



Wikimedia Foundation

Environmental Sustainability Metrics 2024

About These Metrics

Since 2019, the Wikimedia Foundation has been committed to conducting an annual greenhouse gas inventory, to assess the impacts of its data center sites, travel program, and employees' day to day working environments. Our inventory is developed according to the WRI/WBCSD Greenhouse Gas Protocol and includes our scope 1, scope 2, and all of our relevant scope 3 emissions, as defined below:

- **Scope 1:** Direct greenhouse gas emissions that occur from sources controlled or owned by the Wikimedia Foundation. This has historically included natural gas consumption at our San Francisco office at Post Montgomery. Because our new office space at One Sansome does not burn natural gas onsite, our scope 1 emissions have now been reduced to zero.
- **Scope 2:** Indirect emissions associated with the purchase of electricity, steam, heat, or cooling. This includes electricity and steam used at the San Francisco office.
- **Scope 3:** Indirect emissions resulting from activities from assets not owned or controlled by the Wikimedia Foundation, but that we indirectly impact through our operations. Scope 3 emissions include all sources not within our scope 1 and 2 boundary. These include water usage and waste (landfill, recycling, compost) at the San Francisco office; electricity used by our global data center vendors; staff business travel and WMF-sponsored volunteer travel (including, as of this year, a portion of our Conference Grant Portfolio); commuting; and energy usage from remote work.

Improvements in Reporting

As part of our commitment to sustainability, we are continually exploring ways to better capture our environmental impact and to improve the accuracy of our reporting. Notable changes since 2019 include:

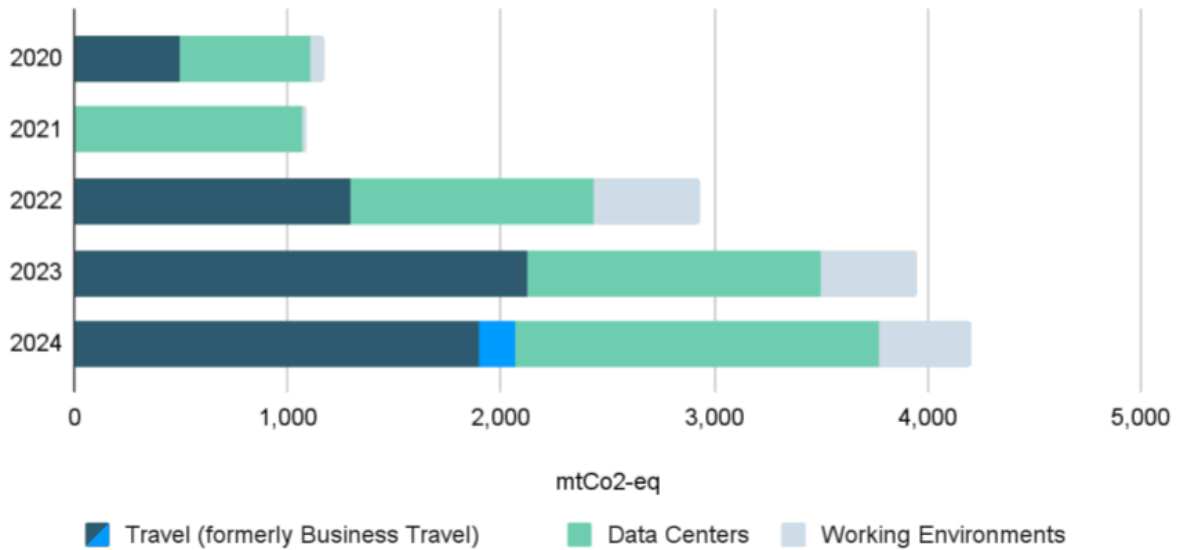
- Updating our data center emissions methodology in our 2021 report to reflect the emission factors of the grids where our data centers operate rather than the procurement decisions of our vendors (i.e., PPAs, RECs). This resulted in a 75% increase in reported data center-related emissions between 2020 and 2021. Please see our [2021 report](#) for more information.
- Expanding our scope 3 emissions boundaries:
 - In our 2022 report, we started accounting for employees' remote work impacts (e.g., estimated home energy use and their commutes to alternative workspaces), which increased our emissions by approximately 500 mtCO₂e in that year.
 - In this year's report, we started accounting for travel emissions associated with a portion of our [Conference Grant Portfolio](#). Previously, due to data collection limitations, we have only been able to account for travel emissions associated with WMF Staff or Board attendance at these events. However, the Foundation's Travel Team began directly managing scholar flight and hotel bookings for a portion of these conferences in 2024, such that we now have access to travel emissions data. As we continue to increase our support for these conferences, we will gain a more accurate understanding of the emissions associated with our Conference Grant Portfolio.

2024 Year in Review

In 2024, our scope 1, 2, and newly expanded scope 3 emissions totaled 4,208 metric tons of Co2-equivalent. Excluding the newly added Conference Grant portfolio (pictured in bright blue below), this represents a 2% increase from the previous year. Emissions from our data center sites increased 23% year over year, with most of that increase being offset by a reduction in ordinary business travel emissions. Working Environment emissions, which are mainly impacted by the number of staff working remotely, remained relatively stable, decreasing by 1%. The decrease was attributable to the Foundation’s move into a smaller office space. Because our new office building does not burn natural gas onsite, this move also decreased our scope 1 emissions to zero.

Wikimedia Foundation

Emissions by Functional Area



Data Centers

The emissions generated by our nine data center sites increased 23% year over year. In April 2024, we added our ninth site: a [caching site](#) (magru) in São Paulo, Brazil. The emissions impacts of this were negligible, however, with a majority of the emissions increase coming from our highest impact sites in Texas (codfw) and Virginia (eqiad). Both of these sites saw a rise in electricity consumption in 2024. Aside from regular growth, factors that contributed to the higher power consumption include increased capacity requirements for Hadoop, the installation of new GPU servers for Machine Learning, migrating MediaWiki servers to Kubernetes, needing higher CPU requirements to deprecate certain services, and performance improvements on the database systems.

Travel

Ordinary business travel emissions decreased 10% in 2024. Most of that decrease was due to our annual Wikimania conference being held in a more centralized location in 2024 (Katowice, Poland) compared to 2023 (Singapore). We recorded a significant decrease in air mileage for our staff and scholarship recipients, with the travel-related footprint of the event being about half that of Wikimania 2023.

In line with our commitment to improve our understanding of our environmental impact, we also began directly managing scholar flight and hotel bookings in 2024 for some of the major volunteer-led conferences in our [Conference & Event Fund](#). This new process has allowed us to further expand the boundaries of our scope 3 emissions, which added another 167mtCO₂-eq to our 2024 inventory. We kicked off this work in the second half of 2024, managing scholar flight bookings for three community-led conferences (CEE, Celtic Knot, WikiConference North America) and scholar flight and hotel bookings for two others (WikiArabia and WikiIndaba). We estimate that this allowed us to capture about 20% of our overall community-led conference emissions. As we continue to increase our support for these conferences in 2025 and beyond, we will be able to account for a much greater portion of these emissions. We are currently on track to capture approximately 40% of the emissions associated with our 2025 volunteer-led conference portfolio through direct bookings. In addition, we will be exploring ways to estimate the remaining 60% through grant reporting.

Working Environments

On October 1, 2024, we moved into a smaller LEED Platinum certified [office space](#) in downtown San Francisco, which resulted in an 80% reduction of our office footprint, as well as a rent cost savings of over 80%. Rather than burning natural gas onsite, our new office space uses steam heating, which means our scope 1 emissions have now been reduced to zero. The office move was in line with our [Annual Plan commitment to strengthen our effectiveness and efficiency](#) as an increasingly globally distributed organization.

Methodology

Scope	Activity	Functional Area	Activity Data	Emission Factor Source(s)
1	Natural Gas & Refrigerants	Working Environments	Total building consumption information prorated by WMF % of total building area	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
2	Purchased Electricity	Working Environments	Electricity consumption from Wikimedia monthly utility billing statements	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
	Purchased Steam	Working Environments	Total building consumption information prorated by WMF % of total building area	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
3	Waste to landfill, Recycling, Composting, E-Waste	Working Environments	Total building consumption information prorated for WMF % of total building area	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
	Water Usage & Waste Water treatment			DEFRA (2024) (EPA does not publish water usage emission factors)
	Commuting	Working Environments	2022 staff survey, 26% response rate. Data from respondents apportioned across non-respondents	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
	Home Energy Use	Working Environments	Staff numbers provided by human resources department	DEFRA (2024)
	Electricity purchased by data center vendors	Data Centers	Energy consumption for Wikimedia application and caching sites pulled from Grafana, with the data for networking sites captured directly from network routers. Local site-specific PUE information provided by data center vendors.	Emission Factors for GHG inventories, EPA (Updated Jan 2025); Google Cloud Platform data used for Singapore and Netherlands; Electricity Maps used for France
	Travel - Air	Travel	Air miles provided by Wikimedia's travel agency	Emission Factors for GHG inventories, EPA (Updated Jan 2025)
	Travel - Lodging		Hotel emissions factors include estimates for natural gas, electricity, and steam consumption	Hotel Footprinting Tool , worldwide average for 3-4 star hotels

Emissions by Functional Area

Emissions (tCO2-eq)	2020	2021	2022	2023	2024	% Change (YoY)
Data Center Operations₁	614.3248	1,072.7170	1,141.3402	1,376.5308	1,699.9321	+ 23%
Server - eqiad	163.1974	589.1320	652.1399	718.4189	887.4587	+ 24%
Server - codfw	437.3246	408.9160	418.9221	550.5087	714.2572	+ 30%
Server - esams	0.1525	35.5020	25.7926	34.0261	31.8855	-6%
Server - eqsin	7.7485	27.2490	23.2396	43.9981	33.4026	-24%
Server - ulsfo	0.0000	10.5030	16.1324	25.0436	25.4378	+ 2%
Server - drmrs ₂	<i>not online</i>	0.0620	2.7785	2.7059	2.3247	-14%
Server - eqord ₃	0.1778	0.4730	0.8655	1.0361	1.1035	+ 7%
Server - eqdfw ₃	0.1414	0.4430	0.7979	0.7934	1.0579	+ 33%
Server - magru	<i>not online</i>	<i>not online</i>	<i>not online</i>	<i>not online</i>	3.0043	
Server - knams	0.0019	0.4370	0.6716	<i>merged with esams</i>	<i>merged with esams</i>	
Server Room ₄ - San Francisco Office	5.5807	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	
Working Environments	62.0252	17.6656	498.9116	446.4841	441.2251	-1%
San Francisco Office	10.4607	15.3550	17.8016	20.6066	13.8205	-33%
Purchased Electricity ₄	42.5593	2.3106	3.2465	3.1168	3.0423	-2%
Employee Commuting	9.0051	0.0000	0.0000	0.0000	0.0000	
Energy - Natural Gas	0.4735	0.4678	0.6253	0.6568	0.0000	-100%
Energy - Steam	9.0866	13.4218	13.0114	15.8578	9.9063	-38%
Waste - composting	0.0209	0.3244	0.0209	0.0253	0.0183	-28%
Waste - eWaste	0.0011	0.0018	0.0003	0.0000	0.0008	
Waste - landfill	0.5544	0.8159	0.7422	0.8366	0.7728	-8%
Waste - mixed recycling	0.0371	0.1153	0.0428	0.0326	0.0153	-53%
Water Management - Municipal Water	0.0939	0.0674	0.0397	0.0378	0.0292	-23%
Water Management - WWT	0.1932	0.1407	0.0725	0.0429	0.0355	-17%
Remote Work₆	<i>data not available</i>	<i>data not available</i>	481.1100	425.8776	427.4046	+ 0%
Home energy use	<i>data not available</i>	<i>data not available</i>	465.0000	412.7123	414.6349	+ 0%
Employee Commuting ₉	<i>data not available</i>	<i>data not available</i>	16.1100	13.1653	12.7698	-3%
Travel	493.0863	0.0000	1,290.9753	2,122.9923	2,067.2809	-3%
Internal Staff Convenings	309.6826	0.0000	947.4461	901.9040	989.5905	+ 10%
Air	288.1272	0.0000	827.9357	763.5218	865.5777	+ 13%
Hotel	21.5553	0.0000	119.5104	138.3822	124.0128	-10%
Community Convenings	98.4796	0.0000	227.6829	1,077.0613	789.7312	-27%
Air	80.3018	0.0000	192.8363	960.9963	688.9569	-28%
Hotel	18.1778	0.0000	34.8467	116.0650	100.7743	-13%
Miscellaneous Business Travel₇	84.9241	0.0000	115.8462	144.0270	120.7570	-16%
Air	74.5557	0.0000	109.9277	136.9835	118.6270	-13%
Hotel	10.3684	0.0000	5.9186	7.0435	2.1299	-70%
Grant-Funded Community Conferences	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	167.2022	
Air	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	142.8684	
Hotel	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	24.3338	
Total Emissions (tCO2-eq)	1,169.44	1,090.38	2,931.23	3,946.01	4,208.44	+ 7%

Notes

1. Due to data collection limitations, we stopped accounting for emissions related to water use in 2021.
2. Our drmrs data center site went online in November 2021 and did not fully start serving Wikipedia users until April 2022.
3. Electricity consumption at our eqdfw and eqord network routers was more fully captured in 2022.
4. Beginning in 2021, electricity-related emissions for the WMF server room are included in the San Francisco Office's electricity emissions. In 2022, we also began using data directly from the Foundation's metered billing statement, rather than prorating building-wide electricity usage.
5. During the COVID-19 pandemic, select data at the San Francisco office was unavailable and estimates for 2019 were used instead. In 2021, actual data was obtained and the results were restated in the report covering calendar year 2020.
6. In 2022, we expanded our scope 3 emissions to include remote work impacts (e.g. estimated home energy use & commuting to alternative workspaces).
7. Miscellaneous business travel was not tracked separately until 2019. In 2018, it was included under community convenings (previously "non-telecommuting").
8. While reviewing our emissions data for the 2021 report, we discovered a calculation error - 2019 emissions have been correctly restated here.
9. In a 2023 report, a correction was made to 2022 employee commuting, which slightly decreased total emissions in that year.

Emissions by Scope

Emissions (tCO2-eq)	2020	2021	2022	2023	2024	% Change (YoY)
Scope 1	0.47	0.47	0.63	0.66	0.00	-100%
Natural Gas	0.47	0.47	0.63	0.66	0.00	
Scope 2	57.23	15.73	16.26	18.97	12.95	-32%
Electricity - San Francisco Office ₁	48.14	2.31	3.25	3.12	3.04	-2%
Steam - San Francisco Office	9.09	13.42	13.01	15.86	9.91	-38%
Scope 3	1,111.74	1,074.18	2,914.35	3,926.38	4,195.49	+ 7%
Electricity - Data Center - eqiad	159.87	589.13	652.14	718.42	887.46	+ 24%
Electricity - Data Center - codfw	437.32	408.92	418.92	550.51	714.26	+ 30%
Electricity - Data Center - esams	0.00	35.50	25.79	34.03	31.89	-6%
Electricity - Data Center - eqsin	7.66	27.25	23.24	44.00	33.40	-24%
Electricity - Data Center - ulsfo	0.00	10.50	16.13	25.04	25.44	+ 2%
Electricity - Data Center - drmrs	<i>not online</i>	0.06	2.78	2.71	2.32	-14%
Electricity - Data Center - eqord	0.18	0.47	0.87	1.04	1.10	+ 6%
Electricity - Data Center - eqdfw	0.14	0.44	0.80	0.79	1.06	+ 34%
Electricity - Data Center - magru		<i>not online</i>	<i>not online</i>	<i>not online</i>	3.0043	
Electricity - Data Center - knams	0.00	0.44	0.67	<i>merged with esams</i>	<i>merged with esams</i>	
Remote Employee Home Energy Use ₃	<i>data not available</i>	<i>data not available</i>	465.00	412.71	414.63	+ 0%
Waste	0.61	1.26	0.81	0.89	0.81	-9%
Water Management ₄	3.87	0.21	0.11	0.08	0.06	-19%
Travel - Air	442.98	0.00	1,130.70	1,861.50	1,816.03	-2%
Travel - Hotel	50.10	0.00	160.28	261.49	251.25	-4%
Employee Commuting to Office	9.01	0.00	0.00	0.00	0.00	
Employee Commuting to Alternative Workspace ₆	<i>data not available</i>	<i>data not available</i>	16.11	13.17	12.77	-3%
Total Emissions (tCO2-eq)	1,169.44	1,090.38	2,931.24	3,946.01	4,208.44	+ 7%

Notes

1. In our 2021 report, we began using data directly from the Foundation's metered billing statement, rather than prorating building-wide electricity usage, which led to a large decrease in these calculated emissions.
2. Because the electricity consumed at our collocated data center sites is purchased by our data center vendors directly (and therefore included in their scope 2 emissions), data center electricity emissions were moved from our scope 2 to scope 3 category in our 2021 report. Electricity-specific emissions data for each of our data centers is not available for 2018, as
3. In 2022, we expanded our scope 3 emissions to include remote worker impacts (e.g. home energy use & commuting to alternative workspaces).
4. Due to data collection limitations, we stopped accounting for emissions related to data center water use in 2021. From 2021 onward, water management emissions include water used at our San Francisco office space only.
5. While reviewing our emissions data for the 2021 report, we discovered a calculation error - 2019 emissions have been correctly restated here.
6. In our 2023 report, a correction was made to 2022 employee commuting, which slightly decreased total emissions in that year.

Activity Data

Activity Data	Unit	2020	2021	2022	2023	2024	% Change (YoY)
Energy							
Total Electricity Consumption	kWh	3,212,519	3,154,197	3,710,680	4,317,817	5,425,584	+ 26%
Data Center - eqiad	kWh	1,741,488	1,912,500	2,295,476	2,463,300	3,042,900	+ 24%
Data Center - codfw	kWh	1,096,052	1,033,530	1,123,770	1,485,160	1,926,920	+ 30%
Data Center - esams	kWh	79,786	86,591	91,140	107,338	135,108	+ 26%
Data Center - eqsin	kWh	47,830	55,272	62,472	90,160	90,522	+ 0%
Data Center - ulsfo ₁	kWh	34,634	50,876	69,006	103,475	105,104	+ 2%
Data Center - drmrs	kWh	<i>not online</i>	1,079	48,490	51,054	51,660	+ 1%
Data Center - eqord	kWh	1,226	971	1,926	2,312	2,312	-0%
Data Center - eqdfw	kWh	1,226	1,120	2,141	2,141	2,854	+ 33%
Data Center - magru	kWh	<i>not online</i>	<i>not online</i>	<i>not online</i>	<i>not online</i>	55,634	
Data Center - knams	kWh	972	1,066	2,373	<i>merged with esams</i>	<i>merged with esams</i>	
WMF Server Room	kWh	24,264	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	
San Francisco Office ₂	kWh	185,041	11,192	13,887	12,878	12,570	-2%
Remote Work ₃		<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	<i>data not available</i>	
Total Stationary Combustion	mmBtu	146	211	208	251.19	149.19	-41%
San Francisco Office - Natural Gas	mmBtu	9.42	8.76	11.77	12.37	0.00	-100%
San Francisco Office - Steam	mmBtu	136.85	202.14	195.96	238.83	149.19	-38%
Water₄							
Municipal Water Use	m3	3,675	198	266	213	191	-10%
Wastewater Treatment	m3	3,675	198	266	213	191	-10%
Waste							
Total Waste Generated	t	5.05	5.10	5.96	5.98	6.06	+ 1%
Landfill	t	1.21	1.57	1.59	1.61	1.49	-8%
Recycled	t	1.74	1.28	2.01	1.53	2.39	+ 56%
Compost	t	2.05	2.16	2.34	2.84	2.06	-28%
eWaste	t	0.05	0.09	0.01	0.0	0.1	
Travel							
Air Travel	km	4,484,151	0	10,470,203	17,253,279	17,111,541	-1%
Hotel stays	nights	2,592	0	5,063	7,514	8,778	+ 17%
Commuting to San Francisco Office₅	km	114,098	0	0	0	0	
Commuting to Alternative Workspace₆	km	<i>data not available</i>	<i>data not available</i>	201,867	182,844	183,696	+ 0%

Notes

1. The ulsfo data center electricity consumption for the years 2018-2020 was calculated using a PUE of 1.12. In 2022, Digital Realty provided a site-specific PUE of 1.58, which led to a significant increase in calculated electricity consumption in 2021.
2. Beginning in 2021, electricity usage for the WMF Server Room is included in the San Francisco Office's electricity consumption. In 2022, we also began using data directly from the Foundation's metered billing statement, rather than prorating building-wide electricity usage, which led to a large decrease in these calculated emissions.
3. Energy consumption data from remote work was not collected; we instead used per person emission factors published in 2022 by DEFRA. We will explore the feasibility of collecting this data for future reports.
4. Due to data collection limitations, we stopped accounting for emissions related to data center water use in 2021. From 2021, water management emissions include water used at our San Francisco Office space only.
5. Office-related commuting emissions were negligible 2021-2023 and have been omitted from our calculations due to their relative insignificance.
6. In our 2023 report, a correction was made to 2022 passenger kilometers.