2024 Greenhouse Gas Emissions Inventory Report

CONTACT ENERGY LTD

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1 Introduction

This is Contact's seventh annual greenhouse gas (GHG) emissions inventory report. The inventory is a complete and accurate report of the GHG emissions that result from Contact's operations within the declared boundary and scope for the reporting period. The inventory has been prepared in accordance with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) (the GHG Protocol) and Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

Contact has reported its Scope 1 – direct emissions since 2012. Scope 2 and 3 indirect emissions have been reported since 2018. 2018 is used as the base year because of the inclusion of all scopes.

No facilities, operations and/or emissions sources have been excluded from the inventory except for specific scope 3 emissions noted in Table 1.

The reporting period covered is from 1 July 2023 to 30 June 2024.

2 Organisational boundaries

The organisational boundary determines the parameters for GHG reporting and ensures a consistent approach is applied when assessing which factors to include. Contact's boundaries have been set following the GHG protocol methodology.

Contact has applied the operational control consolidation approach. This allows us to focus on those emissions sources that we have control over and therefore the ability to improve upon.

The following entities are included in this GHG inventory.

- Contact Energy Limited
- Western Energy Limited

Simply Energy fully amalgamated with Contact on 01 April 2024 and its emissions for this reporting period have been included as part of Contact Energy's emissions. In FY23, Simply Energy's emissions were included in the inventory and identified separately from Contact's where noted.

The following entities are inside Contact's organisational boundary but have no material emissions associated with their activities in this reporting period.

- Contact Energy Solar Limited
- Contact Energy Solar Holdings GP Limited
- Contact Energy Solar Holdings LP
- Contact Energy Trustee Company Limited
- Contact Energy Risk Limited

3 Operational boundaries

Contact has included Scope 1, 2 and 3 emissions in this GHG inventory.

Scope 1 – Direct GHG emissions

Scope 1 includes GHG emissions from sources that are owned or controlled by Contact.

This encompasses emissions from:

- the combustion of fuels at our gas and diesel fired thermal power stations,
- the geothermal steam released at our geothermal power stations,
- the combustion of fuel used in vehicles owned or leased by Contact and
- any fugitive emissions released (SF6).

Fuel used in vehicles owned or leased by our subsidiary Western Energy is also included.

See pages 9-11 for more detail on emissions factors and methodology for Scope 1 reporting.

Scope 2 – Electricity indirect GHG emissions

Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company.

This encompasses emissions from:

- Electricity consumed through Installation Connection Points (ICPs).
- Electricity drawn directly from the grid at power stations when the station is down or requires extra supply.

Electricity consumption by subsidiary Western Energy is also included.

See pages 9-11 for more detail on emissions factors and methodology for Scope 2 reporting.

Scope 3 – Other indirect GHG emissions

Scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. Reporting on these emissions is optional under the GHG protocol.

Contact has determined which categories are relevant using the following criteria:

- Relevance to our operations;
- A significant contributor to overall GHG emissions;
- Connected to stakeholder interests;
- Availability of data; and
- Able to be influenced/reduced.

The following table details which categories have been included. All Scope 3 emissions factors were sourced from Ministry for the Environment. 2024. *Measuring Emissions: A Guide for Organisations: 2024 detailed guide.* Wellington: Ministry for the Environment (MfE) unless noted otherwise.

3 Operational boundaries (continued)

Table 1: Scope 3 categories

Category	Included/ excluded	Justification	Calculation methodology and activity data source	Emission factor source
Category 1 – Purchased goods and services	Included	Estimation using the spend-based approach for relevant opex activity over $100k within reporting period (excluding labour costs, bank fees, FX gains/losses, meter reading, property rental, subscription fees, bad debts and donations). 85% of operating spend for 2024 has been included in the emissions calculation.	Spend-based method from internal finance records of purchases, using emissions factors by relevant activity type. Higher uncertainty due to use of historic inflation adjusted emissions and spend-based method.	Inflation adjusted emissions factors sourced from the Motu Working paper 14-05 *Greenhouse Gas Emissions in New Zealand: A Preliminary Consumption-Based Analysis.*
Category 2 – Capital goods	Included	Estimation using the spend based approach for all capex activity over $500k within reporting period. 97% of capital spend for 2024 has been included in the emissions calculation.	Spend-based method from internal finance records of purchases, using emissions factors by relevant activity type. Higher uncertainty due to use of historic inflation adjusted emissions and spend-based method.	Inflation adjusted emissions factors sourced from the Motu Working paper 14-05 *Greenhouse Gas Emissions in New Zealand: A Preliminary Consumption-Based Analysis.*
Category 3 – Fuel and energy	Included	Upstream emissions of purchased fuels for generation sites. (Transportation of fuel, transmission and distribution, extraction, production)	Average-data method Data taken from fuel usage records, vehicle fuel volumes and distance travelled. Some uncertainty due to use of averages.	Diesel Well to Tank emission specific factors sourced from UK Government *GHG Conversion Factors for Company Reporting 2022.*
		Transmission and Distribution Losses from electricity purchased.	Average-data method from purchased electricity volumes from electricity invoices. Low uncertainty due to use of automated metered data.	MfE
		Emissions from diesel fuel used for drilling.	Average-data method from supplier invoices. Low uncertainty due to use of supplier invoices.	MfE
		Western Energy stationary engine diesel.	Average-data method from fuel records. Low uncertainty due to use of supplier invoices.	MfE
	Excluded	Upstream emissions from extraction and production of gas and the transportation of gas have been excluded as this is captured within Scope 1 emissions.	-	-
Category 4 – Upstream transportation and distribution	Included	Freight of major operating materials.	Spend-based method from internal finance records, supplier invoices Higher uncertainty due to use of	Inflation adjusted emissions factors sourced from the 2007 Motu Working paper 14-05 *Greenhouse*

			historic inflation adjusted emissions and spend-based method.	*Gas Emissions in New Zealand: A Preliminary Consumption-Based Analysis.*
Category 5 – Waste	Included	Waste from all operational and office sites, excluding Western Energy.	Waste-type-specific method from waste collection provider where possible. Average-data method where specific data not available. Some uncertainty involved due to use of averages.	MfE
Category 6 – Business travel	Included	Air travel (domestic and international)	Distance-based method Emissions directly from travel provider have been verified through the *Toitū carbonreduce certification* carbon verification scheme. Low uncertainty.	MfE
		Car travel (rental cars)	Distance-based method Emissions directly from travel provider have been verified through the *Toitū carbonreduce certification* carbon verification scheme. . Low uncertainty.	MfE
		Accommodation	Distance-based method Emissions directly from travel provider have been verified through the *Toitū carbonreduce certification* carbon verification scheme. . Low uncertainty.	MfE
		Car travel (taxis and private vehicles)	Spend-based method from internal finance records. Some uncertainty as engine type and capacity of taxis is not recorded. Overestimation is used to offset this uncertainty.	MfE
Category 7 – Employee commuting	Included	Employee survey, excluding Western Energy.	Distance-based method run through Abley CarbonWise™. Some uncertainty involved due to use of averages and reliance on employee self-reporting.	MfE
Category 8 – Upstream leased assets	Excluded	All leased sites electricity consumption data is included in Scope 2 – operational control.	-	-
Category 9 – Downstream transportation and distribution	Excluded	There is no transportation or distribution of products after the point of sale.	-	-
Category 10 – Processing of sold products	Excluded	There is no processing of sold products by the reporting company.	-	-
Category 11 – Use of sold products	Included	Natural gas sales.	Volume sold records from internal finance records. Low uncertainty as finance records are assumed to be highly accurate.	Climate Change (Stationary Energy and Industrial Processes) Regulations 2009

Category 12 – End of life treatment of sold products	Excluded	There is no remaining product to be disposed of at the end of use.	-	-
Category 13 – Downstream leased assets	Included	Contact has on-leased/licensed property – estimates provided by lessee.	Leaseholder questionnaires / Estimates. Some uncertainty involved due to use of estimates and reliance of leaseholder self-reporting.	MfE
Category 14 – Franchises	Excluded	There are no franchise arrangements.	-	-
Category 15 – Investments	Excluded	Investments deemed to be minimal and no data available.	-	-

4 Base Year

FY18 emissions reporting (Scope 1, 2 and 3) form the base year for all GHG emissions. FY18 was the first year that the full emissions suite was recorded and reported.

As per the Contact policy for the recalculation of base year emissions data, any structural, methodological, or other changes identified that change the emissions reported by more than 5% will trigger a recalculation of the base year and the current reporting year.

5 Greenhouse gas inventory

Table 2: Greenhouse gas emissions inventory summary 1 July 2023 – 30 June 2024 with comparison to prior year and base year

Scope	Category	FY24 tCO2e	FY23 tCO2e	FY18 tCO2e
Direct emissions (Scope 1)	Stationary Combustion	947,131	526,282	1,174,698
	Mobile combustion[1]	212	179	1,072
	Fugitive emissions[2]	28	32	2
	Simply Energy – Mobile combustion	-	2	-
	Western Energy – Mobile combustion	120	126	-
	Subtotal	**947,491**	**526,621**	**1,175,772**
Indirect emissions (Scope 2)	Purchased electricity (location based)	973	1,950	1,397
	Simply Energy - Electricity consumption (location based)[3]	-	4	-
	Western Energy - Electricity consumption (location based)	2	3	-
	Subtotal	**975**	**1,957**	**1,397**
Scope 1 & 2	**TOTAL**	**948,466**	**528,579**	**1,177,169**
Indirect emissions (Scope 3)	Purchased goods and services	6,522	6,197	47,507
	Capital goods	79,185	88,266	13,899
	Fuel and energy related activities	5,130	1,050	77,049
	Upstream distribution and transportation	254	108	116
	Waste	58	47	134
	Business travel	1,601	1,274	1,182
	Employee commuting	927	965	2
	Use of sold products	170,929	175,603	370,168
	Downstream leased assets	429	164	586
	Franchises	-	-	4,536
	Subtotal	**265,034**	**273,673**	**515,179**
Scope 1, 2 & 3	**TOTAL**	**1,213,500**	**802,252**	**1,692,348**

Note: Data from FY18 presented in table 2 has not been subject to assurance procedures by EY. Western Energy is included in all categories apart from waste and employee commuting due to reliable data not being available, and use of sold products and downstream leased assets due to no relevant activity.

[1] Simply Energy - Mobile combustion included in Mobile combustion from FY24 onwards.

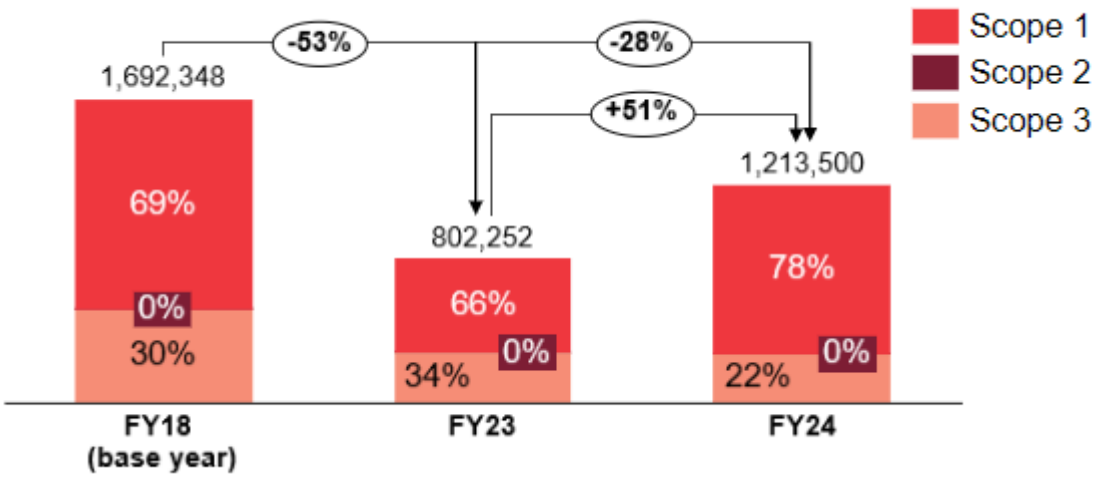
[2] SF_6 data is only collected once annually. Any leakages from 01 January – 30 June 2024 will be reported in FY25 report.

[3] Simply Energy – Electricity consumption (location based) included in Purchased electricity (location based) from FY24 onwards.

Commentary on key year-on-year and base year emissions trends

- Scope 1
  - Emissions from electricity generation (stationary combustion) are 80% greater than the prior year due to increased thermal generation needed to cover reduced hydro generation and a delay in commissioning the new Tauhara geothermal power station.
  - Emissions have reduced 19% when compared with 2018 base year.
- Scope 2
  - Emissions are 50% less than prior year due to reduced direct grid offtake driven by fewer station outages.
  - Emissions have reduced 30% from 2018 base year.
- Scope 3
  - Category 3 – increased consumption of diesel for drilling to support geothermal well development and maintenance.
  - Category 4 - increased freight activity and higher average cost.
  - Category 13 - increased diesel and petrol usage on downstream leased land assets.
  - Emissions have decreased by 49% from 2018 base year.

Figure 1: Total greenhouse gas emissions by scope vs prior year vs base year



Note: Data from FY18 presented in Figure 1 has not been subject to assurance procedures by EY.

Table 3: Total greenhouse gas emissions by greenhouse gas

GHG Gas	Volume (tonnes)	tCO_2e
CO_2	706,483	706,483
CH_4	13.0533	365
N_20	1,2059	320
HFCs	-	-
SF_6	0.0012	28
TOTAL	**706,497**	**707,196**

Note: The above figures exclude scope 3 emissions and scope 1 geothermal emissions as a reliable methodology for calculating the gas breakdown has not yet been determined. This will be addressed in FY25. In order to provide a breakdown of scope 1 emissions from combustion of natural gas, the MfE emissions factor has been used as there is no gas breakdown in the legislated national average emissions factor approved under the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.*

Table 4: Ratio performance indicators

Emissions	**FY24**	**FY23**	**FY18**
Total generation emission intensity (tCO_2e per MWh)	0.110	0.070	0.136
Thermal generation emission intensity (tCO_2e per MWh)	0.449	0.657	0.530

Note: Data from FY18 presented in table 4 has not been subject to assurance procedures by EY.

Table 5: Activity data

Activity amount	**FY24**	**FY23**	**FY18**
Scope 1 activity amount (MWh)	8,635,482	7,543,612	8,613,687
Scope 2 activity amount (MWh)	13,374	16,299	13,578

Note: Data from FY18 presented in table 5 has not been subject to assurance procedures by EY.

There were no direct CO2 emissions from biologically sequestered carbon to report in FY24. Geothermal emission reinjection trials started in the second half of FY23 at our Te Huka plant, and ~4,000 tCO2e was captured and reinjected during FY24.

6 Methodologies, uncertainties, and emission factors

Scope 1 emissions are calculated using activity data and emissions factors, primarily from the Ministry for the Environment. Stationary combustion emissions are calculated from tonnes of geothermal steam, terajoules of natural gas and litres of diesel. There is a high level of certainty in this source data as it comes directly from our asset monitoring systems and finance records. Mobile combustion emissions are calculated from kilometres travelled and vehicle and fuel type.

Geothermal emissions are calculated using unique emissions factors applied for under the Climate Change Regulations referenced on page 11. These unique emissions factors are derived from monthly steam samples taken across a period of six-nine months, analysed, and certified by GNS Science Consultancy and reported to the Environmental Protection Agency.

Most scope 2 data is calculated using e-bench, an online database provided and maintained by CarbonEES. Data is automatically uploaded from invoices for metered

consumption. CarbonEES maintain a database of emissions factors, the original source for purchased electricity emissions factors is the Ministry for the Environment.

All other emissions calculations are completed within Microsoft Excel, using the emissions source data multiplied by the relevant emissions factors. Data collection follows GHG protocol methodology and uses robust finance and regulatory reporting systems wherever possible.

Table 1 provides some detail on the source of the data and how it was collected for each category in scope 3.

All data is maintained by the Contact Energy ESG team however data is contributed from other parts of the business including Finance, Sustainability, Geothermal Resources, Operations, Trading, and our suppliers.

The nature of GHG emissions inventory reporting means there will always be a level of uncertainty, especially within scope 3. To minimise this uncertainty, source data has been used where possible. Where uncertainty exists or source data is unavailable, a conservative estimation approach has been taken so understatement of emissions does not occur. Where emission factors are historical (i.e. the 2007 factors from the *Motu Working paper 14-05 Greenhouse Gas Emissions in New Zealand: A Preliminary Consumption-Based Analysis*), an adjustment for inflation has been applied.

Contact acknowledges that the spend-based method used to calculate several Scope 3 categories contains high levels of uncertainty due to the age of the factors used (2007) and standardisation that may ignore differences between products and services, suppliers, industries, and countries procured from. We are committed to improving the accuracy of our Scope 3 emissions data and are working towards developing calculations that use either emissions data from suppliers or units of goods or services purchased eg. tonnes of cement. Per Greenhouse Gas Protocol *Technical Guidance for Calculating Scope 3 Emissions (version 1.0)* we will select calculation methods based on the size of the emissions from the activity, Contact's business goals, the availability and quality of data, and cost and effort required to apply each method.

6 Methodologies, uncertainties, and emission factors (continued)

All scope 1 and scope 2 emissions factors were sourced from Ministry for the Environment. 2024. *Measuring Emissions: A Guide for Organisations: 2024 detailed guide (*Wellington: Ministry for the Environment), except in the following cases:

Scope 1:

- Geothermal field specific factors approved under the Climate Change (Unique Emissions Factor) Regulations 2009 and, in the case of the Poihipi Road power station, defined by the Climate Change (Emissions Trading Scheme and Synthetic Greenhouse Gas Levies) Amendment Regulations 2022.
- Natural gas specific factors approved under the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009

- The factors for SF6 are sourced from the NZ Emissions Trading Scheme and use the Global Warming Potential (GWP) rate from the Intergovernmental Panel on Climate Change (IPCC) 5th assessment.

Scope 3 emissions factors are discussed in Table 1.

7 Emission Reduction Targets

Contact has set emission reduction targets as part of the Science Based Targets initiative (SBTi). In June 2021 we updated our targets to align with the goal of limiting global warming to 1.5 degrees. Our commitments are as follows:

- to reduce absolute scope 1 and 2 GHG emissions 45% by 2026 from a 2018 base year;
- to reduce absolute scope 1 and scope 3 emissions (category 3 – electricity purchased and sold) from all sold electricity 45% by 2026 from a 2018 base year; and
- reduce scope 3 emissions from use of sold products 34% by 2026 from a 2018 base year.

These targets do not include any offsetting from domestic or international schemes.

8 Assurance

EY has provided reasonable assurance over Scope 1, Scope 2 and Scope 3 (Use of sold products) and Limited assurance over Scope 3 (except for use of sold products), against the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

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