Biogas from the grid

Technical implementation and legal issues

What is 'biogas from the grid'?

- Biogas which is upgraded to match the quality of the fossil natural gas in the grid.

- Upgrading is done by purifying the gas and removing CO_2.

- Upgraded biogas consists mainly of methane (CH_4).

- It is distributed along with fossil natural gas in the gas grid (it is mixed).

- It is practically impossible to track the biogas on the grid (the physical flow), so Member States often allow operators to use (various kinds of) certificates as proof of burning biogas from the grid.

What is the problem?

- How can an operator document purchasing biogas from the grid (instead of fossil natural gas)?

    - What kind of certificates?

    - What kind of registry?

    - How do we handle imports from other Member States?

- How do we avoid double counting?

- Which updates of the MRR (and AVR) are necessary?

Status in the REDII

- Gaseous biomass fuel when used in stationary installations or a bioliquid in transport (REDII, Art. 2, no. 27).

- REDII, Articles 29-31 apply (pending clarification).

- Operators must document fulfilling sustainability and greenhouse gas emissions saving criteria *(the criteria).*

- Documentation is often done using certificates from voluntary schemes, recognised by the EU-Commission.

- The database according to REDII Art. 28 could be used to keep track of the certificates (although it is intended to be used for the transport sector only).

Guarantees of origin (GOs)

- Some Member States use certificates based on guarantees of origin (RED Art. 15), although the Article only applies to electricity, heating and cooling.

- REDII, Art. 19, expands GOs to also cover biogas. This means that GOs could be used in the ETS.

- 1 GO corresponds to 1MWh (often in GCV).

- Mutual recognition of GOs (cross border transfer).

- GOs are handled in registries.

- When a GO is used, it is cancelled in the registry.

- The cancellation statement is a solid piece of documentation.

We now have two potential systems for biogas from the grid

- Certificates (documenting fulfilment of the criteria) combined with the database according to REDII Art. 28.

- Guarantees of origin (with added information about fulfilling the criteria) using the designated registries.

Risks of double counting

- Using two systems in the ETS.

- Using one system in the ETS – and another in the non-ETS (for instance road transport).

- Allowing supplier contracts without GOs/certificate of sustainability – or vice versa.

- Cross border: where the gas is produced and where it is consumed.

- General biomass fraction (national default value).

MRR issues

- We need a common approach, which avoids double counting but allows national variations.

- We need to define 'the grid'.

- We need to handle the conversion of biogas from the grid from other Member States.

- We need to set requirements for documentation.

MRR issues: Two approaches to defining the grid

- Treating the system of connected national (or regional) grids as one grid using the same system.

- Treating each national (or regional) grid as a separate grid, where the grid operator sets the rules. Consignments of biogas can be transferred from one grid to another, only if the consignment is transferred between the operators' registries.

MRR issues: Conversion (I)

- The mix of natural gas and biogas runs through the meter at the receiving installation.

- The biogas is subtracted from the measured amount of natural gas (and reported either as a separate source stream or as a biomass fraction).

- The amount of biogas from the grid must have the same NCV as the natural gas, for it to be subtracted.

- So, when biogas is imported from another Member State through the grid, a conversion to local NCV is necessary.

MRR issues: Conversion (II)

Using amount	Quantity		NCV		Energy		EF (prel)		Emissions	
Where the biogas was produced	1.000.000	Nm3	0,03	GJ/Nm3	30	TJ	60	t CO2/TJ	1.800	t CO2
Where the biogas was consumed			0,04	GJ/Nm3			50	t CO2/TJ		
Converted to local NCV	750.000	Nm3	0,04	GJ/Nm3	30	TJ	60	t CO2/TJ	1.800	t CO2

Using GOs	Quantity		NCV		Energy		EF (prel)		Emissions	
Where the biogas was produced	1.000	MWh	0,03	GJ/Nm3	3,6	TJ	60	t CO2/TJ	216	t CO2
Where the biogas was consumed			0,04	GJ/Nm3			50	t CO2/TJ		
Converted to local NCV	90.000	Nm3	0,04	GJ/Nm3	3,6	TJ	60	t CO2/TJ	216	t CO2

MRR issues: General biomass fraction

It is possible that Member States will seek to mix more and more biogas in the grid. Perhaps a national grid could one day contain 90 % biogas. Should we then still require GOs/certificates of sustainability?

The MRR should allow a national default value (biomass fraction) provided no GOs/certificates (depending on what system we use in the ETS) are issued for that biogas.

MRR issues: National variations

Copenhagen has it own gas grid. It is connected to the national gas grid. Natural gas is mixed with air to lower the calorific values (the gas is used mainly in gas stoves). Biogas is fed directly into the Copenhagen gas grid, and the grid operator also purchases GOs. This combines to a general biomass fraction.

The MRR should allow such exemptions to the grid under certain conditions.

Thank you for your attention

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Elaboration: Conversion

1.000.000 Nm3 biogas has been produced in one Member State. The biogas has an NCV of 0,03 GJ/Nm3 and an EF of 60 t CO2/TJ.

The natural gas in the receiving Member State has an NCV of 0,04 GJ/Nm3 and an EF of 50 t CO2/TJ.

The operator should not subtract 1.000.000 Nm3 from the measured amount of mixed gas.

Amount of gas to be subtracted:

$$Q = \frac{1.000.000\ Nm^3 \cdot 0{,}03\ GJ/Nm^3}{0{,}04\ GJ/Nm^3} = 750.000\ Nm^3$$

However, the original EF should be used if reported as a separate source stream (using biomass fraction is even more complicated).

Elaboration: One grid

Only GOs or certificates

Elaboration: Connected grids