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Comparing the carbon footprint of the SPE CCUS virtual conference with a traditional “attendee” conference.

Conducted on behalf of SPE (Society of Petroleum Engineers), Aberdeen

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The brief

SPE CCUS conference organisers have requested that the carbon footprint for the forthcoming virtual CCUS conference be calculated and benchmarked against a traditional attendee event.

- The basis for this calculation is the GHG Protocol industry benchmark spreadsheet suite/tool.
- All emission factors used in the calculation are fully traceable GHG Protocol embedded numbers. No custom emission factors were used.
- Data inputs to the calculation have been derived from publicly available information:

Scenarios considered for comparison:

1. Traditional “in person” conference held at TECA, Aberdeen whereby fuel used to power the site is primarily derived from renewable sources;
2. Traditional “in person” conference held at TECA, Aberdeen whereby fuel used to power the site is primarily derived from non-renewable sources;
3. Virtual conference.

Each scenario assumes 200 attendees at the conference.

Data inputs

Data used to confirm boundaries of the emission sources and to identify key parameters relevant to the production of greenhouse gases, included:

- Aberdeen City Council, Aberdeen Anaerobic Digestion Gasto Grid Plant, Permit Application PPC/A/1188451.
- Reference Plant fact sheet, Aberdeen Council / TNV Thöni Wet Anaerobic Digestion Semi Dry, Aberdeen (UK), Integration into a renewable energy network
- Aberdeen City Council Press release, Contractor appointed to build anaerobic plant at new AECC/TECA complex, 31 January 2019
- Aberdeen City Council, Capital Programme Committee report, RES/19/277: The Event Complex Aberdeen Project Update.
- Detailed Planning Permission, P151390 Demolition of existing buildings and erection of Exhibition Centre, 24 August 2015
- Mott Mac Donald, Aberdeen Exhibition and Conference Centre Development - Aloft Hotel Travel Plan
- Department for Transport Vehicle Licensing Statistics, Annual 2020
- Grant Faber (2021) A framework to estimate emissions from virtual conferences, International Journal of Environmental Studies, 78:4, 608-623, DOI: 10.1080/00207233.2020.1864190

Application of the GHG Protocol tool

Key activity data, emission factors and assumptions used to calculate the quantity of carbon emissions associated with each scenario were modelled using the GHG protocol spreadsheet suite.

Activity data for the TECA facility has been derived from publicly available reports, fact sheets and press releases describing:

- the power generation capacity of the on-site Anaerobic Digestion (AD) plant;
- power demand of the site
- electricity demand,
- and traffic planning expectations
- number of expected attendees.

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Figures for the virtual conference have been benchmarked with the report by:

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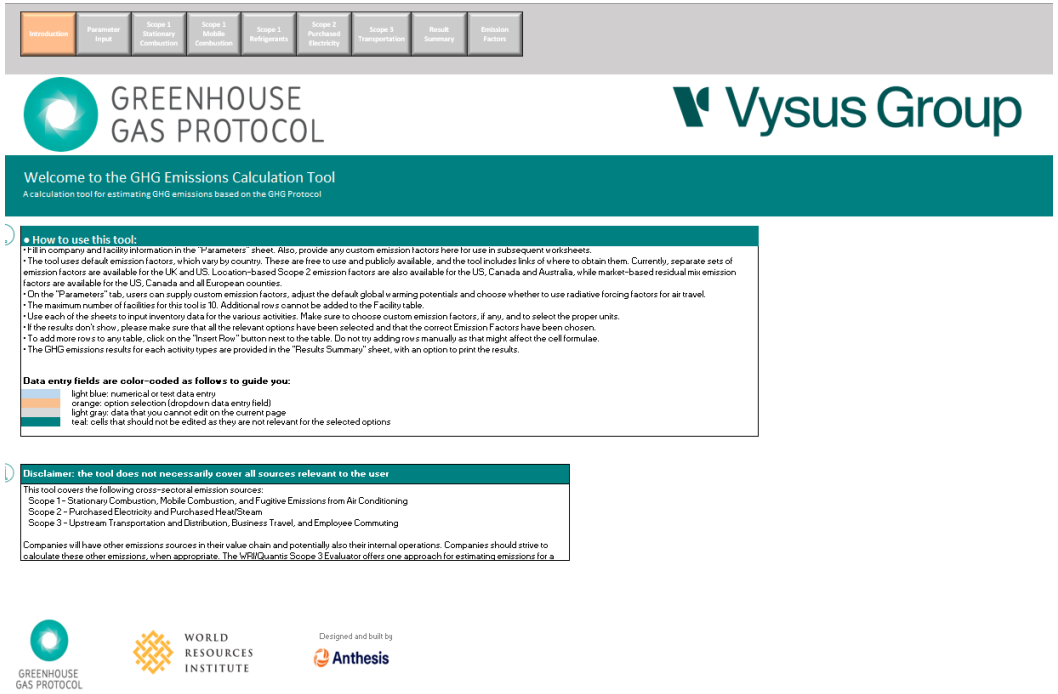

Estimate of emissions for virtual conference – 200 attendees

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Figure 1. CO2 allocation associated with virtual conference activities.

Formula	Emissions (kg CO_2-eq)
1: Allocated Computer Life Cycle	145
2: Data Transfer Energy Use	854
3: Server Energy Use	2
4: Organiser Meetings	249
5: Search Engine Queries	2
6: Allocated Monitor Life Cycle	51
7: Desk Lamp Energy Use	10
8: Website Visits	11
Total	**1,324**

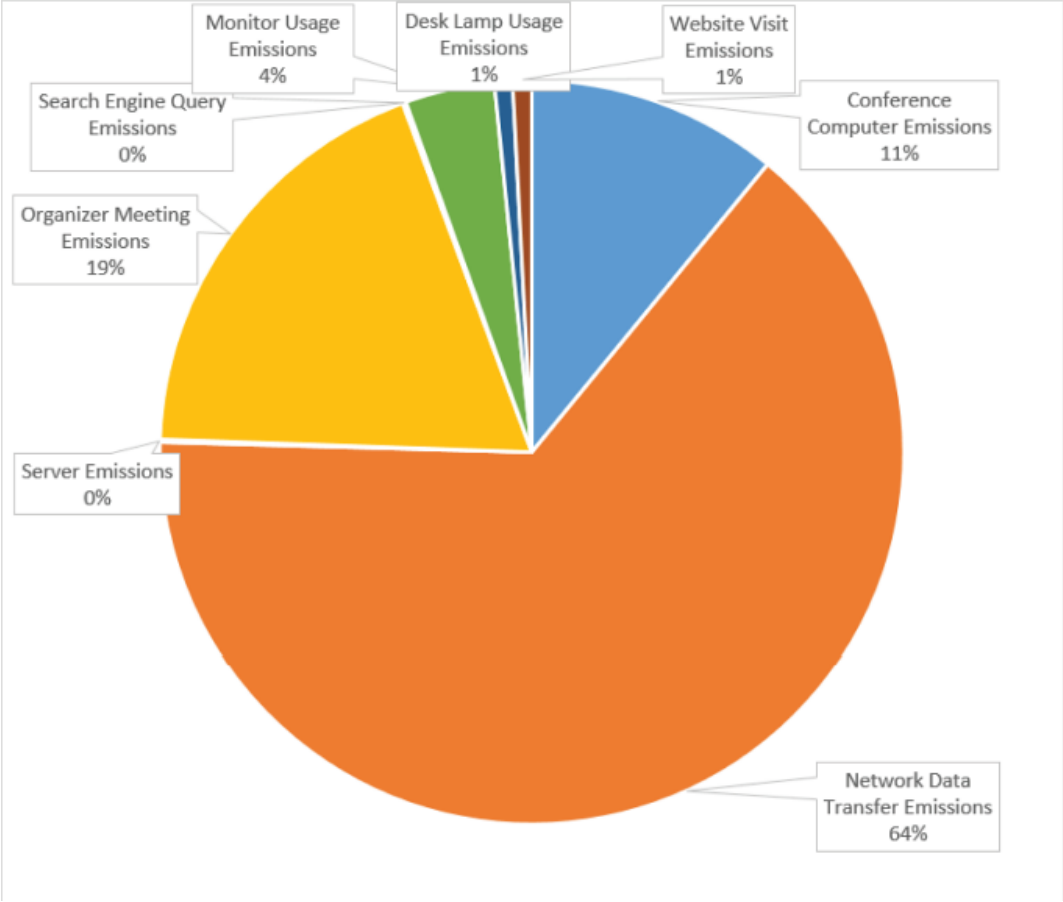

Figure 2. Distribution of contributing factors to conference emissions.

Results of GHG footprinting comparison

Facility / Mode	Scope 1 activity data (Fuel use)	Scope 2 activity data (electricity)	Scope 3. Transport (Private car)	Scope 3. Transport (Public bus)	Scope 3. Transport (Taxi)	Scope 3. Transport (Public train)	Total CO2e (tonnes)
Scenario 1 – TECA operated, as intended.	AD derived biogas. • 148.59 MWh • **0.774 tonnes** CO2	Purchased electricity. • 4.93 MWh • **2.936 tonnes** CO2	Total milage = 5700. • 1.653 tonnes CO2 • Assumes 57% of total 200 attendees • Assumes 50 mile average round trip.	Total milage = 60. • 0.010 tonnes CO2 • Assumes 3% of total 200 attendees • Assumes 10 mile average round trip.	Total milage = 340. • 0.082 tonnes CO2 • Assumes 17% of total 200 attendees • Assumes 10 mile average round trip.	Total milage = 5100. • 0.335 tonnes CO2 • Assumes 17% of total 200 attendees • Assumes 150 mile average round trip.	**5.79**
Scenario 2 TECA clone run on non renewable fuel sources.	Nil	Purchased electricity. • 153.52 MWh • 91.438 tonnes CO2	Total milage = 5700. • 1.653 tonnes CO2 • Assumes 57% of total 200 attendees • Assumes 50 mile average round trip.	Total milage = 60. • 0.010 tonnes CO2 • Assumes 3% of total 200 attendees • Assumes 10 mile average round trip.	Total milage = 340. • 0.082 tonnes CO2 • Assumes 17% of total 200 attendees • Assumes 10 mile average round trip.	Total milage = 5100. • 0.335 tonnes CO2 • Assumes 17% of total 200 attendees • Assumes 150 mile average round trip.	**93.518**
Scenario 3 Virtual conference	Nil	Bought in electricity. • Figures based on literature review.	Nil	Nil	Nil	Nil	**1.324**

Assumes 200 attendees @ 1 day conference.

Conclusion

Using publicly available data to compare the emissions of like for like conferences, we can conclude:

- The TECA is 16 times more efficient than a comparable venue that uses fossil fuel for power and heat.
- A virtual conference is:
  - 4 times more efficient than the TECA venue that primarily uses bio-renewable fuel for power and heat; and is
  - 70 times more efficient than a comparable venue that uses fossil fuel for power and heat.

Significant footprint and legacy

80+ years

Heritage

650+

Employees worldwide

1930
- LR Energy formed

2005
- Capstone
- ODS

2008
- Human Engineering
- Celerity3
- ModuSpec

2010
- Scandpower

2012
- West Engineering

2013
- Senergy

2020
Vysus Group formed

2021
- Promaps Technology™ acquired by Vysus Group

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Our services

Asset Management Consulting

Improve reliability, optimising production, reducing cost and increasing profitability.

Drilling Rig Integrity and Assurance

ModuSpec ensures the integrity, reliability and optimisation of your drilling, completions and intervention equipment and systems.

Survey and GeoEngineering

Navigate hazards and avoid risks with accurate offshore subsurface surveys, ensuring confidence in your offshore construction and decommissioning projects.

Risk Management

Our services help control risks to life, the environment and assets, ensuring compliance to regulatory and market requirements.

Well Engineering, Operations and Project management

Enhance the planning and performance of well operations, from initial conceptual well design through to well construction and ultimate suspension or abandonment.

Energy Transition

Power the transition to clean energy by reducing project risk and optimising the asset performance of your transition and renewable assets.

Grid Connection

Manage the integration of complex power systems into grid infrastructure to ensure stability and maximise power throughout. Accurately monitor and predict disruption in electricity grid systems with advanced real-time risk calculations using our power system reliability software, Promaps™.

February 2022

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Thank you

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