other biofuel producers; or
 - Choose to pay the buy out
- Sustainability requirements based on CO2 savings and land use change
- 1 litre of biofuel = 1 RTFC
- 1 kg of biomethane = 1.9 RTFC
- Double counted if derived from wastes or residues
 - 3.8 RTFC's for biomethane from waste

Size of the RTFO

Volumes of fuels by fuel type: United Kingdom, 15 April 2016 to 14 April 2017

| | | Volume, million litres | |
|------------------------|---------------------|------------------------|---------------------------------|
| | | Total | Percentage of total fuel supply |
| Fuel type | | | |
| Fossil fuels | Diesel | 21,927 | 56% |
| | Low sulphur gas oil | 3,994 | 10% |
| | Petrol | 12,329 | 31% |
| | Total | 38,249 | 97% |
| Renewable fuels | Biodiesel FAME | 545 | 1% |
| | Bioethanol | 571 | 1% |
| | Biogas | 0 | 0% |
| | Biomethanol | 37 | 0% |
| | HVO | 1 | 0% |
| | Off road biodiesel | 2 | 0% |
| | Total | 1,156 | 3% |
| Total | 39,405 | 100% | |

- The obligation of 4.75% is 1,821 million RTFC's
- Government recently consulted on making alterations to the RTFO to increase the obligations and introduce sub-targets for biomethane
- ...but announcements delayed due to the election!

Value of the RTFO

Very difficult to assign a value as there is no published data

Buy out price is 30p per RTFC providing a peak price

25% of RTFC's can be carried over to the next year

Prices have varied between £0.09 and £0.20 per certificate

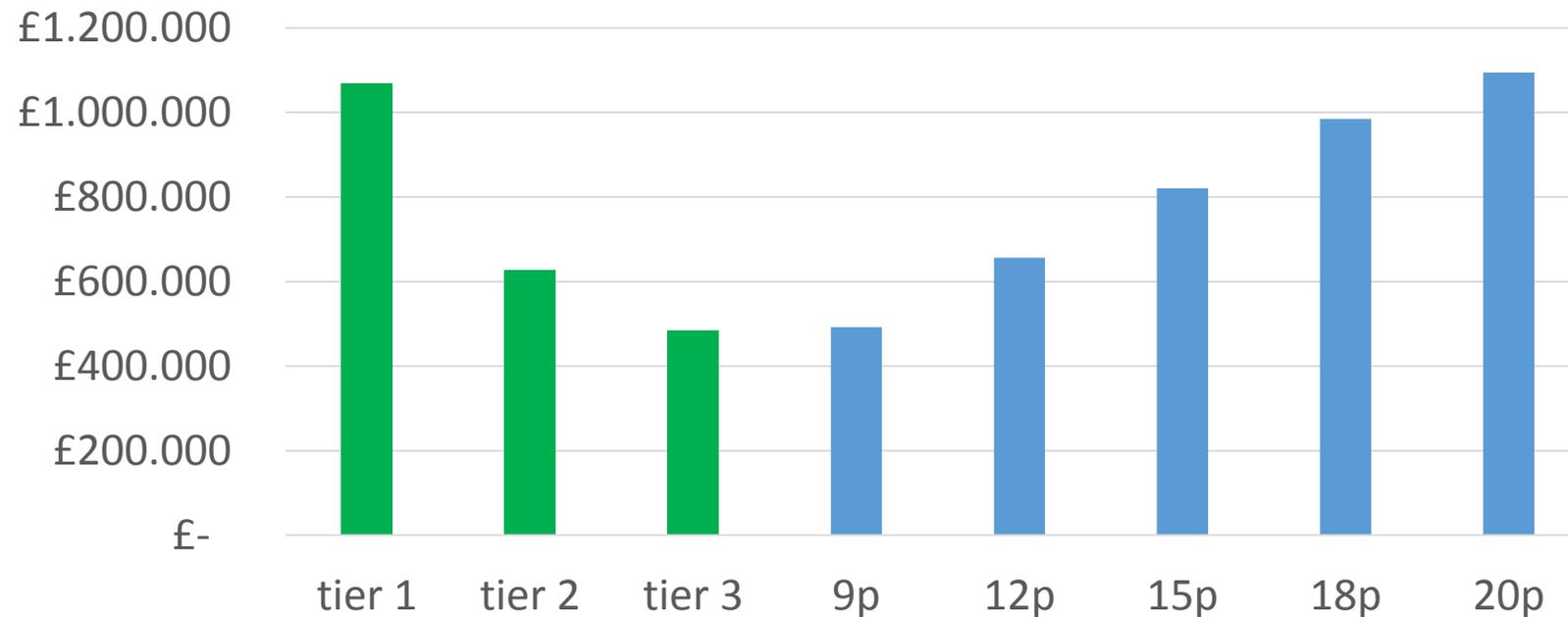
At £0.09 per RTFC the whole market is worth £164 million per annum

Market forces and moving obligation means the value is unreliable compared to the RHI

RTFO could be closed at short notice Vs RHI which is guaranteed for 20 years

RHI vs RTFO

Value of 20 GWh of biomethane from wastes under the new RHI tariffs and on a range of RTFC prices



- Biomethane producers would benefit from claiming the RTFO rather than the RHI for the any volumes over 80 GWh
- Depending on the RTFC price they may benefit from choosing the RTFO for volumes over 40GWh

RTFO sustainability criteria

| Minimum GHG saving thresholds and grandfathering periods for biofuel installations | | | |
|--|--|-----------------|-----------------|
| Period | Date production started at an installation | | |
| | Pre 23/01/2008 | Post 23/01/2008 | Post 01/01/2017 |
| 05/12/2010 to 31/03/2013 | No criteria | 35% | N/A |
| 01/04/2013 to 31/12/2016 | 35% | 35% | N/A |
| 01/01/2017 to 31/12/2017 | 50% | 50% | 50% |
| 01/01/2018 to 31/12/2020 | 50% | 50% | 60% |

Plants built before 2017 will only need to make a 50% GHG saving whereas plants built in 2017 would have to make a 60% GHG saving

GHG savings in the RTFO are against a diesel comparator which is easier than the European heat average comparator under the RHI

This only applies to energy crops so less incentive (1.9 RTFC)

Decarbonising the transport sector

Good progress in decarbonising small vehicles through electrification



Decarbonising the HGV sector

- Electric or fuel cell HGV's not currently available or practical
- Pressure to deal with severe air pollution issues
- Major HGV manufacturers are now producing dedicated gas vehicles



Image: CNG Fuels Ltd

Conclusions

- RHI budget will support a steady growth for around 20 new plants per year up to 2021 if the support levels are correct
- Energy crop cap of 50% will be a barrier for some projects and may have unintended consequences for the waste sector
- RTFO could be promising for producers depending on the market price
- New gas infrastructure and availability of dedicated gas vehicles indicate long term demand for biomethane in transport
- Biomethane offers long term solutions to sector with few alternatives

Thank you

Questions?

Ciaran Burns

cburns@greengas.org.uk

www.greengas.org.uk

