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Independent Accountants' Review Report

To the Board of Directors and Management of Alphabet Inc.

We have reviewed Alphabet Inc.'s accompanying Schedules of Select Environmental Indicators (the "Subject Matter") included in Appendix A for the year ended December 31, 2020 in accordance with the criteria also set forth in Appendix A (the "Criteria"). Alphabet Inc.'s management is responsible for the Subject Matter included in Appendix A, in accordance with the Criteria. Our responsibility is to express a conclusion on the Subject Matter based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) 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 our review to obtain limited assurance about whether any material modifications should be made to the Subject Matter in order for it to be in accordance with the Criteria. A review consists principally of applying analytical procedures, making inquiries of persons responsible for the Subject Matter, obtaining an understanding of the data management systems and processes used to generate, aggregate and report the Subject Matter and performing such other procedures as we considered necessary in the circumstances. A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether the Subject Matter is in accordance with the Criteria, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion. A review also does not provide assurance that we became aware of all significant matters that would be disclosed in an examination. We believe that our review provides a reasonable basis for our conclusion.

In performing our review, we have also complied with the independence and other ethical requirements set forth in the Code of Professional Conduct and applied the Statements on Quality Control Standards established by the AICPA.

As described in Note A within Appendix A, the Subject Matter is subject to measurement uncertainties resulting from limitations inherent in the nature and the methods used for determining such data. The selection of different but acceptable measurement techniques can result in materially different measurements. The precision of different measurement techniques may also vary.

The information included in the Company's annual Environmental Report and submission to the CDP, formerly the Carbon Disclosure Project, other than the Subject Matter, has not been subjected to the procedures applied in our review and, accordingly, we express no conclusion on it.

Based on our review, we are not aware of any material modifications that should be made to the accompanying Schedules of Select Environmental Indicators included in Appendix A for the year ended December 31, 2020, in order for the schedules to be in accordance with the Criteria.

June 25, 2021
San Jose, California

Appendix A: Schedules of Select Environmental Indicators

Alphabet Inc. ¹ Schedule of Environmental Indicators For the Year Ended December 31, 2020			
Indicator	Reported Value ²	Unit	Criteria
Scope 1 greenhouse gas (GHG) emissions ³	38,694	Metric tonnes of carbon dioxide equivalent (tCO ₂ e)	World Resources Institute (WRI)/World Business Council for Sustainable Development's (WBCSD), The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (GHG Protocol)
Biogenic GHG emissions ⁴	5,417	Metric tonnes of carbon dioxide (tCO ₂)	WRI WBCSD GHG Protocol and Global Reporting Initiative (GRI) Disclosure 305-1c
Scope 2 GHG emissions: location-based-method (LBM) ⁵	5,865,095	tCO ₂ e	WRI WBCSD GHG Protocol Scope 2 Guidance
Scope 2 GHG emissions: market-based-method (MBM) ⁵	911,415	tCO ₂ e	
Scope 3 GHG emissions, Category 6 Business Travel ^{6,7}	111,000	tCO ₂ e	WRI WBCSD GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard
Scope 3 GHG emissions, Category 7 Employee Commuting (excluding Work from Home Emissions) ^{7,8}	46,000	tCO ₂ e	
Scope 3 GHG emissions, Category 7 Employee Commuting - Work From Home ^{7,9}	56,000	tCO ₂ e	WRI WBCSD GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, supplemented by EcoAct's Homeworking emissions Whitepaper
Total energy consumption ¹⁰	15,439,538	Megawatt-hour (MWh)	Global Reporting Initiative (GRI) Disclosure 302-1e
Electricity consumption - Global ¹¹	15,138,543	MWh	GRI Disclosure 302-1c, i.
Electricity consumption - U.S.	10,789,194	MWh	
Electricity consumption - International	4,349,349	MWh	
Scope 1 + 2 Carbon intensity per unit of revenue	5.21	tCO ₂ e / million \$	GRI Disclosure 305-4
Scope 1 + 2 Carbon intensity per full-time equivalent employee (FTE)	7.49	tCO ₂ e / FTE	
Scope 1 + 2 Carbon intensity per MWh of energy consumed	0.0615	tCO ₂ e / MWh	
Percentage of electricity procured from renewable sources	100	%	Alphabet Inc. calculates the percentage of total global electricity procured from renewable sources as the amount of electricity procured from renewable energy globally, divided by the total electricity consumed by its Global Facilities. Electricity procured from renewable energy globally is calculated as the amount of electricity from renewable energy generation in the grids Alphabet Inc. uses, the amount of on-site renewable energy generation, and the amount sourced through contractual instruments globally. ¹²

Alphabet Inc.¹ Schedule of Environmental Indicators (continued)
For the Year Ended December 31, 2020

Indicator	Reported Value ²	Unit	Criteria
Carbon credits enabled through contracted carbon offset projects	1,163,109	tCO ₂ e	Alphabet Inc. invests in carbon offset projects. ¹³ A carbon offset project is an investment activity that reduces carbon emissions, ultimately represented by a carbon credit. The carbon credit signifies that GHG emissions are lower than if no one had invested in the carbon offset project. One carbon credit equals one metric ton of carbon dioxide prevented from entering the atmosphere. ¹⁴ Alphabet Inc. enters into long-term purchase agreements with their offsets suppliers to secure future deliveries. Once carbon credits from a project under contract are verified by a third-party and issued by a carbon registry, ¹⁵ per the agreement terms, ownership of the carbon credits is transferred from the project owner to Alphabet Inc. ("delivered"). All carbon credits are retired on a public registry after they are delivered to Alphabet Inc. Due to the timing of third-party verifications, delivery and retirement for some 2020 enabled carbon credits occurs after the year ended December 31, 2020. ¹⁶ As a result, this metric includes 301,380 tCO ₂ e of delivered carbon credits and 861,729 tCO ₂ e of contracted carbon credits. All carbon offset projects were contracted prior to December 31, 2020. ¹⁷ As the ongoing third-party project verifications and carbon credit issuances are completed, carbon credits will be delivered to Alphabet Inc. and subsequently permanently retired on Alphabet Inc.'s behalf.
Water withdrawal ¹⁸	5,689	Million gallons	GRI Disclosure 303-3a (total only)
Water discharge ¹⁹	1,940	Million gallons	GRI Disclosure 303-4a (total only)
Water consumption ²⁰	3,749	Million gallons	GRI Disclosure 303-5a (total only)

Note A: Non-financial information is subject to measurement uncertainties resulting from limitations inherent in the nature and the methods used for determining such data. The selection of different but acceptable standards and frameworks provide acceptable measurement techniques, which may result in materially different measurements. The precision of different measurement techniques may also vary.

Alphabet Inc.'s Schedule of net operational GHG emissions For the Year Ended December 31, 2020 (tCO ₂ e)	
Scope 1 GHG emissions	38,694
Scope 2 GHG emissions (MBM)	911,415
Scope 3 Business Travel GHG emissions	111,000
Scope 3 Employee Commuting GHG emissions	46,000
Scope 3 Work from Home GHG emissions	56,000
Alphabet's Total Operational GHG emissions:	1,163,109
Less: Carbon credits enabled through contracted carbon offset projects	1,163,109
Alphabet's Net Operational GHG Emissions:	0

Alphabet Inc.'s Total Operational GHG Emissions is calculated by totaling Scope 1, Scope 2 (MBM), Scope 3 Category 6 Business Travel, Scope 3 Category 7 Employee Commuting and Scope 3 Category 7 Work from Home GHG emissions, per the criteria described above. Alphabet Inc.'s Net Operational GHG Emissions is calculated as Alphabet's Total Operational GHG emissions less carbon credits enabled through contracted carbon offset projects. Carbon credits enabled through contracted carbon offset projects are retired at an amount equal to Alphabet Inc.'s Scope 1, Scope 2 (MBM), Scope 3 Category 6 Business Travel, Scope 3 Category 7 Employee Commuting and Scope 3 Category 7 Work from Home GHG emissions.

See **Note A** above.

Alphabet Inc.'s Schedule of total emissions reduced through renewable energy PPAs, MBM emission factors and carbon credits enabled through contracted carbon offset projects For the Year Ended December 31, 2020 (tCO ₂ e)	
Scope 2 GHG emissions (LBM)	5,865,095
Less: Scope 2 GHG emissions (MBM)	911,415
Emissions reduced from renewable energy PPAs and MBM emission factors:	4,953,680
Emissions reduced by carbon credits enabled through contracted carbon offset projects:	1,163,109
Total emissions reduced:	6,116,789

Alphabet Inc.'s total emissions reduced from renewable energy PPAs and MBM emission factors is calculated by subtracting Scope 2 MBM GHG emissions from Scope 2 LBM GHG emissions, which are calculated per the criteria described above. Alphabet Inc.'s total emissions reduced is calculated by totaling the Emissions reduced from renewable energy PPAs and MBM emission factors and Emissions reduced by carbon credits enabled through contracted carbon offset projects.

See **Note A** above.

Alphabet Inc.'s Schedule of electricity procured from renewable sources For the Year Ended December 31, 2020 (MWh)	
Renewable electricity procured (PPAs and on-site)	12,069,211
Renewable energy generation in the grids Alphabet Inc. uses	3,069,332
Total electricity procured from renewable sources:	15,138,543

Alphabet Inc. calculates the total renewable electricity procured by totaling the amount of electricity from renewable energy generation in the grids Alphabet Inc. uses, the amount of on-site renewable energy generation and the amount sourced through contractual instruments globally.¹²

See **Note A** above.

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- ¹ References to Alphabet Inc. include its subsidiaries, except otherwise noted. The geographical scope of the Subject Matter within the Schedule includes Alphabet Inc. and its subsidiaries' data centers, offices, and networking infrastructure under its operational control (Global Facilities) for energy and emissions metrics. For water metrics, the geographical scope of the Subject Matter within the Schedule includes Alphabet Inc. and its subsidiaries' data centers and offices under its operational control. This excludes Calico. Where possible, based on the company's reporting timeline and requirements, the company uses the most up-to-date emission factors available at the time of their carbon footprint calculation.
- ² All indicators are reported for the period January 1, 2020 through December 31, 2020.
- ³ Scope 1 emissions capture natural gas from owned Global Facilities, back-up generator fuel use generated by Global Facilities, fuel consumption from Alphabet Inc.'s operated vehicles and aircraft and methane and nitrous oxide from biogenic sources. The emission factors used to calculate Scope 1 emissions include the WRI/WBCSD GHG Protocol Emission Factors from Cross Sector Tools, the Environmental Protection Agency (EPA) Center for Corporate Climate Leadership GHG Emission Factors Hub and the Department for Environment, Food and Rural Affairs (DEFRA) UK Government GHG Conversion Factors.
- ⁴ In accordance with the WRI/WBCSD GHG Protocol, Corporate Standard, biogenic CO₂ emissions are called out separately from other Scope 1 emissions. These emissions are generated from Alphabet Inc.'s operated vehicles consuming biogenic fuels. The emission factors used to calculate biogenic emissions come from the EPA Center for Corporate Climate Leadership GHG Emission Factors Hub.
- ⁵ Scope 2 emissions capture natural gas from leased Global Facilities and electricity consumption generated by Global Facilities. Where natural gas consumption from offices, or electricity consumption for Global Facilities was not available, Alphabet Inc. estimates consumption. Electricity and natural gas estimated consumption are calculated using company square footage and internally developed electricity and natural gas intensity factors by office type based on fiscal year 2020 data. The emission factors used to calculate Scope 2 LBM emissions include the WRI/WBCSD GHG Protocol Emission Factors from Cross Sector Tools and the International Energy Agency (IEA) Emission Factors. The emission factors used to calculate Scope 2 MBM emissions include the WRI/WBCSD GHG Protocol Emission Factors from Cross Sector Tools, the IEA Emission Factors, the Association for Issuing Bodies (AIB) European Residual Mixes, and emission factors specific to energy attribute certificates applied.
- ⁶ Scope 3 Category 6 Business Travel includes GHG emissions generated by Alphabet Inc. employees and candidates from air, rail and car rental travel. Travel data is collected through Alphabet Inc.'s online booking system or through a third-party travel agency for all sources except for candidate car rental travel, which is estimated. Emissions are calculated using DEFRA UK Government GHG Conversion Factors for air, the WRI/WBCSD GHG Protocol Emission Factors from Cross Sector Tools for rail, and the EPA Center for Corporate Climate Leadership GHG Emission Factors Hub for car rental travel.
- ⁷ Scope 3 GHG emissions are rounded up to the nearest thousand.
- ⁸ Scope 3 Category 7 Employee Commuting estimates GHG emissions generated by private vehicle commuting trips made by Alphabet Inc. employees. To determine the number of private vehicles commuting trips made in 2020, Alphabet Inc. surveyed a sample of its employees to determine typical commuting patterns and applied these commuting patterns to its global employee population. The calculation uses an average commuting distance for passenger vehicles obtained from the U.S. Department of Transportation's 2017 National Household Travel Survey and an average fuel efficiency for passenger vehicles obtained from the U.S. Department of Transportation's Transportation Statistics Table 4-23. Emissions are calculated using DEFRA UK Government GHG Conversion Factors for passenger vehicles.
- ⁹ Scope 3 Category 7 Employee Commuting – Work-From Home estimates the GHG emissions generated by employees working remotely from their homes (i.e., telecommuting). Alphabet Inc. applies the estimation methodology outlined in EcoAct's, Homeworking emissions Whitepaper to its annual average workforce in 2020. For the purposes of the estimate, countries split between both the northern and southern hemispheres are captured as part of the southern hemisphere and use of air conditioning in homes is captured only in the U.S., Japan, Korea and China.
- ¹⁰ Total energy includes all fuel and natural gas consumption as included in Scope 1 emissions, all electricity and natural gas consumption as included in Scope 2 LBM emissions and all electricity generated on-site from renewable and non-renewable sources.
- ¹¹ "Electricity consumption – Global" is the summation of ("Electricity consumption – International" + "Electricity consumption - U.S.")
- ¹² The percentage of total global electricity procured from renewable sources = (15,138,543 MWh total renewable energy procured (3,061,455 MWh of renewable energy generation from the grids Alphabet Inc. uses + 7,171 MWh from on-site renewable energy generation + at least 12,069,917 MWh of renewable energy sourced through contractual instruments globally) / (15,138,543 MWh of Alphabet Inc.'s total electricity consumption). Contractual instruments may include power purchase agreements (PPAs) and utility renewable energy tariffs, which may result in renewable energy credits (RECs) or guarantees of origin (GOs). Alphabet Inc.'s renewable energy methodology is a custom calculation and is based on a global approach. The numerator includes all renewable energy procured, regardless of the market in which the renewable energy was consumed. Additional details on Alphabet Inc.'s criteria and methodology can be found in the [Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond](#) disclosure.
- ¹³ Alphabet Inc. assesses carbon offset projects against four standards before investing: Additionality, Leakage prevention, Permanence and Verifiability. Refer to Alphabet Inc.'s [Carbon Offset White Paper](#) for additional information.
- ¹⁴ As stated in the WRI/WBCSD GHG Protocol, a GHG target can be met through using offsets that are generated from GHG reduction projects at sources external to the (company's) boundary. Offsets are designed to be interchangeable globally and deliverable from a variety of project types. Alphabet Inc. refers to these emission offsets as "Emissions neutralized by carbon offset projects" within its Environmental Report.
- ¹⁵ Alphabet Inc.'s carbon credits are verified under Climate Action Reserve (CAR), American Carbon Registry (ACR), or Verified Carbon Standard (VCS).
- ¹⁶ Per the carbon registry verification manuals, all projects must complete their initial verification within 12 months of the end of the initial reporting period.
- ¹⁷ Generation of some carbon credits occurred in the 6 months following December 31, 2020.
- ¹⁸ Water withdrawal data is based on actual metered or invoiced data when it is available. At offices when actual data is not available, water withdrawal is estimated using facility headcount, or facility square footage when headcount is determined not to be a driving factor in water withdrawal, and internally developed water withdrawal intensity factors by office type based on fiscal year 2020 data.
- ¹⁹ In all instances where actual potable water discharge is not available, Alphabet Inc. applies a 90% discharge flow factor to the facility water withdrawal to estimate water discharge. This estimation process is applicable to all offices and potable water withdrawal at data centers used for domestic purposes (i.e., water not used for IT cooling) where actual discharge is not available.
- ²⁰ "Water consumption" is equal to ("Water withdrawal" – "Water discharge")