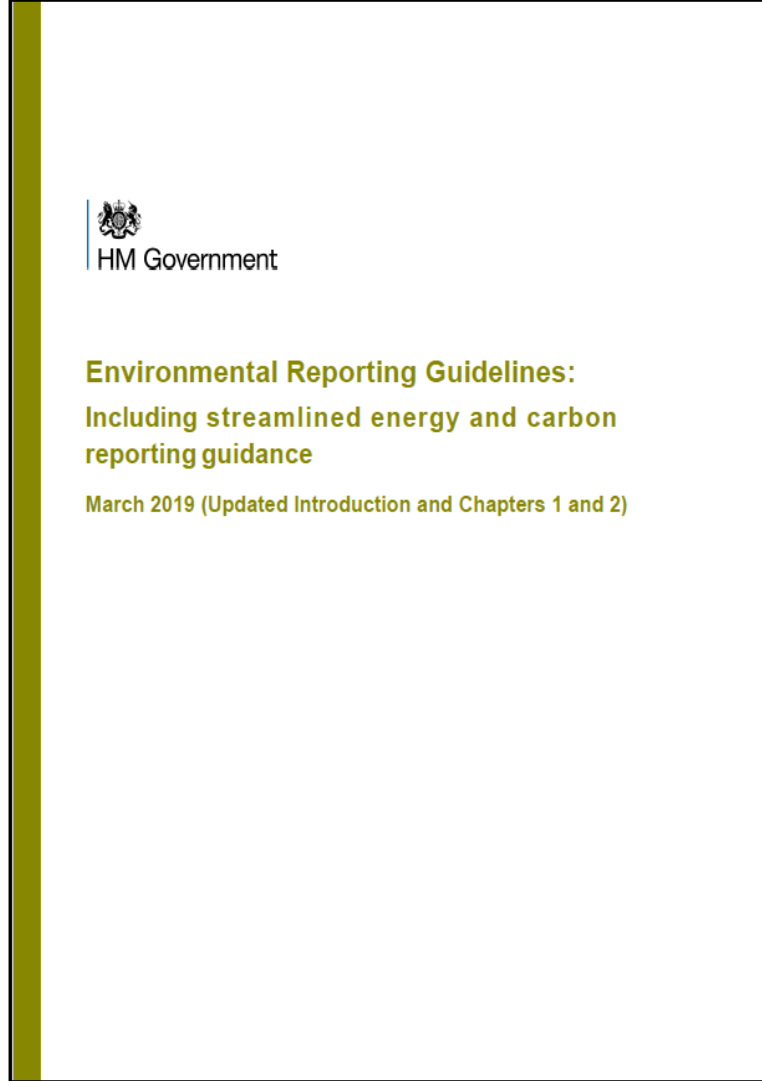


Transport Energy

Collecting Baseline Data

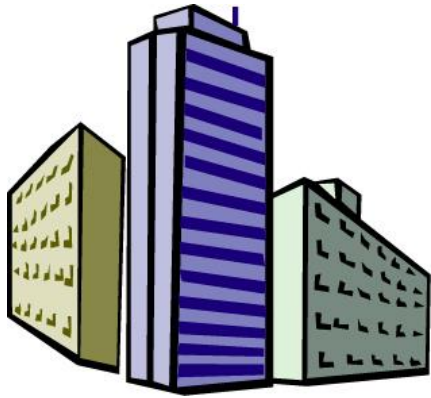


Why Measure Energy?

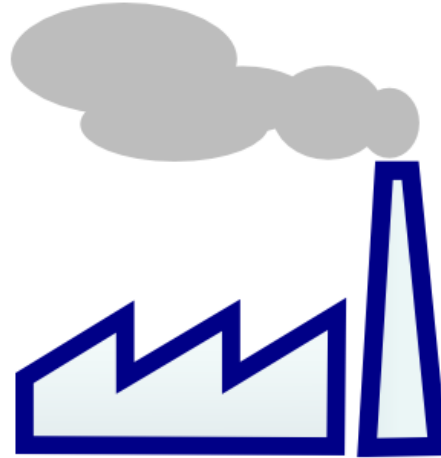


- Because you have to!
- **Energy Savings Opportunity Scheme (ESOS)**
Energy Assessment for “Large Undertakings”
Started July 2014, Every 4 years
Enforced by Environment Agency
- **Streamlined Energy & Carbon Reporting (SECR)**
From April 2019, Annual Report
Covers both Energy and Carbon
Policed by Companies House
- ...and also because you can save money

ESOS Reporting



Buildings



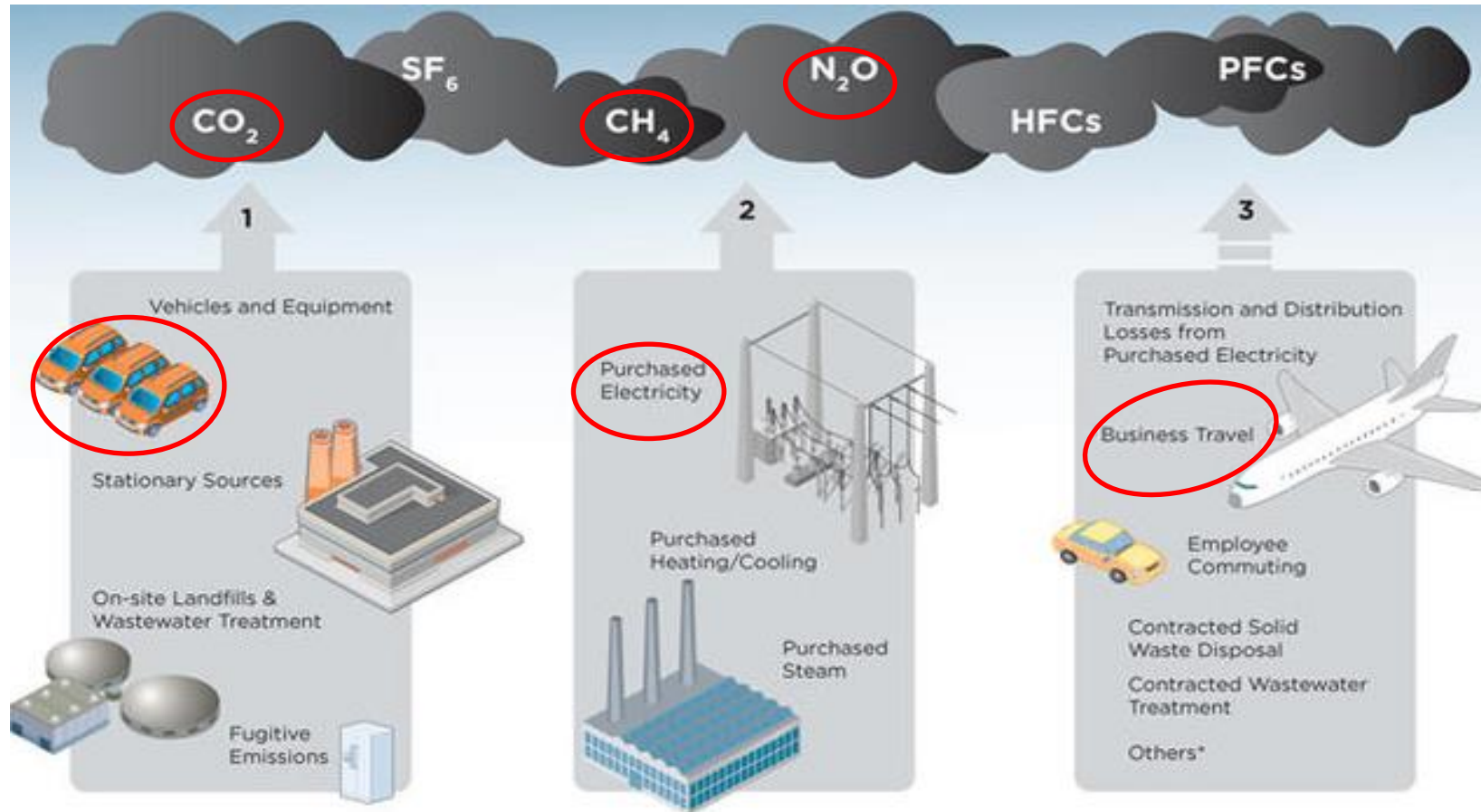
Processes



Transport

- Measure the energy consumption – **kWh** or GJ, **Gross CV** or Net CV.
- Determine areas of significant use (must cover **90%** of total).
- Use accurate and verifiable data.
- Criteria: Do you pay for the energy – directly or indirectly?
(Transport: Do you manage the driver and influence the vehicle used?)

GHG Reporting - Carbon



Scope 1: Emissions from equipment or sources you own.

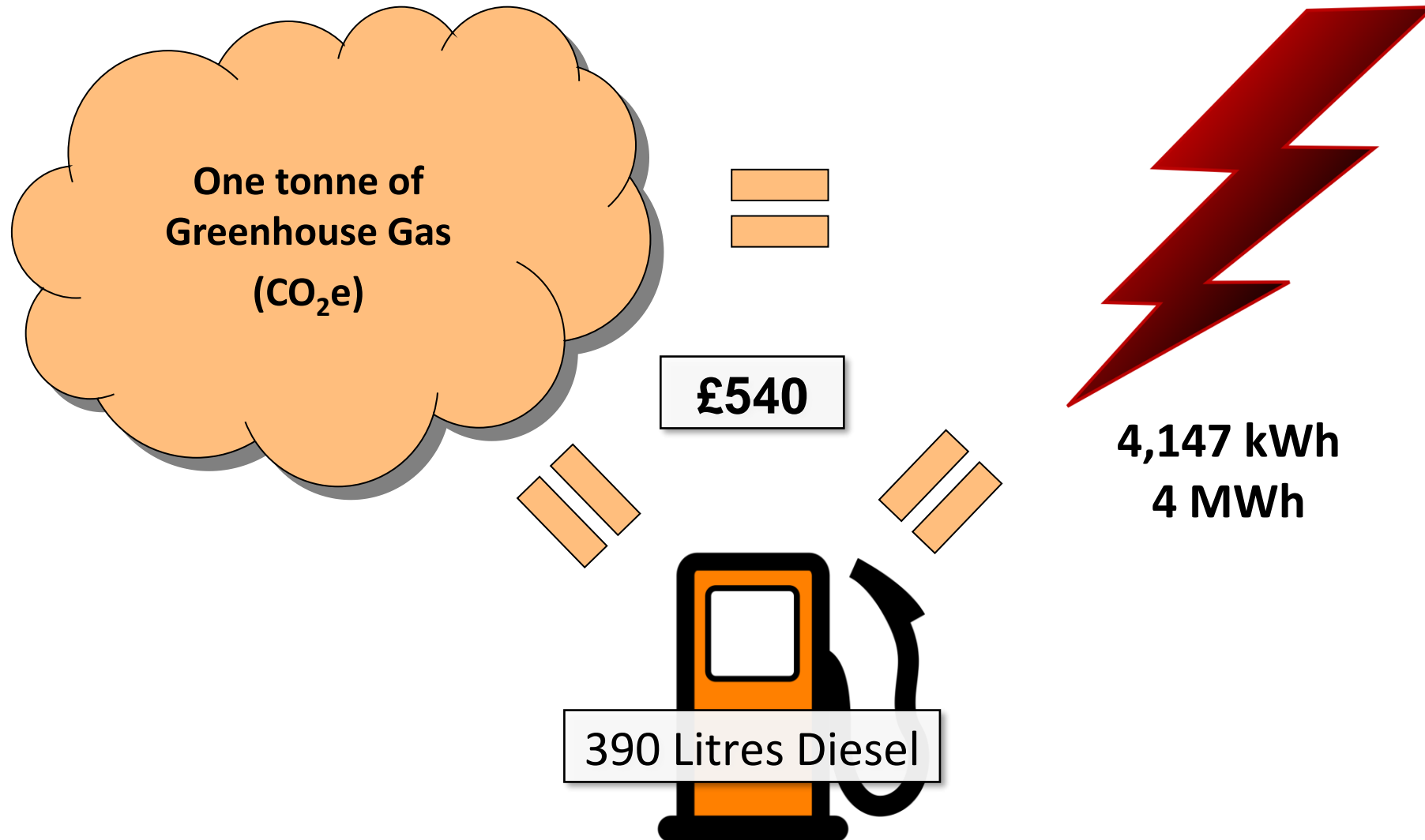
Scope 2: Emissions from Electricity and purchased Heat.

Scope 3: Indirect emissions caused by your activity.

Transport ESOS and GHG Protocol

Fleet/Transport Mode	ESOS	GHG	Scope
Company Car – All User Types	✓	✓	1 or 2
Pool Cars (Shared Use)	✓	✓	1 or 2
Hire Cars & Vans (Daily Rental)	✓	✓	1 or 2
Car Club Cars & Vans (City Car)	✓	✓	1 or 2
LCVs (3.5 tonnes or less)	✓	✓	1 or 2
HCVs (over 3.5 tonnes)	✓	✓	1 or 2
Plant (Diggers, Generators, Tractors)	✓	✓	1 or 2
Opt-Out Car (Monthly Payment)	✓	✓	3
Grey Fleet (Private Cars - £/mile)	✓	✓	3
Taxis (Private Hire & Hackney)	x ✓	✓	3
Shared Transport (Trains, Planes...)	x	✓	3

Links Energy, Sustainability (GHG) and Finance



From miles, km, hours, litres and kg to kWh



Phase 1: Data Sources



- For Phase 1 (is it in the 10%?) we just need a total kWh.
- At this stage we are not interested in asset-level (vehicle) data.
- Range of systems used to dispense energy (fuel):

Bulk Tanks



Fuel Cards



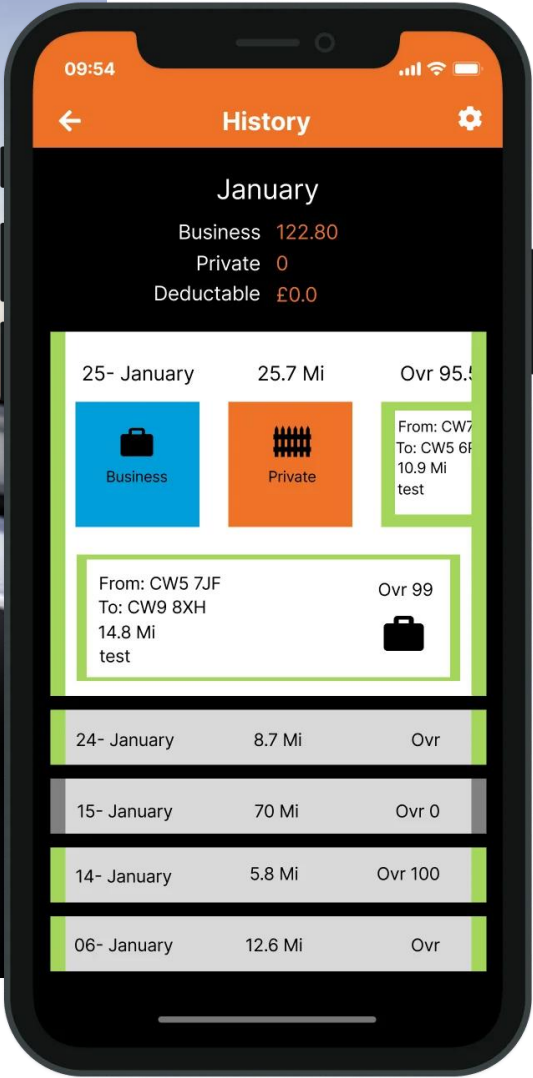
Telemetry & Tracking Data



Other Fuels



Business Travel Mileage



Conversion to kWh: Finding the Factors

Collection

Government conversion factors for company reporting of greenhouse gas emissions

The government conversion factors for greenhouse gas reporting are for use by UK and international organisations to report on greenhouse gas emissions.

From: [Department for Business, Energy & Industrial Strategy](#)

Published 1 May 2013

Last updated 22 June 2022 — [See all updates](#)

	Net CV kWh/kg	Gross CV kWh/kg	Net CV kWh/litre	Gross CV kWh/litre
Diesel (100% mineral diesel)	11.91	12.67	10.02	10.66
Diesel (average biofuel blend)	11.83	12.58	9.98	10.61
Gas Oil	11.83	12.58	9.99	10.63
LPG	12.76	13.70	6.76	7.26
Natural Gas	12.55	13.91	0.01	0.01
Petrol (100% mineral petrol)	12.40	13.06	9.20	9.69
Petrol (average biofuel blend)	12.12	12.78	9.02	9.52
Propane	12.89	14.00	6.63	7.20
Biodiesel (ME)	10.33	10.75	9.20	9.57
Biodiesel (BtL or HVO)	12.22	12.73	9.53	9.93
Bioethanol	7.44	8.25	5.91	6.55
Biomethane	13.61	15.08	0.01	0.01
CNG	12.55	13.91	2.20	2.43

SECR kWh pass & delivery vehs

SECR kWh UK electricity for EVs

Fuel properties

Gross or Net? – Mileage factors only Net

Type	Unit	Diesel kWh (Net CV) per unit	Petrol kWh (Net CV) per unit	Hybrid kWh (Net CV) per unit	CNG kWh (Net CV) per unit	LPG kWh (Net CV) per unit
Small car	km	0.54642	0.61256	0.42118		
	miles	0.87937	0.98582	0.67783		
Medium car	km	0.65773	0.77293	0.44224	0.77293	0.77293
	miles	1.05851	1.24392	0.71171	1.24392	1.24392
Large car	km	0.82216	1.15803	0.61648	1.15803	1.15803
	miles	1.32314	1.86367	0.99212	1.86367	1.86367
Average car	km	0.66889	0.71321	0.485	0.85781	0.85781
	miles	1.07648	1.14779	0.78052	1.38051	1.38051

Mileage & Fuel	kg CO ₂ e/km		kg CO ₂ e/kWh (Gross CV)		kWh/km (Gross CV)
Av. Petrol Car	0.17048	÷	0.22719	=	0.75039
Av. Diesel Car	0.17082	÷	0.24115	=	0.70836

Group Exercise: Getting the Base Data

- The mythical “ABC Construction” regional company.
- Builds the UK’s mythical 300,000 new homes each year.
- Mix of company cars, vans, trucks and plant (NRMM).
- Also has hand-held ICE powered tools (e.g. chain saws).
- Head office employees.
- Has a central stores operation and a depot/workshop.
- A lot of plant on site and also site offices etc.



Group Exercise: Team Feedback

- Told you they had cars, vans, HGVs plant and NRMM
- They use bulk tanks at the depot, plus fuel cards
- Have bowzers on the building sites - unmetered
- Company cars have fuel cards – declare business miles
- Grey fleet drivers claim £0.45/mile, may have opt-out
- But some staff prefer to use a hire car not their own car
- Central stores operates gas & electric fork-lifts.
- Site offices have built-in generators – fuel from bowser



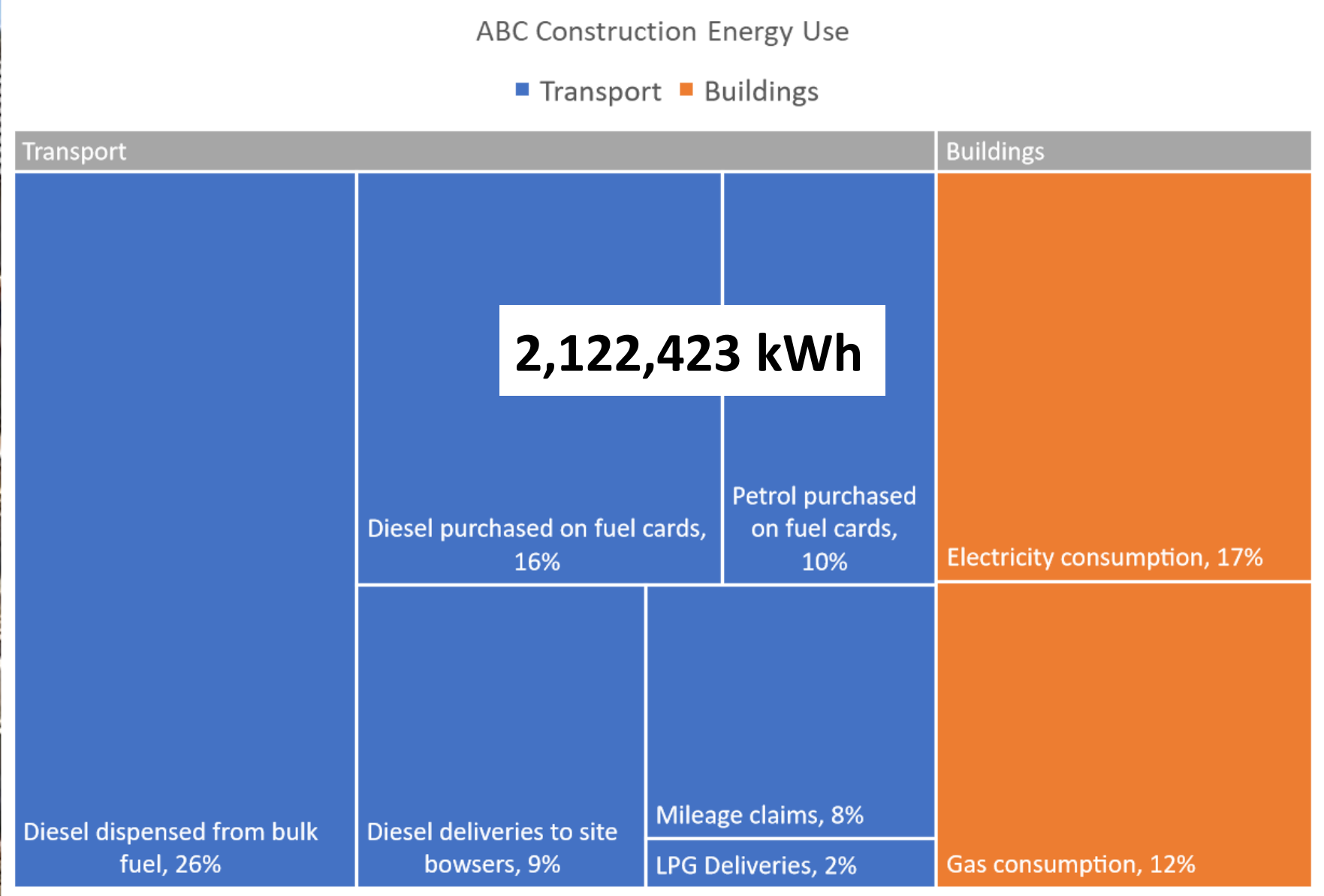
Personal Exercise



Excel

Actual calculation of total energy use of the ABC Contractors.
Feedback your answer (total energy use) in the chat to Tom.

Personal Exercise - Result



Coffee Break

