

# CV Enhancement (1)

- Gas consumers are billed for gas based on the Flow Weighted Average Calorific Value in each Local Distribution Zone
- So if 10 units of gas at 39.8 MJ/M<sup>3</sup> and 10 units at 39.0 MJ/M<sup>3</sup> then all consumers billed as if gas was 39.4 MJ/M<sup>3</sup>
- Regime limits any 'loss' to a consumer to 1 MJ/M<sup>3</sup>
- Biomethane generally consumed by consumers who live within a few KM of the source
- If the biomethane is not enriched, maximum theoretical CV is 37.7 MJ/M<sup>3</sup> (100% methane)
- In practice, CV of around 36.5 MJ/M<sup>3</sup>
- Around 5 - 12% by energy added
  - This depends on level of O<sub>2</sub> and N<sub>2</sub> and the CO<sub>2</sub> removal process
- In effect, buying energy in propane at oil linked price but selling at gas price (the 'Propane Value Loss', "PVL")
- In some cases, it may be possible to 'blend' the lower CV gas to reduce or avoid the need to add propane
  - May only be possible in winter as needs higher grid flows



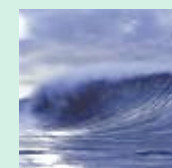
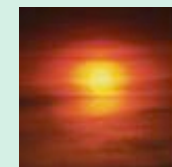
# CV Enhancement (2)

- Key questions:
  - Who has the responsibility to meet the appropriate CV – the producer or the grid operator?
    - UNC Working Group 251 was inconclusive
  - Who funds capex and opex of plant?
    - Opex is maintenance of plant and energy to vaporise propane on cold days
    - Typically <£5k per annum per facility
  - Who funds the PVL?
    - On a 1 million therm/ annum facility, assume 10% propane and PVL of 60 p/therm so annual PVL = £60,000
  - Is the target "FWACV" or "FWACV - 0.5" MJ/M3 or "FWACV+ 0.5" MJ/M3?
  - If there is a blending option, how is DN rewarded?
- PVL can be funded by RHI or socialised via transportation charges
- Ideally there should be correct incentive to manage trade off between propane cost and CO2 removal plant cost
  - Pay more to remove more CO2, add less propane
- Note – the propane energy is netted off the RHI. In addition, the addition of propane is broadly neutral in global warming terms as the propane would be burnt somewhere each day as gas or converted to some other product



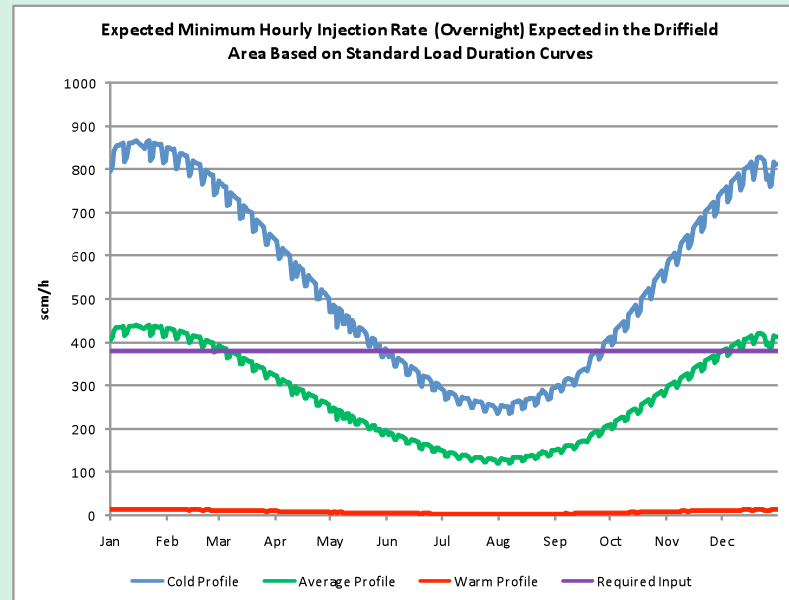
# Distribution Network Incentives and Obligations

- The GDN plays a critical role in relation to biomethane
  - Provision of capacity (see next slide)
  - Standards for the gas quality monitoring, flow control, odorant, telemetry etc
  - Day to day operations
- The above defined in the Network Entry Agreement
- Whilst the GDN has an obligation to provide capacity, there is no specific financial incentive at present
- There are many different ownership, operatorship and funding models and it is not yet agreed which models will apply in the UK
  - German Model has GDN funding 75%
  - Dutch Model has customer funding 100%
- REA would prefer one model for all GDNs to reduce supply chain costs



# Network Capacity

- Often the gas grid cannot accept the biomethane on a 365 day basis
  - REA believes this is an issue for around 50% of potential projects



- Solution is compressors within the grid (to export MP to IP and IP to LTS) and also incurring opex (and possibly capex) to adjust regulators - both require agreed regulatory treatment with Ofgem

