

Greenhouse Gas (GHG) Protocol Disclosure Report

Dow Disclosures – GHG Protocol Disclosure Report

Reporting Policy and Scope for Greenhouse Gas Emissions

Scopes 1, 2, and 3 GHG emissions data are collected and accounted for in accordance with the WRI/WBCSD GHG Protocol: A Corporate Accounting and Reporting Standard (Revised Edition). Management of Dow is responsible for the completeness, accuracy and validity of the disclosures referenced or included in the GHG Protocol Disclosure Report and asserts that the disclosures referenced or included in the GHG Protocol Disclosure Report for the year ended December 31, 2023, are presented in accordance with GHG Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), published by the World Resources Institute/World Business Council for Sustainable Development.

Dow engaged Deloitte & Touche LLP to perform a review engagement on management's assertion related to the disclosures included in the greenhouse gas disclosures in the GHG Protocol Disclosure Report for the year ended December 31, 2023, and the GRI Content Index for the year ended December 31, 2023. Information outside of the disclosures referenced or included in the GHG Protocol Disclosure Report and the GRI Content Index including linked information, was not subject to Deloitte & Touche LLP's review and, accordingly, Deloitte & Touche LLP does not express a conclusion or any form of assurance on such information. See [Deloitte's GRI](#) and [GHG Protocol assurance statements](#) as linked.

The GHG emissions covered by this inventory are based on the calendar year January 1, 2023, to December 31, 2023. Dow reports GHG emissions under the operational control approach criteria described in this standard. In cases where asset ownership is shared, a company has operational control over an asset if they have the full authority to introduce and implement its operating policies at the facility. For operations where Dow is a 50-50 partner or less and does not have full authority to implement its policies, emissions are excluded from this inventory. The Company reports GHG emissions at approximately 98 sites globally, with approximately 25% of those sites accounting for over 95% of its total GHG emissions.

Current Global Emissions in CO₂e

The following accounting includes four of the seven GHG emissions covered by the UNFCCC/Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons (HFCs). Dow does not have emissions of perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), or nitrogen trifluoride (NF₃). GHG emissions are reported in millions of metric tons of carbon dioxide equivalents (CO₂e).

(millions of metric tons CO ₂ e)	2023	2022	2021	2020 (base year) ¹	Amount Change 2023/2020	% Change 2023/2020
Scope 1 ²	26.48	27.29	28.39	28.76	-2.28	-7.93%
Scope 1 Emissions from Power Sold to Third Party/Grid	5.00	5.45	5.84	5.74	-0.74	-12.89%
Scope 2 (Market)	3.20	4.19	5.80	6.22	-3.02	-48.55%
Scope 2 (Location)	2.89	3.45	3.94	3.95	-1.06	-26.84%
Gross Scope 1 & 2 (Market) ²	29.68	31.48	34.19	34.98	-5.30	-15.15%
Scope 3 ³	79.64	82.67	87.77	89.70	-10.06	-11.22%

¹ Base year applies to Scope 1 & Scope 2 only.

² Historical value for 2020 baseline year updated to reflect identified data error correction, which is immaterial to the INtersections report as a whole.





³ For comparability, historical values for 2020, 2021 and 2022 for have been updated to reflect significant advancements in Dow's Scope 3 calculation methodology and data management and to reflect an identified data error correction. See Scope 3 Greenhouse Gas Protocol and GRI 305-3 Other (Scope 3) for detailed information.

Other GHG Emissions

(millions of metric tons CO ₂ e)	2023	2022	2021	2020 (base year)	Amount Change 2023/2020	% Change 2023/2020
Biomass CO ₂	0.47	0.46	0.54	0.45	0.02	4.44%
Other GHG Emissions	0.03	0.03	0.06	0.09	-0.06	-66.67%

Other GHG emissions include bromomethane, carbon monoxide, carbon tetrachloride, dimethyl ether and methylene bromide.

Calculation Methodologies

When calculating Scope 1 GHG emissions, source data is collected within multiple systems following internal processes. Calculation methodologies vary based on a hierarchical approach. Permit-specific or regulatory-required emissions factors are prioritized and, where these do not exist, other published emissions factors and calculation methodologies are used. Some sources for these factors include Intergovernmental Panel on Climate Control (IPCC) Guidelines for National Greenhouse Gas Inventories; U.S. Resources (U.S. EPA State Inventory and Projection Tools; U.S. Emission Factor Resources; or AP-42); and German Environmental Authority (12/2016).

For tracking against its targets to reduce GHG emissions, Dow utilizes the market-based methodology for Scope 2 accounting. Emissions are calculated by multiplying the amount of company-purchased steam and electricity consumed by supplier or utility-specific emissions factors or factors denoted through energy attribute certificates, when available. For U.S. sites, where supplier or utility factors are not available, Green-e® Residual Mix factors are used, as these are readily available. In all other cases, Dow utilizes location-based emissions factors. The impacted portion of electricity purchases is insignificant to overall Scope 2 emissions. Dow also reports Scope 2 emissions using the location-based method in which quantities of Company-purchased steam and electricity are multiplied by the appropriate emissions factors for that geographic area, rather than supplier-specific factors. For U.S.-based locations, Dow used the location-based emissions factors from the EPA EGrid (2022) and for non-U.S. locations, Dow used the International Energy Agency (IEA) (2022, released in 2024).

GHG emissions calculations for Scope 3 are collected and accounted for according to Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard as the foundation, referencing the WBCSD's Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, Together for Sustainability (TfS) Product Carbon Footprint Guidelines, and Global Logistics Emissions Council (GLEC) Framework where needed. Dow relies on internal records as a basis for Scope 3 activity data, such as purchasing and sales data. To convert activity data to GHG emissions, Dow embedded supplier carbon intensity data wherever possible, which was validated using the GHG Protocol, WBCSD Pathfinder Framework and TfS PCF Guidelines. Dow modeled emissions factors for a subset of raw materials and logistics activities based on knowledge of supply chain conditions. In all other cases, Dow employed industry average emissions factors from Ecoinvent v3.10, economic input-output life cycle assessment (EIO-LCA) adjusted for inflation, and the GLEC Framework v3.0 to estimate Scope 3 emissions. One category, 3.15, contains entirely primary data reported by nonconsolidated affiliates.

Base Year

In 2020, Dow launched new climate goals as part of its strategy and set 2020 as the baseline year for the new emissions reduction targets. Dow measures its progress for Scope 1 and Scope 2 emissions toward its current reduction target by this baseline year. Dow is actively working to identify a Scope 3 base year. If changes occur in the configuration of Dow assets or if significant emissions changes are found that make a material impact to its global footprint, the base year will be recalculated to include the new configuration. Dow's internally recognized threshold for significant changes is 5% of the previous year's global total. These changes include, but are not limited to, transfer of ownership, improvement of calculation methodologies or the accuracy of emissions factors, and discovery of significant errors, individually or collectively. Dow continues to improve its calculation methodologies



for GHG emissions accounting globally as part of an effort to align with the GHG Protocol standard. Scope 1 revisions have been made to reflect identified data error corrections, which resulted in a baseline correction that is immaterial to the Intersections Report as a whole.

Targets

By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons. This represents a 15% reduction from Dow's 2020 baseline. By 2050, Dow intends to be carbon neutral (Scopes 1+2+3 plus product benefits). Dow plans to achieve its decarbonization commitments by reducing Scope 1 and 2 greenhouse gas emissions through a phase out of lower efficiency assets, decarbonizing remaining assets and building best in-class, net-zero assets for growth. Dow will deploy known technology in the near term and innovate for the future. Dow is committed to using only high-integrity carbon offsets to compensate for residual, hard-to-abate emissions.

Global Warming Potential (GWP)

To compare the global warming impacts of different greenhouse gases, a universal unit of measurement is needed. GWP factors were developed to measure the amount of energy the emissions of one ton of gas will absorb relative to one ton of carbon dioxide. For Scope 1 emissions, in accordance with the GHG Protocol, Dow uses the most recent IPCC assessment report (AR6) 100-year GWP values for all data, including the baseline, to maintain consistency across time. For Scope 2 emissions, Dow requests, but does not verify, the factors used when data is received from its suppliers. Dow will continue to improve its understanding of the factors used by its suppliers to represent the information as accurately as possible in the future.

Scope 1 Emissions by GHG

GHG Emissions Scope 1 Totals	2023 (Metric Tons)	2023 (Metric Tons CO ₂ e)	2022 (Metric Tons CO ₂ e)	2021 (Metric Tons CO ₂ e)	2020 Base Year (Metric Tons CO ₂ e)
Carbon Dioxide	25,800,000	25,800,000	26,540,000	27,590,000	28,015,000
Methane ¹	16,000	480,000	530,000	580,000	520,000
Nitrous Oxide	550	150,000	158,000	159,000	145,000
HFCs	40	54,000	62,000	60,000	74,000

¹Assumes all methane emissions are "fossil" and uses associated emissions factors provided in the IPCC AR6 report. Conservative method as non-fossil methane emissions have a lower GWP factor.

Dow does not have emissions of PFCs, SF₆ or NF₃.

Scope 2 Emissions by GHG

Speciated emissions data is not available for Scope 2 accounting as suppliers provide the data to Dow in carbon dioxide equivalents.

Scope 3 Emissions by Activity

Dow is committed to tracking and reducing its Scope 3 emissions. Dow calculates Scope 3 emissions according to the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, as well as sector guidance such as the Global Logistics Emissions Council (GLEC) Framework and Together for Sustainability (TfS) Product Carbon Footprint Guideline for the Chemical Industry.

Dow's comprehensive Scope 3 reporting leverages its robust internal data, such as Dow's purchases, shipments, sales, waste and energy use records. Wherever possible, primary data from the value chain was used to calculate greenhouse gas emissions, including supplier product carbon footprints and revenue intensity factors in categories 1 and 2, supplier transport carbon footprints in category 4, travel agency booking data in category 6, lessor energy use in category 8 and investment emissions in category 15. Other emissions factors come from Dow's life cycle assessments, as well as industry average sources like GLEC Framework v3.0 and Ecoinvent v3.10.

In certain instances, Dow has integrated GHG reductions into categories 1, 2 and 4 related to value chain interventions, where Dow's direct suppliers have taken action to decarbonize their activities. These interventions include supplier carbon footprints that embed mass-balanced inputs, supplier revenue intensity factors that include Scope 2 market-





based values, and supplier book & claim certificates related to low-carbon transportation fuels. Dow has assessed these practices against the Greenhouse Gas Protocol, and they are in conformance with the principles of transparency, completeness, and relevance. While these emissions reductions were relatively minor in 2023, Dow expects in-value chain market instruments to play a critical role in Scope 3 decarbonization and thus should be monitored, tracked and accounted for transparently.

Where indicated below, enhancements in Dow's internal data, emissions factors and Scope 3 models necessitated a recalculation of prior-year emissions back to 2020. Two notable changes were applied in 2023. First, emissions factors in categories 1 and 4 were adjusted to include methane emissions from oil and gas production, such as for key fossil fuel-derived materials (e.g., ethylene, benzene and propylene oxide) and freight transportation. Secondly, Dow enhanced its approach to quantifying Scope 3 emissions associated with sold products (categories 11 and 12) by considering product usage, carbon content and customer data. By leveraging customer records, Dow refined its method for identifying products sold for use in fuels. This has led to more accurate allocations of products between categories 11 and 12, which effectively reduced the quantity of products in category 11 and increased those in 12 (as the sum of categories 11 and 12 represents the total quantity of Dow's sold products). For the products in category 11, Dow assumes the carbon contained within each product is converted to CO₂ when combusted, applying the factor of 3.67 kg CO₂/kg elemental carbon.

Further, in category 12, Dow revised its method to apply the circular content cut-off approach, a GHG accounting method that uses circular content, based on primary data, as the cut-off criteria for calculating end-of-life emissions of products. This method is based on existing GHG Protocol guidance that recommends applying a cut-off rule for recycled content, which allows for the exclusion of the GHG burden of the recycling process since it is included in the next life cycle. For non-circular carbon within Dow's sold products, a factor of 1.21 kg CO₂e/kg elemental carbon was applied to represent average GHG emissions at end of life for high-value chemical products. This method allows for more straightforward tracking of circular content and reduces uncertainty in end-of-life treatment assumptions.

The accurate quantification of categories 9 and 10 remains challenging due to the complexity of the chemical sector downstream value chain, and limited data and lack of standardized accounting methodologies. Dow is committed to continually enhancing its efforts by incorporating new data sources and methodologies as they become available. For more information on Dow's Scope 3 strategy and trends, please see [GRI 3-3 Management approach – Energy and Emissions Management](#).

Category (million metric tons CO ₂ e)	2023	2022	2021	2020	Amt Change 2023 / 2020	% Change 2023/2020
Category 1: Purchased Goods & Services ^{1,2}	40.64	42.00	45.54	46.44	-5.80	-12.49%
Category 2: Capital Goods ^{1,2}	0.35	0.26	0.23	0.23	0.12	52.17%
Category 3: Fuel & Energy Related Activities	4.49	4.42	5.22	4.75	-0.26	-5.47%
Category 4: Upstream Transportation & Distribution ¹	2.80	3.37	3.70	3.82	-1.02	-26.70%
Category 5: Waste Generated in Operations	0.35	0.41	0.38	0.41	-0.06	-14.63%
Category 6: Business Travel	0.03	0.02	0.0045	0.0071	0.02	322.54%
Category 7: Employee Commuting	0.06	0.06	0.051	0.046	0.01	30.43%
Category 8: Upstream Leased Assets ²	0.001	0.004	0.014	0.017	-0.02	-94.12%
Category 9: Downstream Transportation & Distribution						
Category 10: Processing of Sold Products						
Category 11: Use of Sold Products ¹	5.55	5.97	6.62	6.42	-0.87	-13.55%
Category 12: End-Of-Life Treatment of Sold Products ¹	21.37	21.99	22.31	23.53	-2.16	-9.18%
Category 13: Downstream Leased Assets	0	0	0	0	0	—%
Category 14: Franchises	0	0	0	0	0	—%
Category 15: Investments	4.00	4.17	3.70	4.03	-0.03	-0.74%
Total	79.64	82.67	87.77	89.70	-10.06	-11.22%

¹ For comparability, historical values for 2020, 2021 and 2022 have been updated to reflect significant advancements in Dow's Scope 3 calculation methodology and data management.

² Historical value for 2022 was updated to reflect identified data error correction, which is immaterial to the Intersections Report as a whole.





Category	Status	Method	Activity Data	Emissions Factor Source(s) for Average Data	Emissions Factor Source(s) for Supplier Data	Description of Any Excluded Activities	% GHGs Covered by Supplier Data	Data Quality Rating ¹
3.1	Relevant, calculated	Hybrid	Dow internal invoice records for goods and services purchased in 2023	Raw materials: Ecoinvent 3.10, Dow LCAs, Packaging and services: EIO LCA adjusted for inflation	Supplier carbon footprints and revenue intensity factors	Spend not relevant per carbon accounting methods; spend accounted for in another category	1.1%	Good
3.2	Relevant, calculated	Hybrid	Dow internal invoice records for all goods and services purchased in 2023	EIO LCA adjusted for inflation	Supplier emissions factors and revenue intensity factors	N/A	4.7%	Good
3.3	Relevant, calculated	Hybrid	Dow internal records for fuel and energy purchased for Dow operations in 2023	Ecoinvent 3.10	N/A	N/A	N/A	Good
3.4	Relevant, calculated	Hybrid	Dow shipment and invoice records for transportation services purchased in 2023	GLEC Framework v3, Dow subject matter experts	Supplier emissions factors reported via CDP, Sea Cargo Charter or directly to Dow	Site logistics emissions, reverse logistics and transport of feedstock purchases outside of Europe	48.0%	Very good
3.5	Relevant, calculated	Hybrid	Dow's internal records on the weight and type of waste generated in Dow's operations	Ecoinvent 3.10	N/A	N/A	N/A	Good
3.6	Relevant, calculated	Average Data	Travel agency records; AAA Foundation	Ecoinvent 3.10; Defra GHG reporting: conversion factors 2023	N/A	Travel booked outside Dow's travel agency	83.0%	Good
3.7	Relevant, calculated	Average Data	Dow employee records; AAA Foundation	Ecoinvent 3.10	N/A	Employee commuting by modes other than personal car	N/A	Fair
3.8	Relevant, calculated	Hybrid	Dow records on leased assets and building energy use	N/A	Average grid emissions from leased asset locations	Leased assets not managed by Corporate Facilities	0 %	Good
3.9	Relevant, not calculated							
3.10	Not relevant, not calculated							
3.11	Relevant, calculated	Direct use phase emissions	Weight, type and sold-to industry of sold products with use phase emissions	Dow subject matter experts	N/A	N/A	N/A	Good





Category	Status	Method	Activity Data	Emissions Factor Source(s) for Average Data	Emissions Factor Source(s) for Supplier Data	Description of Any Excluded Activities	% GHGs Covered by Supplier Data	Data Quality Rating ¹
3.12	Relevant, calculated	Average Data	Quantity and type of sold products that are not included in 3.11	SystemIQ Planet Positive Chemicals; Dow subject matter experts	N/A	N/A	N/A	Fair
3.13	Dow does not currently have any downstream leased assets or franchises, therefore these categories are not relevant for Scope 3 accounting.							
3.14								
3.15	Relevant, calculated	Investment-specific approach	Scope 1 and 2 emissions of principal nonconsolidated affiliates listed in Dow's 10-K ~	N/A	N/A	Joint ventures not listed on Dow's 10-K ~	100.0 %	Very good

¹Data quality was assessed by Dow's subject matter experts based on the GHG Protocol's indicators of completeness, reliability, and geographical, temporal, and technological representativeness. Each Scope 3 category was assigned a 1-10 rating for each indicator, which was then averaged to determine the overall score for the category, with 9-10 as very good, 6-8: good, 4-5: fair, <4 poor.





Independent Accountant's Review Report

Management of
Dow Inc. and The Dow Chemical Company
Midland, MI

We have reviewed management of Dow Inc.'s and its consolidated subsidiaries, including The Dow Chemical Company (collectively, "Dow" or the "Company"), assertion that the GHG Protocol Disclosure Report (the "GHG Disclosures") referenced or included within the accompanying Dow 2023 Intersections Progress Report (the "2023 Intersections Progress Report") for the year ended December 31, 2023 is presented in accordance with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), published by the World Resources Institute/World Business Council for Sustainable Development (the "GHG Protocol"). The Company's management is responsible for its assertion. Our responsibility is to express a conclusion on the GHG Disclosures based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) in AT-C section 105, Concepts Common to All Attestation Engagements, and AT-C section 210, Review Engagements. Those standards require that we plan and perform the review to obtain limited assurance about whether any material modifications should be made to the GHG Disclosures in order for them to be presented in accordance with GHG Protocol. The procedures performed in a review vary in nature and timing from and are substantially less in extent than, an examination, the objective of which is to obtain reasonable assurance about whether the GHG Disclosures are presented in accordance with GHG Protocol, in all material respects, in order to

express an opinion. Accordingly, we do not express such an opinion. Because of the limited nature of the engagement, the level of assurance obtained in a review is substantially lower than the assurance that would have been obtained had an examination been performed. We believe that the review evidence obtained is sufficient and appropriate to provide a reasonable basis for our conclusion.

We are required to be independent and to meet our other ethical responsibilities in accordance with the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The procedures we performed were based on our professional judgment. In performing our review, we conducted inquiries and performed analytical procedures. For a selection of GHG Disclosures, we performed tests of mathematical accuracy of computations, compared the amounts to underlying records, or observed the data collection process in regard to the accuracy of the data in the GHG Disclosures.

The preparation of the GHG Disclosures in the GHG Protocol Disclosure Report included within the 2023 Intersections Progress Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect the reported information. Measurement of Scope 1, 2 and 3 GHG emissions includes estimates and assumptions that are subject to substantial inherent measurement uncertainty resulting, for example, from the accuracy and precision of greenhouse gas emission conversion factors or estimation methodologies used by management. Obtaining sufficient, appropriate review evidence to support our conclusion does not reduce the inherent uncertainty in the amounts and GHG Disclosures. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or GHG Disclosures being reported.

Reporting & Disclosures

Information outside of the disclosures referenced or included in the GHG Protocol Disclosure Report included in the 2023 Intersections Progress Report, including linked information, the TCFD Disclosure Report, SASB Disclosures Report, WEF Disclosure Report, and Non-GAAP Financial Measures, was not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information. Any information relating to forward looking statements, targets, goals and progress against goals, was not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information. Further, any information relating to periods prior to the year ended December 31, 2021 or any information relating to Scope 3 GHG emissions prior to the year ended December 31, 2022 was not subject to our review; and accordingly, we do not express a conclusion or any form of assurance on such information.

The Company changed the methodology used to calculate certain categories of Scope 3 emissions for the year ended December 31, 2023. The methodology for these calculations was revised in the prior periods presented. Our conclusion is not modified with respect to these matters.

Based on our review, we are not aware of any material modifications that should be made to the GHG Disclosures for the year ended December 31, 2023 in order for them be presented in accordance with the GHG Protocol.

Deloitte & Touche LLP
Midland, Michigan

June 18, 2024





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