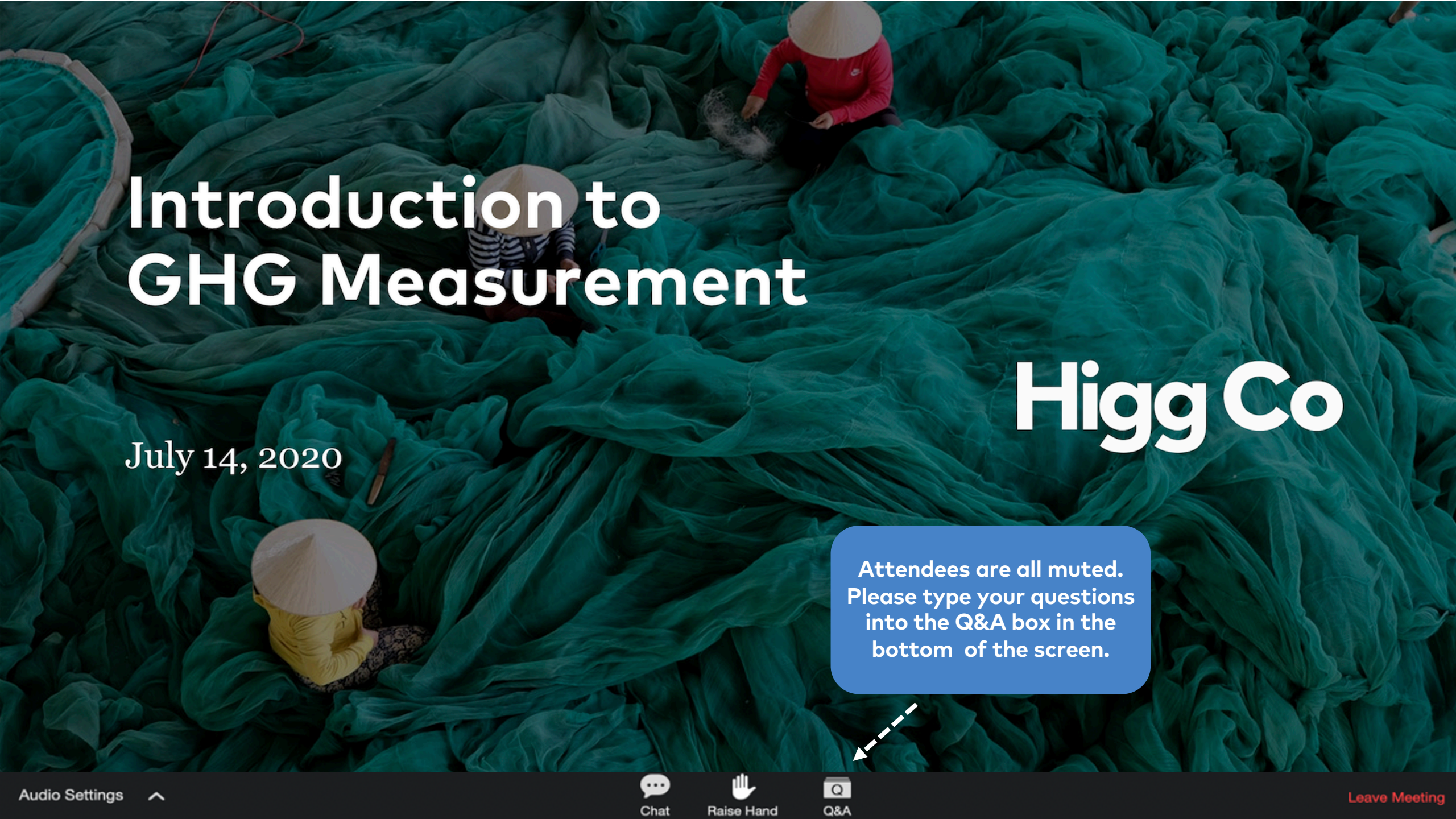
Introduction to GHG Measurement

July 14, 2020

Higg Co


Introduction to
GHG Measurement
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Attendees are all muted.
Please type your questions
into the Q&A box in the
bottom of the screen.
Audio Settings
Chat
Raise Hand
Q&A
Leave Meeting

Team Introduction

English
Tuesday, July 14
8:00 to 9:00 AM PST (EMEA)
8:00 to 9:00 PM PST (APAC)

Cashion East
Director, Data Analytics

Sally Smaili
Director, Customer Success

Agenda

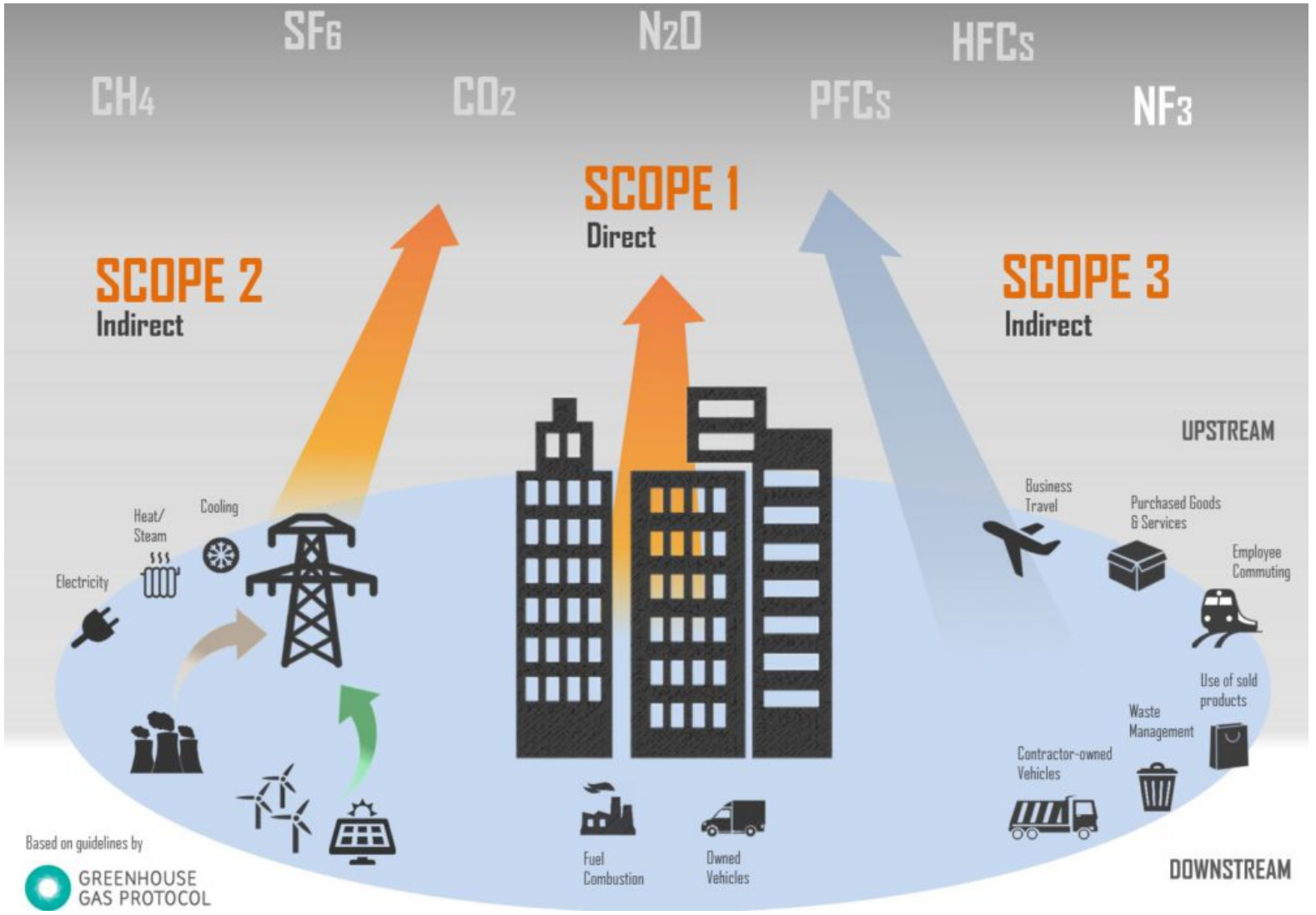
1. GHG Introduction
2. Higg FEM GHG Parameters and Calculation
3. Higg FEM GHG Report
4. Higg FEM CSV GHG Data
5. Guidance & Support
6. Platform Demo
7. Q&A

By the end of this training you will have learned:

- What is GHG emission scope?
- What is the methodological framework in Higg FEM?
- What are the GHG parameters and calculation in Higg FEM?
- How to understand the GHG report in Higg FEM?

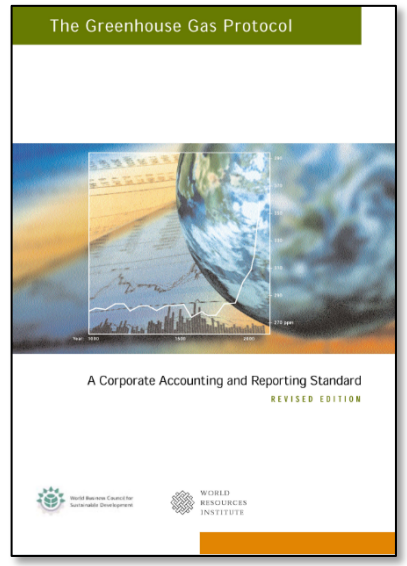
GHG Introduction

GHG Emissions and Scope 1, 2, 3 Categories



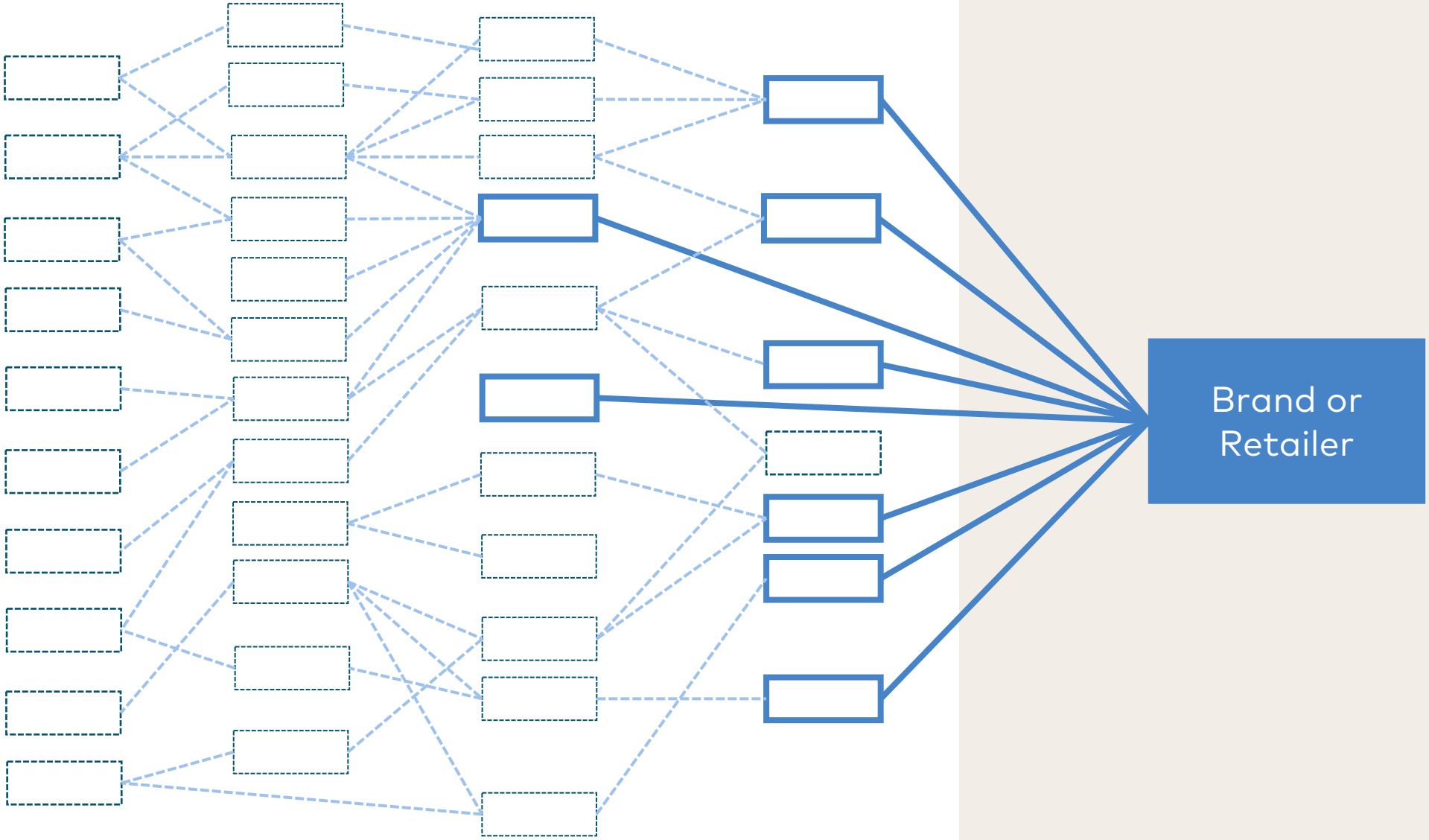
GHG in Higg FEM- Methodological Framework

- Alignment with GHG Protocol, the leading global GHG accounting standard
- Inclusion of non-Carbon GHGs- including CH4, N20, SF6, others
- Emissions calculated based on Energy use, Refrigerant use reported in FEM
- Potential data gaps- process-specific emissions, wastewater emissions
- General calculation and source data alignment with MSI, PM, and BRM

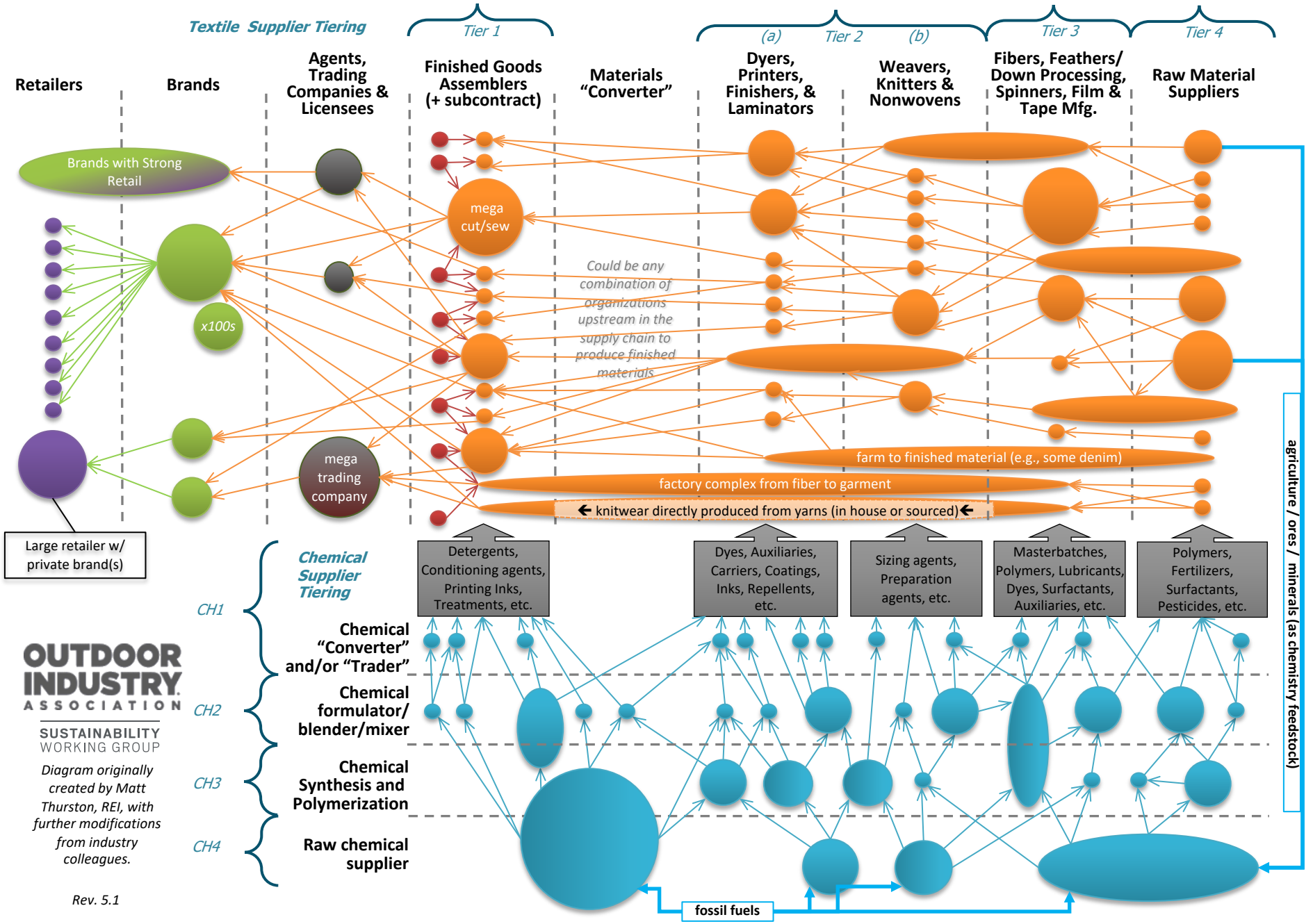


Supply Chain and Facility Nodes

Connections to Brands and Retailers



The Textile & Textile Chemistry Supply "Network"

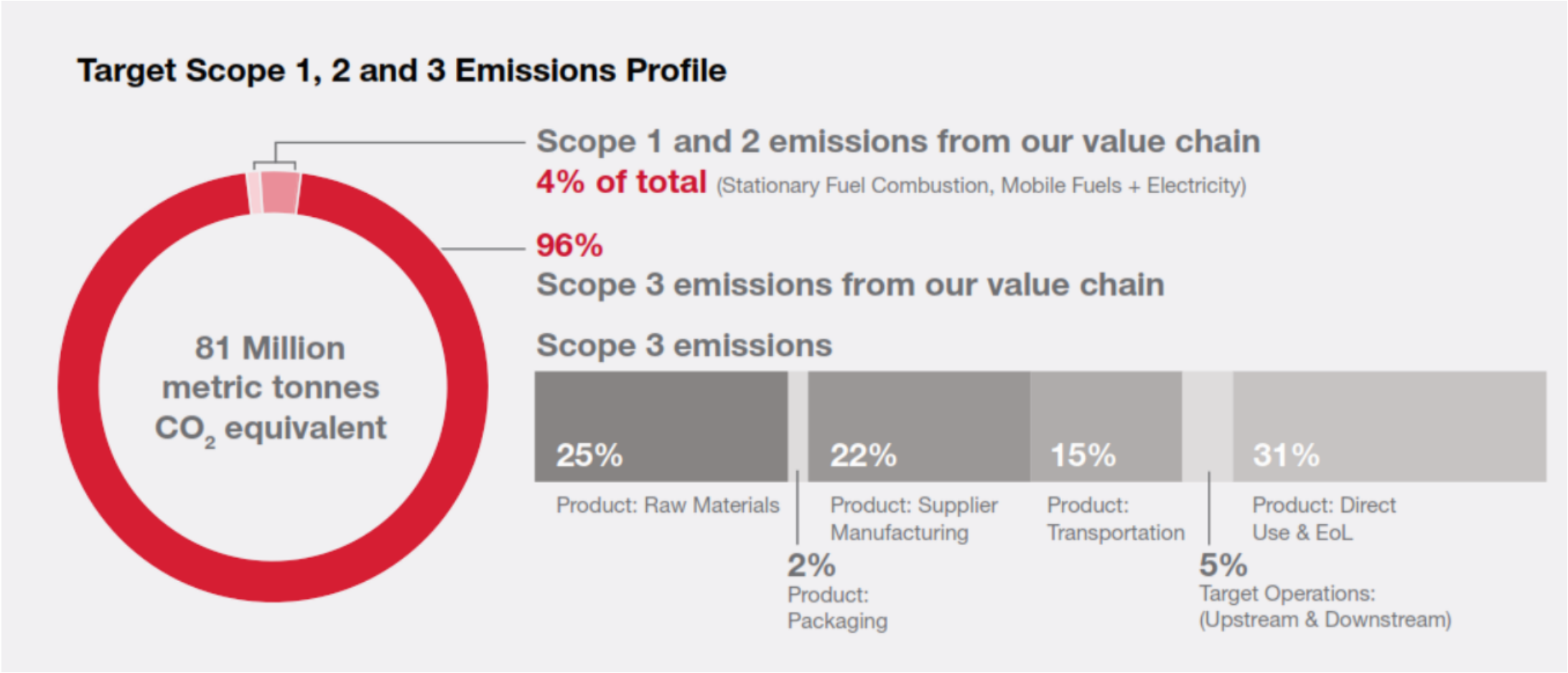


OUTDOOR INDUSTRY ASSOCIATION
SUSTAINABILITY WORKING GROUP

Diagram originally created by Matt Thurston, REI, with further modifications from industry colleagues.

Rev. 5.1

Importance of Scope 3



Source: 2019 Target Sustainability Report
https://corporate.target.com/_media/TargetCorp/csr/pdf/2019_corporate_responsibility_report.pdf

Building a robust Higg FEM sharing network provides a scalable approach to building robust Scope 3 measurements.

Examples of Use Cases

- A **Brand** uses Higg FEM data to identify low carbon intensity suppliers for a particular material or process
- A **Facility** uses Higg FEM data to set emissions targets and move towards low carbon fuels
- A **Retailer** uses Higg FEM data to calculate a portion of their Scope 3 emissions

Higg FEM GHG Parameters and Calculation

Higg FEM GHG Parameters

Updates on the Higg FEM GHG reporting

- Updated and Consolidated Emission Factors
  - Updated background sources, expanded country-level electricity mixes
- Addition of Refrigerant GHG Emissions
  - Emission factors for all relevant refrigerants in Higg FEM
- Separate Reporting of Non-renewable/Renewable Sources

Emissions Sources in Higg FEM

Emission Source	Description	Examples	Source Data
Stationary Combustion Sources (Energy section)	On-site emissions resulting direct combustion of emissions	Coal burned in on-site boilers; natural gas for heating & thermal energy	EPA 2018; IPCC AR5
Fugitive Refrigerant Emissions (Air Section)	Loss of refrigerants (HFC, CFC, etc) to air, typically resulting from leaks or damage to cooling systems	Loss of R404 due to a leaking refrigerant system	IPCC AR5
Purchased Electricity (Energy Section)	Emissions resulting from purchasing electricity- based on the fuel mix (country level)	Electricity purchased from a utility	GaBi, IEA

Technical Parameters

- All greenhouse gases, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6), and nitrogen triflouride (NF_3) are counted in the GHG inventory.

- Some individual country-level electricity emission factors may not include some non-carbon emissions due to limited data availability.

- Emissions are calculated using the 100-year Global Warming Potential (GWP) factors for each GHG in the IPCC 5th assessment report, including non-carbon GHGs.

Calculation Examples

- **Absolute GHG Emissions**
  - **Total emissions from a facility over a reporting year (non-renewable)**
  - Emission source * conversion to MJ (if applicable) * Emission factor per MJ= Absolute Emissions
  - *Example: 5400 kg Coal- SBA*20.077 MJ/kg * 0.09004 kgCO2e/MJ=9262 kg GHG*

- **Normalized GHG Emissions**
  - **Emissions per unit of production over a reporting year (non-renewable)**
  - Absolute emissions/production volume (reported units)= Emissions per reported unit
  - *Example: 9262 kg GHG/49,356 kgs annual production= 0.188 kg CO2E per kg of production*

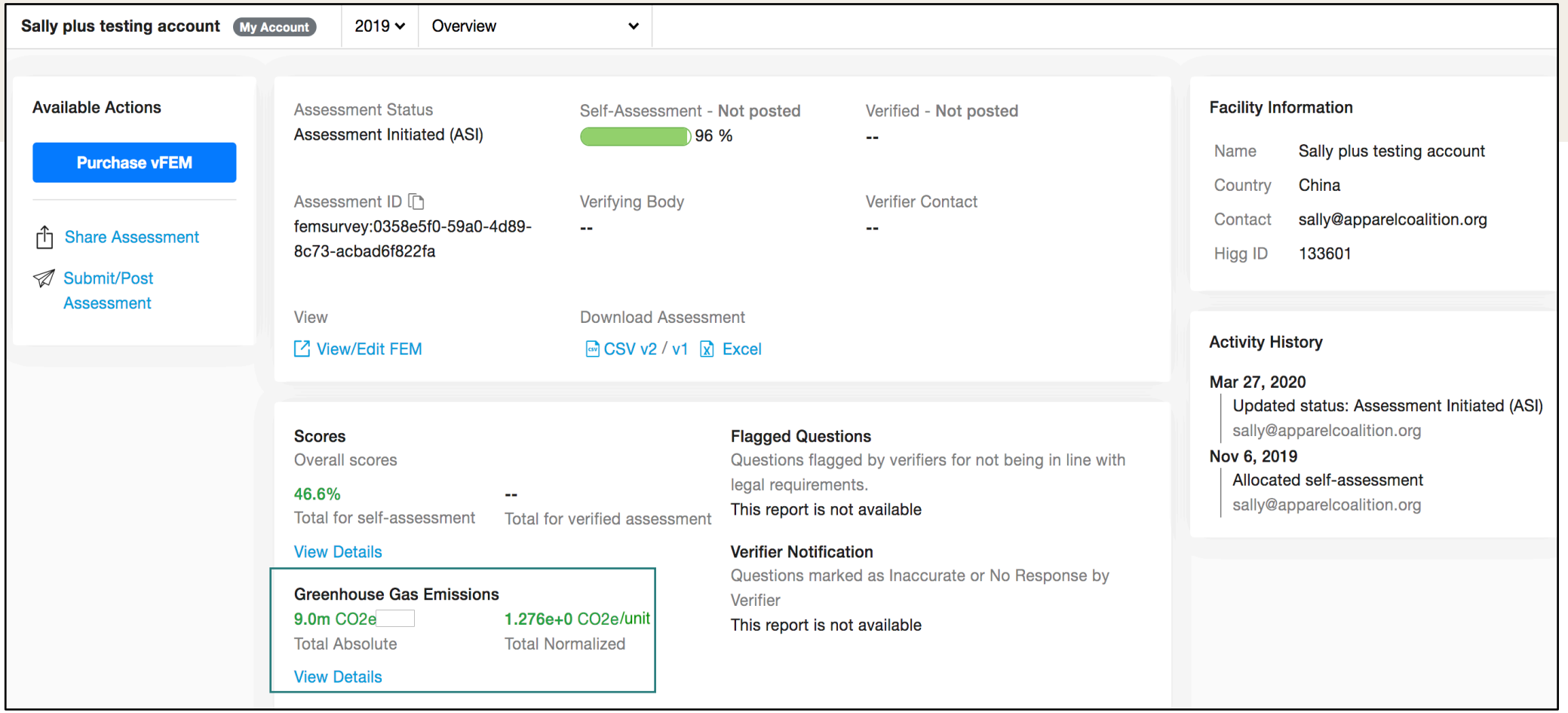
*Higg FEM GHG calculations are based on total reported energy and air emissions data in any individual FEM. In order to accurately calculate Scope 3 emissions, Brands/Retailers must claim their portion of emissions based on the volume of their purchases from an individual facility.

Renewable and Non-renewable Emissions

- Emissions totals include only non-renewable sources
- Renewable emissions (biomass) are calculated separately, but not included in Total Absolute or Total Normalized emissions
- Other direct use renewable sources (solar, wind, hydro) are considered “zero production” emissions, and have emission factors of zero
- Purchased renewables can only be reported if the facility has contractual proof that the energy they are purchasing is from renewable sources. See GHG protocol for additional guidance

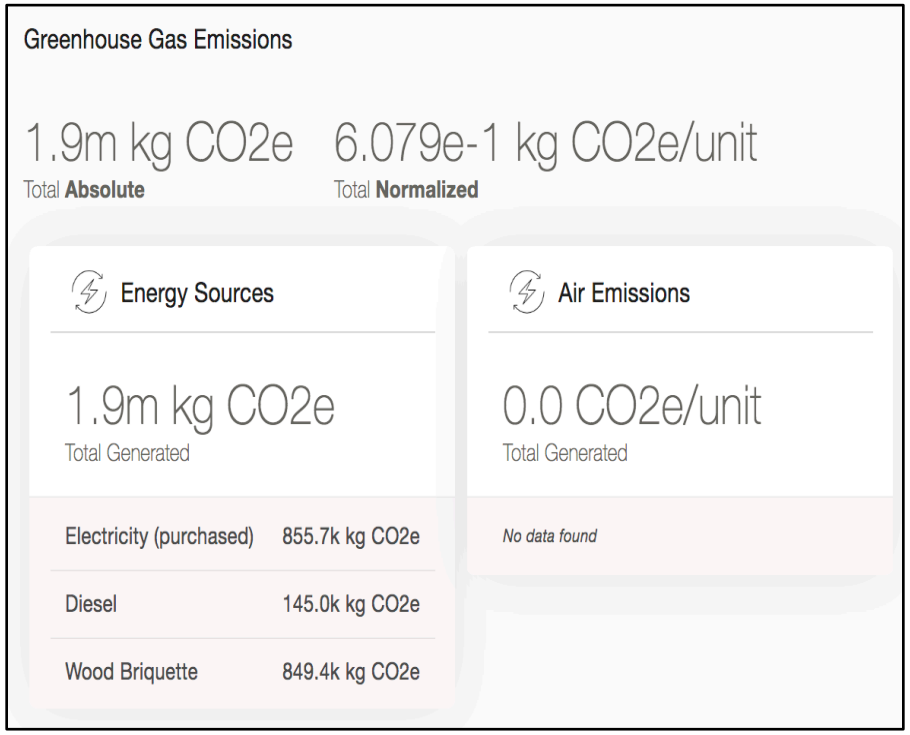
Higg FEM GHG Report

Higg FEM GHG Report

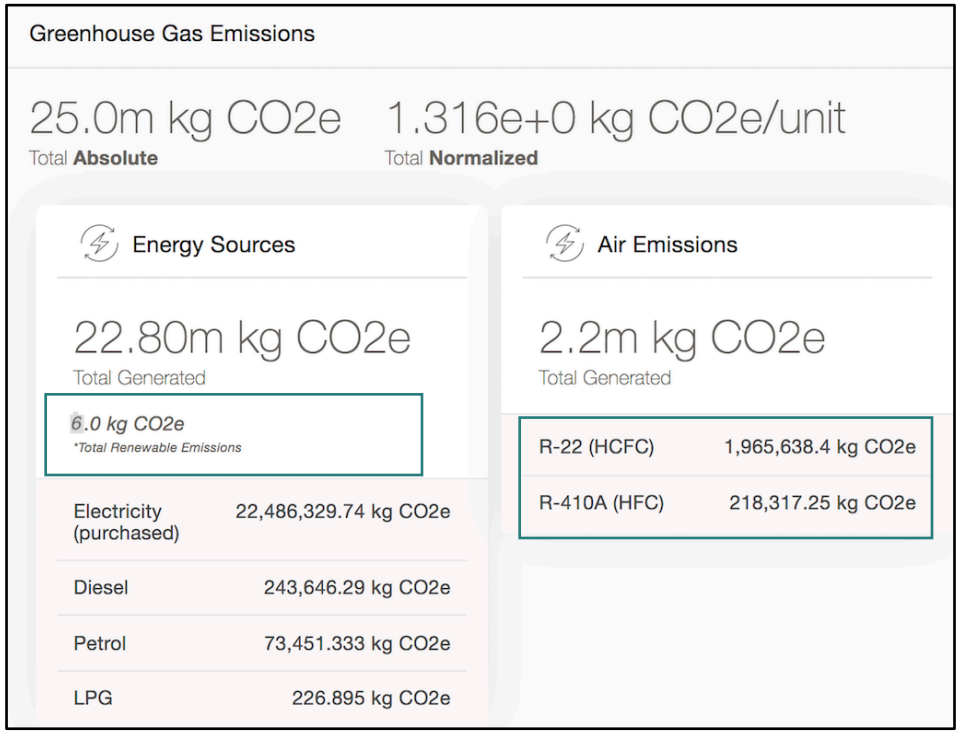


Higg FEM GHG Report

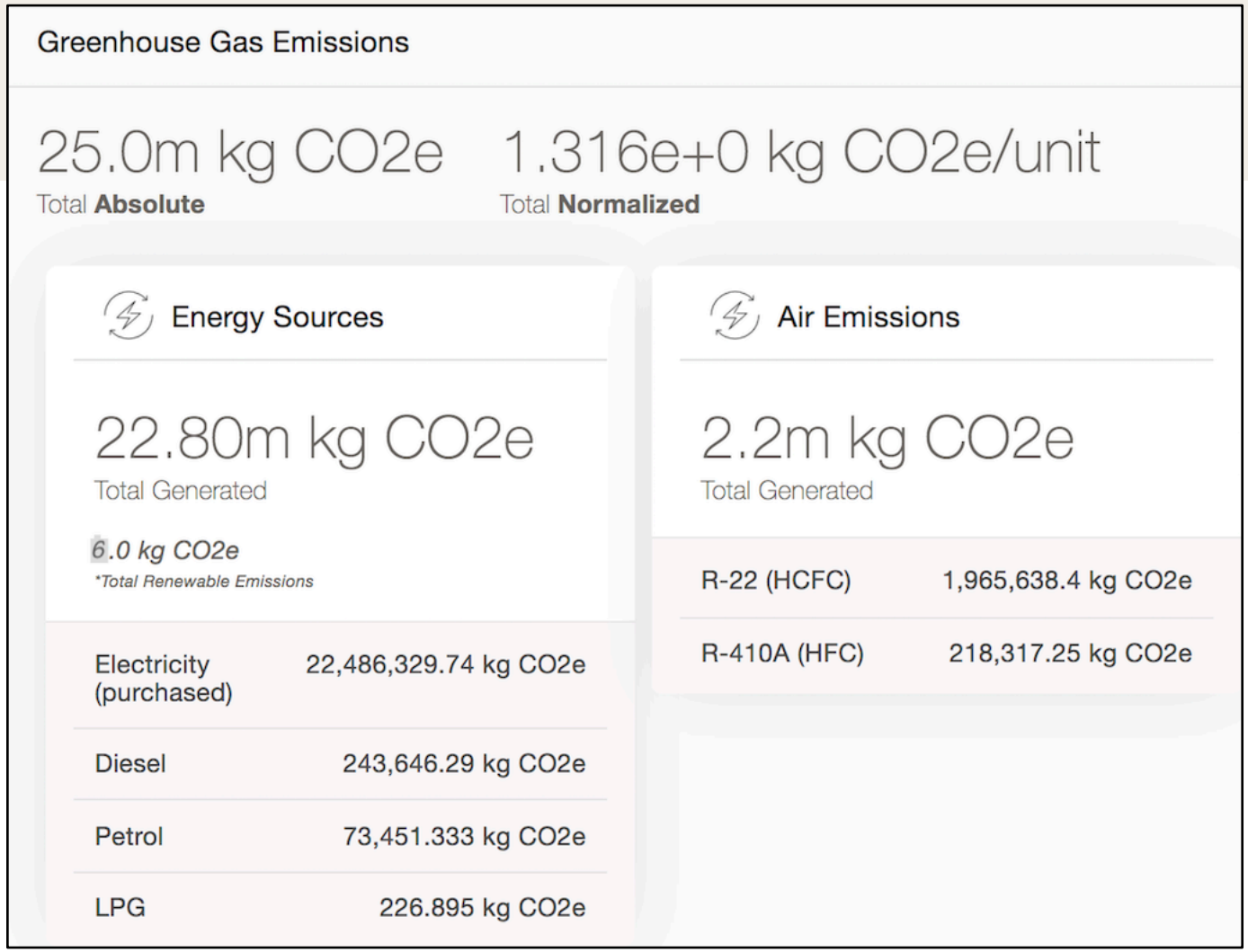
Old Version



New Version



Higg FEM GHG Report



Total GHG

- Absolute
- Normalized

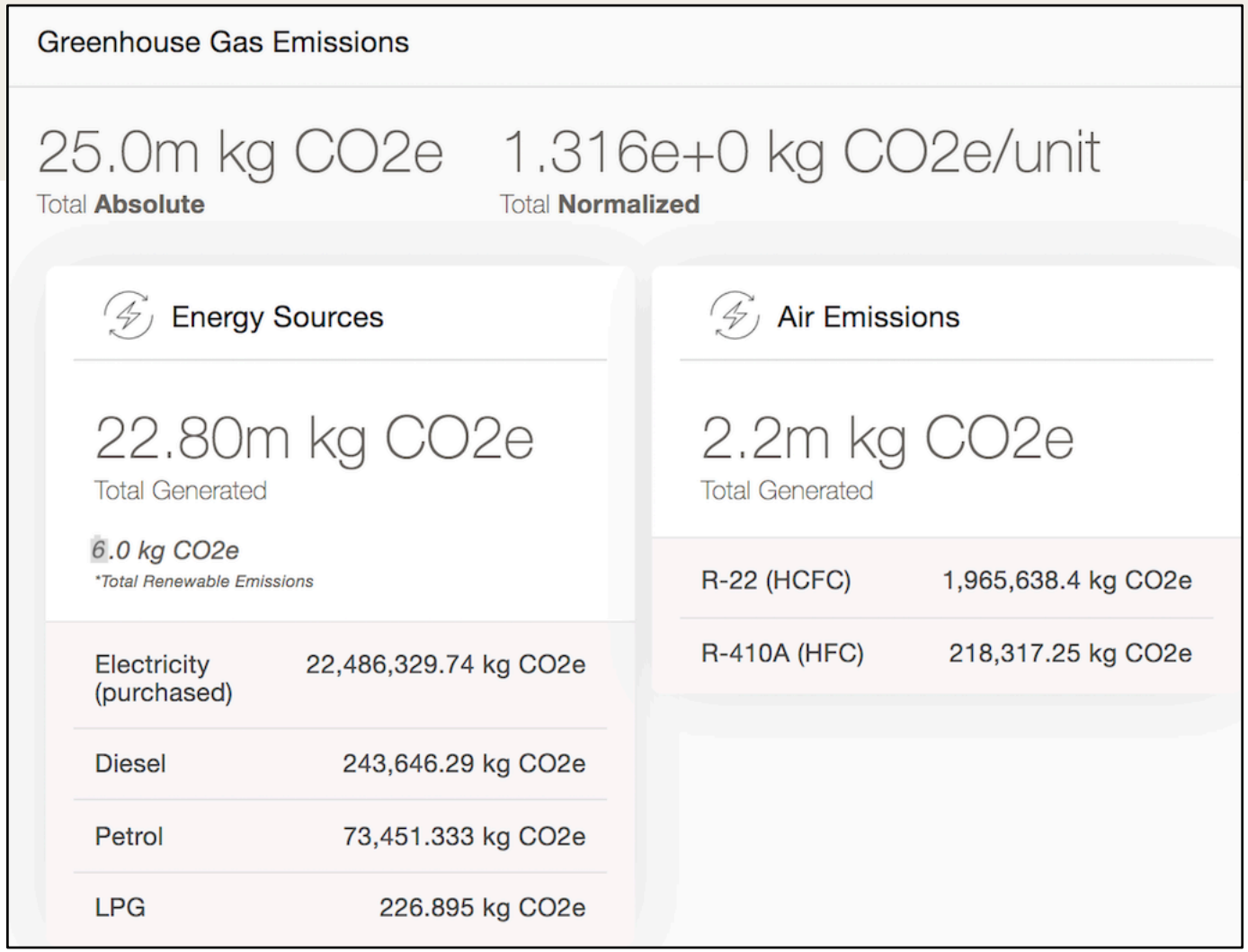
Energy Sources GHG

- Renewable emission GHG
  - Total GHG
  - Each source emission GHG
- Non-renewable emission GHG
  - Total GHG
  - Each source emission GHG

Air Emissions GHG

- Total air emission GHG
- Each source emission GHG

Higg FEM GHG Report



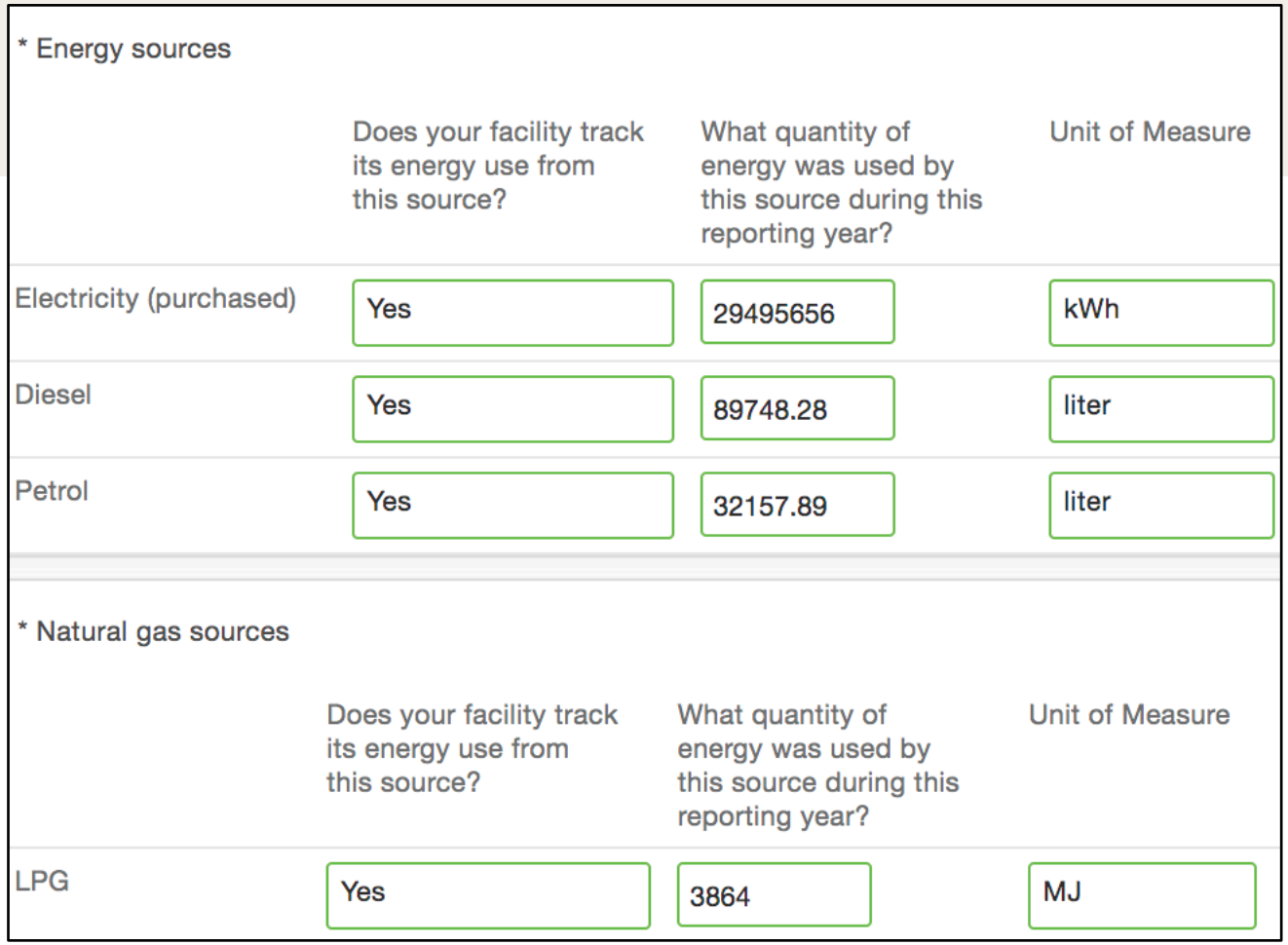
Total GHG = Total energy sources GHG (non-renewable energy GHG) + total air emissions GHG (e.g., 25.0m kg=22.80mkg+2.20mkg)

Total Energy Sources GHG = The sum of individual energy source GHG

- Non-renewable GHG total (e.g., 22.8m kg)
- Renewable GHG total (e.g., 6kg)

Total Air Emissions GHG = The sum of individual refrigerant emissions GHG (e.g., 2.2mkg)

Higg FEM GHG Report – Energy Sources GHG Calculation



* Energy sources

	Does your facility track its energy use from this source?	What quantity of energy was used by this source during this reporting year?	Unit of Measure
Electricity (purchased)	Yes	29495656	kWh
Diesel	Yes	89748.28	liter
Petrol	Yes	32157.89	liter

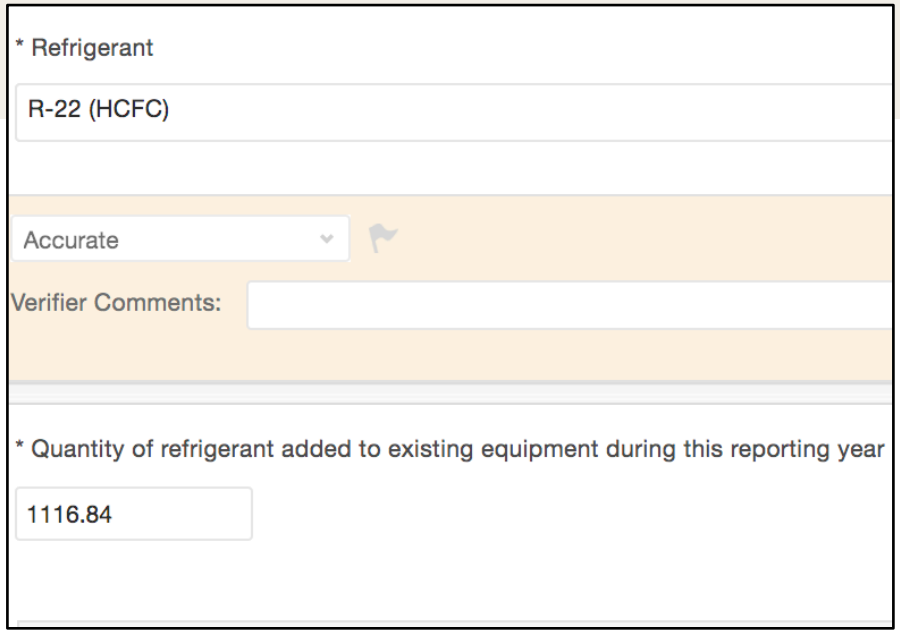
* Natural gas sources

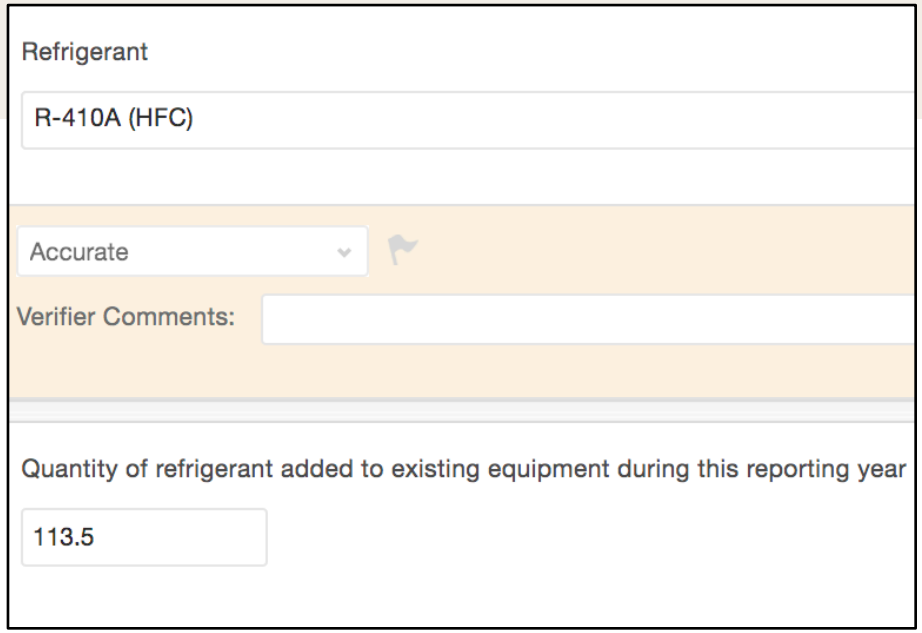
	Does your facility track its energy use from this source?	What quantity of energy was used by this source during this reporting year?	Unit of Measure
LPG	Yes	3864	MJ

GHG Calculation Formula: Emission source * conversion to MJ (if applicable) * Emission factor per MJ

29,495,656 kWh*3.6 MJ/kWh= 106,184,361.6 MJ* 0.2216 kg CO_2e/MJ= 22,486,329.74 kg CO_2e

Higg FEM GHG Report – Air Emission GHG Calculation



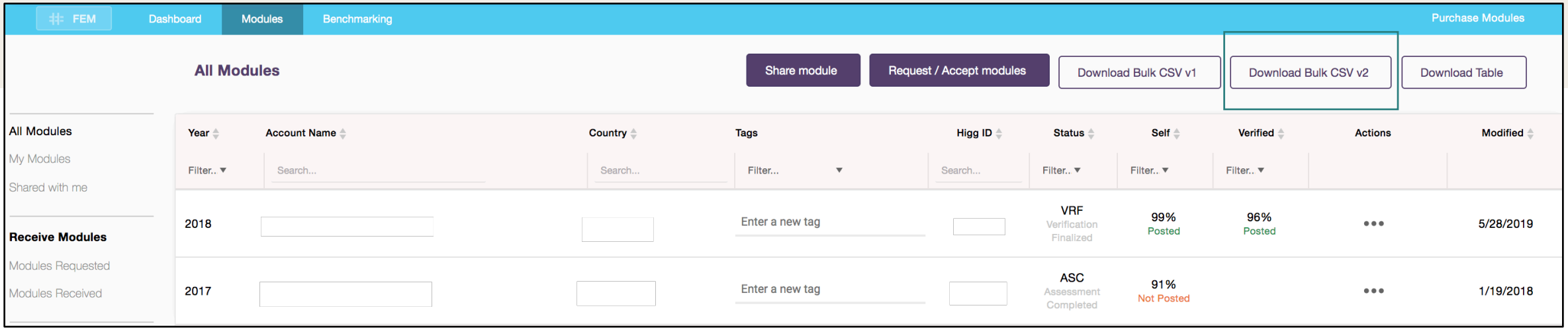


GHG Calculation Formula: Emission source * conversion to kg * Emission factor per kg of Refrigerant

113.5 kg R410a*1,923.5 kg CO_2e/kg= 218317.25 kg CO_2e

Higg FEM CSV GHG Data

Higg FEM CSV GHG Data



CSV V1: only total GHG
CSV V2: total GHG and individual source of GHG (recommend to download)

Higg FEM CSV GHG Data

totalGHGemissions.facility	totalRefrigerants.facility	totalNonRenewables.facility	biomassbeg.GHG: renewable
24987609.91	2183955.65	22803654.26	
23362433.58	2012876.8	21349556.78	

natgaslpg.GH	natgaslng.GH	natgasng.GH	natgasother.	natgaspropa	petrol.GHG:	diesel.GHG:	steampurch.(	electricpurch
226.894704					73451.3329	243646.29		22486329.7
551.029996					73856.301	303016.007		20972133.4

CSV V2

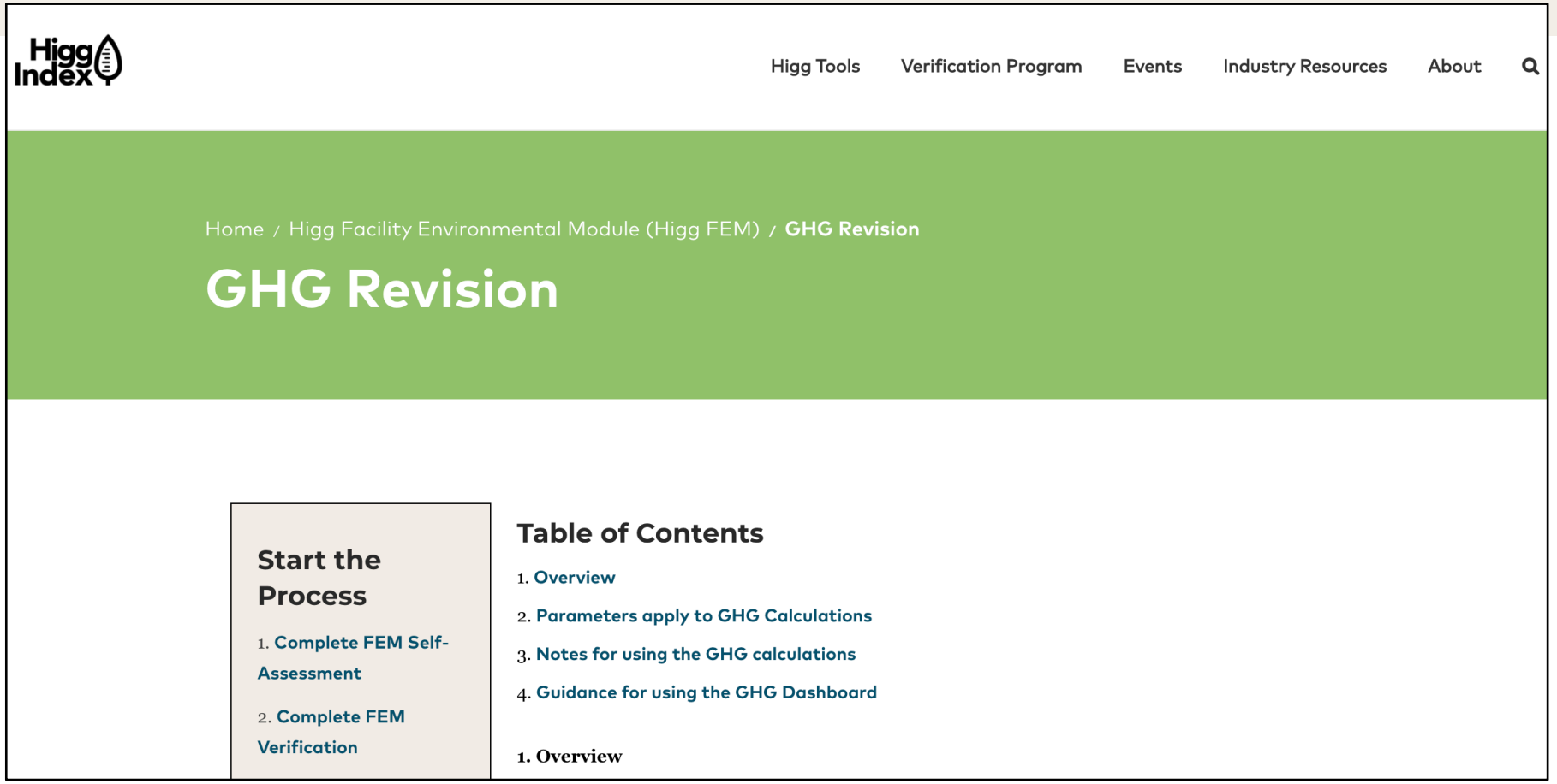
- Total GHG
- Total Air Emission GHG
- Total Non-renewable GHG

- Individual source GHG
  - Renewable, non-renewable and air emission GHG
- Verified GHG data
  - If the FEM has been verified

Guidance & Support

GHG Guidance on Howtohigg.org

Howtohigg.org: Higg Tools -> Higg FEM -> Step by Step Guidance -> GHG Revision

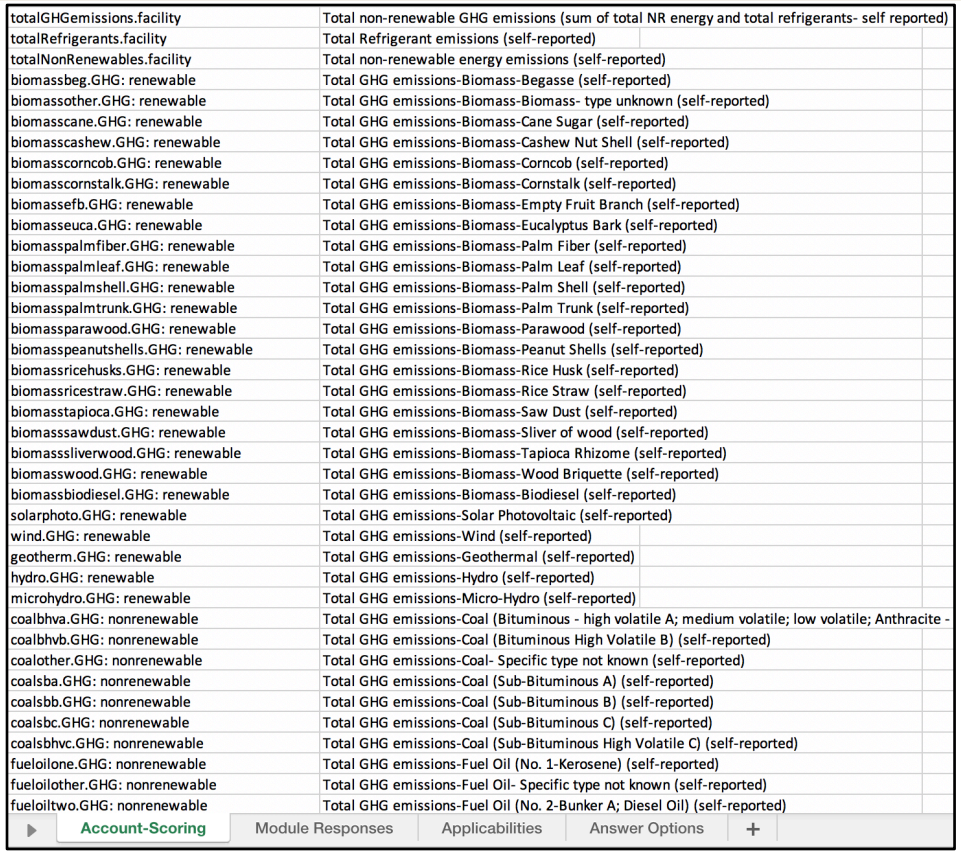


GHG Guidance on Howtohigg.org

Howtohigg.org: Higg Tools -> Higg FEM -> Step by Step Guidance -> GHG Revision

In the FEM CSV bulk export files, you can review the GHG revision data. Below is the updated bulk CSV V2 reference guidance.

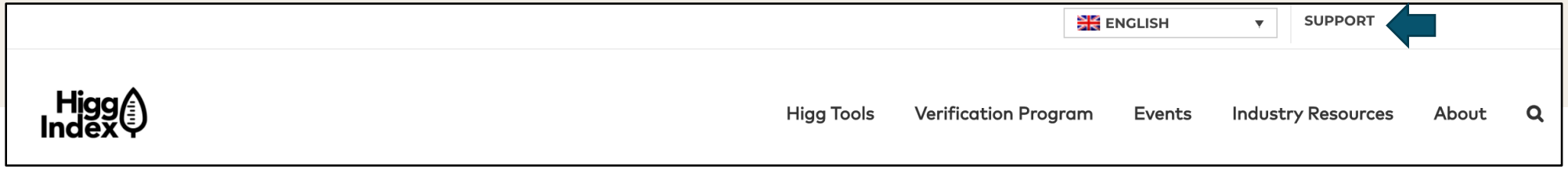
Download Guide

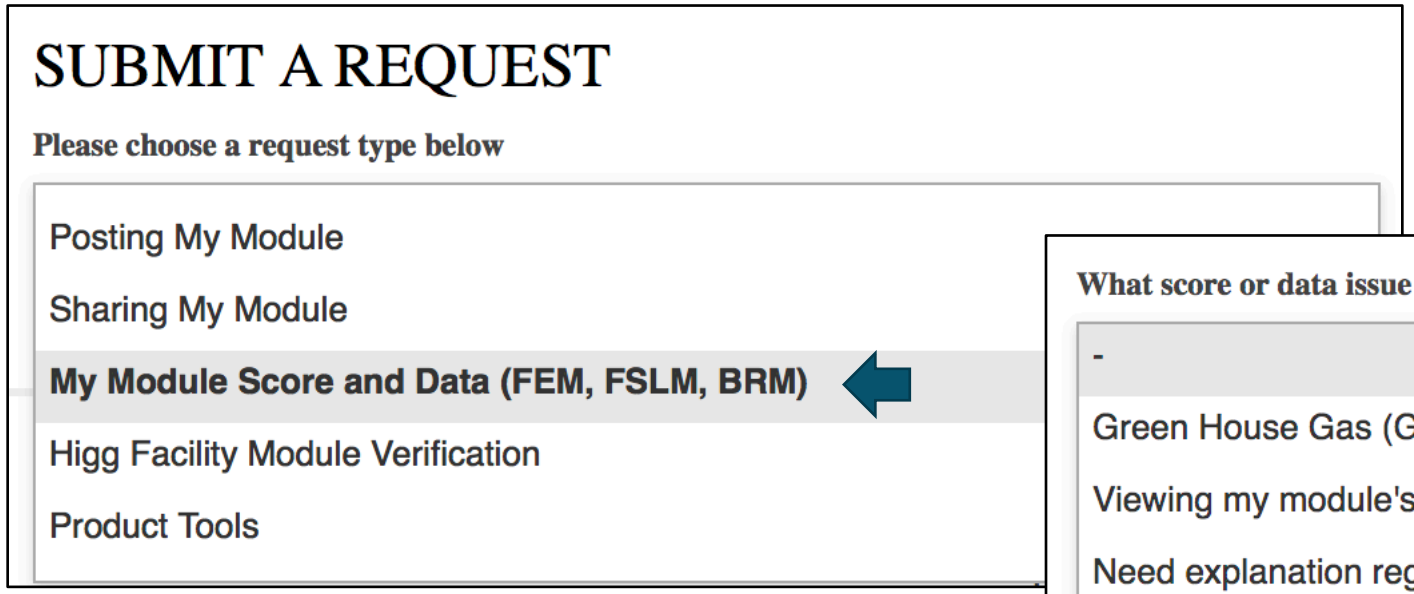


totalGHGemissions.facility	Total non-renewable GHG emissions (sum of total NR energy and total refrigerants- self reported)
totalRefrigerants.facility	Total Refrigerant emissions (self-reported)
totalNonRenewables.facility	Total non-renewable energy emissions (self-reported)
biomassbeg.GHG: renewable	Total GHG emissions-Biomass-Begasse (self-reported)
biomassother.GHG: renewable	Total GHG emissions-Biomass-Biomass- type unknown (self-reported)
biomasscane.GHG: renewable	Total GHG emissions-Biomass-Cane Sugar (self-reported)
biomasscashew.GHG: renewable	Total GHG emissions-Biomass-Cashew Nut Shell (self-reported)
biomasscorncob.GHG: renewable	Total GHG emissions-Biomass-Corncob (self-reported)
biomasscornstalk.GHG: renewable	Total GHG emissions-Biomass-Cornstalk (self-reported)
biomassefb.GHG: renewable	Total GHG emissions-Biomass-Empty Fruit Branch (self-reported)
biomasseuca.GHG: renewable	Total GHG emissions-Biomass-Eucalyptus Bark (self-reported)
biomasspalmfiber.GHG: renewable	Total GHG emissions-Biomass-Palm Fiber (self-reported)
biomasspalmleaf.GHG: renewable	Total GHG emissions-Biomass-Palm Leaf (self-reported)
biomasspalmshell.GHG: renewable	Total GHG emissions-Biomass-Palm Shell (self-reported)
biomasspalmtrunk.GHG: renewable	Total GHG emissions-Biomass-Palm Trunk (self-reported)
biomassparawood.GHG: renewable	Total GHG emissions-Biomass-Parawood (self-reported)
biomasspeanutshells.GHG: renewable	Total GHG emissions-Biomass-Peanut Shells (self-reported)
biomassricehusks.GHG: renewable	Total GHG emissions-Biomass-Rice Husk (self-reported)
biomassricestraw.GHG: renewable	Total GHG emissions-Biomass-Rice Straw (self-reported)
biomasstapioca.GHG: renewable	Total GHG emissions-Biomass-Saw Dust (self-reported)
biomasssawdust.GHG: renewable	Total GHG emissions-Biomass-Sliver of wood (self-reported)
biomasssliverwood.GHG: renewable	Total GHG emissions-Biomass-Tapioca Rhizome (self-reported)
biomasswood.GHG: renewable	Total GHG emissions-Biomass-Wood Briquette (self-reported)
biomassbiodiesel.GHG: renewable	Total GHG emissions-Biomass-Biodiesel (self-reported)
solarphoto.GHG: renewable	Total GHG emissions-Solar Photovoltaic (self-reported)
wind.GHG: renewable	Total GHG emissions-Wind (self-reported)
geotherm.GHG: renewable	Total GHG emissions-Geothermal (self-reported)
hydro.GHG: renewable	Total GHG emissions-Hydro (self-reported)
microhydro.GHG: renewable	Total GHG emissions-Micro-Hydro (self-reported)
coalbhva.GHG: nonrenewable	Total GHG emissions-Coal (Bituminous - high volatile A; medium volatile; low volatile; Anthracite -
coalbhvb.GHG: nonrenewable	Total GHG emissions-Coal (Bituminous High Volatile B) (self-reported)
coalother.GHG: nonrenewable	Total GHG emissions-Coal- Specific type not known (self-reported)
coalsba.GHG: nonrenewable	Total GHG emissions-Coal (Sub-Bituminous A) (self-reported)
coalsbb.GHG: nonrenewable	Total GHG emissions-Coal (Sub-Bituminous B) (self-reported)
coalsbc.GHG: nonrenewable	Total GHG emissions-Coal (Sub-Bituminous C) (self-reported)
coalsbhvc.GHG: nonrenewable	Total GHG emissions-Coal (Sub-Bituminous High Volatile C) (self-reported)
fueloilone.GHG: nonrenewable	Total GHG emissions-Fuel Oil (No. 1-Kerosene) (self-reported)
fueloilother.GHG: nonrenewable	Total GHG emissions-Fuel Oil- Specific type not known (self-reported)
fueloiltwo.GHG: nonrenewable	Total GHG emissions-Fuel Oil (No. 2-Bunker A; Diesel Oil) (self-reported)

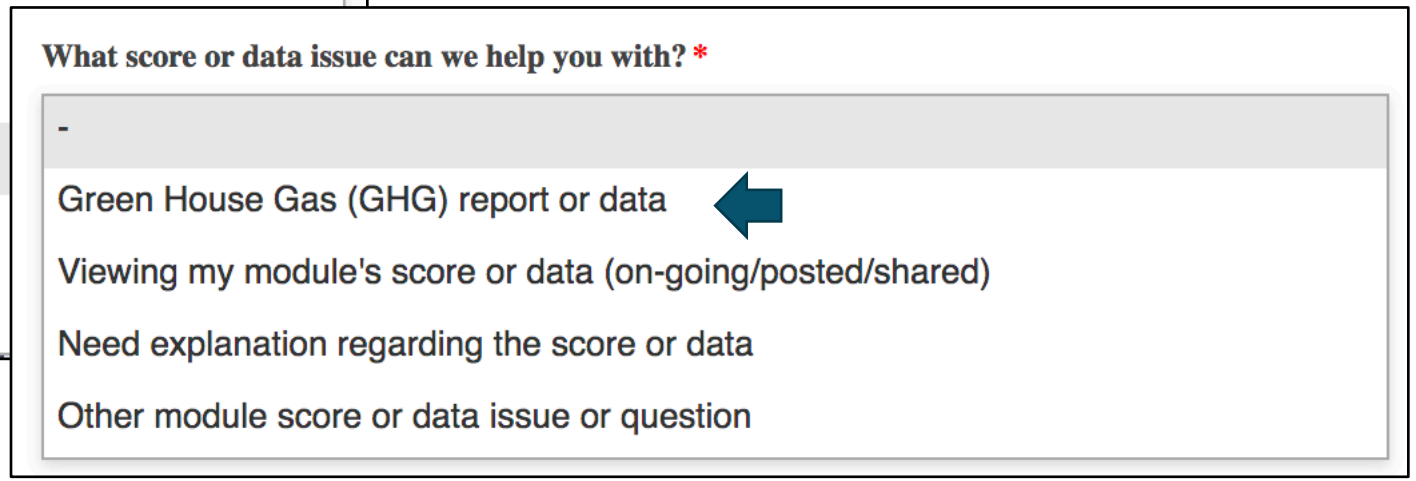
Account-Scoring | Module Responses | Applicabilities | Answer Options | +

Submit a Support Ticket





Howtohigg.org -> Support
or Howtohigg.org/request



Platform Demo


Questions?


Thank you!
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