Scenario 1 - Hydrogen production facility connected to the shared network (National Electricity Market or other)

Definitions - refer to National Greenhouse Accounts Factors (industry.gov.au)

Scope 1 - direct emissions including on-site generation, company vehicles, manufacturing processes and fugitive emissions

Scope 2 – indirect emissions associated with purchased energy

Scope 3 - all other indirect upstream and downstream activities excluding Scope 2 emissions

Boundary assumptions

Advocate for Scope 3 emissions to be excluded from an initial scheme design.

This means that emissions from plant construction, upstream and downstream distribution, employee commuting and business travel would be excluded.

Consideration of Scope 3 emissions is likely to be complex. The inclusion of Scope 3 emissions could delay the establishment of an accredited certification scheme. Unless it is something demanded upfront by international customers it makes sense to focus on simplicity for establishment of an initial scheme.

Description of scenario

Hydrogen is produced by electricity supply taken from an interconnected electricity grid.

In terms of physical supply it is not possible to identify which electrons have come from which grid connected electricity generator. Actual generation on the grid may be from a mix of renewable and fossil fuel sources. Renewable generation connected to the grid is generally of variable nature (wind and solar). Firming of generation to meet load is generally from baseload fossil fuel generation together with gas, hydro generation, pumped hydro and batteries. The composition will change with de-carbonisation of the power system.

Renewable generation is made up of a combination of renewables that are eligible for renewable energy credits under the RET legislation as well as below baseline renewable generation. Above baseline RET generation is credited through either Small-scale Technology Certificate (STCs) or Large Scale Generation Certificates (LGCs)

Current Situation

Representation of Renewable Energy from grid connected supply

A customer may contract energy from a renewable generator as a financial PPA if it is a market participant or alternatively through a retailer. Currently in Australia this alone does not enable the customer to represent that the customer is using renewable energy.

A customer is able to represent the energy as renewable through purchase and voluntary surrender of an equivalent amount of LGCs. This is the same as green power. This enables supply to be classed as renewable despite timing mismatch between (typically variable) renewable generation and when supply is used by the customer as there is a verified match of production against consumption in total over a period (e.g. over the course of a year).

The legislation that creates the Federal Government's Renewable Energy Target concludes at the end of 2030. As a result, the obligation on retailers and load to surrender LGCs and STCs will end at this point. It is possible that the renewable accreditation framework and associated registries could continue beyond 2030, however, this may require changes to the existing legislation.

Reporting of Scope 2 emissions

National Greenhouse and Energy Reporting (NGER) facilities may report Scope 2 emissions on the basis of published state emissions intensity factors. Scope 2 emissions are those associated with energy purchased by an organisation including electricity, steam, heat and cooling.

For grid connected hydrogen production by electrolysis the Scope 2 emissions will be indirect emissions from purchased electricity. The methodology for Scope 2 emissions is included in the National Greenhouse Accounts Factors which are published annually and referenced on DISER website at National Greenhouse Accounts Factors (industry.gov.au)

Options

- **Option 1** - Account for a carbon intensity based on scope 1 and grid scope 2 emissions based on NGERS methodology plus accredited offsets as may be required to achieve zero emissions
- **Option 2** - Develop a new guarantee of origin certificate (GoO) that can be traded. If this was done, there would be an expectancy of consistency of approach with international schemes such as CertifHy. The GoO would need to exist in parallel with the REC scheme and transition beyond 2030. The GoO should include all eligible renewable energy sources including below baseline from eligible renewable generators. Nominally a GoO would represent 1 MWh of renewable generation. Rules would need to be developed including "shelf life" of a GoO.