elite energy

ePMF

GREENHOUSE GAS APPLICATION FRAMEWORK



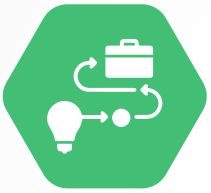
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About the Application Framework

Elite Energy developed a Greenhouse Gas (GHG) Emissions application framework in EnergySys to enable companies to report their emissions and energy in compliance with legislative requirements.

The framework has the objective to inspire innovative thinking and stimulate discussions on client specific GHG configuration, ensuring the proposed solution aligns precisely with the client's operational and system requirements. This approach not only provides clarity on the implementation direction but also ensures transparency and alignment, empowering the client to understand and make informed adjustments.

Key Dimensions



The GHG Application provides a structured approach to greenhouse gas emissions calculation and reporting



The aim GHG Application is to provide a centralised, transparent and auditable solution for all the GHG emission related activities



Designed to seamlessly integrate with other applications



It enables companies to report their emissions and energy in compliance with legislative requirements, including NGER scheme in Australia



The implementation of an automated solution allows the GHG team to focus on high-value activities



It provides crucial metrices including information about key emitters, and emission intensity (t CO_2-e per unit of production)

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Key Features

The GHG application was designed to seamlessly integrate with other applications. **Figure 1** illustrates the GHG application in alignment with the Production Allocation application. The intrinsic relationship between the two applications is discussed in the paper Greenhouse gas emissions tracking: making it count, by Dr Terzini (Elite) and Dr Hayes (EnergySys), 2023 - link: **https://www.publish.csiro.au/aj/AJ22207**

As shown in Figure 1, key information required to perform the GHG emissions and energy calculations is already available in the system and flows seamlessly to the GHG processes. These include (not limited to):

- Allocated quantities
- Validated measured quantities
- Validated compositions
- Wellhead count
- Online hours

In addition to that, emission factors, energy content factors, the methods used for estimating emissions/ energy, measurement criteria, as well as semi-static data (e.g. pipeline length, equipment count, salinity content of water, etc) are also stored and secured in the system.

The system also allows pre-defined users to update these values if amendments are required to meet legislative or business requirements, providing a transparent and auditable solution.



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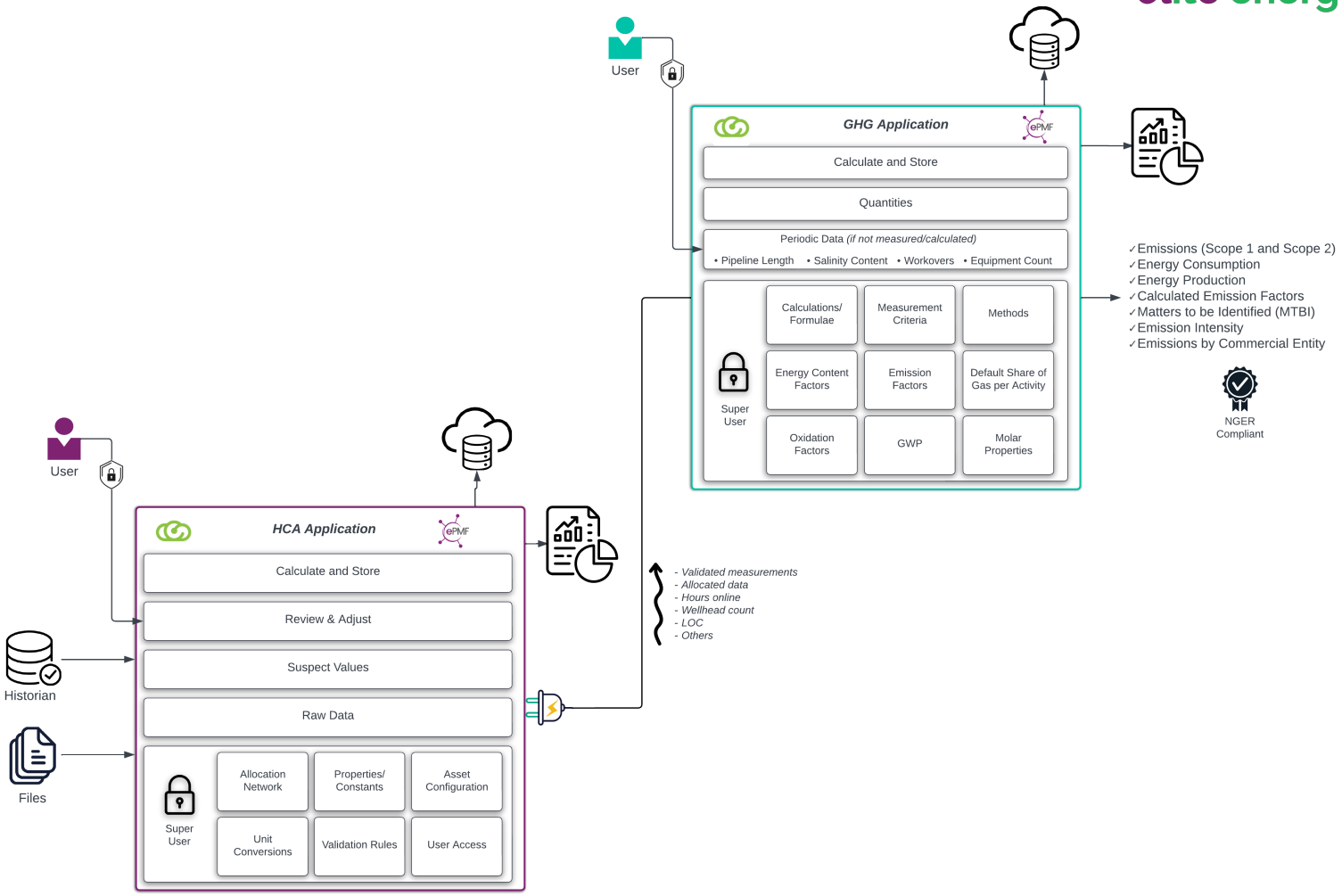


Figure 1. GHG application overview.

Flexibility

Given the hierarchical structure of the GHG emissions, the GHG application provides a flexible way to report emissions, as illustrated in Figure 2.

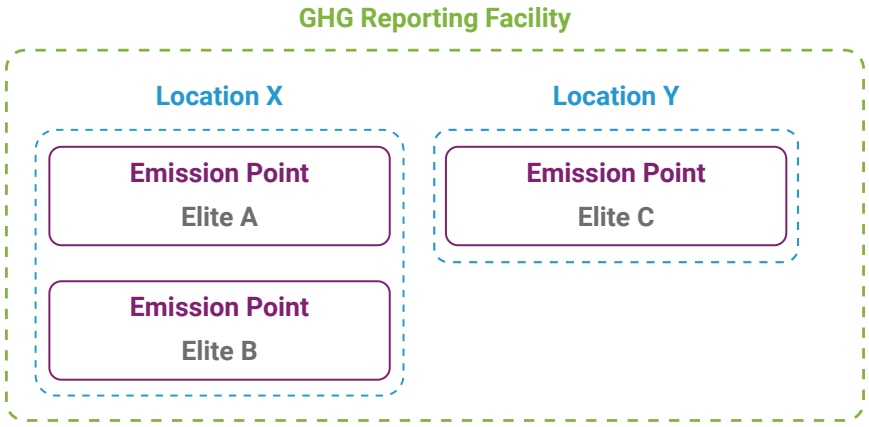
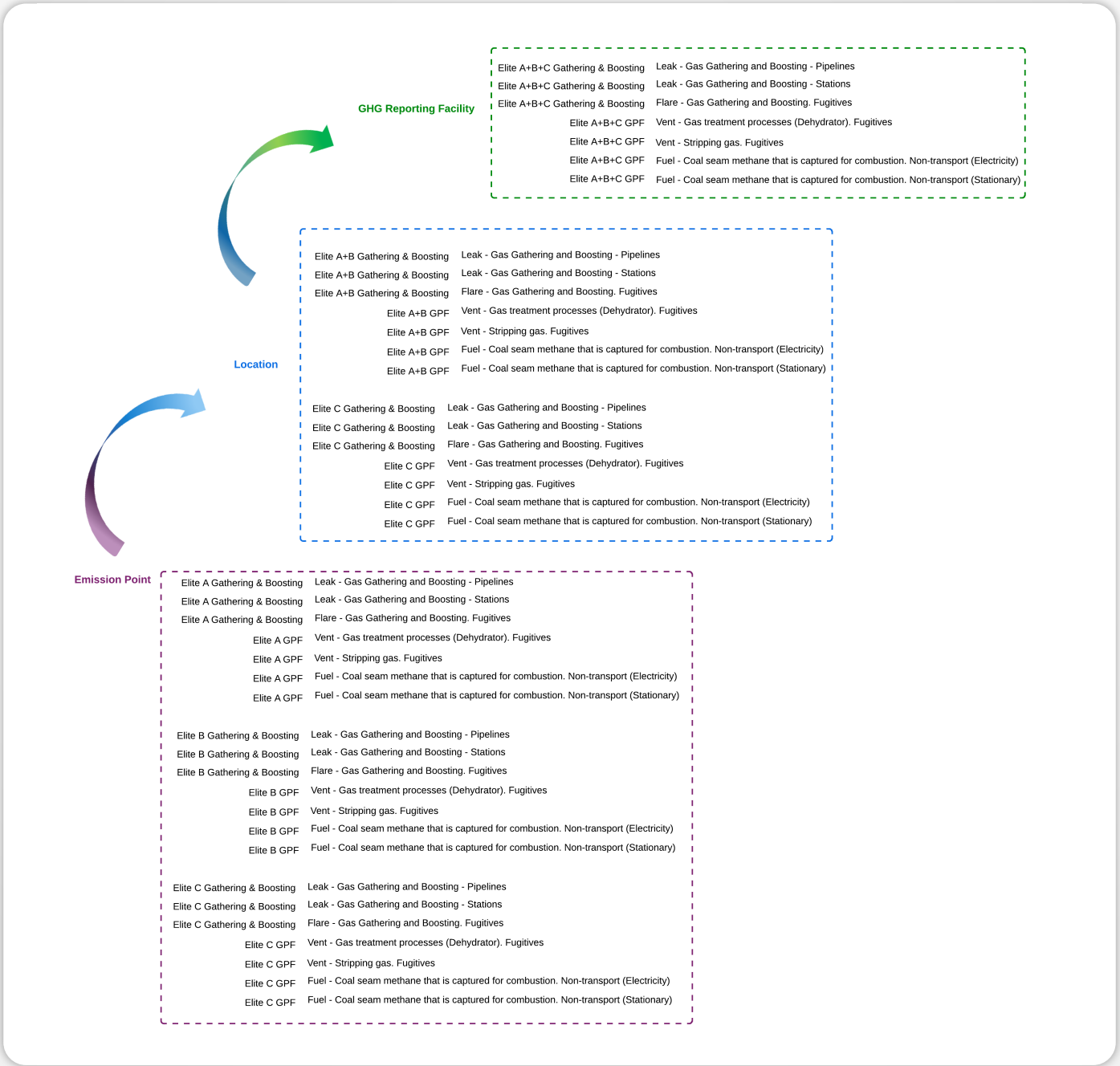


Figure 2. Emission and energy roll up structure.

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In the example shown in **Figure 3,** the Emission Point represents the lowest granularity, and it can be a Gas Processing Facility, Water Treatment Facility, a Production License, etc. The Location can be set up as a physical location or operating area, in the example below areas A and B emissions are combined whereas C is separate. On the other hand, the Reporting Facility (also referred as NGER Facility in Australia) is a pre-defined combination of locations, in this example, the reporting facility is the aggregation of Elite A+B+C. This is done per Activity Type, Source Type and Device (e.g. Activity: Vent - Gas treatment processes (Dehydrator), Source: Natural Gas Production – Venting, and Device: Dehydrator).



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Outputs

All the GHG related data are stored in the database and can be used to generate dashboards to assist the business with their emissions reduction initiatives, as well as reports to meet statutory requirements. Key GHG data is readily available, including:

- Emissions (Scope 1 and Scope 2 per greenhouse gas – CH4, CO2, N2O, SF6, and total)
- Energy Consumption
- Energy Production
- Calculated Emission Factors
- Matters to be Identified (MTBI)
- Emission Intensity
- Emissions by Commercial Entity

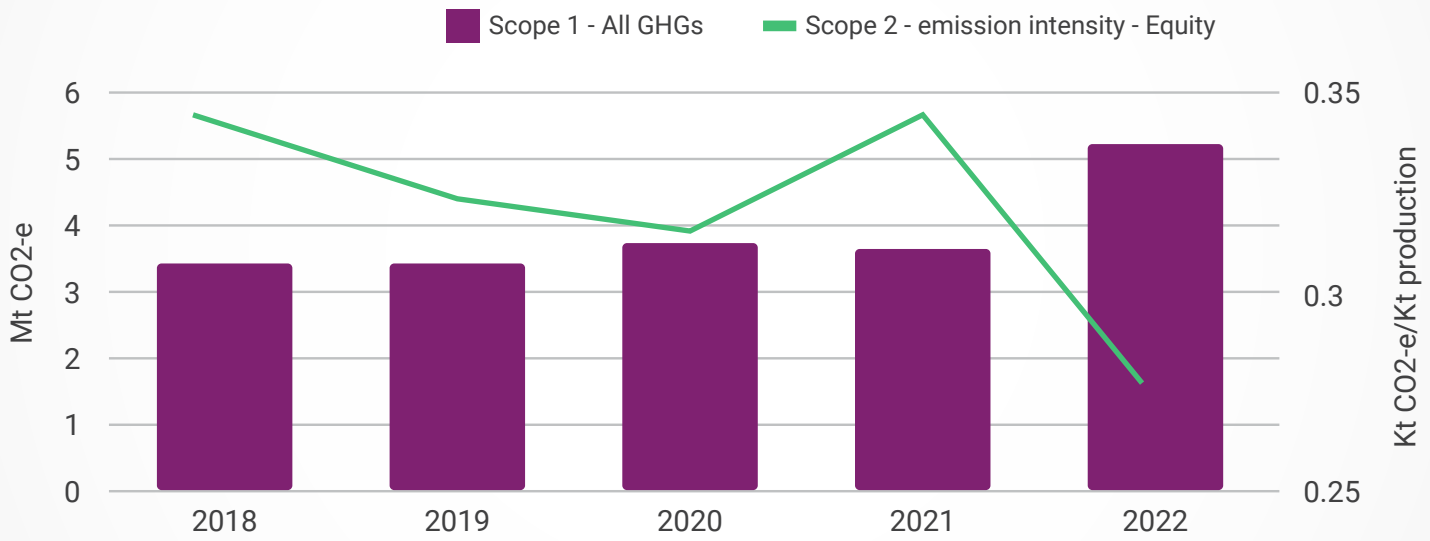


Figure 4. Emissions dashboard – for illustrative purposes only.

Talk to our SME

Dr Fabio Terzini is the Lead Engineer and Global Product Owner for Net Zero at Elite Energy and has been supporting the delivery of specialised engineering and IT projects around the globe.

Dr Terzini is a chemical engineer and holds a PhD in chemical from The University of Queensland in Australia. Prior to joining Elite Energy, Dr Terzini worked with Worley and Advisian on various large-scale projects in Australia, New Zealand and Brazil. Dr Terzini has also interest in greenhouse gas emissions, hydrogen production and CCSU.

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