

2021 Environmental Data

	2021	2020	2019	2018	2017
GHG Emissions (mtCO ₂ e) ^{1, 2}					
Scope 1 – direct ³	84,911	81,944	102,423	98,505	93,031
Natural gas	58,820	55,080	68,428	64,975	60,422
Propane	57	228	300	260	234
Fuel oil	627	629	1,391	1,500	1,387
Jet fuel	6,228	4,013	8,558	8,640	9,160
Fugitive emissions	17,517	18,940	19,448	20,903	20,121
Diesel	1,031	2,568	2,881	1,302	1,655
Fleet	631	486	1,416	924	52
Scope 2 (location) – indirect	755,514	816,056	851,622	919,876	922,762
Purchased electricity	749,234	811,127	842,994	907,508	913,188
Purchased steam and chilled water	6,280	4,929	8,627	12,368	9,574
Total Scope 1 and Scope 2 (location)	840,425	898,000	954,045	1,018,381	1,015,794
Change from 2017 baseline	-17%	-12%	-6%	0%	-
GHG emissions intensity ⁴	6.9	7.5	8.2	9.3	10.1
Scope 2 (market) – indirect	6,280	4,929	711,595	746,043	793,746
Purchased electricity	-	-	702,968	733,675	784,172
Purchased steam and chilled water	6,280	4,929	8,627	12,368	9,574
Total Scope 1 and Scope 2 (market)	91,191	86,873	814,018	844,548	886,777
Scope 3 (category 6 – business travel) ⁵	38,336	36,169	181,004	176,356	187,020
Verified carbon offset emissions reductions	129,527	123,042	189,327	184,769	175,155
Net emissions: Scope 1, 2 (market) and 3	-	-	805,694	836,135	898,642
Renewable Power (MWh)					
Progress towards 70% long-term renewable target	23%	-	-	-	-
Electricity production (on-site solar)	26,125	13,929	4,569	9,665	2,598
Contractual instruments ⁶	2,060,483	2,166,728	380,901	375,280	370,801
Proportion of power use from renewable sources (production and instruments)	100%	100%	18%	17%	18%
Energy Consumption (MWh)					
Direct Energy	353,409	330,374	430,703	413,358	386,561
Natural gas	321,322	300,511	378,026	366,303	336,597
Diesel	4,074	10,144	11,377	5,143	6,537
Propane	266	1,059	1,395	1,209	1,087
Fuel oil	2,476	2,483	5,495	5,925	5,478
Jet fuel	25,272	16,177	34,411	34,778	36,862
Indirect Energy	2,084,106	2,184,547	2,185,084	2,262,069	2,132,398
Purchased electricity	2,060,483	2,166,728	2,155,902	2,219,125	2,100,163
Purchased steam and chilled water	23,622	17,819	29,182	42,944	32,235
Total	2,437,515	2,514,921	2,615,788	2,675,427	2,518,958
Water Withdrawal (m³)					
Global	6,700,709	7,089,706	6,992,210	7,960,416	7,297,347

1. JPMorgan Chase utilizes an operational control approach to establish boundaries for our greenhouse gas inventory. This includes owned and leased facilities for which we control the energy usage.
2. Scope 1, 2, and 3 emissions were verified for 2017, 2018, 2019, 2020, and 2021. Water withdrawal has been verified for 2018, 2019, 2020, and 2021. Other data has not been subject to external verification. Some sources of emissions have been excluded as they have been found to be de minimis, accounting for less than 5% of total Scope 1 and Scope 2 emissions.
3. Scope 1 emissions include emissions from corporate air travel and owned vehicle fleet.
4. Includes Scope 1 and 2 location based GHG emissions; mtCO₂e/mmUSD revenue
5. Scope 3 emissions include business travel (air, rail, car, and hotel stays for 2020 and 2021, air and rail travel in 2019, and only air travel in 2017 and 2018).
6. Contractual instruments include applicable Energy Attribute Certificates (EACs), Renewable Energy Credits (RECs) from PPAs, UK renewable energy guarantees of origin (REGOs) and renewable supply contracts.



VERIFICATION OPINION DECLARATION GREENHOUSE GAS EMISSIONS

To: Stakeholders of JP Morgan Chase & Co.

Apex Companies LLC, (Apex) was engaged to conduct an independent verification of the greenhouse gas (GHG) emissions reported by JP Morgan Chase & Co. (JPMC) for the period stated below. This Verification Opinion applies to the related information included within the scope of work described below.

The determination of the GHG emissions is the sole responsibility of JPMC. JPMC is responsible for the preparation and fair presentation of the GHG statement in accordance with the criteria. Apex's sole responsibility was to provide independent verification on the accuracy of the GHG emissions reported, and on the underlying systems and processes used to collect, analyze, and review the information. Apex is responsible for expressing an opinion on the GHG statement based on the verification. Verification activities applied in a limited level of assurance verification are less extensive in nature, timing, and extent than in a reasonable level of assurance verification.

Boundaries of the reporting company GHG emissions covered by the verification:

- Operational Control
- Worldwide

Types of GHGs: CO₂, N₂O, CH₄, HFCs

GHG Emissions Statement:

- **Electricity Consumption:** 2,060,483 Megawatt hours
- **Purchased Renewable Energy:** 2,060,483 Megawatt hours
- **Scope 1:** 84,911 metric tons of CO₂ equivalent
- **Scope 2 (Location-Based):** 755,514 metric tons of CO₂ equivalent
- **Scope 2 (Market-Based):** 6,280 metric tons of CO₂ equivalent
- **Scope 3: Business Travel:** 38,336 metric tons of CO₂ equivalent
- **Purchased GHG Emissions Offsets:** 129,527 metric tons of CO₂ equivalent
- **Net Emissions of CO₂ equivalent (Scope 1 + Scope 2 Market-Based + Scope 3) - Purchased GHG Emission Offsets:** 0 metric tons of CO₂ equivalent

Data and information supporting the Scope 1, Scope 2, and Scope 3 GHG emissions assertion were historical in nature for the most part. In some cases, data were estimated rather than historical in nature.

Period covered by GHG emissions verification:

- January 1, 2021 to December 31, 2021

Criteria against which verification conducted:

- World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard
- WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard



Reference Standard:

- ISO 14064-3 Second Edition 2019-04: Greenhouse gases -- Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

Level of Assurance and Qualifications:

- Limited
- This verification used a materiality threshold of +/-5% for aggregate errors in sampled data for each of the above indicators
- Qualification - Retirement of Renewable Energy Credits and Carbon Offset instruments is pending; verification of related emissions assumes that proof of instrument retirement will be provided upon receipt in order to remove this qualification from the declaration

GHG Verification Methodology:

Evidence-gathering procedures included but were not limited to:

- Interviews with relevant personnel of JPMC and their consultant;
- Review of documentary evidence produced by JPMC;
- Review of JPMC data and information systems and methodology for collection, aggregation, analysis and review of information used to determine GHG emissions; and
- Audit of sample of data used by JPMC to determine GHG emissions.

Verification Opinion:

Based on the process and procedures conducted, there is no evidence that the GHG emissions statement shown above:

- is not materially correct and is not a fair representation of the GHG emissions data and information; and
- has not been prepared in accordance with the WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard (Scope 1 and 2), and WRI/WBCSD Greenhouse Gas Protocol Corporate Value Chain Accounting and Reporting Standard (Scope 3).

It is our opinion that JPMC has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of these GHG emissions for the stated period and boundaries.

Statement of independence, impartiality and competence

Apex is an independent professional services company that specializes in Health, Safety, Social and Environmental management services including assurance with over 30 years history in providing these services.

No member of the verification team has a business relationship with JPMC, its Directors or Managers beyond that required of this assignment. We conducted this verification independently and to our knowledge there has been no conflict of interest.

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities.

The verification team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the verification of greenhouse gas emissions data.



Attestation:

A handwritten signature in blue ink, appearing to read 'Mary E. Armstrong-Friberg'.

Mary E. Armstrong-Friberg, Lead Verifier
Senior Project Manager
Apex Companies, LLC
Cleveland, Ohio

May 17, 2022

A handwritten signature in blue ink, appearing to read 'Trevor A. Donaghu'.

Trevor A. Donaghu, Technical Reviewer
Program Manager
Apex Companies, LLC
Pleasant Hill, California

This verification opinion including the opinion expressed herein, is provided to JP Morgan Chase & Co. and is solely for the benefit of JP Morgan Chase & Co. in accordance with the terms of our agreement. We consent to the release of this opinion by you to CDP in order to satisfy the terms of CDP disclosure requirements but without accepting or assuming any responsibility or liability on our part to CDP or to any other party who may have access to this opinion.



VERIFICATION OPINION DECLARATION GREENHOUSE GAS EMISSIONS

To: Stakeholders of JP Morgan Chase & Co.

Apex Companies LLC, (Apex) was engaged to conduct an independent verification of the greenhouse gas (GHG) emissions reported by JP Morgan Chase & Co. (JPMC) for the period stated below. This Verification Opinion applies to the related information included within the scope of work described below.

The determination of the GHG emissions is the sole responsibility of JPMC. JPMC is responsible for the preparation and fair presentation of the GHG statement in accordance with the criteria. Apex's sole responsibility was to provide independent verification on the accuracy of the GHG emissions reported, and on the underlying systems and processes used to collect, analyze, and review the information. Apex is responsible for expressing an opinion on the GHG statement based on the verification. Verification activities applied in a limited level of assurance verification are less extensive in nature, timing, and extent than in a reasonable level of assurance verification.

Boundaries of the reporting company GHG emissions covered by the verification:

- Operational Control
- Worldwide

Types of GHGs: CO₂, N₂O, CH₄, HFCs

GHG Emissions Statement:

Calendar Year (January 1-December 31)	2017	2018	2019	2020
Electricity Consumption (Megawatt hours)	2,100,163	2,219,125	2,155,902	2,166,728
Purchased Renewable Energy (Megawatt hours)	370,801	375,280	380,901	2,166,728
Scope 1 (metric tons of CO ₂ equivalent)	93,031	98,505	102,423	81,944
Scope 2 Location-Based (metric tons of CO ₂ equivalent)	922,762	919,876	851,622	816,056
Scope 2 Market-Based (metric tons of CO ₂ equivalent)	793,746	746,043	711,595	4,929
Purchased GHG Emissions Offsets (metric tons of CO ₂ equivalent)	175,155	184,769	189,327	123,042

Data and information supporting the Scope 1 and Scope 2 GHG emissions assertion were historical in nature for the most part. In some cases, data were estimated rather than historical in nature.



Note: The values in this statement may vary from those originally verified in their respective years due to changes in estimation methodology and an expansion of the organizational boundary.

Criteria against which verification conducted:

- World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard
- WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard

Reference Standard:

- ISO 14064-3 Second Edition 2019-04: Greenhouse gases -- Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

Level of Assurance and Qualifications:

- Limited
- This verification used a materiality threshold of +/-5% for aggregate errors in sampled data for each of the above indicators
- Qualification - Retirement of Renewable Energy and Carbon Offset instruments is pending; verification of related emissions assumes that proof of instrument retirement will be provided upon receipt in order to remove this qualification from the declaration

GHG Verification Methodology:

Evidence-gathering procedures included but were not limited to:

- Interviews with relevant personnel of JPMC and their consultant;
- Review of documentary evidence produced by JPMC;
- Review of JPMC data and information systems and methodology for collection, aggregation, analysis and review of information used to determine GHG emissions; and
- Audit of sample of data used by JPMC to determine GHG emissions.

Verification Opinion:

Based on the process and procedures conducted, there is no evidence that the GHG emissions statement shown above:

- is not materially correct and is not a fair representation of the GHG emissions data and information; and
- has not been prepared in accordance with the WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard (**Scope 1 and 2**).

It is our opinion that JPMC has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of these GHG emissions for the stated period and boundaries.

Statement of independence, impartiality and competence

Apex is an independent professional services company that specializes in Health, Safety, Social and Environmental management services including assurance with over 30 years history in providing these services.

No member of the verification team has a business relationship with JPMC, its Directors or Managers beyond that required of this assignment. We conducted this verification independently and to our knowledge there has been no conflict of interest.



Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities.

The verification team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the verification of greenhouse gas emissions data.

Attestation:

A handwritten signature in blue ink, appearing to read 'Mary E. Armstrong-Friberg'.

Mary E. Armstrong-Friberg, Lead Verifier
Senior Project Manager
Apex Companies, LLC
Cleveland, Ohio

May 25, 2022

A handwritten signature in blue ink, appearing to read 'Trevor A. Donaghu'.

Trevor A. Donaghu, Technical Reviewer
Program Manager
Apex Companies, LLC
Pleasant Hill, California

This verification opinion declaration including the opinion expressed herein, is provided to JP Morgan Chase & Co. and is solely for the benefit of JP Morgan Chase & Co. in accordance with the terms of our agreement. We consent to the release of this opinion by you to CDP in order to satisfy the terms of CDP disclosure requirements but without accepting or assuming any responsibility or liability on our part to CDP or to any other party who may have access to this opinion.



VERIFICATION OPINION DECLARATION WATER WITHDRAWAL

To: Stakeholders of JP Morgan Chase & Co.

Apex Companies LLC, (Apex) was engaged to conduct an independent verification of the water withdrawal reported by JP Morgan Chase & Co. (JPMC) for the period stated below. This Verification Opinion applies to the related information included within the scope of work described below.

The determination of the water withdrawal is the sole responsibility of JPMC. Apex was not involved in determining the water withdrawal. Apex's sole responsibility was to provide independent verification on the accuracy of the water withdrawal information reported, and on the underlying systems and processes used to collect, analyze, and review the information. Apex is responsible for expressing an opinion on the water withdrawal statement based on the verification. Verification activities applied in a limited level of assurance verification are less extensive in nature, timing, and extent than in a reasonable level of assurance verification.

Boundaries of the reporting company GHG emissions covered by the verification:

- Operational Control
- Global
- Exclusions from the scope of the reporter's data assertion:
 - Data outside the defined assurance period of calendar year 2021

Data verified:

- **Water Withdrawal:** 6,700,709 cubic meters

Data and information supporting the water withdrawal assertion were historical in nature for the most part. In some cases, data were estimated rather than historical in nature.

Period covered by GHG emissions verification:

- January 1, 2021 to December 31, 2021

Criteria against which verification conducted:

- CDP Guidance for Companies Reporting on Water on Behalf of Investors and Supply Chain Members **(Water Withdrawal)**

Reference Standard:

- Apex's standard procedures and guidelines for external Assurance of Sustainability Reports and International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board. A materiality threshold of ± 5 -percent was set for the assurance process.

Level of Assurance and Qualifications:

- Limited Assurance Level

Verification Methodology:

- Interviews with relevant personnel of JPMC and their consultant;
- Review of documentary evidence produced by JPMC;



- Review of JPMC data and information systems and methodology for collection, aggregation, analysis and review of information used to determine water withdrawal; and
- Audit of sample of data used by JPMC to determine water withdrawal.

Assurance Opinion:

Based on the process and procedures conducted, there is no evidence that the water withdrawal assertion shown above:

- is not materially correct and is not a fair representation of the water withdrawal data and information; and
- has not been prepared in accordance with the CDP Guidance for Companies Reporting on Water on Behalf of Investors and Supply Chain Members.

It is our opinion that JPMC has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of water withdrawal for the stated period and boundaries.

Statement of independence, impartiality, and competence

Apex is an independent professional services company that specializes in Health, Safety, Social and Environmental management services, including assurance, with over 30 years history in providing these services.

No member of the verification team has a business relationship with JPMC, its Directors or Managers beyond that required of this assignment. We conducted this verification independently and to our knowledge there has been no conflict of interest.

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities.

The verification team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the verification of water withdrawal data.

Attestation:

A handwritten signature in blue ink, appearing to read 'Mary E. Armstrong-Friberg'.

Mary E. Armstrong-Friberg, Lead Verifier
Senior Project Manager
Apex Companies, LLC
Cleveland, Ohio

A handwritten signature in blue ink, appearing to read 'Trevor A. Donaghu'.

Trevor A. Donaghu, Technical Reviewer
Program Manager
Apex Companies, LLC
Pleasant Hill, California

May 27, 2022

This verification opinion, including the opinion expressed herein, is provided to JP Morgan Chase & Co. and is solely for the benefit of JP Morgan Chase & Co. in accordance with the terms of our agreement. We consent to the release of this opinion by you to CDP in order to satisfy the terms of CDP disclosure requirements but without accepting or assuming any responsibility or liability on our part to CDP or to any other party who may have access to this opinion.



VERIFICATION OPINION WATER WITHDRAWAL

To: Stakeholders of JP Morgan Chase & Co.

Apex Companies LLC, (Apex) was engaged to conduct an independent verification of the water withdrawal reported by JP Morgan Chase & Co. (JPMC) for the period stated below. This verification opinion applies to the related information included within the scope of work described below.

The determination of the water withdrawal is the sole responsibility of JPMC. Apex was not involved in determining the water withdrawal. Apex's sole responsibility was to provide independent verification on the accuracy of the water withdrawal information reported, and on the underlying systems and processes used to collect, analyze, and review the information. Apex is responsible for expressing an opinion on the water withdrawal statement based on the verification. Verification activities applied in a limited level of assurance verification are less extensive in nature, timing, and extent than in a reasonable level of assurance verification.

Boundaries of the reporting company GHG emissions covered by the verification:

- Operational Control
- Global
- Exclusions from the scope of the reporter's data assertion:
 - Data outside the defined assurance period

Data verified:

Calendar Year (January 1 – December 31)	2017	2018	2019	2020
Water Withdrawal (cubic meters)	7,297,347	7,960,416	6,992,210	7,089,706

Data and information supporting the water withdrawal assertion were historical in nature for the most part. In some cases, data were estimated rather than historical in nature.

Note: The values in this statement may vary from those originally verified in their respective years due to changes in estimation methodology and an expansion of the organizational boundary.

Criteria against which verification conducted:

- CDP Guidance for Companies Reporting on Water on Behalf of Investors and Supply Chain Members (Water Withdrawal)

Reference Standard:

- Apex's standard procedures and guidelines for external Assurance of Sustainability Reports and International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board. A materiality threshold of ± 5 -percent was set for the assurance process.



Level of Assurance and Qualifications:

- Limited Assurance Level

Verification Methodology:

- Interviews with relevant personnel of JPMC and their consultant;
- Review of documentary evidence produced by JPMC;
- Review of JPMC data and information systems and methodology for collection, aggregation, analysis and review of information used to determine water withdrawal; and
- Audit of sample of data used by JPMC to determine water withdrawal.

Assurance Opinion:

Based on the process and procedures conducted, there is no evidence that the water withdrawal assertion shown above:

- is not materially correct and is not a fair representation of the water withdrawal data and information; and
- has not been prepared in accordance with the CDP Guidance for Companies Reporting on Water on Behalf of Investors and Supply Chain Members.

It is our opinion that JPMC has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of water withdrawal for the stated period and boundaries.

Statement of independence, impartiality, and competence

Apex is an independent professional services company that specializes in Health, Safety, Social and Environmental management services, including assurance, with over 30 years history in providing these services.

No member of the verification team has a business relationship with JPMC, its Directors or Managers beyond that required of this assignment. We conducted this verification independently and to our knowledge there has been no conflict of interest.

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities.

The verification team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the verification of water withdrawal data.

Attestation:

A handwritten signature in blue ink, appearing to read 'Mary E. Armstrong-Friberg'.

Mary E. Armstrong-Friberg, Lead Verifier
Senior Project Manager
Apex Companies, LLC
Cleveland, Ohio

A handwritten signature in blue ink, appearing to read 'Trevor A. Donaghu'.

Trevor A. Donaghu, Technical Reviewer
Program Manager
Apex Companies, LLC
Pleasant Hill, California

May 27, 2022



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