UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

April 11, 2022

Jeffrey D. Karpf
Cleary Gottlieb Steen & Hamilton LLP

Re: Alphabet Inc. (the "Company")
Incoming letter dated February 1, 2022

Dear Mr. Karpf:

This letter is in response to your correspondence concerning the shareholder proposal (the "Proposal") submitted to the Company by Dale Wannen for inclusion in the Company's proxy materials for its upcoming annual meeting of security holders.

The Proposal requests that the board create a board committee on environmental sustainability to oversee and review policies and provide guidance on matters relating to environmental sustainability.

We are unable to concur in your view that the Company may exclude the Proposal under Rule 14a-8(i)(7). In our view, the Proposal transcends ordinary business matters and does not seek to micromanage the Company.

We are unable to concur in your view that the Company may exclude the Proposal under Rule 14a-8(i)(10). Based on the information you have presented, it appears that the Company has not substantially implemented the Proposal.

Copies of all of the correspondence on which this response is based will be made available on our website at https://www.sec.gov/corpfin/2021-2022-shareholder-proposals-no-action.

Sincerely,

Rule 14a-8 Review Team

cc: Dale Wannen

CLEARY GOTTLIEB STEEN & HAMILTON LLP

One Liberty Plaza
New York, NY 10006-1470
T: +1 212 225 2000
F: +1 212 225 3999

clearygottlieb.com

WASHINGTON, D.C. · PARIS · BRUSSELS · LONDON · MOSCOW
FRANKFURT · COLOGNE · ROME · MILAN · HONG KONG · BEIJING
BUENOS AIRES · SÃO PAULO · ABU DHABI · SEOUL · SILICON VALLEY

Writer's Direct Dial: +1 212 225 2864
jkarpf@cgsh.com

February 1, 2022

VIA E-MAIL (shareholderproposals@sec.gov)

U.S. Securities and Exchange Commission
Division of Corporation Finance
Office of Chief Counsel
100 F Street, N.E.
Washington, DC 20549

Re: Shareholder Proposal Submitted by Dale Wannen

Ladies and Gentlemen:

We are writing on behalf of our client, Alphabet Inc., a Delaware corporation ("Alphabet" or the "Company"), pursuant to Rule 14a-8(j) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), to notify the staff of the Division of Corporation Finance (the "Staff") of the Securities and Exchange Commission (the "Commission") of the Company's intention to exclude the shareholder proposal (the "Proposal") and supporting statement (the "Supporting Statement") submitted by Dale Wannen (the "Proponent"), by a letter dated December 13, 2021, from the Company's proxy statement for its 2022 annual meeting of shareholders (the "Proxy Statement").

In accordance with Section C of the SEC Staff Legal Bulletin No. 14D (Nov. 7, 2008) ("SLB 14D"), we are emailing this letter and its attachments to the Staff at shareholderproposals@sec.gov. In accordance with Rule 14a-8(j), we are simultaneously sending a copy of this letter and its attachments to the Proponent as notice of the Company's intent to omit the Proposal from the Proxy Statement. The Company expects to file its definitive Proxy Statement with the Commission on or about April 22, 2022, and this letter is being filed with the Commission no later than 80 calendar days before that date in accordance with Rule 14a-8(j). Rule 14a-8(k) and Section E of SLB 14D provide that shareholder proponents are required to send companies a copy of any correspondence that the shareholder proponent elects to submit to the Commission or the Staff. Accordingly, we are taking this opportunity to remind the Proponent that if the Proponent submits correspondence to the Commission or the Staff with respect to the Proposal, a copy of that correspondence should concurrently be furnished to the undersigned on behalf of the Company.

THE PROPOSAL

The Proposal and Supporting Statement are attached hereto as Exhibit A. The Proposal states:

RESOLVED: Shareholders of Alphabet Inc. (GOOGL) request that the Board of Directors create a board committee on environmental sustainability to oversee and review policies and provide guidance on matters relating to environmental sustainability.

BASES FOR EXCLUSION

In accordance with Rule 14a-8, we hereby respectfully request that the Staff confirm that no enforcement action will be recommended against the Company if the Proposal and the Supporting Statement are omitted from the Proxy Statement for the following reasons:

1. The Proposal may be omitted pursuant to Rule 14a-8(i)(10) because the Company has already substantially implemented the Proposal; and
2. The Proposal may be omitted pursuant to Rule 14a-8(i)(7) because the Proposal concerns the Company's ordinary business operations.

ANALYSIS

A. Under Rule 14a-8(i)(10), the Proposal may be omitted because the Company has substantially implemented the Proposal.

a. Rule 14a-8(i)(10) background

Pursuant to Rule 14a-8(i)(10), a company is permitted to exclude a shareholder proposal if the company has already substantially implemented the proposal. The purpose of this rule, as set forth by the Commission, is to "avoid the possibility of shareholders having to consider matters which already have been favorably acted upon by the management." *See* Exchange Act Release No. 34-20091 (Aug. 15, 1983) (the "1983 Release"); Exchange Act Release No. 34-12598 (July 1976) (the "1976 Release"). The Commission has clarified that the proposal's requested actions do not need to be "fully effected" or implemented exactly as presented for a company to exclude the proposal under Rule 14a-8(i)(10); instead, the actions called for by the proposal need only be "substantially implemented." *See* 1983 Release. Whether a proposal has been "substantially implemented" by a company "depends on whether its particular policies, practices and procedures compare favorably with the guidelines of the proposal." *Texaco, Inc.* (Mar. 28, 1991).

The Staff has consistently allowed for the exclusion of proposals under Rule 14a-8(i)(10) where a company's actions have substantially addressed the "essential objective" and underlying concerns of the proposal, even if the specific actions may not be exactly as requested or required by the proposal. For example, the Staff in *Visa Inc.* (Oct. 11, 2019) concurred that the exclusion of a proposal requesting the company's compensation committee reform its executive compensation program to include social factors was substantially implemented because the company's philosophy was tied to its seven strategic pillars, which included social issues. Additionally, the Staff in *Walgreen Co.* (Sept. 26, 2013) agreed that exclusion was permissible of a proposal that requested to amend the company's articles of incorporation to eliminate certain supermajority voting requirements, since the company had already eliminated all of its supermajority provisions. *See also*, *e.g.*, *Invesco Ltd.* (Mar. 8, 2019); *Eli Lilly & Co.* (Feb. 22, 2019); *PepsiCo, Inc.* (Feb. 14, 2019); *State Street Corporation* (Mar. 15, 2018); *The Goodyear Tire & Rubber Company* (January 19, 2018); *Mattel, Inc.* (Feb. 3, 2017); *AbbVie, Inc.* (Dec. 22, 2016); *The Wendy's Co.* (Mar. 2, 2016); *Starbucks Corp.* (Dec. 1, 2011); *Exxon Mobil Corp.* (Mar. 23, 2009); *Chevron Corp.* (Feb. 19, 2008); *Johnson & Johnson* (Feb. 17, 2006).

b. The Proposal has been substantially implemented because the Company's Board of Directors currently provides robust oversight of matters related to environmental, social and governance issues.

Under Rule 14-8a(i)(10), the Staff has consistently concurred with the exclusion of proposals requesting that the board of directors form a committee where an existing committee performs the actions requested in the proposal. In *Goldman Sachs Group, Inc.* (Feb. 12, 2014), for example, the Staff agreed that a proposal requesting the board to form a public policy committee had been substantially implemented where an existing committee's charter empowered such committee to perform the actions requested in the proposal. See also *Siliconix Inc.* (Mar. 1, 2004) (permitting the exclusion of a proposal requesting the board to form a committee of independent directors to review related party transactions where the company's audit committee, comprised of independent directors, was already responsible for reviewing and approving all related party transactions); *ITT Corp.* (Mar. 24, 1992) (permitting the exclusion of a proposal requesting the board to appoint an environmental affairs committee to establish environmental policies and monitor the company's compliance with federal and state laws and regulations where an existing legal affairs committee performed that same function).

The Proposal calls for a committee of the Company's Board of Directors (the "Board") that will "oversee and review policies and provide guidance on matters relating to environmental sustainability." While the Board does not have a specific "Environmental Sustainability Committee," the Company has satisfied the essential objective of designating a committee responsible for oversight of environmental and sustainability issues, including oversight of the Company's related policies, risk exposures, and existing practices. The charter of the Audit and Compliance Committee of the Board (the "Audit and Compliance Committee Charter"), which is available on the Company's website at https://abc.xyz/investor/other/board and attached as Exhibit B, makes clear that the Company's Audit and Compliance Committee of the Board (the "Audit and Compliance Committee") has responsibility for reviewing the Company's sustainability risk exposure, which includes environmental and climate change risks, and discussing this exposure with management, as the Proposal itself acknowledges.

As the Proposal itself acknowledges, environmental, social, and corporate governance issues are at the forefront of the Company's ethos. The Proposal suggests that the purpose of a separate board committee on environmental sustainability "could be to initiate, review, and make policy recommendations regarding topics such as global climate change, resource shortages, biodiversity loss and political instability due to changing environmental conditions." As discussed below, the Company is already reviewing and taking actions on those issues, which have positioned the Company as a leader in a number of these areas. The Audit and Compliance Committee regularly receives updates on these areas. For example, in the Company's 2021 Environmental Report (the "2021 Environmental Report"), the Company highlights its track record of commitment to sustainability: In 2007, it became the first major company to be carbon neutral for its operations; in 2017, it became the first major company to match 100% of its annual electricity use with renewable energy, an accomplishment it has achieved for four consecutive years; in 2020, it issued $5.75 billion in sustainability bonds, the largest sustainability or green bond issuances by any company in history at that time; and in 2020, it compensated for its legacy carbon footprint, making it the first major company to be carbon neutral for its entire operating history.

Furthermore, to address global climate change, the Company invested $3.3 billion in renewable energy projects between 2010 and 2020 with an expected combined capacity of approximately 8.7 gigawatts, among other things. With regards to biodiversity loss, the Company has developed its Wildlife Insights platform, described on its website at https://www.google.com/earth/outreach/special-projects/conservation/, which streamlines conservation monitoring by speeding up camera trap data analysis. The Company has also invested in urban ecology, having planted 2,191 native trees and restored 12 acres of native habitat on its Bay Area campuses in 2020 alone. Finally, to address resource shortages, the Company has worked to create sustainable workplaces, with 17 million square feet of the Company's office facilities having achieved LEED certification, three of the Company's campuses having achieved Alliance for Water Stewardship certification and 100% of "Made by Google" products launched since 2020 having been built with plastic parts made with up to approximately 70% recycled materials.

The Company's existing public disclosure in its Annual Report on Form 10-K for the fiscal year ended December 31, 2020 (the "Annual Report"), a copy of which is attached as Exhibit D, also provides details of oversight measures the Company has in place for environmental, social, and governance issues. The Company explains in the Annual Report that it developed a climate resilience strategy in 2017, which included conducting a climate scenario analysis. Furthermore, it explains that it has aligned its climate change response with the recommendations of the Task Force on Climate-related Financial Disclosures. The Board and the Audit and Compliance Committee have received regular updates on these strategies and practices. The Company has therefore satisfied the Proposal's essential objective by having in place policies and procedures for the oversight and review of matters relating to environmental sustainability. Accordingly, the Proposal may be omitted under Rule 14a-8(i)(10).

B. Under Rule 14a-8(i)(7), the Proposal may be omitted because it concerns the Company's ordinary business operations.

a. Rule 14a-8(i)(7) background

Pursuant to Rule 14a-8(i)(7), a shareholder proposal may be excluded if it "deals with a matter relating to the company's ordinary business operations." According to the Commission's prior guidance, the term "ordinary business" refers to matters that are not necessarily "ordinary" in the common meaning of the word, but instead the term "is rooted in the corporate law concept [of] providing management with flexibility in directing certain core matters involving the company's business and operations." *See* Exchange Act Release No. 34-40018 (May 21, 1998) (the "1998 Release").

In the 1998 Release, the Commission explained that the underlying policy of the ordinary business exclusion is "to confine the resolution of ordinary business problems to management and the board of directors, since it is impracticable for shareholders to decide how to solve such problems at an annual shareholders meeting," and identified two central considerations that underlie this policy. The first is that "[c]ertain tasks are so fundamental to management's ability to run a company on a day-to-day basis that they could not, as a practical matter, be subject to direct shareholder oversight." The second consideration relates to "the degree to which the proposal seeks to 'micro-manage' the company by probing too deeply into matters of a complex nature upon which shareholders, as a group, would not be in a position to make an informed judgment."

More recently, in Staff Legal Bulletin No. 14L (Nov. 3, 2021) ("SLB No. 14L"), the Staff rescinded prior guidance that a company may exclude a shareholder proposal in respect of its ordinary business operation if the proposal did not raise a significant policy issue of the company. The Staff stated that it will instead look to whether the policy issue may have broad societal impact such that it transcends the ordinary business of the company, regardless of nexus between the issue and the company's business. In explaining the change, the Staff noted, "[W]e have found that focusing on the significance of a policy issue to a particular company has drawn the Staff into factual considerations that do not advance the policy objectives behind the ordinary business exception," which "did not yield consistent, predictable results."

In addition, in SLB No. 14L, the Staff provided guidance on its position on micromanagement when evaluating requests to exclude a proposal on that basis under the ordinary business exception. The Staff stated that it will no longer view proposals that seek detail or seek to promote timeframes or methods as *per se* micromanagement. Instead, the Staff will focus on the level of detail and granularity sought in the proposal and may look to well-established frameworks or references in considering what level of detail may be too complex for shareholder input. The Staff also noted that it will look to the sophistication of investors generally, the availability of data and the robustness of public discussion in considering whether a proposal's matter is too complex for shareholders, as a group, to make an informed judgment.

b. The Proposal may be excluded because it seeks to micromanage the Company and does not raise a significant social policy issue that transcends the Company's ordinary business operations.

In addition to being excludable under Rule 14a-8(i)(10), the Proposal is excludable under Rule 14a-8(i)(7) because it seeks to "micromanage" the Company "by probing too deeply into matters of a complex nature upon which shareholders, as a group, would not be in a position to make an informed judgment." *See* 1998 Release. In SLB No. 14L, the Staff clarified that in evaluating companies' "micromanagement" arguments, it will "focus on the level of granularity sought in the proposal and whether and to what extent it inappropriately limits discretion of the board or management." The Staff further noted that this approach is "consistent with the Commission's views on the ordinary business exclusion, which is designed to preserve management's discretion on ordinary business matters but not prevent shareholders from providing *high-level direction on large strategic corporate matters*" (emphasis added).

The Proposal here attempts to direct too closely the activities and judgment of the Board by requesting that the Board "create a board committee on environmental sustainability to oversee and review policies and provide guidance on matters relating to environmental sustainability." The Staff has consistently allowed the exclusion of proposals requesting formation of a committee of the board of directors. In *Exxon Mobil Corporation* (Jan. 17, 2020), for example, the Staff agreed with the exclusion of a proposal requesting the board charter a new board committee on climate risk where the company argued that such a request related to the company's ordinary business operations by impermissibly seeking to "micromanage" the company by imposing specific methods to implement complex policy issues. See also *KB Home* (Jan. 11, 2008) (allowing exclusion of a proposal that required the board to establish a compliance committee that would conduct a thorough review of the company's regulatory, litigation and compliance risks with respect to its mortgage lending operations, and present such findings, recommendations and progress to the shareholders); *Monsanto Company* (Nov. 3, 2005) (allowing exclusion of a proposal that required the creation of an ethics oversight committee of independent directors to monitor the company's compliance with its ethics policy and applicable law, including the Foreign Corrupt Practices Act). The question of whether to form a committee relates to the fundamental authority of the board to determine the best methods for addressing particular issues, and it therefore constitutes a part of a company's day-to-day business operations.

Furthermore, the Proposal imposes specific methods, actions, and outcomes on the Board with respect to creating a separate committee for environmental sustainability, showing clear intent to "micromanage" the Board and unduly limiting the Board's judgment and discretion. The Proposal outlines particular responsibilities of the committee, requesting that it "initiate, review, and make policy recommendations," regarding "global climate change, resource shortages, biodiversity loss, and political instability due to changing environmental conditions." It further identifies the actions that the committee would take as including "approval of sustainability policies to the full Board of Directors and review [of] management and control systems for non-financial risks." This level of prescriptiveness is consistent with exclusion under the guidance provided in Staff Legal Bulletin No. 14K (Oct. 16, 2019) ("SLB No. 14K"), where the Staff explained that, in evaluating arguments under the micromanagement prong of Rule 14a-8(i)(7), it conducts an assessment of the level of prescriptiveness of the proposal:

> "Notwithstanding the precatory nature of a proposal, if the method or strategy for implementing the action requested by the proposal is overly prescriptive, thereby potentially limiting the judgment and discretion of the board and management, the proposal may be viewed as micromanaging the company…When a proposal prescribes specific actions that the company's management or the board must undertake without affording them sufficient flexibility or discretion in addressing the complex matter presented by the proposal, the proposal may micromanage the company to such a degree that exclusion of the proposal would be warranted."

While the Staff reiterated in the recently published SLB No. 14L that proposals that otherwise concern ordinary business matters may nonetheless be appropriate for a shareholder vote if the proposal raises a policy issue that is sufficiently significant to transcend day-to-day business matters, prior Staff letters have made clear that the mere mention of an issue with a broad societal impact will not transform a proposal that is otherwise about ordinary business issues.

For example, in *CVS Health Corporation* (Feb. 27, 2015), the Staff permitted exclusion of a proposal requesting that "CVS Health amend its equal employment opportunity policy…to explicitly prohibit discrimination based on political ideology, affiliation or activity." In its submission to the Staff, CVS argued that "a proposal seeking to protect against discrimination based on political participation affects a company's management of business operations by involving the relationship of employees and management." The Staff concurred, noting that "the proposal relates to CVS Health's policies concerning its employees." The Staff has reaffirmed this approach after the publication of SLB No. 14L with its decision in *Deere & Company* (Jan. 3, 2022), where the Staff agreed that a proposal seeking the publication of the company's employee training materials did not transcend ordinary business matters despite its concern with anti-racism and racial equity issues.

Here, although the Proposal touches on issues of environmental sustainability, its main request is the formation of a board committee. Rather than addressing a significant policy issue, the Proposal requests that the Board address a significant policy issue, and the Proposal itself merely seeks to dictate how the Board must do so. The Proposal's request therefore constitutes "micromanagement" of the Board. Accordingly, the Proposal may be omitted under Rule 14a-8(i)(7).

* * * * *

CONCLUSION

By copy of this letter, the Proponent is being notified that for the reasons set forth herein, the Company intends to omit the Proposal and Supporting Statement from its Proxy Statement. We respectfully request that the Staff confirm that it will not recommend any enforcement action if the Company omits the Proposal and Supporting Statement from its Proxy Statement. If we can be of assistance in this matter, please do not hesitate to call me.

Sincerely,

Jeffrey D. Karpf

Cc: Dale Wannen, President of Sustainvest Asset Management LLC

Enclosures:

Exhibit A – Proponent's Proposal and Supporting Statement
Exhibit B – Audit and Compliance Committee Charter
Exhibit C – 2021 Environmental Report
Exhibit D – Annual Report on Form 10-K for the Fiscal Year Ended December 31, 2020

Exhibit A

Proponent’s Proposal and Supporting Statement

December 9, 2021

Alphabet Inc.
Attn: Corporate Secretary
[redacted]

RE: Shareholder Proposal

Dear Corporate Secretary,

As a beneficial owner of Alphabet, Inc. company stock, I am submitting the enclosed shareholder resolution for inclusion in the proxy statement for the 2022 meeting in accordance with Rule 14a-8 of the General Rules and Regulations of the Securities and Exchange Act of 1934 (the "Act"). I am the beneficial owner, as defined in the Act, of at least $25,000 in market value of Alphabet, Inc. common stock. I have held these securities for more than one year as of the filing date and will continue to hold at least the requisite number of shares for a resolution through the shareholder's meeting. I have enclosed a copy of Proof of Ownership from Charles Schwab & Company. I will attend the shareholder's meeting to move the resolution as required.

My contact information is:

Email: [redacted]
Phone: [redacted]
Address: [redacted]

Sincerely,

Dale Wannen
President
Sustainvest Asset Management LLC

encl.

Board Committee on Environmental Sustainability

RESOLVED: Shareholders of Alphabet Inc. (GOOGL) request that the Board of Directors create a board committee on environmental sustainability to oversee and review policies and provide guidance on matters relating to environmental sustainability.

SUPPORTING STATEMENT

As one of the largest corporations in the world, our company's exposure to environmental sustainability and issues around climate change are considerable and could substantially affect our bottom line.

In a recent report put out by consulting firm Deloitte titled "Addressing Climate Change"[1] the firm asked 353 committee members of large corporations, "How prepared are we to deal with climate risk"? Globally 42% of respondents indicated that their company's "climate response is not as swift and robust as they would like" and almost half "do not believe that they are well-equipped to fulfil their climate regulatory responsibilities." Deloitte called the responses "sobering."

With over 78 offices in more than 50 countries, Alphabet has a major international presence. Though ESG or environmental, social and corporate governance issues are at the forefront of our company ethos, at the director level, the board doesn't seem to have any oversight with environmental sustainability.

Current board committees at Alphabet include the Audit and Compliance Committee, Leadership Development and Compensation Committee, Nominating and Corporate Governance Committee and the Executive Committee. Within the verbiage of all committees' responsibilities and purpose, there are zero mentions of climate change and zero mentions of the environment. Within the Audit and Compliance Committee there is one mention of sustainability, but we feel that because of the scale of climate change, a separate committee specifically focused on environmental issues is warranted. Alphabet's commitment to ESG as a corporation is strong but is the board "on board".

The purpose of an environmental sustainability committee could be to initiate, review, and make policy recommendations regarding topics such as global climate change, resource shortages, biodiversity loss, and political instability due to changing environmental conditions. It could also propose approval of sustainability policies to the full Board of Directors and review management and control systems for non-financial risks. Many of these policies may already be in place at the company level but having additional board oversight will only strengthen these policies.

Nothing herein shall restrict the power of the Board of Directors to manage the business and affairs of the company. The Board Committee on Environmental Sustainability shall not incur any costs to the company except as authorized by the Board of Directors.

Having an independent committee with focused fiduciary duties for oversight of environmental sustainability policies and practices will only strengthen the bottom line and reinforce our company's position as an industry leader in environmental stewardship. The significant risks associated with climate change warrant more fine-tuned accountability and responsibility at the board level. The issue at hand and this proposal seems to go beyond ordinary business and for that reason we urge shareholders to support it.

1. *https://www.lexology.com/library/detail.aspx?g=9db08e75-c1a0-489a-b61b-9e61279381c1*

Exhibit B

Audit and Compliance Committee Charter

Board of Directors

Larry Page
Sergey Brin
Sundar Pichai
John L. Hennessy
Frances Arnold
L. John Doerr
Roger W. Ferguson, Jr.
Ann Mather
Alan R. Mulally
K. Ram Shriram
Robin L. Washington

Board Committees

Audit and Compliance Committee

Ann Mather, Chair
Roger W. Ferguson, Jr.
Alan R. Mulally

Audit and Compliance Committee Charter

Purpose

The purpose of the Audit and Compliance Committee of the Board of Directors of Alphabet Inc. (“Alphabet”) is to:

- Oversee Alphabet’s accounting and financial reporting processes, including Alphabet’s disclosure controls and procedures and system of internal controls and audits of Alphabet’s consolidated financial statements.
- Oversee Alphabet’s relationship with its independent auditors, including appointing or changing Alphabet’s auditors and ensuring their independence.
- Provide oversight regarding significant financial matters, including Alphabet’s tax planning, treasury policies, currency exposures, dividends and share issuance and repurchases.
- Review and discuss with management Alphabet’s major risk exposures, including financial, operational, data privacy and security, competition, legal, regulatory, compliance, civil and human rights, sustainability, and reputational risks, and the steps Alphabet takes to prevent, detect, monitor, and actively manage such exposures.

In carrying out Audit and Compliance Committee functions, the Audit and Compliance Committee must maintain free and open communication with Alphabet’s independent auditors and Alphabet’s management.

Appointment and Membership Requirements

The Audit and Compliance Committee shall be made up of at least the minimum number of independent members of the Board of Directors as required under the rules of the NASDAQ Stock Market (NASDAQ). Audit and Compliance Committee members are appointed by the Board of Directors. The Board of Directors decides the Audit and Compliance Committee's exact number and can at any time remove or replace a Committee member. The Board of Directors will also make all determinations regarding satisfaction of the membership requirements described below.

The Audit and Compliance Committee will comply with all applicable provisions of the Sarbanes-Oxley Act of 2002 and the rules and regulations of the Securities and Exchange Commission (SEC) and the NASDAQ and any other requirements of applicable law, including those related to independence and committee composition.

At least one member of the Audit and Compliance Committee must have past employment experience in finance or accounting, or comparable experience or background, which results in an understanding of GAAP and financial statements, an ability to apply GAAP principles in assessing accounting policies and accounting for estimates, accruals and reserves, experience in preparing, auditing and evaluating financial statements with a level of complexity comparable to Alphabet's financial statements, an understanding of audit committee functions and an understanding of internal control over financial reporting. Having been a CEO, CFO or other senior officer with financial oversight responsibilities for a public company, for instance, would qualify.

Each member of the Audit and Compliance Committee must be able to read and understand fundamental financial statements, including Alphabet's balance sheet, income statement and cash flow statement.

Responsibilities

The Audit and Compliance Committee's main responsibility is to oversee Alphabet's financial reporting process (including Alphabet's disclosure controls and procedures and system of internal controls). The Audit and Compliance Committee believes that Alphabet's policies and procedures should remain flexible in order to best react to changing conditions and circumstances. The following list includes the Audit and Compliance Committee's main recurring processes in carrying out its responsibilities. This list is intended as a guide, with the understanding that the Audit and Compliance Committee can supplement it as appropriate, consistent with the requirements of the SEC and the NASDAQ.

1. Hiring and Selection of Auditors. The Audit and Compliance Committee will directly appoint, retain and compensate Alphabet's independent auditors. These independent auditors will report directly to, and be responsible to, the Audit and Compliance Committee.

2. Approval of Audit and Non-Audit Services. The Audit and Compliance Committee is responsible for overseeing services provided by the independent auditors, including establishing a policy to decide what services will be performed and the approval requirements for these services.

3. Auditor Independence. The Audit and Compliance Committee is responsible for making sure it reviews at least annually the qualifications, performance and independence of the auditors. In addition, the Audit and Compliance Committee shall review a formal written statement explaining all relationships between the outside auditors and Alphabet consistent with the applicable requirements of the Public Company Accounting Oversight Board regarding the independent auditor's communications with the Audit and Compliance Committee concerning independence. The Audit and Compliance Committee will maintain an active dialogue with the independent auditors, covering any disclosed relationships or services that may impact their objectivity and independence. The Audit and Compliance Committee will review all proposed hires by Alphabet or any of its subsidiaries or controlled affiliates of management level or higher individuals formerly employed by the independent auditors who provided services to Alphabet or any of its subsidiaries or controlled affiliates. The Audit and Compliance Committee will take, or recommend to the Board of Directors that it take, appropriate actions to oversee the independence of Alphabet's outside auditors.

4. Oversight of Auditors; Audit Plan. The Audit and Compliance Committee will be responsible for Alphabet's relationship with its independent auditors. The Audit and Compliance Committee will discuss with the independent auditors the overall scope and plans for their audits and other

financial reviews, as well as any other matters that are required to be discussed by the applicable requirements of the Public Company Accounting Oversight Board. The Audit and Compliance Committee will oversee the rotation of the audit partners of Alphabet's independent auditors as required by the Sarbanes-Oxley Act and the rules of the SEC. The Audit and Compliance Committee will be responsible for reviewing and resolving any disagreements between Alphabet's management and the independent auditors regarding financial controls or financial reporting.

5. Risk Assessment. The Audit and Compliance Committee has responsibility for oversight of risks and exposures associated with (1) financial matters, particularly strategy, financial reporting, tax, accounting, disclosure, internal control over financial reporting, investment guidelines and credit and liquidity matters; (2) data privacy and security, competition, legal, regulatory, compliance, civil and human rights, sustainability, and reputational risks; and (3) our operations and infrastructure, particularly reliability, business continuity, and capacity. In order to facilitate this review, the Audit and Compliance Committee will meet in executive session with key management personnel and representatives of outside advisors as required.

6. Internal Controls. The Audit and Compliance Committee will discuss with management and the independent auditors the design, implementation, adequacy and effectiveness of Alphabet's internal controls. The Audit and Compliance Committee will also meet separately with the independent auditors, with and without management present, to discuss the results of their examinations. The Audit and Compliance Committee will provide oversight over the system of internal controls, relying upon management's and the independent auditors' representations and assessments of, and recommendations regarding, these controls. The Audit and Compliance Committee will review any required disclosures regarding Alphabet's internal controls.

7. Internal Audit Processes. The Audit and Compliance Committee will review the appointment of an internal auditing executive and the Chair of the Audit and Compliance Committee will meet separately with such executive at least once every quarter. The Audit and Compliance Committee will review any significant issues raised in reports to management by the internal audit team. The Audit and Compliance Committee will also provide oversight of the internal audit department objectives, its mission, responsibilities, independence, performance and annual plan.

8. Quarterly and Annual Financial Statements. The Audit and Compliance Committee will review and discuss the annual audited financial statements and quarterly financial statements with management. The Audit and Compliance Committee will be responsible for making a recommendation to the Board of Directors as to whether Alphabet's annual audited financial statements should be included in Alphabet's Annual Report on Form 10-K.

9. Proxy Report. The Audit and Compliance Committee will prepare any report required to be prepared by it for inclusion in any proxy statement of Alphabet under SEC rules and regulations.

10. Earnings Announcements. The Audit and Compliance Committee will review and discuss with management Alphabet's quarterly earnings announcements and other public announcements regarding Alphabet's results of operations.

11. Critical Accounting Policies. The Audit and Compliance Committee will obtain, review and discuss reports from the independent auditors about:

- all critical accounting policies and practices which Alphabet will use, and the qualities of those policies and practices;

- all alternative treatments of financial information within generally accepted accounting principles that the auditors have discussed with management officials of Alphabet, ramifications of the use of these alternative disclosures and treatments, the treatment preferred by the independent auditors and the reasons for favoring that treatment; and

- other material written communications between the independent auditors and Alphabet management, such as any management letter or schedule of unadjusted differences.

The Audit and Compliance Committee will also discuss with the independent auditors and then disclose those matters whose disclosure is required by applicable auditing standards, including any critical audit matters, difficulties the independent auditors encountered in the course of the audit work, any restrictions on the scope of the independent auditors' activities or on their access to requested information, and any significant disagreements with management.

12. CEO and CFO Certifications. The Audit and Compliance Committee will review the CEO and CFO disclosure and certifications under Sections 302 and 906 of the Sarbanes-Oxley Act.

13. Related Party Transactions. The Audit and Compliance Committee will review and approve all related party transactions.

14. Anonymous Complaint Handling Process. The Audit and Compliance Committee will have responsibility for establishment and oversight of processes and procedures for (a) the receipt, retention and treatment of complaints about accounting, internal accounting controls or audit matters, and (b) confidential and anonymous submissions by employees concerning questionable accounting, auditing and internal control matters. All such relevant complaints and submissions must be reported to the Audit and Compliance Committee.

15. Ability to Investigate; Retention of Advisors. The Audit and Compliance Committee has the power to investigate any matter brought to its attention, with full access to all Alphabet books, records, facilities and employees. The Audit and Compliance Committee has the sole authority to select, retain and terminate consultants, legal counsel or other advisors to advise the Audit and Compliance Committee, at the expense of Alphabet, and to approve the terms of any such engagement and the fees of any such consultants, legal counsel or advisors. In selecting a consultant or other advisor, the Audit and Compliance Committee will take into account factors it considers appropriate or as may be required by applicable law or listing standards.

16. Review of Alphabet Policies. The Audit and Compliance Committee will be responsible for reviewing and approving all changes to Alphabet's Policy Against Insider Trading, Related Party Transaction Policy, Investment in Marketable Securities and Accounting for Marketable Securities Policy, Foreign Exchange and Accounting for Foreign Currency Hedges Policy, Code of Conduct, and Global Commitment and Signature Authority Policy. The Audit and Compliance Committee will review the implementation and effectiveness of these policies and Alphabet's overall compliance program at least annually with management and Alphabet's compliance and securities counsel. The Chief Legal Officer has express authority to communicate personally at any time with the Chair of the Audit and Compliance Committee about compliance matters.

    The Audit and Compliance Committee will also periodically review and discuss with management, Alphabet's overall hedging strategy and the use of swaps and other derivative instruments by Alphabet or any of its subsidiaries for hedging risks pursuant to Alphabet's Investment Policy, other hedging policies, or otherwise. The Audit and Compliance Committee will have the authority to review and approve, at least annually, decisions by Alphabet or any of its subsidiaries to enter into swaps, including those that may not be subject to clearing and exchange trading and execution requirements in reliance on the "end-user exception" under the Commodity Exchange Act, or other rules and regulations promulgated from time to time.

17. Review of Charter. The Audit and Compliance Committee will review and reassess the adequacy of this charter at least once a year and make recommendations to the Board regarding any proposed changes.

It is not the Audit and Compliance Committee's responsibility to prepare and certify Alphabet's financial statements, to guarantee the independent auditors' report, or to guarantee other disclosures by Alphabet. These are the fundamental responsibilities of management and the independent auditors. The Audit and Compliance Committee members are not full-time Alphabet employees and do not perform the functions of auditors and accountants.

Restrictions on Independent Auditors Services

Alphabet's independent auditors cannot perform any of the following services:

- bookkeeping or other services related to Alphabet's accounting records or financial statements;
- financial information systems design and implementation;
- appraisal or valuation services, fairness opinions or contribution in kind reports;
- actuarial services;
- internal audit outsourcing services;
- management or human resources functions;

- broker or dealer, investment adviser or investment banking services;
- legal services and expert services unrelated to the audit; and
- any other service that the Public Company Accounting Oversight Board of Directors determines, by regulation, would impair the independence of Alphabet's auditors.

Meetings and Minutes

The Audit and Compliance Committee will meet at least four times each year, and will keep minutes of each meeting. The Audit and Compliance Committee decides when and where it will meet, and must deliver a copy of this schedule in advance to the Board of Directors.

Unless the Board of Directors or this Charter provides otherwise, the Audit and Compliance Committee can make, alter or repeal rules for the conduct of its business. In the absence of these rules, the Audit and Compliance Committee will conduct its business in the same way the Board of Directors conducts its business.

Delegation of Authority; Chair of Audit and Compliance Committee

The Audit and Compliance Committee can delegate to one or more members of the Audit and Compliance Committee the authority to pre-approve audit and permissible non-audit services, as long as any pre-approval of services is presented to the full Audit and Compliance Committee at its next scheduled meeting.

The Audit and Compliance Committee can delegate to one or more members of the Audit and Compliance Committee the authority to pre-approve related party transactions, as long as any pre-approval of a transaction is presented to the full Audit and Compliance Committee at its next scheduled meeting.

The Audit and Compliance Committee cannot delegate its responsibilities to non-committee members.

Unless the chair of the Audit and Compliance Committee is elected by the full Board of Directors, the members of the Audit and Compliance Committee shall designate a chair by the majority vote of the full Committee membership. The Audit and Compliance Committee may change the chair at any time.

Last revised October 21, 2020

Exhibit C

2021 Environmental Report

Google

Environmental Report

2021

Table of contents

About this report

Google's 2021 Environmental Report provides an update on the more detailed information about our sustainability strategy that we shared in our 2020 Environmental Report. Our 2021 report covers our 2020 fiscal year (January 1 to December 31, 2020) and includes data, performance highlights, and progress against our targets. It also mentions notable targets set in 2021.

This report outlines how we're driving positive environmental impact throughout our business in five key ways: designing efficient data centers, advancing carbon-free energy, creating sustainable workplaces, building better devices and services, and empowering users with technology.

For more information about our overall corporate responsibility initiatives, see Google's Sustainability and Commitments websites, as well as sustainability and related information. For more information about our business, see About Google and Alphabet's Investor Relations website.

Our approach

We believe that every business has the opportunity and obligation to protect our planet. Sustainability is one of our core values at Google, and we strive to build sustainability into everything we do.

We've been a leader on sustainability and climate change since Google's founding over 20 years ago. These are some of our key achievements over the past two decades:

2007: We became the first major company to be carbon neutral for our operations.

2017: We became the first major company to match 100% of our annual electricity use with renewable energy, which we've achieved for four consecutive years.

2020: We issued $5.75 billion in sustainability bonds—the largest sustainability or green bond issuance by any company in history.

2020: We compensated for our legacy carbon footprint, making Google the first major company to be carbon neutral for its entire operating history.

Our five-year sustainability strategy is focused on three key pillars: accelerating the transition to carbon-free energy and a circular economy, empowering everyone with technology, and benefiting the people and places where we operate (see Figure 1).

Figure 1

FIVE-YEAR SUSTAINABILITY STRATEGY OVERVIEW

We strive to build sustainability into everything we do

Accelerate carbon-free and circular

Decouple business growth from the growth of carbon intensity and material use

Empower with technology

Tackle major sustainability problems and drive net-positive impact using Google technologies, platforms, products, and services

Benefit people and places

Share benefits with the communities of our facilities, users, partners, and suppliers

To accelerate the transition to a carbon-free economy, in 2020, we launched our third decade of climate action, and we're now working toward a new set of ambitious commitments. By 2030, we aim to:

Achieve net-zero emissions across all of our operations and value chain

Become the first major company to run on carbon-free energy 24 hours a day, seven days a week, 365 days a year

Enable 5 gigawatts of new carbon-free energy through investments in our key manufacturing regions

Help more than 500 cities and local governments reduce an aggregate of 1 gigaton of carbon emissions annually

To accelerate the transition to a circular economy, we're working to maximize the reuse of finite resources across our operations, products, and supply chains and to enable others to do the same. We're also working to empower everyone with technology by committing to help 1 billion people make more sustainable choices by 2022 through our core products.

To benefit the people and places where we operate, we've set goals to replenish more water than we consume by 2030 and to support water security in communities where we operate. We'll focus on three areas: enhancing our stewardship of water resources across Google office campuses and data centers; replenishing our water use and improving watershed health and ecosystems in water-stressed communities; and sharing technology and tools that help everyone predict, prevent, and recover from water stress.

At Google, we remain steadfast in our commitment to sustainability, and we'll continue to lead and encourage others to join us in improving the health of our planet. We're proud of what we've achieved so far, and we're energized to help move the world closer to a more sustainable and carbon-free future for all.

Performance highlights

The following section provides a snapshot of our performance as of the end of 2020—demonstrating how we're strengthening our business by reducing the environmental impact of our operations and working to empower people everywhere to live more sustainably.

For a more complete overview of our performance over time, see the environmental data table.

DESIGNING EFFICIENT DATA CENTERS

Energy

2x
as energy efficient

On average, a Google data center is twice as energy efficient as a typical enterprise data center.[1]

6x
as much computing power

Compared with five years ago, we now deliver around six times as much computing power with the same amount of electrical power.

1.10
average annual PUE

In 2020, the average annual PUE[2] for our global fleet of data centers was 1.10, compared with the industry average of 1.59[3]—meaning that Google data centers use about six times less overhead energy.

GHG emissions

0
operational GHG emissions

Whether someone is using Google at home or as part of an organization running Google Cloud or Google Workspace, all products in our Cloud are carbon neutral—meaning that the operational GHG emissions associated with running workloads on our infrastructure have been reduced through procurement of renewable energy and any residual emissions have been compensated for with high-quality carbon credits.[4]

Waste

81%
of waste diverted

In 2020, we diverted 81% of waste from our global data center operations away from landfills.

23%
of components refurbished

In 2020, 23% of components used for server upgrades were refurbished inventory.

8.2 million
components resold

In 2020, we wiped clean and resold nearly 8.2 million components into the secondary market for reuse by other organizations.

ADVANCING CARBON-FREE ENERGY

Energy

6 GW
of renewable energy

From 2010 to 2020, we signed more than 55 agreements totaling nearly 6 GW of renewable energy, representing a commitment of approximately $4 billion through 2034.

100%
renewable energy

In 2020, we matched 100% of the electricity consumption of our operations with renewable energy purchases for the fourth consecutive year.

55 million MWh
of renewable energy

Google is the world's largest annual corporate purchaser of renewable energy, based on renewable electricity purchased in megawatt-hours (MWh). From 2010 to 2020, we purchased a total of more than 55 million MWh of renewable energy through PPAs, via on-site generation, and from the electric grids where our facilities are located.

Investment

$3.3 billion
in investment commitments

From 2010 to 2020, we made commitments to invest nearly $3.3 billion in renewable energy projects with an expected combined capacity of approximately 8.7 GW. These targeted investments go beyond our purchases of renewable energy for our own operational footprint.

GHG emissions

63%
cumulative GHG emissions reduction

From 2011 to 2020, our renewable energy purchasing resulted in a cumulative 63% reduction in our Scope 1 and Scope 2 emissions, as compared with a business-as-usual scenario in which we didn't procure renewable energy via PPAs.

87%
decrease in carbon intensity

From 2011 to 2020, our carbon intensity per unit of revenue decreased by 87%.

14 years
of carbon neutrality

Google has been carbon neutral since 2007. Because of our purchases of renewable energy and procurement of high-quality carbon credits, we have compensated for our operational GHG emissions.

0
legacy GHG emissions

As of September 14, 2020, we had purchased enough high-quality carbon credits to compensate for our entire legacy carbon footprint since our founding, making Google the first major company to be carbon neutral for its entire operating history.

CREATING SUSTAINABLE WORKPLACES

Certifications

17 million ft^2
LEED-certified

From 2009 to 2020, over 1.5 million m^2 (17 million ft^2) of Google office facilities achieved LEED certification.

27%
LEED Platinum

27% of our LEED-certified square footage has achieved a Platinum rating and 58% a Gold rating.

3 campuses
with Alliance for Water Stewardship certification

In 2020, we were the first major tech company to achieve Alliance for Water Stewardship certification for our campuses in Mountain View and Los Angeles, California, and Dublin, Ireland.

1st building project
with ILFI Zero Carbon Certification

Our London office at 6 Pancras Square was the first building project in the world to receive ILFI Zero Carbon Certification, meaning that it was designed and constructed and operates with zero carbon impact.

Waste

71%
landfill diversion

In 2020, we reached a 71% landfill diversion rate for waste from our offices globally.

9.7 million lbs
of food waste prevented

From 2014 to 2020, we prevented a total of nearly 4.4 million kg (9.7 million lbs) of waste in our cafés globally by tracking pre-consumer food waste.

Commuting

3,600
EV charging ports at our offices

From 2017 to 2020, we installed more than 3,600 EV charging ports at our offices in the United States and Canada.

BUILDING BETTER DEVICES AND SERVICES

GHG emissions

100%
of shipments are carbon neutral

All shipments of Made by Google products to and from direct customers are carbon neutral.[5]

38%
emissions reduction per metric ton shipped

From 2019 to 2020, we reduced total transportation emissions of Google hardware products by 38% per metric ton shipped.

Materials

100%
of Made by Google products contain recycled materials

All Made by Google products launched since 2020 are built with recycled materials.[6]

100%
recycled aluminum in Pixel 5 enclosure

Pixel 5 is designed with recycled aluminum to reduce its carbon footprint. The aluminum in the enclosure is 100% recycled content.[7]

Energy

65 billion kWh
of energy savings

From 2011 to 2020, Nest thermostats helped customers cumulatively save more than 65 billion kWh of energy—enough to power all of San Francisco's electricity consumption for over 11 years.

18 billion kWh
of energy savings

In 2020 alone, Nest thermostats helped customers save more than 18 billion kWh of energy—more energy than Google used in 2020.

10%–15%
energy savings

On average, Nest thermostats have proven energy savings of 10%–12% for heating and 15% for cooling,[8] which means they pay for themselves in under two years.[9]

Waste

32 countries
with take-back programs

In 2020, we expanded our take-back program to all 32 countries where we ship Made by Google products, allowing customers to responsibly recycle old and unused devices for free—whether made by Google or not.

EMPOWERING USERS WITH TECHNOLOGY

Products

1 billion km
of transit results on Google Maps

Google Maps provides, on average, more than 1 billion kilometers' (621 million miles') worth of transit results per day, helping to limit carbon emissions by giving people access to mass transit options, bike routes, and traffic information.

180,000
EV charging locations on Google Maps

By the end of 2020, Google Maps contained nearly 180,000 EV charging locations globally.

Tools

400 cities
using Environmental Insights Explorer

By the end of 2020, more than 400 cities worldwide were using the Environmental Insights Explorer, a tool that empowers city planners and policymakers with actionable data to help reduce global emissions.

170 million
rooftops mapped with solar data

By the end of 2020, Project Sunroof contained data for more than 170 million rooftops across 21,500 cities, helping users estimate the impact and potential savings from installing solar panels.

Tools (continued)

40 petabytes
of freely available geospatial data

Earth Engine has enabled tens of thousands of active users around the world to easily analyze over 40 petabytes[10] of freely available geospatial information, resulting in a deeper understanding of the planet.

Programs

€10 million
Impact Challenge on Climate

In 2020, Google.org launched the Impact Challenge on Climate, committing €10 million to fund bold ideas that aim to use technology to accelerate Europe's progress toward a greener, more resilient future.

Progress against targets

As a data-driven company, we believe it is critical to regularly track progress toward our commitments and share updates with our stakeholders. The following section provides an overview of our 2020 progress toward our various environmental targets.

For a more complete overview of our performance over time, see the environmental data table.

DESIGNING EFFICIENT DATA CENTERS			
Target	**Deadline**	**2020 progress**	**Status**
Energy			
Maintain or improve average annual fleet-wide PUE across Google data centers year over year.	2020 (Annual)	In 2020, the average annual PUE for our global fleet of data centers was 1.10. Since 2012, our average annual fleet-wide PUE has stayed at or below 1.12, even as demand for our products has dramatically risen.	Achieved
Certifications			
Maintain ISO 50001 energy management system certification for Google-owned data centers that meet certain operational milestones.	2020 (Annual)	In 2020, we maintained our ISO 50001 certification for our operational European data centers. We were the first major internet company to achieve a multi-site energy management system certification to ISO 50001, which we first attained in 2013.	Achieved
Waste			
Achieve Zero Waste to Landfill for our global data center operations.	Not applicable	In 2020, our global landfill diversion rate for data center operations was 81%.	In progress
Water			
Replenish 120% of the water we consume, on average, across our offices and data centers.	2030	This target was set in 2021.	In progress

Achieved ◐ In progress ⊘ Missed

ADVANCING CARBON-FREE ENERGY			
Target	**Deadline**	**2020 progress**	**Status**
Energy			
Match 100% of the electricity consumption of our operations with renewable energy purchases.	2020 (Annual)	In 2020, we purchased enough renewable energy, from sources such as wind and solar, to match 100% of the electricity consumption of our data centers and offices. We were the first company of our size to reach this milestone back in 2017, and we've achieved it for four consecutive years.[11]	
Operate on carbon-free energy 24/7 by 2030.	2030	In 2020, on an hourly basis, 67% of our data center electricity use was matched with regional carbon-free sources.	
Enable 5 GW of new carbon-free energy in our key manufacturing regions by 2030.	2030	We're working toward this target.	
GHG emissions			
Achieve net-zero emissions across all of our operations and value chain by 2030.	2030	This target was set in 2021.	
Maintain carbon neutrality for our operations.	2020 (Annual)	In 2020, we purchased enough renewable energy and high-quality carbon credits to compensate for all our operational GHG emissions. Google has been carbon neutral since 2007—for 14 consecutive years.	
Compensate for our legacy carbon footprint since our founding through high-quality carbon credits.	2020	As of September 14, 2020, we had purchased enough high-quality carbon credits to compensate for our entire legacy carbon footprint since our founding, making Google the first major company to be carbon neutral for its entire operating history.	

CREATING SUSTAINABLE WORKPLACES			
Target	**Deadline**	**2020 progress**	**Status**
Commuting			
Reduce single-occupancy vehicle commuting at our Bay Area headquarters[12] to 45% of workers commuting on any given day.	Not applicable	We're working toward this target.	
Provide EV charging stations for 10% of total parking spaces at our Bay Area headquarters.	Not applicable	Of the total parking spaces at our Bay Area headquarters, more than 7% were designated EV parking spaces with charging stations in 2020.	
Certifications			
Pursue the ILFI Living Building Challenge Certification for our Charleston East and Bay View campuses—two of Google's first ground-up development projects at our Bay Area headquarters.	2023	At our Charleston East campus, we're working to achieve the Living Building Challenge Materials Petal (which includes Red List Free materials and net-zero waste), and at our Bay View campus, we're working to achieve the Living Building Challenge Water Petal (which includes net-positive water use).	

Achieved In progress Missed

BUILDING BETTER DEVICES AND SERVICES

Target	Deadline	2020 progress	Status
GHG emissions			
Achieve carbon neutrality for 100% of shipments of Made by Google products to and from Google's direct customers by 2020.	2020	We met this target early. All shipments of Made by Google products to and from direct customers have been carbon neutral since October 2019.	●
Publish product environmental reports for 100% of flagship consumer hardware products launching in 2020 and beyond.	2020	In 2020, we published product environmental reports for each of our flagship products.	●
Materials			
Use recycled or renewable material[13] in at least 50% of plastic used across our consumer hardware product portfolio by 2025.[14]	2025	In 2020, we used post-consumer recycled content across numerous plastic parts in Pixel and Nest products.[15]	◒
Eliminate plastic from packaging and make packaging 100% recyclable by 2025.	2025	In 2020, we designed Pixel and Nest packaging to minimize the use of plastic. The retail packaging for the Pixel 4a, Pixel 4a (5G), and Pixel 5 use 98% paper and fiber-based material.	◒
Include recycled materials in 100% of Made by Google products launching in 2022 and every year after.	2022	We met this target early. All Made by Google products launched since 2020 are built with recycled materials.[16]	●
Waste			
Achieve UL 2799 Zero Waste to Landfill certification at all final assembly consumer hardware manufacturing sites by 2022.	2022	In 2020, we achieved certification to the UL 2799 Zero Waste to Landfill certification standard for several final assembly manufacturing sites.	◒

EMPOWERING USERS WITH TECHNOLOGY

Target	Deadline	2020 progress	Status
Tools			
Help more than 500 cities and local governments globally reduce an aggregate of 1 gigaton of carbon emissions annually by 2030.	2030	In 2020, cities around the world had started using the Environmental Insights Explorer tool for their climate action planning efforts.	◒
Products			
Help 1 billion people make more sustainable choices through our core products by 2022.	2022	We're working toward this target and now offer multiple new ways that people can use Google products, such as Google Maps and Google Flights, to make more sustainable choices.	◒

● Achieved ◒ In progress ⊘ Missed

Environmental data

The following table provides an overview of our performance over time and includes both environmental data for our global operations (including our data centers, offices, networking infrastructure, and other facilities) and data beyond our operations (including our investments and technology). The majority of our environmental data covers Alphabet Inc. and its subsidiaries, including Google LLC. All reported data is global and annual unless otherwise specified.

We obtain third-party assurance from an independent, accredited auditor for specific environmental data as part of our Independent Accountants' Review, including select GHG emissions, energy, and water metrics as indicated in the table below.

For more information on our 2020 energy use and GHG emissions, see Alphabet's 2021 CDP Climate Change Response.

Key performance indicator	Assured for 2020[17]	Unit	Fiscal year[18] 2016	2017	2018	2019	2020
OUR OPERATIONS							
GHG EMISSIONS							
Emissions inventory[19,20]							
Scope 1	●	tCO_2e[21]	66,218	66,549	63,521	66,686	38,694
Scope 2 (market-based)[22]	●	tCO_2e	1,518,643	509,334	684,236	794,267	911,415
Scope 2 (location-based)	●	tCO_2e	2,902,554	3,301,392	4,344,686	5,116,949	5,865,095
Scope 3 (total)[23]		tCO_2e	1,292,268	2,719,024	12,900,467[24,25]	11,669,000	9,376,000
Scope 3 (business travel and employee commuting, including teleworking)[26]	●	tCO_2e	314,028	356,060	463,467	542,000	213,000[27]
Scope 3 (other)		tCO_2e	978,240	2,362,964	12,437,000[28]	11,127,000	9,163,000
Total (Scope 1, 2 [market-based], and 3 [total])		tCO_2e	2,877,129	3,294,907	13,648,224[29,30]	12,529,953	10,326,109
Biogenic emissions	●	tCO_2	9,480	14,708	22,862	21,905	5,417
Operational emissions[31,32]							
Scope 1, 2 (market-based), and 3 (business travel and employee commuting, including teleworking)	●	tCO_2e	1,898,889[33]	931,943	1,211,224	1,402,953	1,163,109
Scope 1, 2 (location-based), and 3 (business travel and employee commuting, including teleworking)	●	tCO_2e	3,282,800	3,724,001	4,871,674	5,725,635	6,116,789
Emissions reductions and compensations							
Total emissions reduced by renewable energy PPAs and compensated for by carbon credits	●	tCO_2e	-3,282,800	-3,724,001	-4,871,674	-5,725,635	-6,116,789
Emissions reduced by renewable energy PPAs[34]	●	tCO_2e	-1,383,911	-2,792,058	-3,660,450	-4,322,682	-4,953,680
Emissions compensated for by carbon credits	●	tCO_2e	-1,898,889	-931,943	-1,211,224	-1,402,953	-1,163,109
Total operational GHG emissions[35]	●	tCO_2e	0	0	0	0	0
Carbon intensity[36]							
Carbon intensity per unit of revenue	●	tCO_2e/ million US$	17.6	5.19	5.47	5.32	5.21
Carbon intensity per FTE employee	●	tCO_2e/FTE	23.4	7.60	8.36	7.96	7.49
Carbon intensity per megawatt-hour of energy consumed[37]	●	tCO_2e/MWh	0.243	0.0717	0.0707	0.0675	0.0615

Key performance indicator	Assured for 2020	Unit	Fiscal year 2016	2017	2018	2019	2020
ENERGY							
Energy use							
Energy consumption[38]	●	MWh	6,513,719	8,029,409	10,572,485	12,749,458	15,439,538
Total electricity consumption	●	MWh	6,209,191	7,609,089	10,104,295	12,237,198	15,138,543
Electricity consumption (U.S.)	●	MWh	4,522,314	5,533,783	7,085,620	8,489,242	10,789,194
Electricity consumption (international)	●	MWh	1,686,877	2,075,306	3,018,675	3,747,956	4,349,349
Energy efficiency							
Average annual fleet-wide PUE across Google data centers		PUE	1.12	1.11	1.11	1.10	1.10
Renewable energy							
Renewable energy contracts (cumulative)		MW	2,611	2,960	3,837	5,401	5,746
Total renewable electricity purchased	●	MWh	3,770,571	7,609,089	10,104,295	12,237,198	15,138,543
Renewable electricity (PPAs and on-site)	●	MWh	2,817,913	6,244,788	8,246,508	9,721,283	12,076,382
Renewable electricity (grid)	●	MWh	952,658	1,364,301	1,857,787	2,515,915	3,062,161
Electricity purchased from renewable sources[39,40]	●	%	61	100	100	100	100
Carbon-free energy across Google data centers (hourly)[41]		%	–	–	–	61	67
WASTE							
Waste generated							
Waste generated		Metric tons	43,058	53,363	57,113	48,126[42]	28,864
Waste diversion							
Total landfill diversion rate[43]		%	81	83	80	77	77
Landfill diversion rate (data centers)		%	86	91	87	90	81
Landfill diversion rate (offices)		%	78	78	76	71	71
Pre-consumer food waste prevented in cafés (cumulative)		kg	980,291	1,990,868	3,019,252	4,152,872	4,439,479[44]
Data center hardware refurbishment and reuse							
Components used for machine upgrades that were refurbished inventory		%	22	11	19	19	23
Components resold into the secondary market		Million components	2.1	2.1	3.4	9.9	8.2
WATER							
Operational water[45]							
Water withdrawal[46]	●	Million gallons	2,500	3,071	4,170	5,161	5,689
Water consumption[47]	●	Million gallons	–	–	–	3,412	3,749
Water discharge[48]	●	Million gallons	–	–	–	1,749	1,940

Key performance indicator	Assured for 2020	Unit	Fiscal year 2016	2017	2018	2019	2020
WORKPLACES							
Green building certifications							
LEED-certified office space (cumulative)		m^2	865,493	1,034,875	1,294,161[49]	1,438,257	1,557,606
Platinum (cumulative)		%	34%	28%	29%	29%	27%
Gold (cumulative)		%	54%	56%	57%	56%	58%
Certified and Silver (cumulative)		%	12%	16%	14%	15%	15%
Sustainable commuting							
EV charging ports installed at offices in the United States and Canada (cumulative)[50]		Ports	1,646	2,077	2,722	3,419	3,617
Emissions avoided due to employee EV commuting in the United States and Canada[51]		tCO_2e	2,142	2,891	4,103	6,258	1,892[52]
Employee shuttle commuting trips in the Bay Area		Million trips	3.7	3.8	4.0	4.3	0.7[53]
Employee shuttle riders in the Bay Area (peak daily)		Unique riders	9,000	10,000	11,000	11,900	11,700[54]
Emissions avoided due to employee shuttle trips in the Bay Area		tCO_2e	33,656	33,241	40,309	43,242	7,000[55]
Urban ecology							
Native trees planted on our Bay Area campuses (cumulative)		Trees	96	1,411	1,602	2,191	2,191[56]
Native habitat restored and created on our Bay Area campuses (cumulative)		Acres	1	7	9	12	12[57]
BEYOND OUR OPERATIONS							
INVESTMENTS							
Equity investments in renewable energy[58]							
Combined renewable energy capacity (cumulative)[59]		GW	3.7	3.7	3.7	3.7	3.7
TECHNOLOGY							
Tools							
Rooftops mapped for solar potential by Project Sunroof (cumulative)		Million rooftops	60	67	107	170	170
Cities covered by Project Sunroof (cumulative)		Cities	7,300	8,900	21,500	21,500	21,500
Cities covered by the Environmental Insights Explorer (cumulative)		Cities	–	–	5	117	3,000
Products							
Household energy saved by Nest thermostat customers (cumulative)		GWh	10,270	17,480	29,894	47,020	65,153

Appendix

Endnotes

1. According to Google's own analysis of our more efficient servers, power infrastructure, and cooling systems, compared with data center industry averages.
2. PUE is a standard industry ratio that compares the amount of non-computing overhead energy (used for things like cooling and power distribution) to the amount of energy used to power IT equipment. A PUE of 2.0 means that for every watt of IT power, an additional watt is consumed to cool and distribute power to the IT equipment. A PUE closer to 1.0 means nearly all the energy is used for computing.
3. According to the Uptime Institute's 2020 Data Center Survey, the global average PUE of respondents' largest data centers was around 1.59.
4. Carbon credits are reductions in GHG emissions made to compensate for emissions that occur elsewhere. For each metric ton of carbon dioxide equivalent reduced, one carbon credit is created. References to "carbon offsets" (as mentioned in prior reports) have been updated to "carbon credits" in Google's 2021 Environmental Report.
5. We procure high-quality carbon credits to compensate for the carbon emissions from all Google-owned shipments of consumer hardware, including to and from retail partners, distributors, and Google Store customers. Because shipping devices to customers falls outside the scope of Google's operations, these efforts go beyond Google's long-standing commitment to operational carbon neutrality.
6. Made by Google products are designed with 9%–68% recycled content across their respective plastic parts. This does not include plastics in printed circuit boards, labels, cables, connectors, electronic components and modules, optical components, electrostatic discharge components, electromagnetic interference components, films, coatings, and adhesives.
7. Back housing only. Recycled aluminum is approximately 58% of enclosure based on weight.
8. *Energy Savings from the Nest Learning Thermostat: Energy Bill Analysis Results*, Nest Labs, February 2015.
9. Independent studies showed that Nest saved people an average of 10% to 12% on heating and 15% on cooling. Using typical energy costs, we've estimated average savings of $131 to $145 a year. That means the Nest Learning Thermostat can pay for itself in under two years. Individual savings are not guaranteed.
10. One petabyte is 10^{15} bytes, or 1 million gigabytes, of digital information. It's equal to approximately 2.5 months of uninterrupted, uncompressed, high-definition (1920 x 1080 pixels) video data.
11. Google was the largest organization, in terms of electricity consumption, to achieve a 100% renewable energy match.
12. In this report, "Bay Area headquarters" refers to our operations in both Mountain View and Sunnyvale.
13. Renewable material consists of plastic made from bio-based material.
14. Minimum percentage of recycled or renewable plastic content calculated as a percentage of total plastic (by weight) in all products manufactured in 2025. The following may be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors, electronic components and modules, optical components, electrostatic discharge components, electromagnetic interference components, films, coatings, and adhesives.
15. See note 6 above.
16. See note 6 above.
17. Ernst & Young LLP reviewed select quantitative performance indicators for the fiscal year ended December 31, 2020. See the related Independent Accountants' Review Report. Another third party verified the following emissions in prior years: Scope 1, Scope 2 (market-based), Scope 2 (location-based), Scope 3 (business travel and employee commuting), and biogenic. For more information, see our prior annual Environmental Reports.
18. Alphabet's fiscal year is from January 1 to December 31.
19. GHG emissions are calculated according to *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)*, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). For more information on our methodology, including a breakdown of Scope 3 categories, see Alphabet's 2021 CDP Climate Change Response.
20. Scope 1 emissions are direct emissions from sources we own or over which we have operational control, such as company vehicles or generators at Google's offices and data centers. Scope 2 emissions are indirect emissions from the production of electricity we purchase to run our operations and the production of space heating for our offices. The location-based category reflects the average carbon intensity of the electric grids where our operations are located and, thus, where our energy consumption occurs. The market-based category incorporates our procurement choices, i.e., our renewable energy purchases via contractual mechanisms like PPAs. Scope 3 emissions are indirect emissions from other sources in our value chain, such as business travel or our suppliers.
21. CO_2e is a quantity that describes, for a given mixture and amount of GHG, the amount of carbon dioxide that would have the same global warming potential (GWP), i.e., the ability of a gas to trap heat in the atmosphere when measured over a specified timescale (generally, 100 years). Some GHGs are more potent than others, as measured by their GWP. Carbon dioxide is the baseline and thus has a GWP of 1.
22. Since 2010, we've procured renewable energy for our operations, and in 2012, we began publishing how this reduces our overall emissions. Until 2015, there was no guidance from the Greenhouse Gas Protocol on how to account for these emissions reductions, so we developed our own methodology, whereby on an annual basis we assigned renewable electricity procured against electricity consumed (in megawatt-hours) in the closest data center to the renewable energy project. In 2015, the Greenhouse Gas Protocol released new Scope 2 guidance for the accounting of purchased electricity, steam, heat, and cooling, which we adopted, starting with 2015 data. Our pre-2015 methodology differed from the Greenhouse Gas Protocol's in that we did not use residual mixes, which avoid double-counting of claimed renewable energy attributes.
23. See note 19 above.
24. In 2018, to align with industry best practices for Scope 3 reporting, we extended our reporting boundaries to include emissions associated with food served in our offices, hardware manufacturing emissions beyond Tier 1 suppliers (full upstream to the point of extraction), use of sold products, and end-of-life treatment of sold products. Google's hardware includes data center servers, networking equipment, and consumer hardware products. These extended categories have been reported annually from 2018 onward.
25. We've restated our 2018 Scope 3 (other) emissions due to changes in our calculation methodology and improvements in data quality, resulting in a corresponding restatement of our 2018 Scope 3 (total) and 2018 Total (Scope 1, 2 [market-based], and 3 [total]) emissions.
26. In 2020, due to the global pandemic, we began to estimate and report on our emissions associated with teleworking (i.e., employees working remotely). We applied the estimation methodology outlined in EcoAct's *Homeworking Emissions Whitepaper* to our annual average workforce in 2020 to estimate the GHG emissions generated by employees working remotely from their homes. Teleworking emissions are reported as part of our Scope 3 emissions for employee commuting, per Greenhouse Gas Protocol's Technical Guidance for Calculating Scope 3 Emissions (version 1.0). For a breakdown of our operational Scope 3 emissions by category, see our 2020 Independent Accountants' Review Report.
27. In 2020, we began reporting teleworking emissions as part of our Scope 3 employee commuting emissions. Scope 3 (business travel and employee commuting) emissions reported prior to 2019 do not include teleworking emissions.
28. See note 25 above.

29. See note 24 above.
30. See note 25 above.
31. We calculate total operational emissions as the sum of Scope 1, Scope 2 (location-based or market-based), and Scope 3 (business travel and employee commuting, including teleworking) emissions, which have been third-party assured by Ernst & Young LLP as shown in its 2020 Independent Accountants' Review Report.
32. See note 27 above.
33. In 2016, we adopted the industry practice of including only operational emissions in our carbon neutrality commitment. For more information, see our 2017 white paper, *10 Years of Carbon Neutrality*. In 2020, we extended our operational emissions boundary to include teleworking emissions. The operational emissions included in our carbon neutrality commitment now include Scope 1, Scope 2 (market-based), and Scope 3 (business travel and employee commuting, including teleworking).
34. Emissions reduced by renewable energy PPAs are calculated by subtracting Scope 2 market-based method (MBM) GHG emissions from Scope 2 location-based method GHG emissions, thereby representing emissions reductions from renewable energy PPAs and MBM emission factors.
35. See note 33 above.
36. Carbon intensity metrics are based on gross global combined Scope 1 and market-based Scope 2 emissions.
37. In 2019, we updated our megawatt-hour carbon intensity metric to include all of our gross Scope 1 and market-based Scope 2 emissions divided by our total energy consumption, rather than limiting this intensity figure to our data centers.
38. Total energy consumption includes all fuel and natural gas consumption, purchased electricity, purchased heating, and all electricity generated on-site from renewable and non-renewable sources.
39. Percentage of renewable energy is calculated on a calendar-year basis, comparing the volume of renewable electricity (in megawatt-hours) procured for our global operations (i.e., renewable energy procured through our PPA contracts, on-site renewable energy generation, and renewable energy in the electric grids where our facilities are located) with the total volume of electricity consumed by our operations. This metric includes all renewable energy purchased, regardless of the market in which the renewable energy was consumed. Prior to 2016, we were not accounting for the renewable electricity purchased through grid electricity.
40. The Greenhouse Gas Protocol's Scope 2 Guidance requires energy attribute certificates to be sourced from and applied to the same market in which the reporting entity's electricity-consuming operations are located. This guidance does not recognize existing renewable energy on the electric grids where an entity's operations are located.
41. Our carbon-free energy (CFE) percentage measures the degree to which our electricity consumption on a given regional grid is matched with CFE on an hourly basis. This is calculated using both CFE under contract by Google as well as CFE coming from the overall grid mix. For more information, see our 2021 white paper, *24/7 Carbon-Free Energy: Methodologies and Metrics*.
42. We've revised total waste generated for 2019 due to a calculation error. This correction resulted in a decrease in total waste generated for 2019 from 51,617 metric tons to 48,216 metric tons.
43. Landfill diversion is calculated as waste diverted to a more sustainable pathway than landfill or incineration without energy recovery.
44. In 2020, pre-consumer food waste prevented in our cafés was tracked only from January to March due to limited café operations during the global pandemic.
45. In 2019, we aligned our water reporting with industry standards to disclose three water indicators: total water withdrawal, as well as consumption and discharge.
46. In 2016, 2017, and 2018, water withdrawal was reported as water consumption. Beginning in 2019, we restated the 2016, 2017, and 2018 values as water withdrawal.
47. 2019 was the first year we disclosed gross global water consumption and gross global water discharge data; data for these indicators is not available for prior years.
48. See note 47 above.
49. 2018 is the first year that reflects a refinement in Green Business Certification Inc.'s methodology for determining LEED-certified office space.
50. This figure indicates the number of ports for ChargePoint stations in the United States and Canada, which represent the majority of our EV charging ports in those countries. We began installing EV charging ports in Canada in 2017.
51. Emissions avoided are estimated using data from the reported ports for ChargePoint stations in the United States and Canada only.
52. While Google's total number of installed EV charging ports in the United States and Canada increased in 2020, the ports experienced limited use from March to December due to the global pandemic, resulting in a decrease in emissions avoided due to employee EV commuting.
53. In 2020, due to the global pandemic, our Google shuttle buses in the Bay Area were in operation only from January to March.
54. See note 53 above.
55. See note 53 above.
56. All ecology projects that were scheduled for completion in 2020 were delayed due to the global pandemic.
57. See note 56 above.
58. In addition to our renewable energy contracts, Google also invests in renewable energy projects around the world that are not used to mitigate our emissions.
59. This indicator represents the expected combined capacity of contracted renewable energy projects in which we have an equity investment, even if we're a minority owner.

Glossary

CFE: carbon-free energy

CO_2e: carbon dioxide equivalent

EV: electric vehicle

ft: foot

FTE: full-time equivalent

GHG: greenhouse gas

GW: gigawatt

GWh: gigawatt-hour

GWP: global warming potential

ILFI: International Living Future Institute

ISO: International Organization for Standardization

kg: kilogram

km: kilometer

kWh: kilowatt-hour

lb: pound

LEED: Leadership in Energy and Environmental Design

m: meter

MBM: market-based method

MW: megawatt

MWh: megawatt-hour

PPA: power purchase agreement

PUE: power usage effectiveness

tCO_2: metric tons of carbon dioxide

tCO_2e: metric tons of carbon dioxide equivalent

WBCSD: World Business Council for Sustainable Development

WRI: World Resources Institute

Google Environmental Report 2021
December 2021

On the cover:
Our office at 6 Pancras Square in London. This was the first building project in the world to receive ILFI Zero Carbon Certification.

Exhibit D

Annual Report on Form 10-K for the Fiscal Year Ended December 31, 2020

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from ______ to ______.

Commission file number: **001-37580**

Alphabet Inc.

(Exact name of registrant as specified in its charter)

Delaware	**61-1767919**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

1600 Amphitheatre Parkway
Mountain View, CA 94043
(Address of principal executive offices, including zip code)
(650) 253-0000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A Common Stock, $0.001 par value	**GOOGL**	**Nasdaq Stock Market LLC (Nasdaq Global Select Market)**
Class C Capital Stock, $0.001 par value	**GOOG**	**Nasdaq Stock Market LLC (Nasdaq Global Select Market)**

Securities registered pursuant to Section 12(g) of the Act:

Title of each class

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C.7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of June 30, 2020, the aggregate market value of shares held by non-affiliates of the registrant (based upon the closing sale prices of such shares on the Nasdaq Global Select Market on June 30, 2020) was approximately $849.7 billion. For purposes of calculating the aggregate market value of shares held by non-affiliates, we have assumed that all outstanding shares are held by non-affiliates, except for shares held by each of our executive officers, directors and 5% or greater stockholders. In the case of 5% or greater stockholders, we have not deemed such stockholders to be affiliates unless there are facts and circumstances which would indicate that such stockholders exercise any control over our company, or unless they hold 10% or more of our outstanding common stock. These assumptions should not be deemed to constitute an admission that all executive officers, directors and 5% or greater stockholders are, in fact, affiliates of our company, or that there are not other persons who may be deemed to be affiliates of our company. Further information concerning shareholdings of our officers, directors and principal stockholders is included or incorporated by reference in Part III, Item 12 of this Annual Report on Form 10-K.

As of January 26, 2021, there were 300,737,081 shares of the registrant's Class A common stock outstanding, 45,843,112 shares of the registrant's Class B common stock outstanding, and 327,556,472 shares of the registrant's Class C capital stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2021 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2020.

Alphabet Inc.
Form 10-K
For the Fiscal Year Ended December 31, 2020

TABLE OF CONTENTS

NOTE ABOUT FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include, among other things, statements regarding:

- the ongoing effect of the novel coronavirus pandemic ("COVID-19"), including its macroeconomic effects on our business, operations, and financial results; and the effect of governmental lockdowns, restrictions and new regulations on our operations and processes;
- the growth of our business and revenues and our expectations about the factors that influence our success and trends in our business, including the size and timing of the expected return on our continuing investments in our Google Cloud segment;
- the potential for declines in our revenue growth rate and operating margin;
- our expectation that the shift from an offline to online world will continue to benefit our business;
- our expectation that the portion of our revenues that we derive from non-advertising revenues will continue to increase and may affect our margins;
- our expectation that our traffic acquisition costs ("TAC") and the associated TAC rate will fluctuate, which could affect our overall margins;
- our expectation that our monetization trends will fluctuate, which could affect our revenues and margins;
- fluctuations in our revenue growth, as well as the change in paid clicks and cost-per-click and the change in impressions and cost-per-impression, and various factors contributing to such fluctuations;
- our expectation that we will continue to periodically review, refine, and update our methodologies for monitoring, gathering, and counting the number of paid clicks and impressions;
- our expectation that our results will be affected by our performance in international markets as users in developing economies increasingly come online;
- our expectation that our foreign exchange risk management program will not fully offset our net exposure to fluctuations in foreign currency exchange rates;
- the expected variability of gains and losses related to hedging activities under our foreign exchange risk management program;
- the amount and timing of revenue recognition from customer contracts with commitments for performance obligations, including our estimate of the remaining amount of commitments and when we expect to recognize revenue;
- fluctuations in our capital expenditures;
- our plans to continue to invest in new businesses, products, services and technologies, systems, land and buildings for data centers and offices, and infrastructure, as well as to continue to invest in acquisitions;
- our pace of hiring and our plans to provide competitive compensation programs;
- our expectation that our cost of revenues, research and development ("R&D") expenses, sales and marketing expenses, and general and administrative expenses may increase in amount and/or may increase as a percentage of revenues and may be affected by a number of factors;
- estimates of our future compensation expenses;
- our expectation that our other income (expense), net ("OI&E"), will fluctuate in the future, as it is largely driven by market dynamics;
- fluctuations in our effective tax rate;
- seasonal fluctuations in internet usage and advertiser expenditures, underlying business trends such as traditional retail seasonality (including developments and volatility arising from COVID-19), which are likely to cause fluctuations in our quarterly results;
- the sufficiency of our sources of funding;

- our potential exposure in connection with new and pending investigations, proceedings, and other contingencies;

- the sufficiency and timing of our proposed remedies in response to decisions from the European Commission ("EC") and other regulators and governmental entities;
- our expectations regarding the timing, design and implementation of our new global enterprise resource planning ("ERP") system;
- the expected timing and amount of Alphabet Inc.'s share repurchases;
- our long-term sustainability and diversity goals;
- our expectation that the estimated useful life of servers and certain network equipment will have a favorable effect on our 2021 operating results;

as well as other statements regarding our future operations, financial condition and prospects, and business strategies. Forward-looking statements may appear throughout this report and other documents we file with the Securities and Exchange Commission ("SEC"), including without limitation, the following sections: Item 1 "Business," Item 1A "Risk Factors," and Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations." Forward-looking statements generally can be identified by words such as "anticipates," "believes," "estimates," "expects," "intends," "plans," "predicts," "projects," "will be," "will continue," "may," "could," "will likely result," and similar expressions. These forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties, which could cause our actual results to differ materially from those reflected in the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in this Annual Report on Form 10-K, and in particular, the risks discussed in Item 1A, "Risk Factors" of this report and those discussed in other documents we file with the SEC. We undertake no obligation to revise or publicly release the results of any revision to these forward-looking statements, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements.

As used herein, "Alphabet," "the company," "we," "us," "our," and similar terms include Alphabet Inc. and its subsidiaries, unless the context indicates otherwise.

"Alphabet," "Google," and other trademarks of ours appearing in this report are our property. This report contains additional trade names and trademarks of other companies. We do not intend our use or display of other companies' trade names or trademarks to imply an endorsement or sponsorship of us by such companies, or any relationship with any of these companies.

PART I

ITEM 1. BUSINESS

Overview

As our founders Larry and Sergey wrote in the original founders' letter, "Google is not a conventional company. We do not intend to become one." That unconventional spirit has been a driving force throughout our history, inspiring us to tackle big problems, and invest in moonshots like artificial intelligence ("AI") research and quantum computing. We continue this work under the leadership of Sundar Pichai, who has served as CEO of Google since 2015 and as CEO of Alphabet since 2019.

Alphabet is a collection of businesses — the largest of which is Google — which we report as two segments: Google Services and Google Cloud. We report all non-Google businesses collectively as Other Bets. Our Other Bets include earlier stage technologies that are further afield from our core Google business. We take a long term view and manage the portfolio of Other Bets with the discipline and rigor needed to deliver long-term returns. Our Alphabet structure is about helping each of our businesses prosper through strong leaders and independence.

Access and technology for everyone

The Internet is one of the world's most powerful equalizers, capable of propelling new ideas and people forward. Our mission to organize the world's information and make it universally accessible and useful is as relevant today as it was when we were founded in 1998. Since then, we've evolved from a company that helps people find answers to a company that helps you get things done. We're focused on building an even more helpful Google for everyone, and we aspire to give everyone the tools they need to increase their knowledge, health, happiness and success.

Across Alphabet, we're focused on continually innovating in areas where technology can have an impact on people's lives. Every year, there are trillions of searches on Google, and we continue to invest deeply in AI and other technologies to ensure the most helpful Search experience possible. People come to YouTube for entertainment, information and opportunities to learn something new. And Google Assistant offers the best way to get things done seamlessly across different devices, providing intelligent help throughout your day, no matter where you are.

Since the pandemic began, our teams have built new features to help users go about their daily lives, and to support businesses working to serve their customers during an uncertain time. In conjunction with Apple, we launched Exposure Notification apps that are being used by local governments globally. Our COVID-19 Community Mobility Reports are used by public health agencies and researchers around the globe, and we've committed hundreds of millions of dollars to help small businesses through a combination of small business loans, grants and ad credits. Importantly, we've made authoritative content a key focus area across both Google Search and YouTube to help users search for trusted public health information.

Our Other Bets are also pursuing initiatives with similar goals. For instance, as a part of our efforts in the Metro Phoenix area, Waymo is working toward our goal of making transportation safer and easier for everyone while Verily is developing tools and platforms to improve health outcomes.

Moonshots

Many companies get comfortable doing what they have always done, making only incremental changes. This incrementalism leads to irrelevance over time, especially in technology, where change tends to be revolutionary, not evolutionary. People thought we were crazy when we acquired YouTube and Android and when we launched Chrome, but those efforts have matured into major platforms for digital video and mobile devices and a safer, popular browser. We continue to look toward the future and continue to invest for the long-term. As we said in the original founders' letter, we will not shy away from high-risk, high-reward projects that we believe in because they are the key to our long-term success.

The power of machine learning

Across the company, machine learning and AI are increasingly driving many of our latest innovations. Our investments in machine learning over the past decade have enabled us to build products that are smarter and more helpful. For example, a huge breakthrough in natural language understanding, called BERT, now improves results for almost every English language search query.

DeepMind made a significant AI-powered breakthrough, solving a 50-year-old protein folding challenge, which will help us better understand one of life's fundamental building blocks, and will enable researchers to tackle new and difficult problems, from fighting diseases to environmental sustainability.

Google

For reporting purposes, Google comprises two segments: Google Services and Google Cloud.

Google Services

Serving our users

We have always been a company committed to building helpful products that can improve the lives of millions of people. Our product innovations have made our services widely used, and our brand one of the most recognized in the world. Google Services' core products and platforms include Android, Chrome, Gmail, Google Drive, Google Maps, Google Photos, Google Play, Search, and YouTube, each with broad and growing adoption by users around the world.

Our products and services have come a long way since the company was founded more than two decades ago. Rather than the ten blue links in our early search results, users can now get direct answers to their questions using their computer, mobile device, or their own voice, making it quicker, easier and more natural to find what you're looking for.

This drive to make information more accessible and helpful has led us over the years to improve the discovery and creation of digital content, on the web and through platforms like Google Play and YouTube. With the migration to mobile, people are consuming more digital content by watching more videos, playing more games, listening to more music, reading more books, and using more apps than ever before. Working with content creators and partners, we continue to build new ways for people around the world to find great digital content.

Fueling all of these great digital experiences are powerful platforms and hardware. That’s why we continue to invest in platforms like our Android mobile operating system, Chrome browser, Chrome operating system, as well as growing our family of great hardware devices. We see tremendous potential for devices to be helpful, make your life easier, and get better over time, by combining the best of our AI, software, and hardware. This is reflected in our latest generation of hardware products like Pixel 4a, Pixel 4a 5G and Pixel 5 phones, Chromecast with Google TV and the Google Nest Hub smart display. Creating beautiful products that people rely on every day is a journey that we are investing in for the long run.

Key to building helpful products for users is our commitment to privacy, security and user choice. As the Internet evolves, we continue to invest in keeping data safe, including enhanced malware features in Chrome and improvements to auto-delete controls that will automatically delete web and app searches after 18 months.

How we make money

Our advertising products deliver relevant ads at just the right time, to give people useful commercial information, regardless of the device they’re using. We also provide advertisers with tools that help them better attribute and measure their advertising campaigns. Our advertising solutions help millions of companies grow their businesses, and we offer a wide range of products across devices and formats. Google Services generates revenues primarily by delivering both performance advertising and brand advertising.

- **Performance advertising** creates and delivers relevant ads that users will click on, leading to direct engagement with advertisers. Most of our performance advertisers pay us when a user engages in their ads. Performance advertising lets our advertisers connect with users while driving measurable results. Our ads tools allow performance advertisers to create simple text-based ads that appear on Google Search & other properties, YouTube and the properties of Google Network Members. In addition, Google Network Members use our platforms to display relevant ads on their properties, generating revenues when site visitors view or click on the ads. We continue to invest in our advertising programs and make significant upgrades.
- **Brand advertising** helps enhance users' awareness of and affinity with advertisers' products and services, through videos, text, images, and other interactive ads that run across various devices. We help brand advertisers deliver digital videos and other types of ads to specific audiences for their brand-building marketing campaigns.

We have built a world-class ad technology platform for advertisers, agencies, and publishers to power their digital marketing businesses. We aim to ensure great user experiences by serving the right ads at the right time and by building deep partnerships with brands and agencies. We also seek to improve the measurability of advertising so advertisers know when their campaigns are effective.

We have allocated substantial resources to stopping bad advertising practices and protecting users on the web. We focus on creating the best advertising experiences for our users and advertisers in many ways, ranging

from filtering out invalid traffic, removing billions of bad ads from our systems every year to closely monitoring the sites, apps, and videos where ads appear and blocklisting them when necessary to ensure that ads do not fund bad content.

We continue to look to the future and are making long-term investments that will grow revenues beyond advertising, including Google Play, hardware, and YouTube. We are also investing in research efforts in AI and quantum computing to foster innovation across our businesses and create new opportunities.

Google Cloud

Google was a company built in the cloud. We continue to invest in infrastructure, security, data management, analytics and AI. We see significant opportunity in helping businesses utilize these strengths with features like data migration, modern development environments and machine learning tools to provide enterprise-ready cloud services, including Google Cloud Platform and Google Workspace (formerly known as G Suite). Google Cloud Platform enables developers to build, test, and deploy applications on its highly scalable and reliable infrastructure. Our Google Workspace collaboration tools — which include apps like Gmail, Docs, Drive, Calendar, Meet and more — are designed with real-time collaboration and machine intelligence to help people work smarter. Because more and more of today’s great digital experiences are being built in the cloud, our Google Cloud products help businesses of all sizes take advantage of the latest technology advances to operate more efficiently.

Google Cloud generates revenues primarily from fees received for Google Cloud Platform services and Google Workspace collaboration tools.

Other Bets

Throughout Alphabet, we are also using technology to try and solve big problems across many industries. Alphabet’s investment in our portfolio of Other Bets include emerging businesses at various stages of development, ranging from those in the research and development phase to those that are in the beginning stages of commercialization, and our goal is for them to become thriving, successful businesses in the medium to long term. While these early-stage businesses naturally come with considerable uncertainty, some of them are already generating revenue and making important strides in their industries. Revenues are primarily generated from internet and TV services, as well as licensing and R&D services.

Other Bets operate as independent companies and some of them have their own boards with independent members and outside investors. We are investing in our portfolio of Other Bets and being very deliberate about the focus, scale, and pace of investments.

Competition

Our business is characterized by rapid change as well as new and disruptive technologies. We face formidable competition in every aspect of our business, particularly from companies that seek to connect people with online information and provide them with relevant advertising. We face competition from:

- General purpose search engines and information services, such as Baidu, Microsoft's Bing, Naver, Seznam, Verizon's Yahoo, and Yandex.
- Vertical search engines and e-commerce websites, such as Amazon and eBay (e-commerce), Booking's Kayak (travel queries), Microsoft's LinkedIn (job queries), and WebMD (health queries). Some users will navigate directly to such content, websites, and apps rather than go through Google.
- Social networks, such as Facebook, Snapchat, and Twitter. Some users increasingly rely on social networks for product or service referrals, rather than seeking information through traditional search engines.
- Other forms of advertising, such as billboards, magazines, newspapers, radio, and television. Our advertisers typically advertise in multiple media, both online and offline.
- Other online advertising platforms and networks, including Amazon, AppNexus, Criteo, and Facebook, that compete for advertisers that use Google Ads, our primary auction-based advertising platform.
- Providers of digital video services, such as Amazon, Apple, AT&T, Disney, Facebook, Hulu, Netflix and TikTok.

In businesses that are further afield from our advertising business, we compete with companies that have longer operating histories and more established relationships with customers and users. We face competition from:

- Other digital content and application platform providers, such as Amazon and Apple.

- Companies that design, manufacture, and market consumer hardware products, including businesses that have developed proprietary platforms.
- Providers of enterprise cloud services, including Alibaba, Amazon, and Microsoft.
- Digital assistant providers, such as Amazon and Apple.

Competing successfully depends heavily on our ability to deliver and distribute innovative products and technologies to the marketplace across our businesses. Specifically, for advertising, competing successfully depends on attracting and retaining:

- Users, for whom other products and services are literally one click away, largely on the basis of the relevance of our advertising, as well as the general usefulness, security and availability of our products and services.
- Advertisers, primarily based on our ability to generate sales leads, and ultimately customers, and to deliver their advertisements in an efficient and effective manner across a variety of distribution channels.
- Content providers, primarily based on the quality of our advertiser base, our ability to help these partners generate revenues from advertising, and the terms of our agreements with them.

Ongoing Commitment to Sustainability

At Google, we build technology that helps people do more for the planet. We strive to build sustainability into everything we do, including designing and operating efficient data centers, advancing carbon-free energy, creating sustainable workplaces, building better devices and services, empowering users with technology, and enabling a responsible supply chain.

Google has been carbon neutral since 2007, and in 2019, for the third consecutive year, we matched 100% of our electricity consumption with renewable energy purchases. We are the largest annual corporate purchaser of renewable energy in the world, based on renewable electricity purchased in megawatt-hour (MWh). In 2020, we neutralized our entire legacy carbon footprint since our founding (covering all our operational emissions before we became carbon neutral in 2007), making Google the first major company to achieve carbon neutrality for its entire operating history. In our third decade of climate action, we’ve set our most ambitious goal yet: to run our business on carbon-free energy everywhere, at all times, by 2030.

We're also investing in technologies to help our partners and people all over the world make sustainable choices. For example, we intend to enable 5 GW of new carbon-free energy across our key manufacturing regions by 2030 through investment. We anticipate this will spur more than $5 billion in clean energy investments, avoid the amount of emissions equal to taking more than 1 million cars off the road each year, and create more than 8,000 clean energy jobs. With the Environmental Insights Explorer, we're also working to help more than 500 cities and local governments globally reduce a total of 1 gigaton of carbon emissions annually by 2030 — that’s the equivalent of the annual carbon emissions of a country the size of Japan.

Google’s products are already helping people make more sustainable choices in their daily lives, whether it’s using Google Maps to find bike-shares and electric vehicle charging stations, or in many European countries, using Google Flights to sort the least carbon-intensive option flights. There are more tools and information we can provide, and our goal is to find new ways that our products can help 1 billion people make more sustainable choices by 2022.

Climate change is one of the most significant global challenges of our time. In 2017, we developed a climate resilience strategy, which included conducting a climate scenario analysis. We've earned a spot on the CDP (formerly the Carbon Disclosure Project) Climate Change A List for seven consecutive years. We believe our CDP climate change response reflects the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

In 2020, we issued $5.75 billion in sustainability bonds, the largest sustainability or green bond issuance by any company in history. The net proceeds from the issuance are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response.

More information on our approach to sustainability can be found in our annual sustainability reports, including Google’s environmental report. The content of our sustainability reports are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC.

Culture and Workforce

We're a company of curious, talented and passionate people. We embrace collaboration and creativity, and encourage the iteration of ideas to address complex challenges in technology and society.

Our people are critical for our continued success. We work hard to provide an environment where Googlers can have fulfilling careers, and be happy, healthy and productive. We offer industry-leading benefits and programs to take care of the diverse needs of our employees and their families, including access to excellent healthcare choices, opportunities for career growth and development, and resources to support their financial health. Our competitive compensation programs help us to attract and retain top candidates, and we will continue to invest in recruiting talented people to technical and non-technical roles and rewarding them well.

Alphabet is committed to making diversity, equity, and inclusion part of everything we do and we're committed to growing a workforce that's representative of the users we serve. More information on Google's approach to diversity can be found in our annual diversity reports, available publicly at diversity.google. The content of our diversity reports is not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC.

We have work councils and statutory employee representation obligations in certain countries and we are committed to supporting protected labor rights, maintaining an open culture and listening to all Googlers. Supporting healthy and open dialogue is central to how we work, and we communicate information about the company through multiple internal channels to our employees. As of December 31, 2020, Alphabet had 135,301 employees.

When necessary, we contract with businesses around the world to provide specialized services where we don't have appropriate in-house expertise or resources, often in fields that require specialized training like cafe operations, customer support, content moderation and physical security. We also contract with temporary staffing agencies when we need to cover short-term leaves, when we have spikes in business needs, or when we need to quickly incubate special projects. We choose our partners and staffing agencies carefully, and review their compliance with Google's Supplier Code of Conduct. We continually make improvements to promote a respectful and positive working environment for everyone — employees, vendors and temporary staff alike.

Government Regulation

We are subject to numerous U.S. federal, state, and foreign laws and regulations covering a wide variety of subject matters. Like other companies in the technology industry, we face heightened scrutiny from both U.S. and foreign governments with respect to our compliance with laws and regulations. Our compliance with these laws and regulations may be onerous and could, individually or in the aggregate, increase our cost of doing business, impact our competitive position relative to our peers, and/or otherwise have an adverse impact on our business, reputation, financial condition, and operating results. For additional information about government regulation applicable to our business, see Risk Factors in Part I, Item 1A, Trends in Our Business in Part II, Item 7, and Legal Matters in Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 in this Annual Report on Form 10-K.

Intellectual Property

We rely on various intellectual property laws, confidentiality procedures and contractual provisions to protect our proprietary technology and our brand. We have registered, and applied for the registration of, U.S. and international trademarks, service marks, domain names and copyrights. We have also filed patent applications in the U.S. and foreign countries covering certain of our technology, and acquired patent assets to supplement our portfolio. We have licensed in the past, and expect that we may license in the future, certain of our rights to other parties.

Seasonality

Our business is affected by seasonal fluctuations in internet usage, advertising expenditures, and underlying business trends such as traditional retail seasonality (including developments and volatility arising from COVID-19).

Available Information

Our website is located at www.abc.xyz, and our investor relations website is located at www.abc.xyz/investor. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and our Proxy Statements, and any amendments to these reports, are available through our investor relations website, free of charge, after we file them with the SEC. We also provide a link to the section of the SEC's website at www.sec.gov that has all of the reports that we file or furnish with the SEC.

We webcast via our investor relations website our earnings calls and certain events we participate in or host with members of the investment community. Our investor relations website also provides notifications of news or announcements regarding our financial performance and other items that may be material or of interest to our investors, including SEC filings, investor events, press and earnings releases, and blogs. We also share Google news and product updates on Google's Keyword blog at https://www.blog.google/, that may be material or of interest to our investors. Further, corporate governance information, including our certificate of incorporation, bylaws, governance guidelines, board committee charters, and code of conduct, is also available on our investor relations website under the heading "Other." The content of our websites are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC, and any references to our websites are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

Our operations and financial results are subject to various risks and uncertainties, including but not limited to those described below, which could harm our business, reputation, financial condition, and operating results.

Risks Specific to our Company

We generate a significant portion of our revenues from advertising, and reduced spending by advertisers, a loss of partners, or new and existing technologies that block ads online and/or affect our ability to customize ads could harm our business.

We generated over 80% of total revenues from the display of ads online in 2020. Many of our advertisers, companies that distribute our products and services, digital publishers, and content providers can terminate their contracts with us at any time. These partners may not continue to do business with us if we do not create more value (such as increased numbers of users or customers, new sales leads, increased brand awareness, or more effective monetization) than their available alternatives. Changes to our advertising policies and data privacy practices, as well as changes to other companies' advertising and/or data privacy practices may affect the advertising that we are able to provide, which could harm our business. In addition, technologies have been developed that make customized ads more difficult or that block the display of ads altogether and some providers of online services have integrated technologies that could potentially impair the availability and functionality of third-party digital advertising. Failing to provide superior value or deliver advertisements effectively and competitively could harm our reputation, financial condition, and operating results.

n addition, expenditures by advertisers tend to be cyclical, reflecting overall economic conditions and budgeting and buying patterns. Adverse macroeconomic conditions, including COVID-19 and its effects on the global economy (as discussed in greater detail in our COVID-19 risk factor under 'General Risks' below), have impacted the demand for advertising and resulted in fluctuations in the amounts our advertisers spend on advertising, and could have an adverse impact on such demand and spend, which could harm our financial condition and operating results.

We face intense competition. If we do not continue to innovate and provide products and services that are useful to users, we may not remain competitive, which could harm our business and operating results.

Our business environment is rapidly evolving and intensely competitive. Our businesses face changing technologies, shifting user needs, and frequent introductions of rival products and services. To compete successfully, we must accurately anticipate technology developments and deliver innovative, relevant and useful products, services, and technologies in a timely manner. As our businesses evolve, the competitive pressure to innovate will encompass a wider range of products and services. We must continue to invest significant resources in research and development, including through acquisitions, in order to enhance our technology and new and existing products and services.

e have many competitors in different industries. Our current and potential domestic and international competitors range from large and established companies to emerging start-ups. Some competitors have longer operating histories and well established relationships in various sectors. They can use their experience and resources in ways that could affect our competitive position, including by making acquisitions, continuing to invest heavily in research and development and in talent, aggressively initiating intellectual property claims (whether or not meritorious), and continuing to compete aggressively for users, advertisers, customers, and content providers. Further, discrepancies in enforcement of existing laws may enable our lesser known competitors to aggressively interpret those laws without commensurate scrutiny, thereby affording them competitive advantages. Our competitors may also be able to innovate and provide products and services faster than we can or may foresee the need for products and services before us.

Our operating results may also suffer if our products and services are not responsive to the needs of our users, advertisers, publishers, customers, and content providers. As technologies continue to develop, our competitors may be able to offer experiences that are, or that are seen to be, substantially similar to or better than ours. This

may force us to compete in different ways and expend significant resources in order to remain competitive. If our competitors are more successful than we are in developing compelling products or in attracting and retaining users, advertisers, publishers, customers, and content providers, our operating results could be harmed.

Our ongoing investment in new businesses, products, services, and technologies is inherently risky, and could disrupt our current operations and harm our financial condition and operating results.

We have invested and expect to continue to invest in new businesses, products, services, and technologies. The investments that we are making across Google Services, Google Cloud and Other Bets reflect our ongoing efforts to innovate and provide products and services that are useful to users, advertisers, publishers, customers, and content providers. Our investments in Google Services, Google Cloud and Other Bets span a wide range of industries beyond online advertising. Such investments ultimately may not be commercially viable or may not result in an adequate return of capital and, in pursuing new strategies, we may incur unanticipated liabilities. These endeavors may involve significant risks and uncertainties, including diversion of management resources and, with respect to Other Bets, the use of alternative investment, governance, or compensation structures that may fail to adequately align incentives across the company or otherwise accomplish their objectives.

Within Google Services, we continue to invest heavily in hardware, including our smartphones and home devices, which is a highly competitive market with frequent introduction of new products and services, rapid adoption of technological advancements by competitors, short product life cycles, evolving industry standards, continual improvement in product price and performance characteristics, and price and feature sensitivity on the part of consumers and businesses. There can be no assurance we will be able to provide hardware that competes effectively.

Within Google Cloud, we devote significant resources to develop and deploy our enterprise-ready cloud services, including Google Cloud Platform and Google Workspace. We are incurring costs to build and maintain infrastructure to support cloud computing services and hire talent, particularly to support and scale our salesforce. At the same time, our competitors are rapidly developing and deploying cloud-based services. Pricing and delivery models are competitive and evolving, and we may not attain sufficient scale and profitability to achieve our business objectives.

Within Other Bets, we are investing significantly in the areas of health, life sciences, and transportation, among others. These investment areas face intense competition from large experienced and well-funded competitors and our offerings may not be able to compete effectively or to operate at sufficient levels of profitability.

In addition, new and evolving products and services, including those that use artificial intelligence and machine learning, raise ethical, technological, legal, regulatory, and other challenges, which may negatively affect our brands and demand for our products and services. Because all of these new ventures are inherently risky, no assurance can be given that such strategies and offerings will be successful and will not harm our reputation, financial condition, and operating results.

Our revenue growth rate could decline over time, and we anticipate downward pressure on our operating margin in the future.

Our revenue growth rate could decline over time as a result of a number of factors, including increasing competition and the continued expansion of our business into a variety of new fields. Changes in device mix, geographic mix, ongoing product and policy changes, product mix, and property mix and an increasing competition for advertising may also affect our advertising revenue growth rate. We may also experience a decline in our revenue growth rate as our revenues increase to higher levels, if there is a decrease in the rate of adoption of our products, services, and technologies, or due to deceleration or decline in demand for devices used to access our services, among other factors. In addition, COVID-19 and its effects on the global economy has impacted and may continue to adversely impact our revenue growth rate (as discussed in greater detail in our COVID-19 risk factor under ‘General Risks’ below).

n addition to a decline in our revenue growth rate, we may also experience downward pressure on our operating margin resulting from a variety of factors, such as the continued expansion of our business into new fields, including products and services such as hardware, Google Cloud, and subscription products, as well as significant investments in Other Bets, all of which may have margins lower than those we generate from advertising. We may also experience downward pressure on our operating margins from increasing regulations, increasing competition and increased costs for many aspects of our business, including within advertising where changes such as device mix, property mix, and partner agreements can affect margin. The margin we earn on revenues generated from our Google Network Members could also decrease in the future if we pay a larger percentage of advertising fees to them. We may also pay increased TAC to our distribution partners as well as increased content acquisition

costs to content providers. We may also face an increase in infrastructure costs, supporting businesses such as Search, Google Cloud, and YouTube. Many of our expenses are less variable in nature and may not correlate to changes in revenues.

Due to these factors and the evolving nature of our business, our historical revenue growth rate and historical operating margin may not be indicative of our future performance.

Our intellectual property rights are valuable, and any inability to protect them could reduce the value of our products, services and brands as well as affect our ability to compete.

Our patents, trademarks, trade secrets, copyrights, and other intellectual property rights are important assets for us. Various events outside of our control pose a threat to our intellectual property rights, as well as to our products, services, and technologies. For example, effective intellectual property protection may not be available in every country in which our products and services are distributed or made available through the Internet. Also, the efforts we have taken to protect our proprietary rights may not be sufficient or effective. Although we seek to obtain patent protection for our innovations, it is possible we may not be able to protect some of these innovations. Moreover, we may not have adequate patent or copyright protection for certain innovations that later turn out to be important. Furthermore, there is always the possibility, despite our efforts, that the scope of the protection gained will be insufficient or that an issued patent may be deemed invalid or unenforceable.

We also seek to maintain certain intellectual property as trade secrets. The secrecy of such trade secrets and other sensitive information could be compromised, which could cause us to lose the competitive advantage resulting from these trade secrets. We also face risks associated with our trademarks. For example, there is a risk that the word “Google” could become so commonly used that it becomes synonymous with the word “search.” Some courts have ruled that "Google" is a protectable trademark, but it is possible that other courts, particularly those outside of the United States, may reach a different determination. If this happens, we could lose protection for this trademark, which could result in other people using the word “Google” to refer to their own products, thus diminishing our brand.

Any significant impairment of our intellectual property rights could harm our business and our ability to compete. Also, protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results.

Our business depends on strong brands, and failing to maintain and enhance our brands would hurt our ability to expand our base of users, advertisers, customers, content providers, and other partners.

Our strong brands have significantly contributed to the success of our business. Maintaining and enhancing the brands within Google Services, Google Cloud and Other Bets increases our ability to enter new categories and launch new and innovative products that better serve the needs of our users, advertisers, customers, content providers, and other partners. Our brands may be negatively affected by a number of factors, including, among others, reputational issues, third-party content shared on our platforms, data privacy and security issues and developments, and product or technical performance failures. For example, if we fail to appropriately respond to the sharing of misinformation or objectionable content on our services and/or products or objectionable practices by advertisers, or to otherwise adequately address user concerns, our users may lose confidence in our brands.

Furthermore, failure to maintain and enhance equity in our brands may harm our business, financial condition, and operating results. Our success will depend largely on our ability to remain a technology leader and continue to provide high-quality, innovative products and services that are truly useful and play a valuable role in a range of settings.

We face a number of manufacturing and supply chain risks that, if not properly managed, could harm our financial condition, operating results, and prospects.

We face a number of risks related to manufacturing and supply chain management, which could affect our ability to supply both our products and our internet-based services.

We rely on other companies to manufacture many of our finished products, to design certain of our components and parts, and to participate in the distribution of our products and services. Our business could be negatively affected if we are not able to engage these companies with the necessary capabilities or capacity on reasonable terms, or if those we engage fail to meet their obligations (whether due to financial difficulties or other reasons), or make adverse changes in the pricing or other material terms of our arrangements with them.

We have experienced and/or may experience supply shortages and price increases driven by raw material, component or part availability, manufacturing capacity, labor shortages, industry allocations, tariffs, trade disputes

and barriers, natural disasters or pandemics (including COVID-19), the effects of climate change (such as sea level rise, drought, flooding, wildfires, and increased storm severity), and significant changes in the financial or business condition of our suppliers. We have experienced and/or may in the future, experience shortages or other supply chain disruptions that could negatively affect our operations. In addition, some of the components we use in our technical infrastructure and product are available from only one or limited ource , and we may not be able to find replacement vendor on favorable term in the event of a upply chain di ruption In addition, a ignificant upply interruption could delay critical data center upgrades or expansions and delay product availability.

We may enter into long term contracts for materials and products that commit us to significant terms and conditions. We may be liable for materials and products that are not consumed due to market acceptance, technological change, obsolescences, quality, product recalls, and warranty issues. For instance, because certain of our hardware supply contracts have volume-based pricing or minimum purchase requirements, if the volume of our hardware sales decreases or does not reach projected targets, we could face increased materials and manufacturing costs or other financial liabilities that could make our products more costly per unit to manufacture and negatively affect our financial results. Furthermore, certain of our competitors may negotiate more favorable contractual terms based on volume and other commitments that may provide them with competitive advantages and may affect our supply.

Our products and services may have quality issues resulting from design, manufacturing, or operations. Sometimes, these issues may be caused by components we purchase from other manufacturers or suppliers. If the quality of our products and services does not meet expectations or our products or services are defective, it could harm our reputation, financial condition, and operating results.

We require our suppliers and business partners to comply with laws and, where applicable, our company policies, such as the Google Supplier Code of Conduct, regarding workplace and employment practices, data security, environmental compliance and intellectual property licensing, but we do not control them or their practices. Violations of law or unethical business practices could result in supply chain disruptions, canceled orders, harm to key relationships, and damage to our reputation. Their failure to procure necessary license rights to intellectual property, could affect our ability to sell our products or services and expose us to litigation or financial claims.

Interruption, interference with, or failure of our complex information technology and communications systems could hurt our ability to effectively provide our products and services, which could harm our reputation, financial condition, and operating results. In addition, complications with the design or implementation of our new global enterprise resource planning system could harm our business and operations.

The availability of our products and services and fulfillment of our customer contracts depend on the continuing operation of our information technology and communications systems. Our systems are vulnerable to damage, interference, or interruption from modifications or upgrades, terrorist attacks, natural disasters or pandemics (including COVID-19), the effects of climate change (such as sea level rise, drought, flooding, wildfires, and increased storm severity), power loss, telecommunications failures, computer viruses, ransomware attacks, computer denial of service attacks, phishing schemes, or other attempts to harm or access our systems. Some of our data centers are located in areas with a high risk of major earthquakes or other natural disasters. Our data centers are also subject to break-ins, sabotage, and intentional acts of vandalism, and, in some cases, to potential disruptions resulting from problems experienced by facility operators. Some of our systems are not fully redundant, and disaster recovery planning cannot account for all eventualities.

The occurrence of a natural disaster or pandemic (including COVID-19), closure of a facility, or other unanticipated problems at, or impacting, our data centers could result in lengthy interruptions in our service. In addition, our products and services are highly technical and complex and may contain errors or vulnerabilities, which could result in interruptions in or failure of our services or systems.

In addition, we rely extensively on information systems and technology to manage our business and summarize operating results. We are in the process of a multi-year implementation of a new ERP system, which will replace much of our existing core financial systems. The ERP system is designed to accurately maintain our financial records, enhance the flow of financial information, improve data management, and provide timely information to our management team. We may not be able to successfully implement the ERP system without experiencing delays, increased costs, and other difficulties. Failure to successfully design and implement the new ERP system as planned could harm our business, financial condition, and operating results. Additionally, if we do not effectively implement the ERP system as planned or the ERP system does not operate as intended, the effectiveness of our internal control over financial reporting could be negatively affected.

Our international operations expose us to additional risks that could harm our business, our financial condition, and operating results.

Our international operations are significant to our revenues and net income, and we plan to continue to grow internationally. International revenues accounted for approximately 53% of our consolidated revenues in 2020. In addition to risks described elsewhere in this section, our international operations expose us to other risks, including the following:

- Restrictions on foreign ownership and investments, and stringent foreign exchange controls that might prevent us from repatriating cash earned in countries outside the U.S.
- Import and export requirements, tariffs and other market access barriers that may prevent or impede us from offering products or providing services to a particular market, or that could limit our ability to source assemblies and finished products from a particular market, and may increase our operating costs.
- Longer payment cycles in some countries, increased credit risk, and higher levels of payment fraud.
- Evolving foreign events, including the effect of the United Kingdom's withdrawal from the European Union, may adversely affect our revenues and could subject us to new regulatory costs and challenges (including the transfer of personal data between the EU and the United Kingdom and new customer requirements), in addition to other adverse effects that we are unable to effectively anticipate.
- Anti-corruption laws, such as the U.S. Foreign Corrupt Practices Act, and other local laws prohibiting certain payments to government officials, violations of which could result in civil and criminal penalties.
- Uncertainty regarding liability for services and content, including uncertainty as a result of local laws and lack of legal precedent.
- Different employee/employer relationships, existence of works councils and labor unions, and other challenges caused by distance, language, and cultural differences, making it harder to do business in certain jurisdictions.

Because we conduct business in currencies other than U.S. dollars but report our financial results in U.S. dollars, we face exposure to fluctuations in foreign currency exchange rates. Although we hedge a portion of our international currency exposure, significant fluctuations in exchange rates between the U.S. dollar and foreign currencies may adversely affect our revenues and earnings, particularly in light of market volatilities due to COVID-19. Hedging programs are also inherently risky and could expose us to additional risks that could harm our financial condition and operating results.

Risks Related to our Industry

People access the Internet through a variety of platforms and devices that continue to evolve with the advancement of technology and user preferences. If manufacturers and users do not widely adopt versions of our products and services developed for these interfaces, our business could be harmed.

People access the Internet through a growing variety of devices such as desktop computers, mobile phones, smartphones, laptops and tablets, video game consoles, voice-activated speakers, wearables, automobiles, and television-streaming devices. Our products and services may be less popular on some interfaces. Each manufacturer or distributor may establish unique technical standards for its devices, and our products and services may not be available or may only be available with limited functionality for our users or our advertisers on these devices as a result. Some manufacturers may also elect not to include our products on their devices. In addition, search queries are increasingly being undertaken via voice-activated speakers, apps, social media or other platforms, which could harm our business. It is hard to predict the challenges we may encounter in adapting our products and services and developing competitive new products and services. We expect to continue to devote significant resources to creating and supporting products and services across multiple platforms and devices. Failing to attract and retain a substantial number of new device manufacturers, suppliers, distributors, developers, and users, or failing to develop products and technologies that work well on new devices and platforms, could harm our business, financial condition, and operating results and ability to capture future business opportunities.

Data privacy and security concerns relating to our technology and our practices could damage our reputation, cause us to incur significant liability, and deter current and potential users or customers from using our products and services. Software bugs or defects, security breaches, and attacks on our systems could result in the improper disclosure and use of user data and interference with our users and customers' ability to use our products and services, harming our business operations and reputation.

Concerns about our practices with regard to the collection, use, disclosure, or security of personal information or other data-privacy-related matters, even if unfounded, could harm our reputation, financial condition, and operating results. Our policies and practices may change over time as expectations regarding privacy and data change.

Our products and services involve the storage and transmission of proprietary and other sensitive information, and bugs, theft, misuse, defects, vulnerabilities in our products and services, and security breaches expose us to a risk of loss of this information, improper use and disclosure of such information, litigation, and other potential liability. Systems and control failures, security breaches, failure to comply with our privacy policies, and/or inadvertent disclosure of user data could result in government and legal exposure, seriously harm our reputation and brand and, therefore, our business, and impair our ability to attract and retain users or customers. We expect to continue to expend significant resources to maintain security protections that shield against bugs, theft, misuse, or security vulnerabilities or breaches.

We experience cyber attacks and other attempts to gain unauthorized access to our systems on a regular basis. We may experience future security issues, whether due to employee error or malfeasance or system errors or vulnerabilities in our or other parties' systems, which could result in significant legal and financial exposure. Government inquiries and enforcement actions, litigation, and adverse press coverage could harm our business. We may be unable to anticipate or detect attacks or vulnerabilities or implement adequate preventative measures. Attacks and security issues could also compromise trade secrets and other sensitive information, harming our business.

While we have dedicated significant resources to privacy and security incident response capabilities, including dedicated worldwide incident response teams, our response process, particularly during times of a natural disaster or pandemic (including COVID-19), may not be adequate, may fail to accurately assess the severity of an incident, may not respond quickly enough, or may fail to sufficiently remediate an incident. As a result, we may suffer significant legal, reputational, or financial exposure, which could harm our business, financial condition, and operating results.

Our ongoing investments in safety, security, and content review will likely continue to identify abuse of our platforms and misuse of user data.

In addition to our efforts to mitigate cyber attacks, we are making significant investments in safety, security, and content review efforts to combat misuse of our services and unauthorized access to user data by third parties, including investigations and review of platform applications that could access the information of users of our services. As a result of these efforts, we could discover incidents of unnecessary access to or misuse of user data or other undesirable activity by third parties. We may not discover all such incidents or activity, whether as a result of our data limitations, including our lack of visibility over our encrypted services, the scale of activity on our platform, or other factors, including factors outside of our control such as a natural disaster or pandemic (including COVID-19), and we may be notified of such incidents or activity via third parties. Such incidents and activities may include the use of user data or our systems in a manner inconsistent with our terms, contracts or policies, the existence of false or undesirable user accounts, election interference, improper ad purchases, activities that threaten people's safety on- or offline, or instances of spamming, scraping, or spreading disinformation. We may also be unsuccessful in our efforts to enforce our policies or otherwise remediate any such incidents. Any of the foregoing developments may negatively affect user trust and engagement, harm our reputation and brands, require us to change our business practices in a manner adverse to our business, and adversely affect our business and financial results. Any such developments may also subject us to additional litigation and regulatory inquiries, which could result in monetary penalties and damages, divert management's time and attention, and lead to enhanced regulatory oversight.

Problematic content on our platforms, including low-quality user-generated content, web spam, content farms, and other violations of our guidelines could affect the quality of our services, which could damage our reputation and deter our current and potential users from using our products and services.

We, like others in the industry, face violations of our content guidelines across our platforms, including sophisticated attempts by bad actors to manipulate our hosting and advertising systems to fraudulently generate revenues, or to otherwise generate traffic that does not represent genuine user interest or intent. While we invest significantly in efforts to promote high-quality and relevant results and to detect and prevent low-quality content and invalid traffic, we may be unable to adequately detect and prevent such abuses or promote high-quality content, particularly during times of a natural disaster or pandemic (including COVID-19).

Many websites violate or attempt to violate our guidelines, including by seeking to inappropriately rank higher in search results than our search engine's assessment of their relevance and utility would rank them. Such efforts

(known as “web spam”) may affect the quality of content on our platforms and lead them to display false, misleading or undesirable content.

Although English-language web spam in our search results has been reduced, and web spam in most other languages is limited, we expect web spammers will continue to seek inappropriate ways to improve their rankings. We continuously combat web spam in our search results, including through indexing technology that makes it harder for spam-like, less useful web content to rank highly. We also continue to invest in and deploy proprietary technology to detect and prevent web spam from abusing our platforms.

We also face other challenges from low-quality and irrelevant content websites, including content farms, which are websites that generate large quantities of low-quality content to help them improve their search rankings. We are continually launching algorithmic changes focused on detecting and preventing abuse from low-quality websites.

We also face other challenges on our platforms, including violations of our content guidelines involving incidents such as attempted election interference, activities that threaten the safety and/or well-being of our users on- or offline, and the spreading of disinformation, among other challenges.

If we fail to either detect and prevent an increase in problematic content or effectively promote high-quality content, it could hurt our reputation for delivering relevant information or reduce use of our platforms, harming our financial condition or operating results. It may also subject us to litigation and regulatory inquiries, which could result in monetary penalties and damages, divert management’s time and attention, and lead to enhanced regulatory oversight.

Our business depends on continued and unimpeded access to the Internet by us and our users. Internet access providers may be able to restrict, block, degrade, or charge for access to certain of our products and services, which could lead to additional expenses and the loss of users and advertisers.

Our products and services depend on the ability of our users to access the Internet, and certain of our products require significant bandwidth to work effectively. Currently, this access is provided by companies that have significant market power in the broadband and internet access marketplace, including incumbent telephone companies, cable companies, mobile communications companies, and government-owned service providers. Some of these providers have taken, or have stated that they may take measures that could degrade, disrupt, or increase the cost of user access to certain of our products by restricting or prohibiting the use of their infrastructure to support or facilitate our offerings, by charging increased fees to us or our users to provide our offerings, or by providing our competitors preferential access. Some jurisdictions have adopted regulations prohibiting certain forms of discrimination by internet access providers; however, substantial uncertainty exists in the United States and elsewhere regarding such protections. For example, in 2018 the United States Federal Communications Commission repealed net neutrality rules, which could permit internet access providers to restrict, block, degrade, or charge for access to certain of our products and services. In addition, in some jurisdictions, our products and services have been subject to government-initiated restrictions or blockages. COVID-19 has also resulted in quarantines, shelter in place orders, and work from home directives, all of which have increased demands for internet access and may create access challenges. These could result in a loss of existing users, customers and advertisers, goodwill, and increased costs, and could impair our ability to attract new users, customers and advertisers, thereby harming our business.

Risks Related to Laws and Regulations

We face increased regulatory scrutiny as well as changes in regulatory conditions, laws and policies governing a wide range of topics that may negatively affect our business.

We and other companies in the technology industry face increased regulatory scrutiny, enforcement action, and other proceedings. For instance, the U.S. Department of Justice, joined by a number of state Attorneys General, filed an antitrust complaint against Google on October 20, 2020, alleging that Google violated U.S. antitrust laws relating to Search and Search advertising. Separately, on December 16, 2020, a number of state Attorneys General filed an antitrust complaint against Google in the United States District Court for the Eastern District of Texas, alleging that Google violated U.S. antitrust laws as well as state deceptive trade laws relating to its advertising technology. Various other regulatory agencies in the United States and around the world, including competition enforcers, consumer protection agencies, data protection authorities, grand juries, inter-agency consultative groups, and a range of other governmental bodies have and continue to review our products and services and their compliance with laws and regulations around the world. We continue to cooperate with these investigations. Various laws, regulations, investigations, enforcement lawsuits, and regulatory actions have in the past and may in the future result in substantial fines and penalties, injunctive relief, ongoing auditing and monitoring

obligations, changes to our products and services, alterations to our business models and operations, and collateral litigation, all of which could harm our business, reputation, financial condition, and operating results.

Changes in international and local social, political, economic, tax, and regulatory conditions or in laws and policies governing a wide range of topics may increase our cost of doing business, limit our ability to pursue certain business models, offer products or services in certain jurisdictions, or cause us to change our business practices. We have in the past had to alter or withdraw certain products and services as a result of laws or regulations that made them unfeasible, and new laws or regulations, such as the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission currently tabled in parliament, could result in our having to alter or withdraw products and services in the future. These additional costs of doing business, new limitations or changes to our business model or practices could harm our business, reputation, financial condition, and operating results.

A variety of new and existing laws and/or interpretations could harm our business.

We are subject to numerous U.S. and foreign laws and regulations covering a wide variety of subject matters. New laws and regulations (or new interpretations or applications of existing laws and regulations in a manner inconsistent with our practices) may make our products and services less useful, limit our ability to pursue certain business models or offer certain products and services, require us to incur substantial costs, expose us to civil or criminal liability, or cause us to change our business practices. These laws and regulations are evolving and involve matters central to our business, including, among others:

- New competition laws and related regulations around the world, that can limit certain business practices, and in some cases, create the risk of significant penalties.
- Privacy laws, such as the California Consumer Privacy Act of 2018 that came into effect in January of 2020 and the California Privacy Rights Act which will go into effect in 2023, both of which give new data privacy rights to California residents, and SB-327 in California, which regulates the security of data in connection with internet connected devices.
- Data protection laws passed by many states within the U.S. and by certain countries regarding notification to data subjects and/or regulators when there is a security breach of personal data.
- New laws further restricting the collection, processing and/or sharing of advertising-related data.
- Copyright or similar laws around the world, including the EU Directive on Copyright in the Digital Single Market (EUCD) of April 17, 2019, which EU Member States must implement by June 7, 2021; and the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission. These and similar laws that have been adopted or proposed introduce new constraining licensing regimes that could affect our ability to operate. The EUCD and similar laws could increase the liability of some content-sharing services with respect to content uploaded by their users. Some of these laws, as well as follow-on administrative or judicial actions, have also created or may create a new property right in news publications that limits the ability of some online services to interact with or present such content. They may also impose compensation negotiations with news agencies and publishers for the use of such content, which may result in payment obligations that significantly exceed the value that such content provides to Google and its users.
- Data localization laws, which generally mandate that certain types of data collected in a particular country be stored and/or processed within that country.
- Various U.S. and international laws that govern the distribution of certain materials to children and regulate the ability of online services to collect information from minors.
- Various laws with regard to content removal and disclosure obligations, such as the Network Enforcement Act in Germany, which may affect our businesses and operations and may subject us to significant fines if such laws are interpreted and applied in a manner inconsistent with our practices or when we may not proactively discover such content due to the scale of third-party content and the limitations of existing technologies. Other countries, including Singapore, Australia, and the United Kingdom, have implemented or are considering similar legislation imposing penalties for failure to remove certain types of content.
- Various legislative, litigation, and regulatory activity regarding our Google Play billing policies and business model, which could result in monetary penalties, damages and/or prohibition.

In addition, the applicability and scope of these laws, as interpreted by the courts, remain uncertain and could harm our business. For example:

- We rely on statutory safe harbors, as set forth in the Digital Millennium Copyright Act and Section 230 of the Communications Decency Act in the United States and the E-Commerce Directive in Europe, against liability for various linking, caching, and hosting activities. Any legislation or court rulings affecting these safe harbors may adversely affect us. There are legislative proposals in both the US and EU that could reduce our safe harbor protection.
- Court decisions such as the judgment of the Court of Justice of the European Union (CJEU) on May 13, 2014 on the ‘right to be forgotten,’ which allows individuals to demand that Google remove search results about them in certain instances, may limit the content we can show to our users and impose significant operational burdens.

The introduction of new businesses, products, services, and technologies, our activities in certain jurisdictions, or other actions we take may subject us to additional laws and regulations. Our investment in a variety of new fields, such as healthcare and payment services, may expand the scope of regulations that apply to our business. The costs of compliance with these laws and regulations are high and are likely to increase in the future. Any failure on our part to comply with laws and regulations can result in negative publicity and diversion of management time and effort and may subject us to significant liabilities and other penalties.

We are subject to claims, suits, government investigations, and other proceedings that may harm our business, financial condition, and operating results.

We are subject to claims, suits, and government investigations involving competition, intellectual property, data privacy and security, consumer protection, tax, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms, and other matters. Due to our manufacturing and sale of an expanded suite of products, including hardware as well as Google Cloud offerings, we also are subject to a variety of claims including product warranty, product liability, and consumer protection claims related to product defects, among other litigation. We may also be subject to claims involving health and safety, hazardous materials usage, other environmental impacts, or service disruptions or failures.

Any of these types of legal proceedings can have an adverse effect on us because of legal costs, diversion of management resources, negative publicity and other factors. Determining reserves for our pending litigation is a complex, fact-intensive process that requires significant judgment. The resolution of one or more such proceedings has resulted in, and may in the future result in, additional substantial fines, penalties, injunctions, and other sanctions that could harm our business, financial condition, and operating results.

We may be subject to legal liability associated with providing online services or content.

Our products and services let users exchange information, advertise products and services, conduct business, and engage in various online activities. We also place advertisements displayed on other companies’ websites, and we offer third-party products, services, and/or content. The law relating to the liability of online service providers for others’ activities on their services is still somewhat unsettled around the world. Claims have been brought against us for defamation, negligence, breaches of contract, copyright and trademark infringement, unfair competition, unlawful activity, torts, fraud, or other legal theories based on the nature and content of information available on or via our services.

We may be subject to claims by virtue of our involvement in hosting, transmitting, marketing, branding, or providing access to content created by third parties. Defense of any such actions could be costly and involve significant time and attention of our management and other resources, may result in monetary liabilities or penalties, and may require us to change our business in an adverse manner.

Privacy and data protection regulations are complex and rapidly evolving areas. Adverse interpretations of these laws could harm our business, reputation, financial condition, and operating results.

Authorities around the world have adopted and are considering a number of legislative and regulatory proposals concerning data protection and limits on encryption of user data. Adverse legal rulings, legislation, or regulation could result in fines and orders requiring that we change our data practices, which could have an adverse effect on our ability to provide services, harming our business operations. Complying with these evolving laws could result in substantial costs and harm the quality of our products and services, negatively affecting our business, and may be particularly challenging during certain times, such as a natural disaster or pandemic (including COVID-19).

Recent legal developments in Europe have created compliance uncertainty regarding transfers of personal data from Europe to the United States. For example, the General Data Protection Regulation (GDPR) applies to all of our activities conducted from an establishment in the EU or related to products and services that we offer to EU

users or customers, or the monitoring of their behavior in the EU. The GDPR creates a range of new compliance obligations.

Ensuring compliance with the GDPR is an ongoing commitment that involves substantial costs, and despite our efforts, governmental authorities or others have asserted and may continue to assert that our business practices fail to comply with its requirements. If our operations are found to violate GDPR requirements, we may incur substantial fines, have to change our business practices, and face reputational harm, any of which could have an adverse effect on our business. In particular, serious breaches of the GDPR can result in administrative fines of up to 4% of annual worldwide revenues. Fines of up to 2% of annual worldwide revenues can be levied for other specified violations.

The EU-U.S. and the Swiss-U.S. Privacy Shield frameworks allow U.S. companies that self-certify to the U.S. Department of Commerce and publicly commit to comply with specified requirements to import personal data from the EU and Switzerland. Recently, the CJEU ruled that the EU-U.S. Privacy Shield is an invalid transfer mechanism, but upheld Standard Contractual Clauses as a valid transfer mechanism, provided they meet certain requirements. The validity of data transfer mechanisms remains subject to legal, regulatory, and political developments in both Europe and the U.S., such as recent recommendations from the European Data Protection Board, the invalidation of the EU-U.S. Privacy Shield and potential invalidation of other data transfer mechanisms, which could have a significant adverse impact on our ability to process and transfer personal data outside of the EEA.

These developments create some uncertainty, and compliance obligations could cause us to incur costs or harm the operations of our products and services in ways that harm our business.

We face, and may continue to face intellectual property and other claims that could be costly to defend, result in significant damage awards or other costs (including indemnification awards), and limit our ability to use certain technologies in the future.

We, like other internet, technology and media companies, are frequently subject to litigation based on allegations of infringement or other violations of intellectual property rights. In addition, patent-holding companies may frequently seek to generate income from patents they have obtained by bringing claims against us. As we have grown, the number of intellectual property claims against us has increased and may continue to increase as we develop new products, services, and technologies.

We have had patent, copyright, trade secret, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Other parties have also sought broad injunctive relief against us by filing claims in U.S. and international courts and the U.S. International Trade Commission (ITC) for exclusion and cease-and-desist orders, which could limit our ability to sell our products or services in the U.S. or elsewhere if our products or services or those of our customers or suppliers are found to infringe the intellectual property subject to the claims. Adverse results in any of these lawsuits may include awards of monetary damages, costly royalty or licensing agreements (if licenses are available at all), or orders preventing us from offering certain features, functionalities, products, or services. They may also cause us to change our business practices and require development of non-infringing products, services, or technologies, which could result in a loss of revenues for us and otherwise harm our business.

Many of our agreements with our customers and partners, including certain suppliers, require us to defend against certain intellectual property infringement claims and in some cases indemnify them for certain intellectual property infringement claims against them, which could result in increased costs for defending such claims or significant damages if there were an adverse ruling in any such claims. Such customers and partners may also discontinue the use of our products, services, and technologies, as a result of injunctions or otherwise, which could result in loss of revenues and adversely affect our business. Moreover, intellectual property indemnities provided to us by our suppliers, when obtainable, may not cover all damages and losses suffered by us and our customers arising from intellectual property infringement claims. Furthermore, in connection with our divestitures, we have agreed, and may in the future agree, to provide indemnification for certain potential liabilities, including those associated with intellectual property claims.

Regardless of their merits, intellectual property claims are often time consuming and expensive to litigate or settle. To the extent such claims are successful, they may harm our business, including our product and service offerings, financial condition, or operating results.

Risks Related to Ownership of our Stock

We cannot guarantee that any share repurchase program will be fully consummated or will enhance long-term stockholder value, and share repurchases could increase the volatility of our stock prices and could

diminish our cash reserves.

We engage in share repurchases of our Class C capital stock from time to time in accordance with authorizations from the Board of Directors of Alphabet. Our repurchase program does not have an expiration date and does not obligate Alphabet to repurchase any specific dollar amount or to acquire any specific number of shares. Further, our share repurchases could affect our share trading prices, increase their volatility, reduce our cash reserves and may be suspended or terminated at any time, which may result in a decrease in the trading prices of our stock.

The concentration of our stock ownership limits our stockholders' ability to influence corporate matters.

Our Class B common stock has 10 votes per share, our Class A common stock has one vote per share, and our Class C capital stock has no voting rights. As of December 31, 2020, Larry Page and Sergey Brin beneficially owned approximately 85.3% of our outstanding Class B common stock, which represented approximately 51.5% of the voting power of our outstanding common stock. Through their stock ownership, Larry and Sergey have significant influence over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger or other sale of our company or our assets, for the foreseeable future. In addition, because our Class C capital stock carries no voting rights (except as required by applicable law), the issuance of the Class C capital stock, including in future stock-based acquisition transactions and to fund employee equity incentive programs, could continue Larry and Sergey's current relative voting power and their ability to elect all of our directors and to determine the outcome of most matters submitted to a vote of our stockholders. This concentrated control limits or severely restricts other stockholders' ability to influence corporate matters and we may take actions that some of our stockholders do not view as beneficial, which could reduce the market price of our Class A common stock and our Class C capital stock.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable.

Provisions in Alphabet's certificate of incorporation and bylaws may have the effect of delaying or preventing a change of control or changes in our management. These provisions include the following:

- Our certificate of incorporation provides for a tri-class capital stock structure. As a result of this structure, Larry and Sergey have significant influence over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger or other sale of our company or our assets. This concentrated control could discourage others from initiating any potential merger, takeover, or other change of control transaction that other stockholders may view as beneficial. As noted above, the issuance of the Class C capital stock could have the effect of continuing the influence of Larry and Sergey.
- Our Board of Directors has the right to elect directors to fill a vacancy created by the expansion of the Board of Directors or the resignation, death, or removal of a director, which prevents stockholders from being able to fill vacancies on our Board of Directors.
- Our stockholders may not act by written consent. As a result, a holder, or holders, controlling a majority of our capital stock would not be able to take certain actions without holding a stockholders' meeting.
- Our certificate of incorporation prohibits cumulative voting in the election of directors. This limits the ability of minority stockholders to elect director candidates.
- Stockholders must provide advance notice to nominate individuals for election to the Board of Directors or to propose matters that can be acted upon at a stockholders' meeting. These provisions may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.
- Our Board of Directors may issue, without stockholder approval, shares of undesignated preferred stock. The ability to issue undesignated preferred stock makes it possible for our Board of Directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us.

As a Delaware corporation, we are also subject to certain Delaware anti-takeover provisions. Under Delaware law, a corporation may not engage in a business combination with any holder of 15% or more of its outstanding voting stock unless the holder has held the stock for three years or, among other things, the Board of Directors has approved the transaction. Our Board of Directors could rely on Delaware law to prevent or delay an acquisition of us.

General Risks

The continuing impacts of COVID-19 are highly unpredictable and could be significant, and may have an adverse effect on our business, operations and our future financial performance.

Since COVID-19 was declared a global pandemic by the World Health Organization, governments and municipalities around the world have instituted measures in an effort to control the spread of COVID-19, including quarantines, shelter-in-place orders, school closings, travel restrictions, and closure of non-essential businesses. The macroeconomic impacts on our business continue to evolve and be unpredictable and may continue to adversely affect our business, operations and financial performance. As a result of the scale of the ongoing pandemic and the speed at which the global community has been impacted, our revenue growth rate and expense as a percentage of our revenues in future periods may differ significantly from our historical rate, and our future operating results may fall below expectations.

The future impacts of the ongoing pandemic on our business, operations and future financial performance could include, but are not limited to:

- Significant decline in advertising revenues as advertiser spending slows due to an economic downturn. This decline in advertising revenues could persist through and beyond a recessionary period. In addition, we may experience a significant and prolonged shift in user behavior such as a shift in interests to less commercial topics.
- Significant decline in other revenues due to a decline or shifts in customer demand. For example, if consumer demand for electronics significantly declines, our hardware revenues could be significantly impacted.
- Adverse impacts to our operating income, operating margin, net income, EPS and respective growth rates - particularly if expenses do not decrease across Alphabet at the same pace as revenue declines. Many of our expenses are less variable in nature and/or may not correlate to changes in revenues, including costs associated with our data centers and facilities as well as employee compensation. As such, we may not be able to decrease them significantly in the short-term, or we may choose not to significantly reduce them in an effort to remain focused on long-term outlook and investment opportunities.
- Significant decline in our operating cash flows as a result of decreased advertiser spending and deterioration in the credit quality and liquidity of our customers, which could adversely affect our accounts receivable. Investing cash flows could decrease due to slowing spend on data center and facilities construction projects due to a slowing or stopping of construction or significant restrictions placed on construction.
- The prolonged and broad-based shift to a remote working environment continues to create inherent productivity, connectivity, and oversight challenges and could affect our ability to enhance, develop and support existing products and services, detect and prevent spam and problematic content, hold product sales and marketing events, and generate new sales leads, among others. In addition, the changed environment under which we are operating could have an effect on our internal controls over financial reporting as well as our ability to meet a number of our compliance requirements in a timely or quality manner. Additional and/or extended, governmental lockdowns, restrictions or new regulations could significantly impact the ability of our employees and vendors to work productively. Governmental restrictions have been globally inconsistent and it remains unclear when a return to worksite locations or travel will be permitted or what restrictions will be in place in those environments. As we prepare to return our workforce in more locations back to the office in 2021, we may experience increased costs as we prepare our facilities for a safe return to work environment and experiment with hybrid work models, in addition to potential effects on our ability to compete effectively and maintain our corporate culture.

Our operating results may fluctuate, which makes our results difficult to predict and could cause our results to fall short of expectations.

Our operating results may fluctuate as a result of a number of factors, many outside of our control.

As a result, comparing our operating results (including our expenses as a percentage of our revenues) on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. Our operating results in future quarters may fall below expectations. Any of these events could cause our stock price to fall. Each of the risk factors listed under this Item 1A in addition to the following factors may affect our operating results:

- Our ability to attract user and/or customer adoption of, and generate significant revenues from, new products, services, and technologies in which we have invested considerable time and resources.

- Our ability to monetize traffic on Google Search & other properties, YouTube and our Google Network Members' properties across various devices.
- The amount and timing of operating costs and expenses and capital expenditures related to the maintenance and expansion of our businesses, operations, and infrastructure.
- Our focus on long-term goals over short-term results.
- The results of our acquisitions, divestitures, and our investments in risky projects, including new businesses, products, services, and technologies.
- Our ability to keep our products and services operational at a reasonable cost and without service interruptions.
- The seasonal fluctuations in internet usage, advertising spending, and underlying business trends such as traditional retail seasonality. Our rapid growth has tended to mask the cyclicality and seasonality of our business. As our growth rate has slowed, the cyclicality and seasonality in our business has become more pronounced and caused our operating results to fluctuate.
- Geopolitical events, including trade disputes.
- Changes in global business or macroeconomic conditions.

Acquisitions, joint ventures, investments, and divestitures could result in operating difficulties, dilution, and other consequences that may harm our business, financial condition, and operating results.

Acquisitions, joint ventures, investments and divestitures are important elements of our overall corporate strategy and use of capital, and these transactions could be material to our financial condition and operating results. We expect to continue to evaluate and enter into discussions regarding a wide array of such potential strategic transactions, which could create unforeseen operating difficulties and expenditures. Some of the areas where we face risks include:

- Diversion of management time and focus from operating our business to challenges related to acquisitions and other strategic transactions.
- Failure to successfully integrate and further develop the acquired business or technology.
- Implementation or remediation of controls, procedures, and policies at the acquired company.
- Integration of the acquired company's accounting, human resource, and other administrative systems, and coordination of product, engineering, and sales and marketing functions.
- Transition of operations, users, and customers onto our existing platforms.
- Failure to obtain required approvals on a timely basis, if at all, from governmental authorities, or conditions placed upon approval that could, among other things, delay or prevent us from completing a transaction, or otherwise restrict our ability to realize the expected financial or strategic goals of a transaction.
- In the case of foreign acquisitions, the need to integrate operations across different cultures and languages and to address the particular economic, currency, political, and regulatory risks associated with specific countries.
- Cultural challenges associated with integrating employees from the acquired company into our organization, and retention of employees from the businesses we acquire.
- Liability for activities of the acquired company before the acquisition, including patent and trademark infringement claims, data privacy and security issues, violations of laws, commercial disputes, tax liabilities, and other known and unknown liabilities.
- Litigation or other claims in connection with the acquired company, including claims from terminated employees, customers, former stockholders, or other third parties.

Our failure to address these risks or other problems encountered in connection with our past or future acquisitions and other strategic transactions could cause us to fail to realize their anticipated benefits, incur unanticipated liabilities, and harm our business generally.

Our acquisitions and other strategic transactions could also result in dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities, or amortization expenses, or impairment of goodwill and/or purchased long-lived assets, and restructuring charges, any of which could harm our financial condition or operating results.

Also, the anticipated benefits or value of our acquisitions and other strategic transactions may not materialize. In connection with our divestitures, we have agreed, and may in the future agree, to provide indemnification for certain potential liabilities, which may harm our financial condition or operating results.

If we were to lose the services of key personnel, we may not be able to execute our business strategy.

Our future success depends in large part upon the continued service of key members of our senior management team. For instance, Sundar Pichai is critical to the overall management of Alphabet and its subsidiaries and plays an important role in the development of our technology, maintaining our culture and setting our strategic direction. All of our executive officers and key employees are at-will employees, and we do not maintain any key-person life insurance policies. The loss of key personnel could seriously harm our business.

We rely on highly skilled personnel and, if we are unable to retain or motivate key personnel, hire qualified personnel, or maintain our corporate culture, we may not be able to grow effectively.

Our performance largely depends on the talents and efforts of highly skilled individuals. Our ability to compete effectively and our future success depends on our continuing to identify, hire, develop, motivate, and retain highly skilled personnel for all areas of our organization. Competition in our industry for qualified employees is intense, and certain of our competitors have directly targeted our employees. In addition, our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. Restrictive immigration policy and regulatory changes may also impact our ability to hire, mobilize or retain some of our global talent.

n addition, we believe that our corporate culture fosters innovation, creativity, and teamwork. As our organization grows and evolves, we may need to implement more complex organizational management structures or adapt our corporate culture and work environments to ever-changing circumstances, such as during times of a natural disaster or pandemic (including COVID-19), and these changes could impact our ability to compete effectively or have an adverse impact on our corporate culture.

We are exposed to fluctuations in the market values of our investments and, in some instances, our financial statements incorporate valuation methodologies that are subjective in nature resulting in fluctuations over time.

The market value of our investments can be negatively affected by liquidity, credit deterioration or losses, performance and financial results of the underlying entities, foreign exchange rates, changes in interest rates, including changes that may result from the implementation of new benchmark rates, the effect of new or changing regulations, the stock market in general, or other factors. The effect of COVID-19 on our impairment assessment for non-marketable investments requires significant judgment due to the uncertainty around the duration and severity of the impact.

e measure certain of our non-marketable equity and debt investments, certain other instruments including stock-based compensation awards settled in the stock of certain Other Bets, and certain assets and liabilities acquired in a business combination, at fair value on a nonrecurring basis. The determination of fair value involves use of appropriate valuation methods and certain unobservable inputs, require management judgment and estimation, and may change over time.

e adjust the carrying value of our non-marketable equity investments to fair value for observable transactions of identical or similar investments of the same issuer or for impairments. All gains and losses on non-marketable equity securities, realized and unrealized, are recognized in other income (expense), which increases the volatility of our other income (expense). The unrealized gains and losses we record on our non-marketable equity securities in any particular period may differ significantly from the realized gains or losses we ultimately experience on such investments.

As a result of these factors, the value or liquidity of our cash equivalents, as well as our marketable and non-marketable securities could decline and result in a material impairment, which could adversely affect our financial condition and operating results.

We could be subject to changes in tax rates, the adoption of new U.S. or international tax legislation, or exposure to additional tax liabilities.

Our future income taxes could be negatively affected by earnings being lower than anticipated in jurisdictions that have lower statutory tax rates and higher than anticipated in jurisdictions that have higher statutory tax rates, the net gains and losses recognized by legal entities on certain hedges and related hedged intercompany and other transactions under our foreign exchange risk management program, changes in the valuation of our deferred tax

assets or liabilities, the application of different provisions of tax laws or changes in tax laws, regulations, or accounting principles (including changes in the interpretation of existing laws), as well as certain discrete items.

In addition, we are subject to regular review and audit by both domestic and foreign tax authorities. As a result, we have received, and may in the future receive, assessments in multiple jurisdictions, including in Europe, on various tax-related assertions, such as transfer-pricing adjustments or permanent-establishment claims. Any adverse outcome of such a review or audit could have a negative effect on our operating results and financial condition and could require us to change our business practices in a manner adverse to our business. It may also subject us to additional litigation and regulatory inquiries, resulting in the diversion of management's time and attention. In addition, the determination of our worldwide provision for income taxes and other tax liabilities requires significant judgment, and there are many transactions and calculations for which the ultimate tax determination is uncertain. Although we believe our estimates are reasonable, the ultimate tax outcome may differ from the amounts recorded in our financial statements and may affect our financial results in the period or periods for which such determination is made.

Furthermore, due to shifting economic and political conditions, tax policies, laws, or rates in various jurisdictions may be subject to significant changes in ways that impair our financial results. Various jurisdictions around the world have enacted or are considering digital services taxes, which could lead to inconsistent and potentially overlapping international tax regimes. The Organization for Economic Cooperation and Development (OECD) recently released proposals relating to its initiative for modernizing international tax rules, with the goal of having different countries implement a modernized and aligned international tax framework, but there can be no guarantee that this will occur.

In addition, in response to significant market volatility and disruptions to business operations resulting from the global spread of COVID-19, legislatures and taxing authorities in many jurisdictions in which we operate may propose changes to their tax rules. These changes could include modifications that have temporary effect, and more permanent changes. The impact of these potential new rules on us, our long-term tax planning, and our effective tax rate could be material.

The trading price for our Class A common stock and non-voting Class C capital stock may continue to be volatile.

The trading price of our stock has at times experienced substantial price volatility and may continue to be volatile.

In addition to the factors discussed in this report, the trading price of our Class A common stock and Class C capital stock may fluctuate widely in response to various factors, many of which are beyond our control, including, among others announcements by us or our competitors of acquisitions, divestitures, investments, new products, significant contracts, commercial relationships, or capital commitments; recommendations by securities analysts or changes in their earnings estimates; announcements about our or our competitors' earnings that are not in line with analyst expectations, the risk of which is enhanced, in our case, because it is our policy not to give guidance on earnings; commentary by industry and market professionals about our products, strategies, and other matters affecting our business and results, regardless of its accuracy; the volume of shares of Class A common stock and Class C capital stock available for public sale; sales of Class A common stock and Class C capital stock by us or by our stockholders (including sales by our directors, executive officers, and other employees); short sales, hedging, and other derivative transactions on shares of our Class A common stock and Class C capital stock; the size, timing and share class of any share repurchase program; and the perceived values of Class A common stock and Class C capital stock relative to one another.

In addition, the stock market in general, which can be affected by various factors, including overall economic and political conditions, and the market for technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies.

These broad market and industry factors may harm the market price of our Class A common stock and our Class C capital stock, regardless of our actual operating performance.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our headquarters are located in Mountain View, California. We also own and lease office and building space in the surrounding areas near our headquarters, which we believe is sufficient to accommodate anticipated future growth. In addition, we own and lease office/building space and research and development sites around the world, primarily in North America, Europe, South America, and Asia. We own and operate data centers in the U.S., Europe, South America, and Asia. We believe our existing facilities, both owned and leased, are in good condition and suitable for the conduct of our business.

ITEM 3. LEGAL PROCEEDINGS

For a description of our material pending legal proceedings, please see Legal Matters in Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K, which is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

As of October 2, 2015, Alphabet Inc. became the successor issuer of Google Inc. pursuant to Rule 12g-3(a) under the Exchange Act. Our Class A common stock has been listed on the Nasdaq Global Select Market under the symbol "GOOG" since August 19, 2004 and under the symbol "GOOGL" since April 3, 2014. Prior to August 19, 2004, there was no public market for our stock. Our Class B common stock is neither listed nor traded. Our Class C capital stock has been listed on the Nasdaq Global Select Market under the symbol "GOOG" since April 3, 2014.

Holders of Record

As of December 31, 2020, there were approximately 4,337 and 1,942 stockholders of record of our Class A common stock and Class C capital stock, respectively. Because many of our shares of Class A common stock and Class C capital stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders. As of December 31, 2020, there were approximately 64 stockholders of record of our Class B common stock.

Dividend Policy

We have never declared or paid any cash dividend on our common or capital stock. The primary use of capital continues to be to invest for the long term growth of the business. We regularly evaluate our cash and capital structure, including the size, pace and form of capital return to stockholders.

Issuer Purchases of Equity Securities

The following table presents information with respect to Alphabet's repurchases of Class C capital stock during the quarter ended December 31, 2020:

Period	Total Number of Shares Purchased (in thousands) (1)	Average Price Paid per Share (2)	Total Number of Shares Purchased as Part of Publicly Announced Programs (in thousands) (1)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (in millions)
October 1 - 31	1,869	$ 1,540.84	1,869	$ 22,667
November 1 - 30	1,640	$ 1,748.65	1,640	$ 19,799
December 1 - 31	1,205	$ 1,787.62	1,205	$ 17,645
Total	4,714		4,714	

(1) The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases or privately negotiated transactions, including through Rule 10b5-1 plans. The repurchase program does not have an expiration date. Please refer to Note 11 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for additional information related to share repurchases.

(2) Average price paid per share includes costs associated with the repurchases.

Stock Performance Graphs

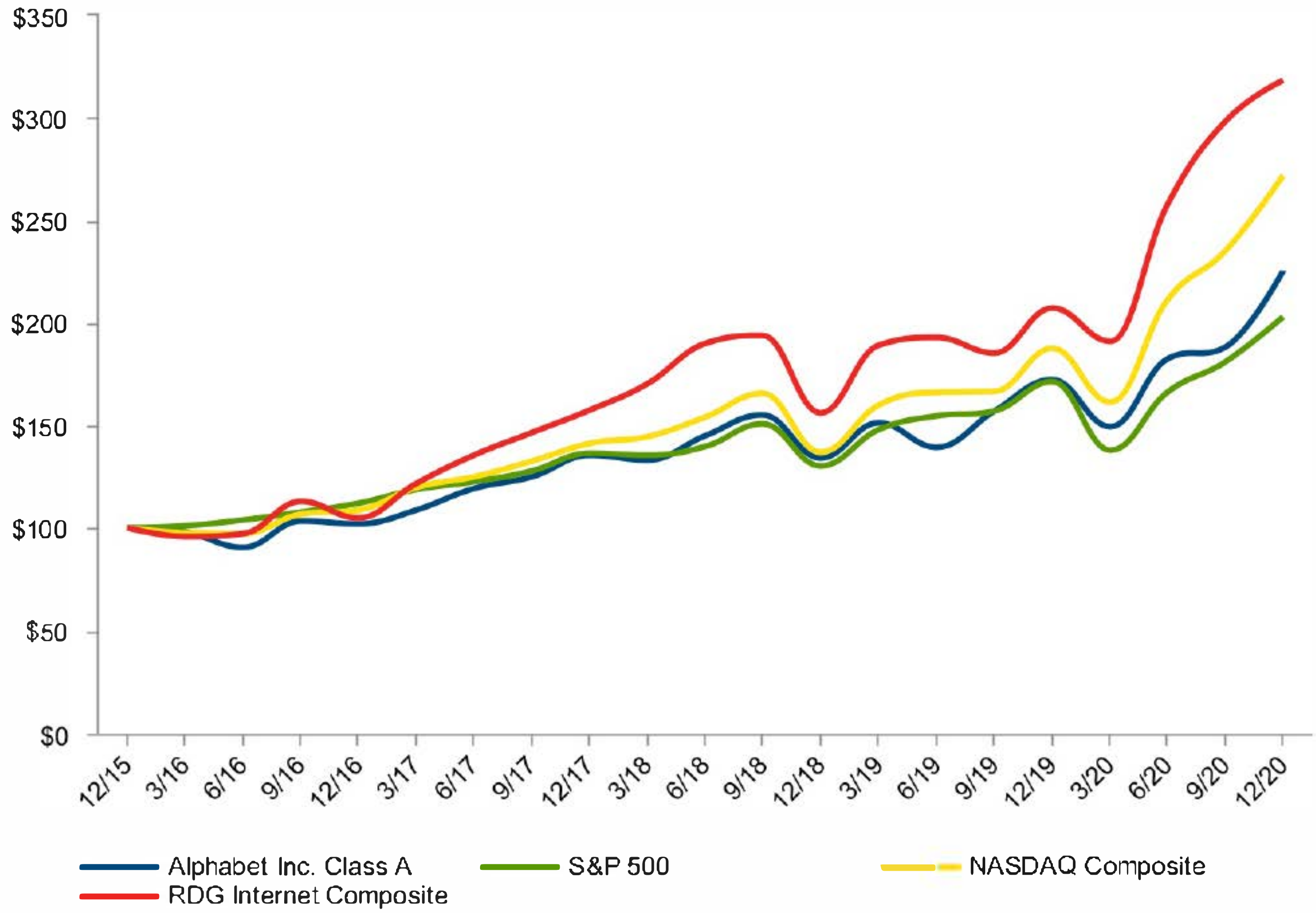
The graph below matches Alphabet Inc. Class A's cumulative 5-Year total shareholder return on common stock with the cumulative total returns of the S&P 500 index, the NASDAQ Composite index, and the RDG Internet Composite index. The graph tracks the performance of a $100 investment in our common stock and in each index (with the reinvestment of all dividends) from December 31, 2015 to December 31, 2020. The returns shown are based on historical results and are not intended to suggest future performance.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

ALPHABET INC. CLASS A COMMON STOCK

Among Alphabet Inc., the S&P 500 Index, the

NASDAQ Composite Index, and the RDG Internet Composite Index



*$100 invested on December 31, 2015 in stock or index, including reinvestment of dividends. Fiscal year ending December 31.

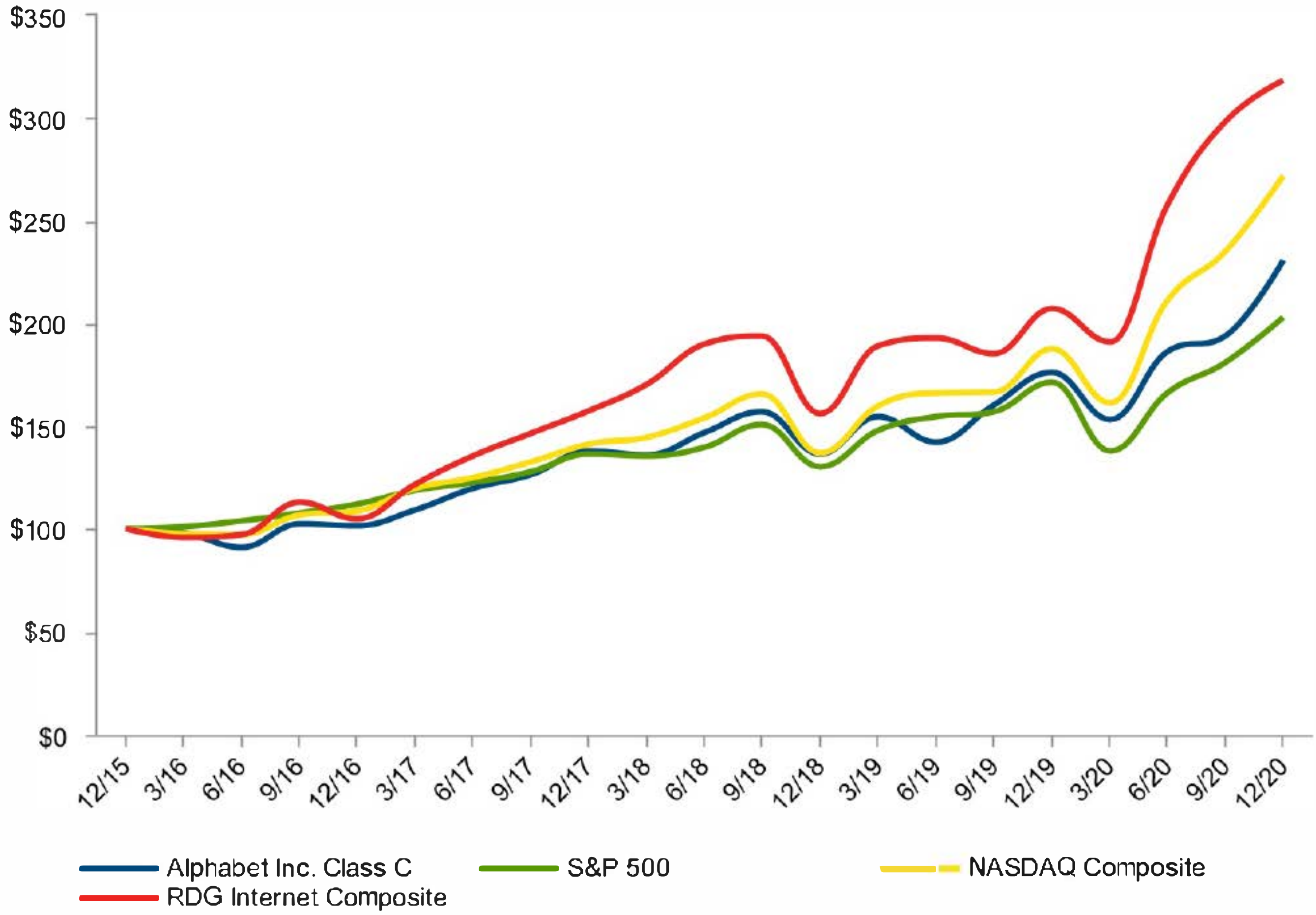
The graph below matches Alphabet Inc. Class C's cumulative 5-Year total shareholder return on capital stock with the cumulative total returns of the S&P 500 index, the NASDAQ Composite index, and the RDG Internet Composite index. The graph tracks the performance of a $100 investment in our Class C capital stock and in each index (with the reinvestment of all dividends) from December 31, 2015 to December 31, 2020. The returns shown are based on historical results and are not intended to suggest future performance.

COMPARISON OF CUMULATIVE TOTAL RETURN*

ALPHABET INC. CLASS C CAPITAL STOCK

Among Alphabet Inc., the S&P 500 Index, the

NASDAQ Composite Index, and the RDG Internet Composite Index



*$100 invested on December 31, 2015 in stock or in index, including reinvestment of dividends. Fiscal year ending December 31.

ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read in conjunction with Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations“ and our consolidated financial statements and the related notes appearing in Item 8 “Financial Statements and Supplementary Data“ of this Annual Report on Form 10-K. The historical results are not necessarily indicative of the results to be expected in any future period.

	Year Ended December 31,				
	2016	2017	2018	2019	2020
	(in millions, except per share amounts)				
Consolidated Statements of Income Data:					
Revenues	$ 90,272	$ 110,855	$ 136,819	$ 161,857	$ 182,527
Income from operations	$ 23,737	$ 26,178	$ 27,524	$ 34,231	$ 41,224
Net income	$ 19,478	$ 12,662	$ 30,736	$ 34,343	$ 40,269
Basic net income per share of Class A and B common stock	$ 28.32	$ 18.27	$ 44.22	$ 49.59	$ 59.15
Basic net income per share of Class C capital stock	$ 28.32	$ 18.27	$ 44.22	$ 49.59	$ 59.15
Diluted net income per share of Class A and B common stock	$ 27.85	$ 18.00	$ 43.70	$ 49.16	$ 58.61
Diluted net income per share of Class C capital stock	$ 27.85	$ 18.00	$ 43.70	$ 49.16	$ 58.61

	As of December 31,				
	2016	2017	2018	2019	2020
	(in millions)				
Consolidated Balance Sheet Data:					
Cash, cash equivalents, and marketable securities	$ 86,333	$ 101,871	$ 109,140	$ 119,675	$ 136,694
Total assets	$ 167,497	$ 197,295	$ 232,792	$ 275,909	$ 319,616
Total long-term liabilities	$ 11,705	$ 20,610	$ 20,544	$ 29,246	$ 40,238
Total stockholders' equity	$ 139,036	$ 152,502	$ 177,628	$ 201,442	$ 222,544

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Please read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and related notes included under Part II, Item 8 of this Annual Report on Form 10-K.

We have omitted discussion of 2018 results where it would be redundant to the discussion previously included in Part II, Item 7 of our 2019 Annual Report on Form 10-K.

Trends in Our Business

The following long-term trends have contributed to the results of our consolidated operations, and we anticipate that they will continue to affect our future results:

- **Users' behaviors and advertising continue to shift online as the digital economy evolves.**

The continuing shift from an offline to online world has contributed to the growth of our business since inception, contributing to revenue growth, and we expect that this online shift will continue to benefit our business.

- **Users are increasingly using diverse devices and modalities to access our products and services, and our advertising revenues are increasingly coming from new formats.**

Our users are accessing the Internet via diverse devices and modalities, such as smartphones, wearables and smart home devices, and want to feel connected no matter where they are or what they are doing. We seek to expand our products and services to stay in front of these trends in order to maintain and grow our business.

We generate our advertising revenues increasingly from different channels, including mobile, and newer advertising formats, and the margins from the advertising revenues from these channels and newer products have generally been lower than those from traditional desktop search. Additionally, as the market for a particular device type or modality matures, our revenues may be affected. For example, growth in the global smartphone market has slowed due to various factors, including increased market saturation in developed countries, which can affect our mobile advertising revenue growth rates.

We expect TAC paid to our distribution partners and Google Network Members to increase as our revenues grow and to be affected by changes in device mix; geographic mix; partner mix; partner agreement terms; the percentage of queries channeled through paid access points; product mix; the relative revenue growth rates of advertising revenues from different channels; and revenue share terms.

We expect these trends to continue to affect our revenue growth rates and put pressure on our overall margins.

- **As online advertising evolves, we continue to expand our product offerings which may affect our monetization.**

As interactions between users and advertisers change and as online user behavior evolves, we continue to expand and evolve our product offerings to serve their changing needs. Over time, we expect our monetization trends to fluctuate. For example, we have seen an increase in YouTube ads and Google Play ads, which monetize at a lower rate than our traditional search ads.

- **As users in developing economies increasingly come online, our revenues from international markets continue to increase and movements in foreign exchange rates affect such revenues.**

The shift to online, as well as the advent of the multi-device world, has brought opportunities outside of the U.S., including in emerging markets, such as India, where we continue to invest heavily and develop localized versions of our products and relevant advertising programs useful to our users in these markets. This has led to a trend of increased revenues from international markets over time, as regions with emerging markets, such as APAC, have demonstrated higher revenue growth rates. We expect that our results will continue to be affected by our performance in these markets, particularly as low-cost mobile devices become more available. This trend could impact our margins as developing markets initially monetize at a lower rate than more mature markets.

Our international revenues represent a significant portion of our revenues and are subject to fluctuations in foreign currency exchange rates relative to the U.S. dollar. While we have a foreign exchange risk management program designed to reduce our exposure to these fluctuations, this program does not fully offset their effect on our revenues and earnings.

- **The portion of our revenues that we derive from non-advertising revenues is increasing and may affect margins.**

Non-advertising revenues have grown over time. We expect this trend to continue as we focus on expanding our offerings to our users through products and services like Google Cloud, Google Play, hardware products, and YouTube subscriptions. Across these initiatives, we currently derive non-advertising revenues primarily from sales of apps, in-app purchases, digital content products, and hardware; and licensing and service fees, including fees received for Google Cloud services and subscription and other services. The margins on these revenues vary significantly and may be lower than the margins on our advertising revenues. A number of our Other Bets initiatives are in their initial development stages, and as such, the sources of revenues from these businesses could change over time and the revenues could be volatile.

- **As we continue to serve our users and expand our businesses, we will invest heavily in operating and capital expenditures.**

We continue to make significant R&D investments in areas of strategic focus such as advertising, cloud, machine learning, and search, as well as in new products and services. In addition, we expect to continue to invest in land and buildings for data centers and offices, and information technology assets, which includes servers and network equipment, to support the long-term growth of our business.

In addition, acquisitions and strategic investments are an important part of our strategy and use of capital, contributing to the breadth and depth of our offerings, expanding our expertise in engineering and other functional areas, and building strong partnerships around strategic initiatives. For example, in 2020 we announced our Google for India Digitization Fund to invest approximately $10 billion into India over the next 5-7 years through a mix of equity investments, partnerships, and operational, infrastructure and ecosystem investments.

- **We face continuing changes in regulatory conditions, laws and public policies, which could impact our business practices and financial results.**

Changes in social, political, economic, tax, and regulatory conditions or in laws and policies governing a wide range of topics and related legal matters have resulted in fines and caused us to change our business practices. As these global trends continue, for example the recent antitrust complaints filed by the U.S. Department of Justice and a number of state Attorneys General as well as the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission, our cost of doing business may increase and our ability to pursue certain business models or offer certain products or services may be limited.

- **Our employees are critical to our success and we expect to continue investing in them.**

Our employees are among our best assets and are critical for our continued success. We expect to continue hiring talented employees around the globe and to provide competitive compensation programs to our employees.

The Impact of COVID-19 on our Results and Operations

In late 2019, an outbreak of COVID-19 emerged and by March 11, 2020 was declared a global pandemic by the World Health Organization. Across the United States and the world, governments and municipalities instituted measures in an effort to control the spread of COVID-19, including quarantines, shelter-in-place orders, school closings, travel restrictions and the closure of non-essential businesses. The macroeconomic impacts of COVID-19 are significant and continue to evolve, as exhibited by, among other things, a rise in unemployment, changes in consumer behavior, and market volatility.

We began to observe the impact of COVID-19 and the related reductions in global economic activity on our financial results in March 2020 when, despite an increase in users' search activity, our advertising revenues declined compared to the prior year due to a shift of user search activity to less commercial topics and reduced spending by our advertisers. During the course of the quarter ended June 30, 2020, we observed a gradual return in user search activity to more commercial topics, followed by increased spending by our advertisers that continued throughout the second half of 2020.

We continue to assess the realized and potential credit deterioration of our customers due to changes in the macroeconomic environment, which has been reflected in our allowance for credit losses for accounts receivable. Additionally, over the course of the year we experienced variability in our margins as many of our expenses are less variable in nature and/or may not correlate to changes in revenues, including costs associated with our data centers and facilities as well as employee compensation. Also, market volatility has contributed to fluctuations in the valuation of our equity investments.

While we continued to make investments in land and buildings for data centers, offices and information technology, in 2020 we slowed the pace of our investments, primarily as it relates to office facilities, as a result of COVID-19.

The ongoing impact of COVID-19 on our business continues to evolve and be unpredictable. For example, to the extent the pandemic disrupts economic activity globally we, like other businesses, are not immune to continued adverse impacts to our business, operations and financial results from volatility in advertising spending, changes in user behavior and preferences, credit deterioration and liquidity of our customers, depressed economic activity, or volatility in capital markets. The ongoing impact will depend on a number of factors, including the duration and severity of the pandemic; the uneven impact to certain industries; advances in testing, treatment and prevention including vaccines; and the macroeconomic impact of government measures to contain the spread of the virus and related government stimulus measures.

To address the potential impact to our business, over the near-term, we continue to evaluate the pace of our investment plans, including, but not limited to, our hiring, investments in data centers, servers, network equipment, real estate and facilities, marketing and travel spending, as well as taking certain measures to support our customers, our overall workforce, and communities we operate in. As we look to return our workforce in more locations back to the office in 2021, we may experience increased costs as we prepare our facilities for a safe return to work environment and experiment with hybrid work models. At the same time, we believe the current environment is accelerating digital transformation and we remain focused on innovating and investing in the services we offer to consumers and businesses. For example, as it relates to Google Cloud, we continue to invest aggressively around the globe in our go-to-market capabilities, product development and technical infrastructure to support long term growth. The ongoing impact of COVID-19 and the extent of these measures we have taken and the additional measures that we may implement could have a material impact on our financial results. Our past results may not be indicative of our future performance, and historical trends in our financial results may differ materially.

Executive Overview

The following table summarizes our consolidated financial results for the years ended December 31, 2019 and 2020 (in millions, except for per share information and percentages).

	Year Ended December 31,	
	2019	2020
Revenues	$161,857	$182,527
Increase in revenues year over year	18 %	13 %
Increase in constant currency revenues year over year	20 %	14 %
Operating income[(1)]	$ 34,231	$ 41,224
Operating margin[(1)]	21 %	23 %
Other income (expense), net	$ 5,394	$ 6,858
Net Income[(1)]	$ 34,343	$ 40,269
Diluted EPS[(1)]	$ 49.16	$ 58.61

(1) Results for 2019 include the effect of the $1.7 billion EC fine. See Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information.

- Total revenues were $182.5 billion, an increase of 13% year over year, primarily driven by an increase in Google Services segment revenues of $16.8 billion or 11% and an increase in Google Cloud segment revenues of $4.1 billion or 46%. Revenues from the United States, EMEA, APAC, and Other Americas were $85.0 billion, $55.4 billion, $32.6 billion, and $9.4 billion, respectively.
- Total cost of revenues was $84.7 billion, an increase of 18% year over year. TAC was $32.8 billion, an increase of 9% year over year, primarily driven by an increase in revenues subject to TAC. Other cost of revenues were $51.9 billion, an increase of 24% year over year, primarily driven by an increase in data centers and other operations costs and content acquisition costs.

- Operating expenses were $56.6 billion, an increase of 5% year over year primarily driven by headcount growth and partially offset by declines in advertising and promotional expenses and travel and entertainment expenses.

Other information:

- Operating cash flow was $65.1 billion.
- Capital expenditures, which primarily included investments in technical infrastructure, were $22.3 billion.
- Number of employees was 135,301 as of December 31, 2020. The majority of new hires during the year were engineers and product managers.

Our Segments

Beginning in the fourth quarter of 2020, we report our segment results as Google Services, Google Cloud, and Other Bets:

- Google Services includes products and services such as ads, Android, Chrome, hardware, Google Maps, Google Play, Search, and YouTube. Google Services generates revenues primarily from advertising; sales of apps, in-app purchases, digital content products, and hardware; and fees received for subscription-based products such as YouTube Premium and YouTube TV.
- Google Cloud includes Google's infrastructure and data analytics platforms, collaboration tools, and other services for enterprise customers. Google Cloud generates revenues primarily from fees received for Google Cloud Platform ("GCP") services and Google Workspace (formerly known as G Suite) collaboration tools.
- Other Bets is a combination of multiple operating segments that are not individually material. Revenues from the Other Bets are derived primarily through the sale of internet services as well as licensing and R&D services.

Unallocated corporate costs primarily include corporate initiatives, corporate shared costs, such as finance and legal, including fines and settlements, as well as costs associated with certain shared research and development activities. Additionally, hedging gains (losses) related to revenue are included in corporate costs.

Financial Results

Revenues

The following table presents our revenues by type (in millions).

	Year Ended December 31,	
	2019	2020
Google Search & other	$ 98,115	$ 104,062
YouTube ads	15,149	19,772
Google Network Members' properties	21,547	23,090
Google advertising	134,811	146,924
Google other	17,014	21,711
Google Services total	151,825	168,635
Google Cloud	8,918	13,059
Other Bets	659	657
Hedging gains (losses)	455	176
Total revenues	$ 161,857	$ 182,527

Google Services

Google advertising revenues

Our advertising revenue growth, as well as the change in paid clicks and cost-per-click on Google Search & other properties and the change in impressions and cost-per-impression on Google Network Members' properties and the correlation between these items, have been affected and may continue to be affected by various factors, including:

- advertiser competition for keywords;
- changes in advertising quality, formats, delivery or policy;

- changes in device mix;
- changes in foreign currency exchange rates;
- fees advertisers are willing to pay based on how they manage their advertising costs;
- general economic conditions including the impact of COVID-19;
- seasonality; and
- traffic growth in emerging markets compared to more mature markets and across various advertising verticals and channels.

Our advertising revenue growth rate has been affected over time as a result of a number of factors, including challenges in maintaining our growth rate as revenues increase to higher levels; changes in our product mix; changes in advertising quality or formats and delivery; the evolution of the online advertising market; increasing competition; our investments in new business strategies; query growth rates; and shifts in the geographic mix of our revenues. We also expect that our revenue growth rate will continue to be affected by evolving user preferences, the acceptance by users of our products and services as they are delivered on diverse devices and modalities, our ability to create a seamless experience for both users and advertisers, and movements in foreign currency exchange rates.

Google advertising revenues consist primarily of the following:

- Google Search & other consists of revenues generated on Google search properties (including revenues from traffic generated by search distribution partners who use Google.com as their default search in browsers, toolbars, etc.) and other Google owned and operated properties like Gmail, Google Maps, and Google Play;
- YouTube ads consists of revenues generated on YouTube properties; and
- Google Network Members' properties consist of revenues generated on Google Network Members' properties participating in AdMob, AdSense, and Google Ad Manager.

Google Search & other

Google Search & other revenues increased $5,947 million from 2019 to 2020. The overall growth was primarily driven by interrelated factors including increases in search queries resulting from ongoing growth in user adoption and usage, primarily on mobile devices, growth in advertiser spending primarily in the second half of the year, and improvements we have made in ad formats and delivery. This increase was partially offset by a decline in advertiser spending primarily in the first half of the year driven by the impact of COVID-19.

YouTube ads

YouTube ads revenues increased $4,623 million from 2019 to 2020. Growth was primarily driven by our direct response advertising products, which benefited from improvements to ad formats and delivery and increased advertiser spending. Brand advertising products also contributed to growth despite revenues being adversely impacted by a decline in advertiser spending primarily in the first half of the year driven by the impact of COVID-19.

Google Network Members' properties

Google Network Members' properties revenues increased $1,543 million from 2019 to 2020. The growth was primarily driven by strength in AdMob and Google Ad Manager.

Use of Monetization Metrics

Paid clicks for our Google Search & other properties represent engagement by users and include clicks on advertisements by end-users on Google search properties and other owned and operated properties including Gmail, Google Maps, and Google Play. Historically, we included certain viewed YouTube engagement ads and the related revenues in our paid clicks and cost-per-click monetization metrics. Over time, advertising on YouTube has expanded to multiple advertising formats and the type of viewed engagement ads historically included in paid clicks and cost-per-click metrics have increasingly covered a smaller portion of YouTube advertising revenues. As a result, we removed these ads and the related revenues from the paid clicks and cost-per-click metrics for the current and historical periods presented. The revised metrics provide a better understanding of monetization trends on the properties included within Google Search & other, as they now more closely correlate with the related changes in revenues.

mpressions for our Google Network Members' properties include impressions displayed to users served on Google Network Members' properties participating primarily in AdMob, AdSense and Google Ad Manager.

Cost-per-click is defined as click-driven revenues divided by our total number of paid clicks and represents the average amount we charge advertisers for each engagement by users.

Cost-per-impression is defined as impression-based and click-based revenues divided by our total number of impressions and represents the average amount we charge advertisers for each impression displayed to users.

As our business evolves, we periodically review, refine and update our methodologies for monitoring, gathering, and counting the number of paid clicks on our Google Search & other properties and the number of impressions on Google Network Members' properties and for identifying the revenues generated by click activity on our Google Search & other properties and the revenues generated by impression activity on Google Network Members' properties.

Paid clicks and cost-per-click

The following table presents changes in our paid clicks and cost-per-click (expressed as a percentage):

	Year Ended December 31,	
	2019	2020
Paid clicks change	23 %	19 %
Cost-per-click change	(6)%	(10)%

Paid clicks increased from 2019 to 2020 primarily due to an increase in clicks due to interrelated factors, resulting from ongoing growth in user adoption and usage, primarily on mobile devices; continued growth in advertiser activity; and improvements we have made in ad formats and delivery. Growth was also driven by an increase in clicks relating to ads on Google Play. The positive effect on our revenues from an increase in paid clicks was partially offset by a decrease in the cost-per-click paid by our advertisers. The decrease in cost-per-click was primarily driven by reduced advertiser spending in response to COVID-19 primarily during the first half of the year. The decrease in cost-per-click was also affected by changes in device mix, geographic mix, ongoing product changes, product mix, property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies.

Paid clicks increased from 2018 to 2019 primarily due to an increase in clicks due to interrelated factors, including an increase in search queries resulting from ongoing growth in user adoption and usage, primarily on mobile devices; continued growth in advertiser activity; and improvements we have made in ad formats and delivery. Growth was also driven by an increase in clicks relating to ads on Google Play. The positive effect on our revenues from an increase in paid clicks was partially offset by a decrease in the cost-per-click paid by our advertisers. The decrease in cost-per-click was driven by changes in device mix, geographic mix, ongoing product changes, product mix, property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies.

Impressions and cost-per-impression

The following table presents changes in our impressions and cost-per-impression (expressed as a percentage):

	Year Ended December 31,
	2020
Impressions change	15 %
Cost-per-impression change	(8)%

mpressions increased from 2019 to 2020 primarily due to growth in Google Ad Manager. The positive effect on our revenues from an increase in impressions was partially offset by a decrease in the cost-per-impression paid by our advertisers which was driven by a reduction in advertiser spending in response to COVID-19, primarily during the first half of the year, as well as the effect of a combination of factors including ongoing product and policy changes and improvements we have made in ad formats and delivery, changes in device mix, geographic mix, product mix, property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies.

<u>Google other revenues</u>

Google other revenues consist primarily of revenues from:

- Google Play, which includes revenues from sales of apps and in-app purchases (which we recognize net of payout to developers) and digital content sold in the Google Play store;
- hardware, including Google Nest home products, Pixelbooks, Pixel phones and other devices;
- YouTube non-advertising, including YouTube Premium and YouTube TV subscriptions and other services; and
- other products and services.

Google other revenues increased $4,697 million from 2019 to 2020. The growth was primarily driven by Google Play and YouTube non-advertising. Growth for Google Play was primarily driven by sales of apps and in-app purchases, which benefited from elevated user engagement partially due to the impact of COVID-19. Growth for YouTube non-advertising was primarily driven by an increase in paid subscribers.

Over time, our growth rate for Google other revenues may be affected by the seasonality associated with new product and service launches as well as market dynamics.

Google Cloud

Our Google Cloud revenues increased $4,141 million from 2019 to 2020. The growth was primarily driven by GCP followed by our Google Workspace offerings. Our infrastructure and our data and analytics platform products were the largest drivers of growth in GCP.

Over time, our growth rate for Google Cloud revenues may be affected by customer usage, market dynamics, as well as new product and service launches

Revenues by Geography

The following table presents our revenues by geography as a percentage of revenues, determined based on the addresses of our customers:

	Year Ended December 31,	
	2019	2020
United States	46 %	47 %
EMEA	31 %	30 %
APAC	17 %	18 %
Other Americas	6 %	5 %

For further details on revenues by geography, see Note 2 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Use of Constant Currency Revenues and Constant Currency Revenue Percentage Change

The effect of currency exchange rates on our business is an important factor in understanding period to period comparisons. Our international revenues are favorably affected as the U.S. dollar weakens relative to other foreign currencies, and unfavorably affected as the U.S. dollar strengthens relative to other foreign currencies. Our revenues are also favorably affected by net hedging gains and unfavorably affected by net hedging losses.

We use non-GAAP constant currency revenues and non-GAAP percentage change in constant currency revenues for financial and operational decision-making and as a means to evaluate period-to-period comparisons. We believe the presentation of results on a constant currency basis in addition to U.S. Generally Accepted Accounting Principles ("GAAP") results helps improve the ability to understand our performance because they exclude the effects of foreign currency volatility that are not indicative of our core operating results.

Constant currency information compares results between periods as if exchange rates had remained constant period over period. We define constant currency revenues as total revenues excluding the effect of foreign exchange rate movements and hedging activities, and use it to determine the constant currency revenue percentage change on a year-on-year basis. Constant currency revenues are calculated by translating current period revenues using prior period exchange rates, as well as excluding any hedging effects realized in the current period.

Constant currency revenue percentage change is calculated by determining the change in period revenues over prior period revenues where current period foreign currency revenues are translated using prior period exchange rates and hedging effects are excluded from revenues of both periods.

These results should be considered in addition to, not as a substitute for, results reported in accordance with GAAP. Results on a constant currency basis, as we present them, may not be comparable to similarly titled measures used by other companies and are not a measure of performance presented in accordance with GAAP.

The following table presents the foreign exchange effect on our international revenues and total revenues (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
EMEA revenues	$ 50,645	$ 55,370
Exclude foreign exchange effect on current period revenues using prior year rates	2,397	(111)
EMEA constant currency revenues	$ 53,042	$ 55,259
Prior period EMEA revenues	$ 44,739	$ 50,645
EMEA revenue percentage change	13 %	9 %
EMEA constant currency revenue percentage change	19 %	9 %
APAC revenues	$ 26,928	$ 32,550
Exclude foreign exchange effect on current period revenues using prior year rates	388	11
APAC constant currency revenues	$ 27,316	$ 32,561
Prior period APAC revenues	$ 21,341	$ 26,928
APAC revenue percentage change	26 %	21 %
APAC constant currency revenue percentage change	28 %	21 %
Other Americas revenues	$ 8,986	$ 9,417
Exclude foreign exchange effect on current period revenues using prior year rates	541	964
Other Americas constant currency revenues	$ 9,527	$ 10,381
Prior period Other Americas revenues	$ 7,608	$ 8,986
Other Americas revenue percentage change	18 %	5 %
Other Americas constant currency revenue percentage change	25 %	16 %
United States revenues	$ 74,843	$ 85,014
United States revenue percentage change	18 %	14 %
Hedging gains (losses)	455	176
Total revenues	$ 161,857	$ 182,527
Total constant currency revenues	$ 164,728	$ 183,215
Prior period revenues, excluding hedging effect[1]	$ 136,957	$ 161,402
Total revenue percentage change	18 %	13 %
Total constant currency revenue percentage change	20 %	14 %

(1) Total revenues and hedging gains (losses) for the year ended December 31, 2018 were $136,819 million and $(138) million, respectively.

EMEA revenue percentage change from 2019 to 2020 was not significantly affected by foreign currency exchange rates, primarily due to the U.S. dollar weakening relative to the Euro offset by the U.S. dollar strengthening relative to the Turkish lira and Russian ruble.

APAC revenue percentage change from 2019 to 2020 was not significantly affected by foreign currency exchange rates, primarily due to the U.S. dollar strengthening relative to the Indian rupee, partially offset by the U.S. dollar weakening relative to the Japanese yen.

Other Americas revenue percentage change from 2019 to 2020 was unfavorably affected by changes in foreign currency exchange rates, primarily due to the U.S. dollar strengthening relative to the Brazilian real and Argentine peso.

Costs and Operating Expenses

Cost of Revenues

Cost of revenues includes TAC which are paid to our distribution partners who make available our search access points and services, and amounts paid to Google Network Members primarily for ads displayed on their properties. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.

The cost of revenues as a percentage of revenues generated from ads placed on Google Network Members' properties are significantly higher than the cost of revenues as a percentage of revenues generated from ads placed on Google properties (which includes Google Search & other and YouTube ads), because most of the advertiser revenues from ads served on Google Network Members' properties are paid as TAC to our Google Network Members.

Additionally, other cost of revenues (which is the cost of revenues excluding TAC) includes the following:

- Content acquisition costs primarily related to payments to content providers from whom we license video and other content for distribution on YouTube advertising and subscription services and Google Play (we pay fees to these content providers based on revenues generated or a flat fee);
- Expenses associated with our data centers (including bandwidth, compensation expenses including stock-based compensation ("SBC"), depreciation, energy, and other equipment costs) as well as other operations costs (such as content review and customer support costs). These costs are generally less variable in nature and may not correlate with related changes in revenues; and
- Inventory related costs for hardware we sell.

The following tables present our cost of revenues, including TAC (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
TAC	$ 30,089	$ 32,778
Other cost of revenues	41,807	51,954
Total cost of revenues	$ 71,896	$ 84,732
Total cost of revenues as a percentage of revenues	44.4 %	46.4 %

Cost of revenues increased $12,836 million from 2019 to 2020. The increase was due to increases in other cost of revenues and TAC of $10,147 million and $2,689 million, respectively.

The increase in other cost of revenues from 2019 to 2020 was due to an increase in data center and other operations costs and an increase in content acquisition costs primarily for YouTube. This increase was partially offset by a decline in hardware costs.

The increase in TAC from 2019 to 2020 was due to increases in TAC paid to distribution partners and to Google Network Members, driven by growth in revenues subject to TAC. The TAC rate was 22.3% in both 2019 and 2020. The TAC rate on Google properties revenues and the TAC rate on Google Network revenues were both substantially consistent from 2019 to 2020.

Over time, cost of revenues as a percentage of total revenues may be affected by a number of factors, including the following:

- The amount of TAC paid to distribution partners, which is affected by changes in device mix, geographic mix, partner mix, partner agreement terms such as revenue share arrangements, and the percentage of queries channeled through paid access points;
- The amount of TAC paid to Google Network Members, which is affected by a combination of factors such as geographic mix, product mix, and revenue share terms;
- Relative revenue growth rates of Google properties and Google Network Members' properties;
- Certain costs that are less variable in nature and may not correlate with the related revenues;
- Costs associated with our data centers and other operations to support ads, Google Cloud, Search, YouTube and other products;
- Content acquisition costs, which are primarily affected by the relative growth rates in our YouTube advertising and subscription revenues;
- Costs related to hardware sales; and

- Increased proportion of non-advertising revenues, which generally have higher costs of revenues, relative to our advertising revenues.

Research and Development

The following table presents our R&D expenses (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
Research and development expenses	$ 26,018	$ 27,573
Research and development expenses as a percentage of revenues	16.1 %	15.1 %

R&D expenses consist primarily of:

- Compensation expenses (including SBC) for engineering and technical employees responsible for R&D of our existing and new products and services;
- Depreciation expenses;
- Equipment-related expenses; and
- Professional services fees primarily related to consulting and outsourcing services.

R&D expenses increased $1,555 million from 2019 to 2020. The increase was primarily due to an increase in compensation expenses of $1,619 million, largely resulting from a 11% increase in headcount and partially offset by higher compensation charges in certain Other Bets in 2019. Additionally, the increase in R&D expenses was partially offset by a decrease in travel and entertainment expenses of $383 million.

Over time, R&D expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues. In addition, R&D expenses may be affected by a number of factors including continued investment in ads, Android, Chrome, Google Cloud, Google Play, hardware, machine learning, Other Bets, Search and YouTube.

Sales and Marketing

The following table presents our sales and marketing expenses (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
Sales and marketing expenses	$ 18,464	$ 17,946
Sales and marketing expenses as a percentage of revenues	11.4 %	9.8 %

Sales and marketing expenses consist primarily of:

- Advertising and promotional expenditures related to our products and services; and
- Compensation expenses (including SBC) for employees engaged in sales and marketing, sales support, and certain customer service functions.

Sales and marketing expenses decreased $518 million from 2019 to 2020. The decrease was primarily due to a decrease in advertising and promotional expenses of $1,395 million, as we reduced spending and paused or rescheduled campaigns and changed some events to digital-only formats as a result of COVID-19, and a decrease in travel and entertainment expenses of $371 million. The decrease was partially offset by an increase in compensation expenses of $1,347 million, largely resulting from an 8% increase in headcount.

Over time, sales and marketing expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues. In addition, sales and marketing expenses may be affected by a number of factors including the seasonality associated with new product and service launches and strategic decisions regarding the timing and extent of our spending.

General and Administrative

The following table presents our general and administrative expenses (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
General and administrative expenses	$ 9,551	$ 11,052
General and administrative expenses as a percentage of revenues	5.9 %	6.1 %

General and administrative expenses consist primarily of:

- Compensation expenses (including SBC) for employees in our finance, human resources, information technology, and legal organizations;
- Depreciation;

- Equipment-related expenses;
- Legal-related expenses; and
- Professional services fees primarily related to audit, information technology consulting, outside legal, and outsourcing services.

General and administrative expenses increased $1,501 million from 2019 to 2020. The increase was primarily due to an increase in compensation expenses of $887 million, largely resulting from a 16% increase in headcount. In addition, there was an increase of $440 million related to allowance for credit losses for accounts receivable. The increase was partially offset by a $554 million charge recognized in 2019 relating to a legal settlement.

Over time, general and administrative expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues, the effect of discrete items such as legal settlements, or allowances for credit losses for accounts receivable.

European Commission Fines

In March 2019, the EC announced its decision that certain contractual provisions in agreements that Google had with AdSense for Search partners infringed European competition law. The EC decision imposed a €1.5 billion ($1.7 billion as of March 20, 2019) fine, which was accrued in the first quarter of 2019.

Please refer to Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information.

Segment Profitability

The following table presents our segment operating income (loss) (in millions). For comparative purposes, amounts in prior periods have been recast.

	Year Ended December 31,		
	2018	2019	2020
Operating income (lo)			
Google Services	$ 43,137	$ 48,999	$ 54,606
Google Cloud	(4,348)	(4,645)	(5,607)
Other Bets	(3,358)	(4,824)	(4,476)
Corporate co t , unallocated[(1)]	(7,907)	(5,299)	(3,299)
Total income from operations	$ 27,524	$ 34,231	$ 41,224

(1) Corporate costs, unallocated includes a fine of $5.1 billion for the year ended December 31, 2018 and a fine and legal settlement totaling $2.3 billion for the year ended December 31, 2019.

Google Services

Google services operating income increased $5,607 million from 2019 to 2020. The increase was primarily driven by an increase in revenues partially offset by increases in content acquisition costs primarily for YouTube, data center and other operations costs, and TAC. Additionally, there was an increase in operating expenses primarily driven by an increase in compensation expenses (including SBC) largely due to increases in headcount. Operating income benefited from a decline in hardware costs.

Google services operating income increased $5,862 million from 2018 to 2019. The increase was primarily driven by an increase in revenues partially offset by increases in TAC, data center and other operations costs, and content acquisition costs primarily for YouTube. Additionally, there was an increase in operating expenses primarily driven by an increase in compensation expenses (including SBC) largely due to an increase in headcount.

Google Cloud

Google Cloud operating loss increased $962 million from 2019 to 2020 and increased $297 million from 2018 to 2019. The increase in operating loss in both periods was driven by an increase in total expenses of $5,103 million from 2019 to 2020 and $3,377 million from 2018 to 2019. Operating expenses increased primarily due to compensation expenses (including SBC), largely driven by an increase in headcount. Additionally, data center and other operating costs increased in both periods.

Other Bets

Other Bets operating loss decreased $348 million from 2019 to 2020 and increased $1,466 million from 2018 to 2019. The fluctuations were primarily driven by compensation expenses (including SBC).

Other Income (Expense), Net

The following table presents other income (expense), net, (in millions):

	Year Ended December 31,	
	2019	2020
Other income (expense), net	$ 5,394	$ 6,858

Other income (expense), net, increased $1,464 million from 2019 to 2020. The change was primarily driven by an increase in net gains on equity and debt securities of $3,519 million, partially offset by a $902 million loss resulting from our equity derivatives, which hedged the changes in fair value of certain marketable equity securities, and a decrease in interest income of $562 million.

Over time, other income (expense), net, may be affected by market dynamics and other factors. Equity values generally change daily for marketable equity securities and upon the occurrence of observable price changes or upon impairment of non-marketable equity securities. In addition, volatility in the global economic climate and financial markets, including the effects of COVID-19, could result in a significant change in the value of our investments. Fluctuations in the value of these investments has, and we expect will continue to, contribute to volatility of OI&E in future periods. For additional information about our investments, see Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Provision for Income Taxes

The following table presents our provision for income taxes (in millions, except for effective tax rate):

	Year Ended December 31,	
	2019	2020
Provision for income taxes	$ 5,282	$ 7,813
Effective ta rate	13 3 %	16 2 %

Our provi ion for income ta e and our effective ta rate increa ed from 2019 to 2020 The increa e in the provi ion for income ta e and our effective ta rate i primarily due to benefit related to the re olution of multi year audit in 2019 that did not recur in 2020, higher earning in countrie that have higher tatutory rate re ulting from the change in our corporate legal entity tructure implemented a of December 31, 2019, and an increa e in valuation allowance for net deferred ta a et that are not likely to be realized relating to certain of our Other Bet , partially off et by an increa e in the U S federal Foreign Derived Intangible Income ta deduction benefit

See Note 14 of the Note to Con olidated Financial Statement included in Part II, Item 8 of thi Annual Report on Form 10 K for further information

We e pect our future effective ta rate to be affected by the geographic mi of earning in countrie with different tatutory rate Additionally, our future effective ta rate may be affected by change in the valuation of our deferred ta a et or liabilitie , or change in ta law , regulation , or accounting principle , a well a certain di crete item

Quarterly Results of Operations

The following tables presenting our quarterly results of operations should be read in conjunction with the consolidated financial statements and related notes included in Part II, Item 8 of this Annual Report on Form 10-K. We have prepared the unaudited information on the same basis as our audited consolidated financial statements. Our operating results for any quarter are not necessarily indicative of results for any future quarters or for a full year.

The following table presents our unaudited quarterly results of operations for the eight quarters ended December 31, 2020. This table includes all adjustments, consisting only of normal recurring adjustments, that we consider necessary for a fair presentation of our consolidated financial position and operating results for the quarters presented. Seasonal fluctuations in internet usage and advertiser expenditures, underlying business trends such as traditional retail seasonality and macroeconomic conditions have affected, and are likely to continue to affect, our business (including developments and volatility arising from COVID-19). Commercial queries typically increase significantly in the fourth quarter of each year. These seasonal trends have caused, and will likely continue to cause, fluctuations in our quarterly results, including fluctuations in sequential revenue growth rates.

	Quarter Ended							
	Mar 31, 2019	Jun 30, 2019	Sept 30, 2019	Dec 31, 2019	Mar 31, 2020	Jun 30, 2020	Sept 30, 2020	Dec 31, 2020
	(In millions, except per share amounts) (unaudited)							
Consolidated Statements of Income Data:								
Revenues	$ 36,339	$ 38,944	$ 40,499	$ 46,075	$ 41,159	$ 38,297	$ 46,173	56,898
Co t and e pen e								
Cost of revenues	16,012	17,296	17,568	21,020	18,982	18,553	21,117	26,080
Research and development	6,029	6,213	6,554	7,222	6,820	6,875	6,856	7,022
Sales and marketing	3,905	4,212	4,609	5,738	4,500	3,901	4,231	5,314
General and administrative	2,088	2,043	2,591	2,829	2,880	2,585	2,756	2,831
European Commission fine	1,697	0	0	0	0	0	0	0
Total costs and expenses	29,731	29,764	31,322	36,809	33,182	31,914	34,960	41,247
Income from operation	6,608	9,180	9,177	9,266	7,977	6,383	11,213	15,651
Other income (expense), net	1,538	2,967	(549)	1,438	(220)	1,894	2,146	3,038
Income before income taxes	8,146	12,147	8,628	10,704	7,757	8,277	13,359	18,689
Provision for income taxes	1,489	2,200	1,560	33	921	1,318	2,112	3,462
Net income	$ 6,657	$ 9,947	$ 7,068	$ 10,671	$ 6,836	$ 6,959	$ 11,247	15,227
Basic net income per share of Class A and B common stock and Class C capital stock	$ 9.58	$ 14.33	$ 10.20	$ 15.49	$ 9.96	$ 10.21	$ 16.55	$ 22.54
Diluted net income per share of Class A and B common stock and Class C capital stock	$ 9.50	$ 14.21	$ 10.12	$ 15.35	$ 9.87	$ 10.13	$ 16.40	$ 22.30

Financial Condition

Cash, Cash Equivalents, and Marketable Securities

As of December 31, 2020, we had $136.7 billion in cash, cash equivalents, and short-term marketable securities. Cash equivalents and marketable securities are comprised of time deposits, money market funds, highly liquid government bonds, corporate debt securities, mortgage-backed and asset-backed securities and marketable equity securities.

Sources, Uses of Cash and Related Trends

Our principal sources of liquidity are our cash, cash equivalents, and marketable securities, as well as the cash flow that we generate from our operations. The primary use of capital continues to be to invest for the long term growth of the business. We regularly evaluate our cash and capital structure, including the size, pace and form of capital return to stockholders.

The following table presents our cash flows (in millions):

	Year Ended December 31,	
	2019	2020
Net cash provided by operating activities	$ 54,520	$ 65,124
Net cash used in investing activities	$ (29,491)	$ (32,773)
Net ca h u ed in financing activitie	$ (23,209)	$ (24,408)

Cash Provided by Operating Activities

Our large t ource of ca h provided by our operation are adverti ing revenue generated by Google Search & other propertie , Google Network Member ' propertie and YouTube ad Additionally, we generate ca h through ale of app , in app purcha e , digital content product , and hardware; and licen ing and ervice fee including fee received for Google Cloud offering and ub cription ba ed product

Our primary u e of ca h from our operating activitie include compen ation and related co t , payment to our di tribution partner and Google Network Member , and payment for content acqui ition co t In addition, u e of ca h from operating activitie include hardware inventory co t , income ta e , and other general corporate e penditure

Net ca h provided by operating activitie increa ed from 2019 to 2020 primarily due to the net effect of increa e in ca h received from revenue and ca h paid for co t of revenue and operating e pen e , and change in operating a et and liabilitie

Cash Used in Investing Activities

Ca h provided by inve ting activitie con i t primarily of maturitie and ale of our inve tment in marketable and non marketable ecuritie Ca h u ed in inve ting activitie con i t primarily of purcha e of marketable and non marketable ecuritie , purcha e of property and equipment, and payment for acqui ition

Net ca h u ed in inve ting activitie increa ed from 2019 to 2020 primarily due to a net increa e in purcha e of ecuritie , partially off et by decrea e in payment for acqui ition and purcha e of property and equipment The net decrea e in purcha e of property and equipment wa driven by decrea e in purcha e of land and building for office a well a data center con truction, partially off et by increa e in purcha e of erver

Cash Used in Financing Activities

Ca h provided by financing activitie con i t primarily of proceed from i uance of debt and proceed from the ale of intere t in con olidated entitie Ca h u ed in financing activitie con i t primarily of repurcha e of capital tock, net payment related to tock ba ed award activitie , and repayment of debt

Net ca h u ed in financing activitie increa ed from 2019 to 2020 primarily due to an increa e in ca h payment for repurcha e of capital tock, partially off et by increa e in net proceed from i uance of debt and proceed from the ale of intere t in con olidated entitie

Liquidity and Material Cash Requirements

We e pect e i ting ca h, ca h equivalent , hort term marketable ecuritie , ca h flow from operation and financing activitie to continue to be ufficient to fund our operating activitie and ca h commitment for inve ting and financing activitie for at lea t the ne t 12 month and thereafter for the fore eeable future

A of December 31, 2020, we had long term ta e payable of $6 5 billion related to a one time tran ition ta payable incurred as a result of the U.S. Tax Cuts and Jobs Act ("Tax Act"). As permitted by the Tax Act, we will pay the transition tax in annual interest-free installments through 2025.

In 2017, 2018 and 2019, the EC announced decisions that certain actions taken by Google infringed European competition law and imposed fines of €2.4 billion ($2.7 billion as of June 27, 2017), €4.3 billion ($5.1 billion as of June 30, 2018), and €1.5 billion ($1.7 billion as of March 20, 2019), respectively. While each EC decision is under appeal, we included the fines in accrued expenses and other current liabilities on our Consolidated Balance Sheets as we provided bank guarantees (in lieu of a cash payment) for the fines.

n January 2021, we closed the acquisition of Fitbit, a leading wearables brand, for $2.1 billion.

e have a short-term debt financing program of up to $5.0 billion through the issuance of commercial paper. Net proceeds from this program are used for general corporate purposes. As of December 31, 2020, we had no commercial paper outstanding. As of December 31, 2020, we have $4.0 billion of revolving credit facilities expiring

in July 2023 with no amounts outstanding. The interest rate for the credit facilities is determined based on a formula using certain market rates.

n August 2020, we issued $10.0 billion of fixed-rate senior unsecured notes in six tranches: $1.0 billion due in 2025, $1.0 billion due in 2027, $2.25 billion due in 2030, $1.25 billion due in 2040, $2.5 billion due in 2050 and $2.0 billion due in 2060. The 2020 Notes had a weighted average duration of 21.5 years and weighted average coupon rate of 1.57%. Of the total issuance, $5.75 billion was designated as Sustainability Bonds, the net proceeds of which are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response. The remaining net proceeds are used for general corporate purposes. As of December 31, 2020, we have senior unsecured notes outstanding with a total carrying value of $13.8 billion. Refer to Note 6 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information on the debts.

n accordance with the authorizations of the Board of Directors of Alphabet, in 2020 we repurchased and subsequently retired 21.5 million shares of Alphabet Class C capital stock for an aggregate amount of $31.1 billion. As of December 31, 2020, $17.6 billion remains authorized and available for repurchase. The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purcha e or privately negotiated tran action , including through Rule 10b5 1 plan The repurcha e program doe not have an e piration date Refer to Note 11 of the Note to Con olidated Financial Statement included in Part II, Item 8 of this Annual Report on Form 10-K.

Capital Expenditures and Leases

e make investments in land and buildings for data centers and offices and information technology assets through purchases of property and equipment and lease arrangements to provide capacity for the growth of our services and products.

Our capital investments in property and equipment consist primarily of the following major categories:

- Technical infrastructure, which consists of our investments in servers and network equipment for compute, storage and networking requirements for ongoing business activities, including machine learning, (collectively referred to as our information technology assets) and data center land and building construction; and
- Office facilities, ground up development projects and related building improvements.

Due to the integrated nature of Alphabet, our technical infrastructure and office facilities are managed centrally at a consolidated level. The associated costs, including depreciation and impairment, are allocated to operating segments as a service cost generally based on usage or headcount. Our technical infrastructure investments are designed to support all of Alphabet, including primarily ads, Google Cloud, Search, and YouTube.

Construction in progress consists primarily of technical infrastructure and office facilities which have not yet been placed in service for our intended use. The time frame from date of purchase to placement in service of these assets may extend to multiple periods. For example, our data center construction projects are generally multi-year projects with multiple phases, where we acquire qualified land and buildings, construct buildings, and secure and install information technology assets.

During the years ended December 31, 2019 and 2020, we spent $23.5 billion and $22.3 billion on capital expenditures and recognized total operating lease assets of $4.4 billion and $2.8 billion, respectively. As of December 31, 2020, the amount of total future lease payments under operating leases, which had a weighted average remaining lease term of 9 years, was $15.1 billion. As of December 31, 2020, we have entered into leases that have not yet commenced with future lease payments of $8.0 billion, excluding purchase options, that are not yet recorded on our Consolidated Balance Sheets. These leases will commence between 2021 and 2026 with non-cancelable lease terms of 1 to 25 years.

Depreciation of our property and equipment commences when the deployment of such assets are completed and are ready for our intended use. Land is not depreciated. For the years ended December 31, 2019 and 2020, our depreciation and impairment expenses on property and equipment were $10.9 billion and $12.9 billion, respectively.

For the years ended December 31, 2019 and 2020, our operating lease expenses (including variable lease costs), were $2.4 billion and $2.9 billion, respectively. Finance leases were not material for the years ended December 31, 2019 and 2020. Please refer to Note 4 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information on the leases.

Contractual Obligations as of December 31, 2020

The following summarizes our contractual obligations as of December 31, 2020 (in millions):

	Payments Due By Period				
	Total	Less than 1 year	1 3 years	3-5 years	More than 5 years
Operating lease obligations[1]	$ 15,091	$ 2,198	$ 4,165	$ 3,127	$ 5,601
Obligations for leases that have not yet commenced[1]	8,049	370	1,198	1,469	5,012
Purcha e obligation [2]	10,656	7,368	1,968	354	966
Long-term debt obligations[3]	19,840	1,357	634	2,587	15,262
Tax payable[4]	7,359	834	1,916	4,609	0
Other long-term liabilities reflected on our balance heet[5]	1,421	532	616	185	88
Total contractual obligations	$ 62,416	$ 12,659	$ 10,497	$ 12,331	$ 26,929

(1) For further information, refer to Note 4 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10 K

(2) Represents non-cancelable contractual obligations primarily related to data center operations and build-outs; information technology assets; purchases of inventory; and digital media content licensing arrangements. The amounts included above represent the non-cancelable portion of agreement or the minimum cancellation fee For tho e agreement with variable term , we do not e timate the non-cancelable obligation beyond any minimum quantities and/or pricing as of December 31, 2020. Excluded from the table above are open order for purcha e that upport normal operation , which are generally cancelable

(3) Represents our principal and interest payments. For further information on long-term debt, refer to Note 6 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

(4) Repre ent one time tran ition tax payable incurred a a re ult of the Tax Act For further information, refer to Note 14 of the Note to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. Excluded from the table above are long term taxe payable of $2 3 billion a of December 31, 2020 primarily related to uncertain tax po ition , for which e are unable to make a reasonably reliable estimate of the timing of payments in individual years beyond 12 months due to uncertainties in the timing and outcomes of tax audits.

(5) Represents cash obligations recorded on our Consolidated Balance Sheets, including the short-term portion of these long-term iabilities, primarily for certain commercial agreements. These amounts do not include the EC fines which are classified as current iabilitie on our Con olidated Balance Sheet For further information regarding the EC fine , refer to Note 10 of the Note to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Off-Balance Sheet Arrangements

As of December 31, 2020, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K, that have or are reasonably likely to have a current or future effect on our financial condition, changes in our financial condition, revenues, or expenses, results of operations, liquidity, capital expenditures, or capital resources that is material to investors. See Note 10 included in Part II, Item 8 of this annual report on Form 10-K for more information on our commitments and contingencies.

Critical Accounting Policies and Estimates

e prepare our consolidated financial statements in accordance with GAAP. In doing so, we have to make estimates and assumptions that affect our reported amounts of assets, liabilities, revenues, expenses, gains and losses, as well as related disclosure of contingent assets and liabilities. In some cases, we could reasonably have used different accounting policies and estimates. In some cases, changes in the accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ materially from our estimates. To the extent that there are material differences between these estimates and actual results, our financial condition or results of operations will be affected. We base our estimates on past experience and other assumptions that we believe are reasonable under the circumstances, and we evaluate these estimates on an ongoing basis. We refer to accounting estimates of this type as critical accounting policies and estimates, which we discuss further below. We have reviewed our critical accounting policies and estimates with the audit and compliance committee of our Board of Directors.

Please see Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for a summary of significant accounting policies and the effect on our financial statements.

Revenues

For the sale of third-party goods and services, we evaluate whether we are the principal, and report revenues on a gross basis, or an agent, and report revenues on a net basis. In this assessment, we consider if we obtain control of the specified goods or services before they are transferred to the customer, as well as other indicators such as the party primarily responsible for fulfillment, inventory risk, and discretion in establishing price.

Income Taxes

We are subject to income taxes in the U.S. and foreign jurisdictions. Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes.

Although we believe we have adequately reserved for our uncertain tax positions, no assurance can be given that the final tax outcome of these matters will not be different. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes and the effective tax rate in the period in which such determination is made.

The provision for income taxes includes the effect of reserve provisions and changes to reserves that are considered appropriate as well as the related net interest and penalties. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Services ("IRS") and other tax authorities which may assert assessments against us. We regularly assess the likelihood of adverse outcomes resulting from these examinations and assessments to determine the adequacy of our provision for income taxes.

Loss Contingencies

We are regularly subject to claims, suits, government investigations, and other proceedings involving competition, intellectual property, privacy, tax and related compliance, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms, personal injury consumer protection, and other matters. Certain of these matters include speculative claims for substantial or indeterminate amounts of damages. We record a liability when we believe that it is probable that a loss has been incurred and the amount can be reasonably estimated. If we determine that a loss is reasonably possible and the loss or range of loss can be estimated, we disclose the possible loss in the Notes to the Consolidated Financial Statements.

We evaluate, on a regular basis, developments in our legal matters that could affect the amount of liability that has been previously accrued, and the matters and related reasonably possible losses disclosed, and make adjustments and changes to our disclosures as appropriate. Significant judgment is required to determine both the likelihood of there being, and the estimated amount of, a loss related to such matters. Until the final resolution of such matters, there may be an exposure to loss in excess of the amount recorded, and such amounts could be material. Should any of our estimates and assumptions change or prove to have been incorrect, it could have a material effect on our business, consolidated financial position, results of operations, or cash flows.

Long-lived Assets

Long-lived assets, including property and equipment, long-term prepayments, and intangible assets, excluding goodwill, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The evaluation is performed at the lowest level of identifiable cash flows independent of other assets. An impairment loss would be recognized when estimated undiscounted future cash flows generated from the assets are less than their carrying amount. Measurement of an impairment loss would be based on the excess of the carrying amount of the asset group over its fair value.

Fair Value Measurements

We measure certain of our non-marketable equity and debt investments, certain other instruments including stock-based compensation awards settled in the stock of certain Other Bets, and certain assets and liabilities acquired in a business combination, at fair value on a nonrecurring basis. The determination of fair value involves the use of appropriate valuation methods and relevant inputs into valuation models. The fair value hierarchy prioritizes the inputs used to measure fair value whereby it gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. We maximize the use of relevant observable inputs and minimize the use of unobservable inputs. Our use of unobservable inputs reflects the assumptions that market participants would use and may include our own data adjusted based on reasonably available information. We apply judgment in assessing the relevance of observable market data to determine the priority of inputs under the fair value hierarchy, particularly in situations where there is very little or no market activity.

In determining the fair values of our non-marketable equity and debt investments, as well as assets acquired (especially with respect to intangible assets) and liabilities assumed in business combinations, we make significant estimates and assumptions, some of which include the use of unobservable inputs.

Certain stock-based compensation awards may be settled in the stock of certain of our Other Bets or in cash. These awards are based on the equity values of the respective Other Bet, which requires use of unobservable inputs.

We also have compensation arrangements with payouts based on realized investment returns, i.e. performance fees. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized, and may require the use of unobservable inputs.

Non-marketable Equity Securities

Our non-marketable equity securities not accounted for under the equity method are carried either at fair value or under the measurement alternative. Under the measurement alternative, the carrying value is measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. Determining whether an observed transaction is similar to a security within our portfolio requires judgment based on the rights and obligations of the securities. Recording upward and downward adjustments to the carrying value of our equity securities as a result of observable price changes requires quantitative assessments of the fair value of our securities using various valuation methodologies and involves the use of estimates.

Non-marketable equity securities are also subject to periodic impairment reviews. Our quarterly impairment analysis considers both qualitative and quantitative factors that may have a significant effect on the investment's fair value. Qualitative factors considered include the companies' financial and liquidity position, access to capital resources and the time since the last adjustment to fair value, among others. When indicators of impairment exist, we prepare quantitative assessments of the fair value of our equity investments using both the market and income approaches which require judgment and the use of estimates, including discount rates, investee revenues and costs, and comparable market data of private and public companies, among others. When our assessment indicates that an impairment exists, we write down the investment to its fair value.

Change in Accounting Estimate

In January 2021, we completed an assessment of the useful lives of our servers and network equipment and determined we should adjust the estimated useful life of our servers from three years to four years and the estimated useful life of certain network equipment from three years to five years. This change in accounting estimate will be effective beginning fiscal year 2021. For assets that are in-service as of December 31, 2020, we expect operating results to be favorably impacted by approximately $2.1 billion for the full fiscal year 2021. The effect of the change may be different due to our capital investments during the fiscal year 2021.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

e are exposed to financial market risks, including changes in foreign currency exchange rates, interest rates, and equity investment risks.

Foreign Currency Exchange Risk

e transact business globally in multiple currencies. Our international revenues, as well as costs and expenses denominated in foreign currencies, expose us to the risk of fluctuations in foreign currency exchange rates against the U.S. dollar. Principal currencies hedged included the Australian dollar, British pound, Canadian dollar, Euro and Japanese yen. For the purpose of analyzing foreign currency exchange risk, we considered the historical trends in foreign currency exchange rates and determined that it was reasonably possible that adverse changes in exchange rates of 10% could be experienced in the near term.

e use foreign exchange forward contracts to offset the foreign exchange risk on our assets and liabilities denominated in currencies other than the functional currency of the subsidiary. These forward contracts reduce, but do not entirely eliminate, the effect of foreign currency exchange rate movements on our assets and liabilities. The foreign currency gains and losses on the assets and liabilities are recorded in other income (expense), net, which are offset by the gains and losses on the forward contracts.

f an adverse 10% foreign currency exchange rate change was applied to total monetary assets, liabilities, and commitments denominated in currencies other than the functional currencies at the balance sheet date, it would have resulted in an adverse effect on income before income taxes of approximately $8 million and $497 million as of

December 31, 2019 and 2020, respectively, after consideration of the effect of foreign exchange contracts in place for the years ended December 31, 2019 and 2020.

e use foreign currency forwards and option contracts, including collars (an option strategy comprised of a combination of purchased and written options) to protect our forecasted U.S. dollar-equivalent earnings from changes in foreign currency exchange rates. When the U.S. dollar strengthens, gains from foreign currency options and forwards reduce the foreign currency losses related to our earnings. When the U.S. dollar weakens, losses from foreign currency collars and forwards offset the foreign currency gains related to our earnings. These hedging contracts reduce, but do not entirely eliminate, the effect of foreign currency exchange rate movements. We designate these contracts as cash flow hedges for accounting purposes. We reflect the gains or losses of foreign currency spot rate changes as a component of AOCI and subsequently reclassify them into revenues to offset the hedged exposures as they occur.

f the U.S. dollar weakened by 10% as of December 31, 2019 and 2020, the amount recorded in AOCI related to our foreign exchange contracts before tax effect would have been approximately $1.1 billion and $912 million lower as of December 31, 2019 and 2020, respectively. The change in the value recorded in AOCI would be expected to offset a corresponding foreign currency change in forecasted hedged revenues when recognized.

e use foreign exchange forward contracts designated as net investment hedges to hedge the foreign currency risks related to our investment in foreign subsidiaries. These forward contracts serve to offset the foreign currency translation risk from our foreign operations.

f the U.S. dollar weakened by 10%, the amount recorded in cumulative translation adjustment ("CTA") within AOCI related to our net investment hedge would have been approximately $936 million and $1 billion lower as of December 31, 2019 and 2020, respectively. The change in value recorded in CTA would be expected to offset a corresponding foreign currency translation gain or loss from our investment in foreign subsidiaries.

Interest Rate Risk

Our Corporate Treasury investment strategy is to achieve a return that will allow us to preserve capital and maintain liquidity. We invest primarily in debt securities including those of the U.S. government and its agencies, corporate debt securities, mortgage-backed securities, money market and other funds, municipal securities, time deposits, asset backed securities, and debt instruments issued by foreign governments. By policy, we limit the amount of credit exposure to any one issuer. Our investments in both fixed rate and floating rate interest earning securities carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than predicted if interest rates fall. Unrealized gains or losses on our marketable debt securities are primarily due to interest rate fluctuations as compared to interest rates at the time of purchase. For certain fixed and variable rate debt securities, we have elected the fair value option for which changes in fair value are recorded in other income (expense), net. We measure securities for which we have not elected the fair value option at fair value with gains and losses recorded in AOCI until the securities are sold, less any expected credit losses.

e use value-at-risk ("VaR") analysis to determine the potential effect of fluctuations in interest rates on the value of our marketable debt security portfolio. The VaR is the expected loss in fair value, for a given confidence interval, for our investment portfolio due to adverse movements in interest rates. We use a variance/covariance VaR model with 95% confidence interval. The estimated one-day loss in fair value of our marketable debt securities as of December 31, 2019 and 2020 are shown below (in millions):

	As of December 31,		12-Month Average As of December 31,	
	2019	2020	2019	2020
Risk Category - Interest Rate	$ 104	$ 144	$ 90	$ 145

Actual future gains and losses associated with our marketable debt security portfolio may differ materially from the sensitivity analyses performed as of December 31, 2019 and 2020 due to the inherent limitations associated with predicting the timing and amount of changes in interest rates and our actual exposures and positions. VaR analysis is not intended to represent actual losses but is used as a risk estimation.

Equity Investment Risk

Our marketable and non-marketable equity securities are subject to a wide variety of market-related risks that could substantially reduce or increase the fair value of our holdings.

Our marketable equity securities are publicly traded stocks or funds and our non-marketable equity securities are investments in privately held companies, some of which are in the startup or development stages.

We record our marketable equity securities not accounted for under the equity method at fair value based on readily determinable market values, of which publicly traded stocks and mutual funds are subject to market price volatility, and represent $3.3 billion and $5.9 billion of our investments as of December 31, 2019 and 2020, respectively. A hypothetical adverse price change of 30% on our December 31, 2020 balance, which could be experienced in the near term, would decrease the fair value of our marketable equity securities by $1.8 billion. From time to time, we may enter into derivatives to hedge the market price risk on certain of our marketable equity securities.

Our non-marketable equity securities not accounted for under the equity method are adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). The fair value measured at the time of the observable transaction is not necessarily an indication of the current fair value as of the balance sheet date. These investments, especially those that are in the early stages, are inherently risky because the technologies or products these companies have under development are typically in the early phases and may never materialize and they may experience a decline in financial condition, which could result in a loss of a substantial part of our investment in these companies. The success of our investment in any private company is also typically dependent on the likelihood of our ability to realize appreciation in the value of our investments through liquidity events such as public offerings, acquisitions, private sales or other market events. As of December 31, 2019 and 2020, the carrying value of our non-marketable equity securities, which were accounted for under the measurement alternative, was $11.4 billion and $18.9 billion, respectively. Valuations of our equity investments in private companies are inherently more complex due to the lack of readily available market data. Volatility in the global economic climate and financial markets could result in a significant impairment charge relating to our non-marketable equity securities. Changes in valuation of non-marketable equity securities may not directly correlate with changes in valuation of marketable equity securities. Additionally, observable transactions at lower valuations could result in significant losses on our non-marketable equity securities. The effect of COVID-19 on our impairment assessment requires significant judgment due to the uncertainty around the duration and severity of the impact.

The carrying values of our equity method investments, which totaled approximately $1.3 billion and $1.4 billion as of December 31, 2019 and 2020, respectively, generally do not fluctuate based on market price changes, however these investments could be impaired if the carrying value exceeds the fair value and is not expected to recover.

For further information about our equity investments, please refer to Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in Part II of this Annual Report on Form 10-K.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Alphabet Inc.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

The supplementary financial information required by this Item 8 is included in Item 7 under the caption “Quarterly Results of Operations.”

REPORT OF ERNST & YOUNG LLP, INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Alphabet Inc. (the Company) as of December 31, 2019 and 2020, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, and the related notes and financial statement schedule listed in the Index at Item 15 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 2, 2021 expressed an unqualified opinion thereon

Ba i for Opinion

The e financial tatement are the re pon ibility of the Company' management Our re pon ibility i to e pre   an opinion on the Company' financial tatement ba ed on our audit   We are a public accounting firm regi tered with the PCAOB and are required to be independent with re pect to the Company in accordance with the U S federal ecuritie law and the applicable rule and regulation of the U S Securitie and E change Commi ion and the PCAOB

We conducted our audit in accordance with the tandard of the PCAOB Tho e tandard require that we plan and perform the audit to obtain rea onable a urance about whether the financial tatement are free of material mi tatement, whether due to error or fraud Our audit included performing procedure to a e   the ri k of material mi tatement of the financial tatement , whether due to error or fraud, and performing procedure that re pond to tho e ri k   Such procedure included e amining, on a te t ba i , evidence regarding the amount and di clo ure in the financial tatement   Our audit al o included evaluating the accounting principle u ed and ignificant e timate made by management, a well a evaluating the overall pre entation of the financial tatement   We believe that our audit provide a rea onable ba i for our opinion

Critical Audit Matter

The critical audit matter communicated below i a matter ari ing from the current period audit of the financial tatement that wa communicated or required to be communicated to the audit committee and that (1) relate to account or di clo ure that are material to the financial tatement and (2) involved our e pecially challenging, ubjective, or comple judgment   The communication of the critical audit matter doe not alter in any way our opinion on the con olidated financial tatement , taken a a whole, and we are not, by communicating the critical audit matter below, providing a eparate opinion on the critical audit matter or on the account or di clo ure to which it relate

Loss Contingencies

Description of the Matter	The Company is regularly subject to claims, suits, and government investigations involving competition, intellectual property, privacy, con umer protection, ta , labor and employment, commercial disputes, content generated by its users, goods and services offered by advertisers or publishers using their platforms, and other matters. As described in Note 10 to the consolidated financial statements "Commitments and Contingencies" such claims could result in adverse consequences. Significant judgment is required to determine both the likelihood, and the estimated amount, of a loss related to uch matter Auditing management' accounting for and di clo ure of lo contingencie from these matters involved challenging and subjective auditor judgment in assessing the Company's evaluation of the probability of a lo , and the e timated amount or range of lo
How We Addressed the Matter in Our Audit	We tested relevant controls over the identified risks associated with management's accounting for and disclosure of these matters. This included controls over management's assessment of the probability of incurrence of a lo and whether the lo or range of lo wa rea onably e timable and the development of related disclosures. Our audit procedures included gaining an understanding of previous rulings issued by regulators and the tatu of ongoing law uit , reviewing letter addre ing the matter from internal and e ternal legal counsel, meeting with internal legal counsel to discuss the allegations, and obtaining a representation letter from management on these matters. We also evaluated the Company's disclosures in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1999.

San Jose, California
February 2, 2021

REPORT OF ERNST & YOUNG LLP, INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on Internal Control over Financial Reporting

We have audited Alphabet Inc.’s internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Alphabet Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the 2020 consolidated financial statements of the Company and our report dated February 2, 2021 expressed an unqualified opinion thereon.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management’s Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the U.S. Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/ / Ern t & Young LLP

San Jo e, California
February 2, 2021

Alphabet Inc.
CONSOLIDATED BALANCE SHEETS
(In millions, except share amounts which are reflected in thousands, and par value per share amounts)

	As of December 31, 2019	As of December 31, 2020
Assets		
Current a et		
Cash and cash equivalents	$ 18,498	$ 26,465
Marketable securities	101,177	110,229
Total cash, cash equivalents, and marketable securities	119,675	136,694
Accounts receivable, net	25,326	30,930
Income taxes receivable, net	2,166	454
Inventory	999	728
Other current a et	4,412	5,490
Total current assets	152,578	174,296
Non-marketable investments	13,078	20,703
Deferred income ta e	721	1,084
Property and equipment, net	73,646	84,749
Operating lease assets	10,941	12,211
Intangible assets, net	1,979	1,445
Goodwill	20,624	21,175
Other non-current assets	2,342	3,953
Total assets	$ 275,909	$ 319,616
Liabilities and Stockholders' Equity		
Current liabilities:		
Account payable	$ 5,561	$ 5,589
Accrued compensation and benefits	8,495	11,086
Accrued expenses and other current liabilities	23,067	28,631
Accrued revenue share	5,916	7,500
Deferred revenue	1,908	2,543
Income taxes payable, net	274	1,485
Total current liabilities	45,221	56,834
Long term debt	4,554	13,932
Deferred revenue, non-current	358	481
Income taxes payable, non-current	9,885	8,849
Deferred income taxes	1,701	3,561
Operating lea e liabilitie	10,214	11,146
Other long-term liabilities	2,534	2,269
Total liabilities	74,467	97,072
Commitment and Contingencie (Note 10)		
Stockholders' equity:		
Convertible preferred stock, $0.001 par value per share, 100,000 shares authorized; no shares issued and outstanding	0	0
Class A and Class B common stock, and Class C capital stock and additional paid-in capital, $0.001 par value per share: 15,000,000 shares authorized (Cla A 9,000,000, Cla B 3,000,000, Cla C 3,000,000); 688,335 (Class A 299,828, Class B 46,441, Class C 342,066) and 675,222 (Class A 300,730, Class B 45,843, Class C 328,649) shares issued and out tanding	50,552	58,510
Accumulated other comprehensive income (loss)	(1,232)	633
Retained earnings	152,122	163,401
Total stockholders' equity	201,442	222,544
Total liabilities and stockholders' equity	$ 275,909	$ 319,616

See accompanying notes.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

	Year Ended December 31,		
	2018	2019	2020
Revenues	$ 136,819	$ 161,857	$ 182,527
Costs and expenses:			
Co t of revenue	59,549	71,896	84,732
Research and development	21,419	26,018	27,573
Sales and marketing	16,333	18,464	17,946
General and administrative	6,923	9,551	11,052
European Commi ion fine	5,071	1,697	0
Total costs and expenses	109,295	127,626	141,303
Income from operations	27,524	34,231	41,224
Other income (expense), net	7,389	5,394	6,858
Income before income taxes	34,913	39,625	48,082
Provi ion for income ta e	4,177	5,282	7,813
Net income	$ 30,736	$ 34,343	$ 40,269
Basic net income per share of Class A and B common stock and Class C capital tock	$ 44.22	$ 49.59	$ 59.15
Diluted net income per share of Class A and B common stock and Class C capital stock	$ 43 70	$ 49 16	$ 58 61

See accompanying note

Alphabet Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	Year Ended December 31,		
	2018	2019	2020
Net income	$ 30,736	$ 34,343	$ 40,269
Other comprehensive income (loss):			
Change in foreign currency tran lation adju tment	(781)	(119)	1,139
Available-for-sale investments:			
Change in net unrealized gains (losses)	88	1,611	1,313
Less: reclassification adjustment for net (gains) losses included in net income	(911)	(111)	(513)
Net change, net of tax benefit (expense) of $156, $(221), and $(230)	(823)	1,500	800
Cash flow hedges:			
Change in net unrealized gains (losses)	290	22	42
Less: reclassification adjustment for net (gains) losses included in net income	98	(299)	(116)
Net change, net of tax benefit (expense) of $(103), $42, and $11	388	(277)	(74)
Other comprehen ive income (lo)	(1,216)	1,104	1,865
Comprehensive income	$ 29,520	$ 35,447	$ 42,134

See accompanying notes.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions, except share amounts which are reflected in thousands)

	Class A and Class B Common Stock, Class C Capital Stock and Additional Paid-In Capital		Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Total Stockholders' Equity
	Shares	Amount			
Balance as of December 31, 2017	694,783	$ 40,247	$ (992)	$ 113,247	$ 152,502
Cumulative effect of accounting change	0	0	(98)	(599)	(697)
Common and capital stock issued	8,975	148	0	0	148
Stock ba ed compen ation e pen e	0	9,353	0	0	9,353
Tax withholding related to vesting of restricted stock units	0	(4,782)	0	0	(4,782)
Repurcha e of capital tock	(8,202)	(576)	0	(8,499)	(9,075)
Sale of interest in consolidated entities	0	659	0	0	659
Net income	0	0	0	30,736	30,736
Other comprehensive income (loss)	0	0	(1,216)	0	(1,216)
Balance as of December 31, 2018	695,556	45,049	(2,306)	134,885	177,628
Cumulative effect of accounting change	0	0	(30)	(4)	(34)
Common and capital stock issued	8,120	202	0	0	202
Stock ba ed compen ation e pen e	0	10,890	0	0	10,890
Tax withholding related to vesting of restricted stock units and other	0	(4,455)	0	0	(4,455)
Repurcha e of capital tock	(15,341)	(1,294)	0	(17,102)	(18,396)
Sale of interest in consolidated entities	0	160	0	0	160
Net income	0	0	0	34,343	34,343
Other comprehensive income (loss)	0	0	1,104	0	1,104
Balance as of December 31, 2019	688,335	50,552	(1,232)	152,122	201,442
Common and capital tock i ued	8,398	168	0	0	168
Stock-based compensation expense	0	13,123	0	0	13,123
Tax withholding related to vesting of restricted stock units and other	0	(5,969)	0	0	(5,969)
Repurchases of capital stock	(21,511)	(2,159)	0	(28,990)	(31,149)
Sale of interest in consolidated entities	0	2,795	0	0	2,795
Net income	0	0	0	40,269	40,269
Other comprehensive income (loss)	0	0	1,865	0	1,865
Balance as of December 31, 2020	675,222	$ 58,510	$ 633	$ 163,401	$ 222,544

See accompanying note

Alphabet Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Year Ended December 31,		
	2018	2019	2020
Operating activities			
Net income	$ 30,736	$ 34,343	$ 40,269
Adjustments:			
Depreciation and impairment of property and equipment	8,164	10,856	12,905
Amortization and impairment of intangible assets	871	925	792
Stock-based compensation expense	9,353	10,794	12,991
Deferred income taxes	778	173	1,390
Gain on debt and equity ecuritie , net	(6,650)	(2,798)	(6,317)
Other	(189)	(592)	1,267
Changes in assets and liabilities, net of effects of acquisitions:			
Accounts receivable	(2,169)	(4,340)	(6,524)
Income ta e , net	(2,251)	(3,128)	1,209
Other assets	(1,207)	(621)	(1,330)
Accounts payable	1,067	428	694
Accrued expenses and other liabilities	8,614	7,170	5,504
Accrued revenue hare	483	1,273	1,639
Deferred revenue	371	37	635
Net cash provided by operating activities	47,971	54,520	65,124
Inve ting activitie			
Purchases of property and equipment	(25,139)	(23,548)	(22,281)
Purchases of marketable securities	(50,158)	(100,315)	(136,576)
Maturities and sales of marketable securities	48,507	97,825	132,906
Purcha e of non marketable inve tment	(2,073)	(1,932)	(7,175)
Maturities and sales of non-marketable investments	1,752	405	1,023
Acquisitions, net of cash acquired, and purchases of intangible assets	(1,491)	(2,515)	(738)
Other investing activities	98	589	68
Net ca h u ed in inve ting activitie	(28,504)	(29,491)	(32,773)
Financing activities			
Net payments related to stock-based award activities	(4,993)	(4,765)	(5,720)
Repurcha e of capital tock	(9,075)	(18,396)	(31,149)
Proceeds from issuance of debt, net of costs	6,766	317	11,761
Repayments of debt	(6,827)	(585)	(2,100)
Proceeds from sale of interest in consolidated entities, net	950	220	2,800
Net ca h u ed in financing activitie	(13,179)	(23,209)	(24,408)
Effect of exchange rate changes on cash and cash equivalents	(302)	(23)	24
Net increa e in ca h and ca h equivalent	5,986	1,797	7,967
Cash and cash equivalents at beginning of period	10,715	16,701	18,498
Cash and cash equivalents at end of period	$ 16,701	$ 18,498	$ 26,465
Supplemental disclosures of cash flow information			
Ca h paid for ta e , net of refund	$ 5,671	$ 8,203	$ 4,990

See accompanying note

Alphabet Inc.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Nature of Operations and Summary of Significant Accounting Policies

Nature of Operations

Google was incorporated in California in September 1998 and re-incorporated in the State of Delaware in August 2003. In 2015, we implemented a holding company reorganization, and as a result, Alphabet Inc. ("Alphabet") became the successor issuer to Google.

We generate revenues by delivering relevant, cost-effective online advertising, cloud-based solutions that provide customers with platforms, collaboration tools and services, and sales of other products and services, such as apps and in-app purchases, digital content and subscriptions for digital content, and hardware.

Basis of Consolidation

The consolidated financial statements of Alphabet include the accounts of Alphabet and entities consolidated under the variable interest and voting models. All intercompany balances and transactions have been eliminated.

Use of Estimates

Preparation of consolidated financial statements in conformity with generally accepted accounting principles in the United States ("GAAP") requires us to make estimates and assumptions that affect the amounts reported and disclosed in the financial statements and the accompanying notes. Actual results could differ materially from these estimates. On an ongoing basis, we evaluate our estimates, including those related to the allowance for credit losses, fair values of financial instruments (including non-marketable equity securities), intangible assets and goodwill, useful lives of intangible assets and property and equipment, income taxes, and contingent liabilities, among others. We base our estimates on assumptions, both historical and forward looking, that are believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities.

As of December 31, 2020 the impact of COVID-19 continues to unfold and the extent of the impact will depend on a number of factors, including the duration and severity of the pandemic; the uneven impact to certain industries; advances in testing, treatment and prevention; and the macroeconomic impact of government measures to contain the spread of the virus and related government stimulus measures. As a result, certain of our estimates and assumptions, including the allowance for credit losses for accounts receivable, the credit worthiness of customers entering into revenue arrangements, the valuation of non-marketable equity securities, including our impairment assessment, and the fair values of our financial instruments require increased judgment and carry a higher degree of variability and volatility that could result in material changes to our estimates in future periods.

In January 2021, we completed an assessment of the useful lives of our servers and network equipment and determined we should adjust the estimated useful life of our servers from three years to four years and the estimated useful life of certain network equipment from three years to five years. This change in accounting estimate will be effective beginning fiscal year 2021.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to our customers and the collectibility of an amount that we expect in exchange for those goods or services is probable. Sales and other similar taxes are excluded from revenues.

Advertising Revenues

e generate advertising revenues primarily by delivering advertising on Google Search & other properties, including Google.com, the Google Search app, Google Play, Gmail and Google Maps; YouTube, and Google Network Members' properties.

Our customers generally purchase advertising inventory through Google Ads, Google Ad Manager and Google Marketing Platform, among others.

e offer advertising by delivering both performance and brand advertising. We recognize revenues for performance advertising when a user engages with the advertisement, such as a click, a view, or a purchase. For brand advertising, we recognize revenues when the ad is displayed or a user views the ad.

For ads placed on Google Network Members' properties, we evaluate whether we are the principal (i.e., report revenues on a gross basis) or agent (i.e., report revenues on a net basis). Generally, we report advertising revenues for ads placed on Google Network Members' properties on a gross basis, that is, the amounts billed to our customers are recorded as revenues, and amounts paid to Google Network Members are recorded as cost of revenues. Where we are the principal, we control the advertising inventory before it is transferred to our customers. Our control is evidenced by our sole ability to monetize the advertising inventory before it is transferred to our customers, and is further supported by us being primarily responsible to our customers and having a level of discretion in establishing pricing.

Google Cloud Revenues

Google Cloud revenues consist primarily of fees received for Google Cloud Platform services (which includes infrastructure and data analytics platform products and other services) and Google Workspace (formerly G Suite) collaboration tools and other enterprise services. Our cloud services are generally provided on either a consumption or subscription basis. Revenues related to cloud services provided on a consumption basis are recognized when the cu tomer utilize the ervice , ba ed on the quantity of ervice con umed Revenue related to cloud ervice provided on a ub cription ba i are recognized ratably over the contract term a the cu tomer receive and con ume the benefit of the cloud services.

Other Revenues

Google other revenues and Other Bets revenues consist primarily of revenues from:

- Google Play, which includes revenues from sale of apps and in-app purchases (which we recognize net of payout to developers) and digital content sold in the Google Play store;
- hardware, including Google Nest home products, Pixelbooks, Pixel phones and other devices;
- YouTube non-advertising services including, YouTube premium and YouTube TV subscriptions and other services; and
- other products and services.

As it relates to Google other revenues, the most significant judgment is determining whether we are the principal or agent for app sales and in-app purchases through the Google Play store. We report revenues from these transactions on a net basis because our performance obligation is to facilitate a transaction between app developers and end users, for which we earn a commission. Consequently, the portion of the gross amount billed to end users that is remitted to app developers is not reflected as revenues.

Arrangements with Multiple Performance Obligations

Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenues to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or using expected cost plus margin.

Customer Incentives and Credits

Certain customers receive cash-based incentives or credits, which are accounted for as variable consideration. We estimate these amounts based on the expected amount to be provided to customers and reduce revenues. We believe that there will not be significant changes to our estimates of variable consideration.

Sales Commissions

We expense sales commissions when incurred when the amortization period is one year or less. We recognize an asset for certain sales commissions if we expect the period of benefit of these costs to exceed one year and amortize it over the period of expected benefit. These costs are recorded within sales and marketing expenses.

Co t of Revenue

Co t of revenue con i t of TAC and other co t of revenue

TAC repre ent the amount paid to our di tribution partner who make available our earch acce point and ervice and amount paid to Google Network Member primarily for ad di played on their propertie Our di tribution partner include brow er provider , mobile carrier , original equipment manufacturer , and oftware developer

Other co t of revenue (which i the co t of revenue e cluding TAC) include the following

- Content acqui ition co t primarily related to payment to content provider from whom we licen e video and other content for distribution on YouTube advertising and subscription services and Google Play. We pay fees to these content providers based on revenues generated or a flat fee;

- Expenses associated with our data centers and other operations (including bandwidth, compensation expense (including SBC), depreciation, energy, and other equipment costs); and
- Inventory related costs for hardware we sell.

Software Development Costs

We expense software development costs, including costs to develop software products or the software component of products to be sold, leased, or marketed to external users, before technological feasibility is reached. Technological feasibility is typically reached shortly before the release of such products and as a result, development costs that meet the criteria for capitalization were not material for the periods presented.

Software development costs also include costs to develop software to be used solely to meet internal needs and cloud based applications used to deliver our services. We capitalize development costs related to these software applications once the preliminary project stage is complete and it is probable that the project will be completed and the software will be used to perform the function intended. Costs capitalized for developing such software applications were not material for the periods presented.

Stock-based Compensation

Stock-based compensation primarily consists of Alphabet restricted stock units ("RSUs"). RSUs are equity classified and measured at the fair market value of the underlying stock at the grant date. We recognize RSU expense using the straight-line attribution method over the requisite service period and account for forfeitures as they occur.

For RSUs, shares are issued on the vesting dates net of the applicable statutory tax withholding to be paid by us on behalf of our employees. As a result, fewer shares are issued than the number of RSUs outstanding and the tax withholding is recorded as a reduction to additional paid-in capital.

Additionally, stock-based compensation also includes other stock-based awards, such as performance stock units ("PSUs") and awards that may be settled in cash or the stock of certain Other Bets. PSUs and certain Other Bet awards are equity classified and expense is recognized over the requisite service period. Certain Other Bet awards are liability classified and remeasured at fair value through settlement. The fair value of Other Bet awards is based on the equity valuation of the respective Other Bet.

Advertising and Promotional Expenses

We expense advertising and promotional costs in the period in which they are incurred. For the years ended December 31, 2018, 2019 and 2020, advertising and promotional expenses totaled approximately $6.4 billion, $6.8 billion, and $5.4 billion, respectively.

Performance Fees

Performance fees refer to compensation arrangements with payouts based on realized investment returns. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized. Performance fees, which are primarily related to gains on equity securities, are recorded as a component of other income (expense), net.

Certain Risks and Concentrations

Our revenues are primarily derived from online advertising, the market for which is highly competitive and rapidly changing. In addition, our revenues are generated from a multitude of markets in countries around the world. Significant changes in this industry or changes in customer buying or advertiser spending behavior could adversely affect our operating results.

No individual customer or groups of affiliated customers represented more than 10% of our revenues in 2018, 2019, or 2020. In 2018, 2019, and 2020, we generated approximately 46%, 46%, and 47% of our revenues, respectively, from customers based in the U.S.

We are subject to concentrations of credit risk principally from cash and cash equivalents, marketable securities, foreign exchange contracts, and accounts receivable. We manage our credit risk exposure through timely assessment of our counterparty creditworthiness, credit limits and use of collateral management.

Cash equivalents and marketable securities consist primarily of time deposits, money market and other funds, highly liquid debt instruments of the U.S. government and its agencies, debt instruments issued by foreign governments, debt instruments issued by municipalities in the U.S., corporate debt securities, mortgage-backed securities, and asset-backed securities. Foreign exchange contracts are transacted with various financial institutions with high credit standing. Accounts receivable are typically unsecured and are derived from revenues earned from customers located around the world. We perform ongoing evaluations to determine customer credit and we limit the amount of credit we extend. We generally do not require collateral from our customers.

Fair Value of Financial Instruments

Our financial assets and liabilities that are measured at fair value on a recurring basis include cash equivalents, marketable securities, derivative contracts, and non-marketable debt securities. Our financial assets measured at fair value on a nonrecurring basis include non-marketable equity securities, which are adjusted to fair value when observable price changes are identified or when the non-marketable equity securities are impaired (referred to as the measurement alternative). Other financial assets and liabilities are carried at cost with fair value disclosed, if required.

Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that is determined based on assumptions that market participants would use in pricing an asset or a liability. Assets and liabilities recorded at fair value are measured and classified in accordance with a three-tier fair value hierarchy based on the observability of the inputs available in the market used to measure fair value:

Level 1 - Observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level 2 - Inputs that are based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant inputs are observable in the market or can be derived from observable market data. Where applicable, these models project future cash flows and discount the future amounts to a present value using market-based observable inputs including interest rate curves, foreign exchange rates, and credit ratings.

Level 3 - Unobservable inputs that are supported by little or no market activities.

The fair value hierarchy requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value.

Cash, Cash Equivalents, and Marketable Securities

We invest all excess cash primarily in government bonds, corporate debt securities, mortgage-backed and asset-backed securities, time deposits, and money market funds.

We classify all marketable debt securities that have stated maturities of three months or less from the date of purchase as cash equivalents and those with stated maturities of greater than three months as marketable securities on our Consolidated Balance Sheets.

We determine the appropriate classification of our investments in marketable debt securities at the time of purchase and reevaluate such designation at each balance sheet date. We have classified and accounted for our marketable debt securities as available-for-sale. After consideration of our risk versus reward objectives, as well as our liquidity requirements, we may sell these debt securities prior to their stated maturities. As we view these securities as available to support current operations, we classify highly liquid securities with maturities beyond 12 months as current assets under the caption marketable securities on the Consolidated Balance Sheets. We carry these securities at fair value, and report the unrealized gains and losses, net of taxes, as a component of stockholders' equity, except for the changes in allowance for expected credit losses, which are recorded in other income (expense), net. For certain marketable debt securities we have elected the fair value option, for which changes in fair value are recorded in other income (expense), net. We determine any realized gains or losses on the sale of marketable debt securities on a specific identification method, and we record such gains and losses as a component of other income (expense), net.

Our investments in marketable equity securities are measured at fair value with the related gains and losses, realized and unrealized, recognized in other income (expense), net.

Accounts Receivable

Our payment terms for accounts receivable vary by the type and location of our customer and the products or services offered. The term between invoicing and when payment is due is not significant. For certain products or services and customers, we require payment before the products or services are delivered to the customer.

We maintain an allowance for credit losses for accounts receivable, which is recorded as an offset to accounts receivable and changes in such are classified as general and administrative expense in the Consolidated Statements of Income. We assess collectibility by reviewing accounts receivable on a collective basis where similar characteristics exist and on an individual basis when we identify specific customers with known disputes or collectibility issues. In determining the amount of the allowance for credit losses, we consider historical collectibility based on past due status and make judgments about the creditworthiness of customers based on ongoing credit evaluations. We also consider customer-specific information, current market conditions and reasonable and supportable forecasts of future economic conditions to inform adjustments to historical loss data.

For the year ended December 31, 2020, our assessment considered the impact of COVID-19 and estimates of expected credit and collectibility trends. Volatility in market conditions and evolving credit trends are difficult to predict and may cause variability and volatility that may have a material impact on our allowance for credit losses in future periods. The allowance for credit losses on accounts receivable was $275 million and $789 million as of December 31, 2019 and 2020, respectively.

Inventory

Inventory consists primarily of finished goods and is stated at the lower of cost and net realizable value. Cost is computed using the first-in, first-out method.

Non-Marketable Investments

e account for non-marketable equity investments through which we exercise significant influence but do not have control over the investee under the equity method. Our non-marketable equity securities not accounted for under the equity method are primarily accounted for under the measurement alternative. Under the measurement alternative, the carrying value of our non-marketable equity investments is adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment. Adjustments are determined primarily based on a market approach as of the transaction date and are recorded as a component of other income (expense), net.

Non-marketable debt investments are classified as available-for-sale securities.

Non-marketable investments that do not have stated contractual maturity dates are classified as non-current assets on the Consolidated Balance Sheets.

Impairment of Investments

We periodically review our debt and non-marketable equity investments for impairment.

For debt securities in an unrealized loss position, we determine whether a credit loss exists. The credit loss is estimated by considering available information relevant to the collectibility of the security and information about past events, current conditions, and reasonable and supportable forecasts. Any credit loss is recorded as a charge to other income (expense), net, not to exceed the amount of the unrealized loss. Unrealized losses other than the credit loss are recognized in accumulated other comprehensive income ("AOCI"). If we have an intent to sell, or if it is more likely than not that we will be required to sell a debt security in an unrealized loss position before recovery of its amortized cost basis, we will write down the security to its fair value and record the corresponding charge as a component of other income (expense), net.

For non-marketable equity securities we consider whether impairment indicators exist by evaluating the companies' financial and liquidity position, access to capital resources and the time since the last adjustment to fair value, among others. If the assessment indicates that the investment is impaired, we write down the investment to its fair value by recording the corresponding charge as a component of other income (expense), net. Fair value is estimated using the best information available, which may include cash flow projections or other available market data.

Variable Interest Entities

We determine at the inception of each arrangement whether an entity in which we have made an investment or in which we have other variable interests is considered a variable interest entity ("VIE"). We consolidate VIEs when we are the primary beneficiary. We are the primary beneficiary of a VIE when we have the power to direct activities that most significantly affect the economic performance of the VIE and have the obligation to absorb the majority of their losses or benefits. If we are not the primary beneficiary in a VIE, we account for the investment or other variable interests in a VIE in accordance with applicable GAAP.

Periodically, we assess whether any changes in our interest or relationship with the entity affect our determination of whether the entity is a VIE and, if so, whether we are the primary beneficiary.

Property and Equipment

Property and equipment includes the following categories: land and buildings, information technology assets, construction in progress, leasehold improvements, and furniture and fixtures. Land and buildings include land, offices, data centers and related building improvements. Information technology assets include servers and network equipment. We account for property and equipment at cost less accumulated depreciation. We compute depreciation using the straight-line method over the e timated u eful live of the a et , which we regularly evaluate We depreciate building over period of even to 25 year We depreciate information technology a et generally over period of three to five year (specifically, three years for servers and three to five years for network equipment).

We depreciate leasehold improvements over the shorter of the remaining lease term or the estimated useful lives of the assets. Construction in progress is the construction or development of property and equipment that have not yet been placed in service for our intended use. Depreciation for equipment, buildings, and leasehold improvements commences once they are ready for our intended use. Land is not depreciated.

Leases

We determine if an arrangement is a lease at inception. Our lease agreements generally contain lease and non-lease components. Payments under our lease arrangements are primarily fixed. Non-lease components primarily include payments for maintenance and utilities. We combine fixed payments for non-lease components with lease payments and account for them together as a single lease component which increases the amount of our lease assets and liabilities.

Certain lease agreements contain variable payments, which are expensed as incurred and not included in the lease assets and liabilities. These amounts include payments affected by the Consumer Price Index, payments contingent on wind or solar production for power purchase arrangements, and payments for maintenance and utilities.

Lease assets and liabilities are recognized at the present value of the future lease payments at the lease commencement date. The interest rate used to determine the present value of the future lease payments is our incremental borrowing rate, because the interest rate implicit in our leases is not readily determinable. Our incremental borrowing rate is estimated to approximate the interest rate on a collateralized basis with similar terms and payments, and in economic environments where the leased asset is located. Our lease terms include periods under options to extend or terminate the lease when it is reasonably certain that we will exercise that option. We generally use the base, non-cancelable, lease term when determining the lease assets and liabilities. Lease assets also include any prepaid lease payments and lease incentives.

Operating lease assets and liabilities are included on our Consolidated Balance Sheet beginning January 1, 2019. The current portion of our operating lease liabilities is included in accrued expenses and other current liabilities and the long term portion is included in operating lease liabilities. Finance lease assets are included in property and equipment, net. Finance lease liabilities are included in accrued expenses and other current liabilities or long-term debt.

Operating lease expense (excluding variable lease costs) is recognized on a straight-line basis over the lease term.

Long-Lived Assets, Goodwill and Other Acquired Intangible Assets

We review property and equipment, long-term prepayments and intangible assets, excluding goodwill, for impairment when events or changes in circumstances indicate the carrying amount may not be recoverable. We measure recoverability of these assets by comparing the carrying amounts to the future undiscounted cash flows that the assets or the asset group are expected to generate. If the carrying value of the assets or asset group are not recoverable, the impairment recognized is measured as the amount by which the carrying value exceeds its fair value. Impairments were not material for the periods presented.

We allocate goodwill to reporting units based on the expected benefit from the business combination. We evaluate our reporting units periodically, as well as when changes in our operating segments occur. For changes in reporting units, we reassign goodwill using a relative fair value allocation approach. We test our goodwill for impairment at least annually, or more frequently if events or changes in circumstances indicate that the asset may be impaired. Goodwill impairments were not material for the periods presented.

Intangible assets with definite lives are amortized over their estimated useful lives. We amortize intangible assets on a straight-line basis with definite lives generally over periods ranging from one to twelve years.

Income Taxes

We account for income taxes using the asset and liability method, under which we recognize the amount of taxes payable or refundable for the current year and deferred tax assets and liabilities for the future tax consequences of events that have been recognized in our financial statements or tax returns. We measure current and deferred tax assets and liabilities based on provisions of enacted tax law. We evaluate the realization of our deferred tax assets based on all available evidence and establish a valuation allowance to reduce deferred tax assets when it is more likely than not that they will not be realized.

We recognize the financial statement effects of a tax position when it is more likely than not that, based on technical merits, the position will be sustained upon examination. The tax benefits of the position recognized in the financial statements are then measured based on the largest amount of benefit that is greater than 50% likely to be realized upon settlement with a taxing authority. In addition, we recognize interest and penalties related to unrecognized tax benefits as a component of the income tax provision.

Business Combinations

We include the results of operations of the businesses that we acquire as of the acquisition date. We allocate the purchase price of the acquisitions to the assets acquired and liabilities assumed based on their estimated fair values. The excess of the purchase price over the fair values of identifiable assets and liabilities is recorded as goodwill. Acquisition-related expenses are recognized separately from the business combination and are expensed as incurred.

Foreign Currency

Generally, the functional currency of our international subsidiaries is the local currency. We translate the financial statements of these subsidiaries to U.S. dollars using month-end exchange rates for assets and liabilities, and average rates for the annual period derived from month-end exchange rates for revenues, costs, and expenses. We record translation gains and losses in accumulated other comprehensive income (AOCI) as a component of stockholders' equity. We reflect net foreign exchange transaction gains and losses resulting from the conversion of the transaction currency to functional currency as a component of foreign currency exchange gain (loss) in other income (expense), net.

Recently Adopted Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2016-13 ("ASU 2016-13") "Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments", which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13 replaces the existing incurred loss impairment model with an expected loss model which requires the use of forward-looking information to calculate credit loss estimates. It also eliminates the concept of other-than-temporary impairment and requires credit losses related to certain available-for-sale debt securities to be recorded through an allowance for credit losses rather than as a reduction in the amortized cost basis of the securities. These changes result in earlier recognition of credit losses. We adopted ASU 2016-13 using the modified retrospective approach as of January 1, 2020. The cumulative effect upon adoption was not material to our consolidated financial statements. See "Impairment of Investments" and "Accounts Receivable" above as well as Note 3 for the effect on our consolidated financial statements.

Prior Period Reclassifications

Certain amounts in prior periods have been reclassified to conform with current period presentation. See Note 15 for further details.

Note 2. Revenues

Revenue Recognition

The following table presents our revenues disaggregated by type (in millions).

	Year Ended December 31,		
	2018	2019	2020
Google Search & other	$ 85,296	$ 98,115	$ 104,062
YouTube ads	11,155	15,149	19,772
Google Network Member ' propertie	20,010	21,547	23,090
Google advertising	116,461	134,811	146,924
Google other	14,063	17,014	21,711
Google Services total	130,524	151,825	168,635
Google Cloud	5,838	8,918	13,059
Other Bets	595	659	657
Hedging gain (lo e)	(138)	455	176
Total revenues	$ 136,819	$ 161,857	$ 182,527

The following table presents our revenues disaggregated by geography, based on the addresses of our customers (in millions):

	Year Ended December 31,					
	2018		2019		2020	
United State	$ 63,269	46 %	$ 74,843	46 %	$ 85,014	47 %
EMEA[(1)]	44,739	33	50,645	31	55,370	30
APAC[(1)]	21,341	15	26,928	17	32,550	18
Other America [(1)]	7,608	6	8,986	6	9,417	5
Hedging gains (losses)	(138)	0	455	0	176	0
Total revenues	$ 136,819	100 %	$ 161,857	100 %	$ 182,527	100 %

(1) Regions represent Europe, the Middle East, and Africa ("EMEA"); Asia-Pacific ("APAC"); and Canada and Latin America ("Other Americas").

Deferred Revenues and Remaining Performance Obligations

We record deferred revenues when cash payments are received or due in advance of our performance, including amounts which are refundable. Deferred revenues primarily relate to Google Cloud and Google other. Our total deferred revenue as of December 31, 2019 was $2.3 billion, of which $1.8 billion was recognized as revenues for the year ending December 31, 2020.

Additionally, we have performance obligations associated with commitments in customer contracts, primarily related to Google Cloud, for future services that have not yet been recognized as revenues, also referred to as remaining performance obligations. Remaining performance obligations include related deferred revenue currently recorded as well as amounts that will be invoiced in future periods, and excludes (i) contracts with an original expected term of one year or less, (ii) cancellable contracts, and (iii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed. As of December 31, 2020, the amount not yet recognized as revenues from these commitments is $29.8 billion. We expect to recognize approximately half over the next 24 months with the remaining thereafter. However, the amount and timing of revenue recognition is largely driven by when the customer utilizes the services and our ability to deliver in accordance with relevant contract terms, which could impact our estimate of the remaining performance obligations and when we expect to recognize such as revenues.

Note 3. Financial Instruments

Debt Securities

We classify our marketable debt securities, which are accounted for as available-for-sale, within Level 2 in the fair value hierarchy because we use quoted market prices to the extent available or alternative pricing sources and models utilizing market observable inputs to determine fair value.

For certain marketable debt securities, we have elected the fair value option for which changes in fair value are recorded in other income (expense), net. The fair value option was elected for these securities to align with the unrealized gains and losses from related derivative contracts. Unrealized net gains related to debt securities still held where we have elected the fair value option were $87 million as of December 31, 2020. As of December 31, 2020, the fair value of these debt securities was $2 billion. Balances as of December 31, 2019 were not material.

The following tables summarize our debt securities, for which we did not elect the fair value option, by significant investment categories as of December 31, 2019 and 2020 (in millions):

	As of December 31, 2019					
	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Cash and Cash Equivalents	Marketable Securities
Level 2:						
Time deposits[1]	$ 2,294	$ 0	$ 0	$ 2,294	$ 2,294	$ 0
Government bond	55,033	434	(30)	55,437	4,518	50,919
Corporate debt securities	27,164	337	(3)	27,498	44	27,454
Mortgage-backed and asset-backed securities	19,453	96	(41)	19,508	0	19,508
Total	$ 103,944	$ 867	$ (74)	$ 104,737	$ 6,856	$ 97,881

	As of December 31, 2020					
	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Cash and Cash Equivalents	Marketable Securities
Level 2:						
Time depo it [1]	$ 3,564	$ 0	$ 0	$ 3,564	$ 3,564	$ 0
Government bonds	55,156	793	(9)	55,940	2,527	53,413
Corporate debt securities	31,521	704	(2)	32,223	8	32,215
Mortgage-backed and asset-backed ecuritie	16,767	364	(7)	17,124	0	17,124
Total	$ 107,008	$ 1,861	$ (18)	$ 108,851	$ 6,099	$ 102,752

(1) The majority of our time deposits are domestic deposits.

We determine realized gains or losses on the sale or extinguishment of debt securities on a specific identification method. We recognized gross realized gains of $1.3 billion, $292 million, and $899 million for the years ended December 31, 2018, 2019, and 2020, respectively. We recognized gross realized losses of $143 million, $143 million, and $184 million for the years ended December 31, 2018, 2019, and 2020, respectively. We reflect these gains and losses as a component of other income (expense), net.

The following table summarizes the estimated fair value of our investments in marketable debt securities by stated contractual maturity dates (in millions):

	As of December 31, 2020
Due in 1 year or less	$ 19,795
Due in 1 year through 5 years	69,228
Due in 5 year through 10 year	2,739
Due after 10 years	13,038
Total	$ 104,800

The following tables present fair values and gross unrealized losses recorded to AOCI as of December 31, 2019 and 2020, aggregated by investment category and the length of time that individual securities have been in a continuous loss position (in millions):

	As of December 31, 2019					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Government bonds	$ 6,752	$ (20)	$ 4,590	$ (10)	$ 11,342	$ (30)
Corporate debt securities	1,665	(2)	978	(1)	2,643	(3)
Mortgage-backed and asset-backed securities	4,536	(13)	2,835	(28)	7,371	(41)
Total	$ 12,953	$ (35)	$ 8,403	$ (39)	$ 21,356	$ (74)

	As of December 31, 2020					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Government bonds	$ 5,516	$ (9)	$ 3	$ 0	$ 5,519	$ (9)
Corporate debt securities	1,999	(1)	0	0	1,999	(1)
Mortgage-backed and asset-backed securities	929	(5)	242	(2)	1,171	(7)
Total	$ 8,444	$ (15)	$ 245	$ (2)	$ 8,689	$ (17)

During the years ended December 31, 2018, and 2019 we did not recognize any significant other-than-temporary impairment losses. During the year ended December 31, 2020, with the adoption of ASU 2016-13, we did not recognize significant credit losses and the ending allowance for credit losses was immaterial. See Note 7 for further details on other income (expense), net.

Equity Investments

The following discusses our marketable equity securities, non-marketable equity securities, gains and losses on marketable and non-marketable equity securities, as well as our equity securities accounted for under the equity method.

Our marketable equity securities are publicly traded stocks or funds measured at fair value and classified within Level 1 and 2 in the fair value hierarchy because we use quoted prices for identical assets in active markets or inputs that are based upon quoted prices for similar instruments in active markets.

Our non-marketable equity securities are investments in privately held companies without readily determinable market values. The carrying value of our non-marketable equity securities is adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). Non-marketable equity securities that have been remeasured during the period based on observable transactions are classified within Level 2 or Level 3 in the fair value hierarchy because we estimate the value based on valuation methods which may include a combination of the observable transaction price at the transaction date and other unobservable inputs including volatility, rights, and obligations of the securities we hold. The fair value of non-marketable equity securities that have been remeasured due to impairment are classified within Level 3.

Gains and losses on marketable and non-marketable equity securities

Gains and losses reflected in other income (expense), net, for our marketable and non-marketable equity securities are summarized below (in millions):

	Year Ended December 31,	
	2019	2020
Net gain (lo) on equity ecuritie old during the period	$ (301)	$ 1,339
Net unrealized gain (loss) on equity securities held as of the end of the period	2,950	4,253
Total gain (loss) recognized in other income (expense), net	$ 2,649	$ 5,592

In the table above, net gain (loss) on equity securities sold during the period reflects the difference between the sale proceeds and the carrying value of the equity securities at the beginning of the period or the purchase date, if later.

Cumulative net gains (losses) on equity securities sold during the period, which is summarized in the following table (in millions), represents the total net gains (losses) recognized after the initial purchase date of the equity security. While these net gains may have been reflected in periods prior to the period of sale, we believe they are important supplemental information as they reflect the economic realized net gains on the securities sold during the period. Cumulative net gains are calculated as the difference between the sale price and the initial purchase price for the equity security sold during the period.

	Equity Securities Sold During the Year Ended December 31,	
	2019	2020
Total ale price	$ 3,134	$ 4,767
Total initial cost	858	2,674
Cumulative net gains (losses)	$ 2,276	$ 2,093

Carrying value of marketable and non marketable equity securities

The carrying value i mea ured a the total initial co t plu the cumulative net gain (lo) The carrying value for our marketable and non marketable equity ecuritie are ummarized below (in million)

	As of December 31, 2019		
	Marketable Equity Securities	Non-Marketable Equity Securities	Total
Total initial cost	$ 1,935	$ 8,297	$ 10,232
Cumulative net gain (loss)[(1)]	1,361	3,056	4,417
Carrying value	$ 3,296	$ 11,353	$ 14,649

(1) Non-marketable equity securities cumulative net gain (loss) is comprised of $3.5 billion unrealized gains and $445 million unrealized losses (including impairment).

	As of December 31, 2020		
	Marketable Equity Securities	Non-Marketable Equity Securities	Total
Total initial cost	$ 2,227	$ 14,616	$ 16,843
Cumulative net gain (loss)[(1)]	3,631	4,277	7,908
Carrying value[(2)]	$ 5,858	$ 18,893	$ 24,751

(1) Non marketable equity ecuritie cumulative net gain (lo) i compri ed of $6 1 billion unrealized gain and $1 9 billio unrealized losses (including impairment).

(2) The long-term portion of marketable equity securities of $429 million is included in other non-current assets.

Marketable equity securities

The following table summarizes marketable equity securities measured at fair value by significant investment categories as of December 31, 2019 and 2020 (in millions):

	As of December 31, 2019		As of December 31, 2020	
	Cash and Cash Equivalents	Marketable Equity Securities	Cash and Cash Equivalents	Marketable Equity Securities
Level 1:				
Money market funds	$ 4,604	$ 0	$ 12,210	$ 0
Marketable equity securities[(1)(2)]	0	3,046	0	5,470
	4,604	3,046	12,210	5,470
Level 2:				
Mutual funds	0	250	0	388
Total	$ 4,604	$ 3,296	$ 12,210	$ 5,858

(1) The balance as of December 31, 2019 and 2020 includes investments that were reclassified from non-marketable equity securities following the commencement of public market trading of the i uer or acqui ition by public entitie A of December 31, 2020 certain investments are subject to short-term lock-up restrictions.

(2) As of December 31, 2020 the long-term portion of marketable equity securities of $429 million is included within other non-current assets.

Non marketable equity securities

The following i a ummary of unrealized gain and lo e recorded in other income (e pen e), net, and included a adju tment to the carrying value of non marketable equity ecuritie (in million)

	Year Ended December 31,	
	2019	2020
Unrealized gains	$ 2,163	$ 3,020
Unrealized lo e (including impairment)	(372)	(1,489)
Total unrealized gain (loss) for non-marketable equity securities	$ 1,791	$ 1,531

During the year ended December 31, 2020, included in the $18.9 billion of non-marketable equity securities, $9.7 billion were measured at fair value resulting in a net unrealized gain of $1.5 billion.

Equity securities accounted for under the Equity Method

As of December 31, 2019 and 2020, equity securities accounted for under the equity method had a carrying value of approximately $1.3 billion and $1.4 billion, respectively. Our share of gains and losses including impairment are included as a component of other income (expense), net, in the Consolidated Statements of Income. See Note 7 for further details on other income (expense), net.

Derivative Financial Instruments

We enter into derivative instruments to manage risks relating to our ongoing business operations. The primary risk managed with derivative instruments is foreign exchange risk. We use foreign currency contracts to reduce the risk that our cash flows, earnings, and investment in foreign subsidiaries will be adversely affected by foreign currency exchange rate fluctuations. We also enter into derivative instruments to partially offset our exposure to other risks and enhance investment returns.

We recognize derivative instruments as either assets or liabilities in the Consolidated Balance Sheets at fair value and classify the derivatives primarily within Level 2 in the fair value hierarchy. We present our collar contracts (an option strategy comprised of a combination of purchased and written options) at net fair values where both the purchased and written options are with the same counterparty. For other derivative contracts, we present at gross fair values. We primarily record changes in the fair value in the Consolidated Statements of Income as either other income (expense), net, or revenues, or in the Consolidated Balance Sheets in AOCI, as discussed below.

We enter into master netting arrangements, which reduce credit risk by permitting net settlement of transactions with the same counterparty. Further, we enter into collateral security arrangements that provide for collateral to be received or pledged when the net fair value of certain financial instruments fluctuates from contractually established thresholds. Cash collateral received related to derivative instruments under our collateral security arrangements are included in other current assets with a corresponding liability. Cash and non-cash collateral pledged related to derivative instruments under our collateral security arrangements are included in other current assets.

Cash Flow Hedges

We designate foreign currency forward and option contracts (including collars) as cash flow hedges to hedge certain forecasted revenue transactions denominated in currencies other than the U.S. dollar. These contracts have maturities of 24 months or less.

Cash flow hedge amounts included in the assessment of hedge effectiveness are deferred in AOCI and subsequently reclassified to revenue when the hedged item is recognized in earnings. We exclude the change in forward points and time value from our assessment of hedge effectiveness. The initial value of the excluded component is amortized on a straight-line basis over the life of the hedging instrument and recognized in revenues. The difference between fair value changes of the excluded component and the amount amortized to revenues is recorded in AOCI. If the hedged transactions become probable of not occurring, the corresponding amounts in AOCI are reclassified to other income (expense), net in the period of de-designation.

As of December 31, 2020, the net accumulated loss on our foreign currency cash flow hedges before tax effect was $124 million, which is expected to be reclassified from AOCI into earnings within the next 12 months.

Fair Value Hedges

e designate foreign currency forward contracts as fair value hedges to hedge foreign currency risks for our investments denominated in currencies other than the U.S. dollar. Fair value hedge amounts included in the assessment of hedge effectiveness are recognized in other income (expense), net, along with the offsetting gains and losses of the related hedged items. We exclude changes in forward points from the assessment of hedge effectiveness and recognize changes in the excluded component in other income (expense), net.

Net Investment Hedges

We designate foreign currency forward contracts as net investment hedges to hedge the foreign currency risks related to our investment in foreign subsidiaries. Net investment hedge amounts included in the assessment of hedge effectiveness are recognized in AOCI along with the foreign currency translation adjustment. We exclude changes in forward points from the assessment of hedge effectiveness and recognize changes in the excluded component in other income (expense), net.

Other Derivatives

Other derivatives not designated as hedging instruments consist primarily of foreign currency forward contracts that we use to hedge intercompany transactions and other monetary assets or liabilities denominated in currencies other than the functional currency of a subsidiary. Gains and losses on these contracts, as well as the related costs, are recognized in other income (expense), net, along with the foreign currency gains and losses on monetary assets and liabilities.

e also use derivatives not designated as hedging instruments to manage risks relating to interest rates, equity and commodity prices, credit exposures and to enhance investment returns.

The gross notional amounts of our outstanding derivative instruments were as follows (in millions):

	As of December 31, 2019	As of December 31, 2020
Derivatives Designated as Hedging Instruments:		
Foreign exchange contracts		
Cash flow hedges	$ 13,207	$ 10,187
Fair value hedges	$ 455	$ 1,569
Net investment hedges	$ 9,318	$ 9,965
Derivatives Not Designated as Hedging Instruments:		
Foreign exchange contracts	$ 43,497	$ 39,861
Other contracts	$ 117	$ 2,399

The fair values of our outstanding derivative instruments were as follows (in millions):

		As of December 31, 2019		
	Balance Sheet Location	Fair Value of Derivatives Designated as Hedging Instruments	Fair Value of Derivatives Not Designated as Hedging Instruments	Total Fair Value
Derivative Assets:				
Level 2:				
Foreign exchange contracts	Other current and non-current assets	$ 91	$ 253	$ 344
Other contracts	Other current and non-current assets	0	1	1
Total		$ 91	$ 254	$ 345
Derivative Liabilities:				
Level 2:				
Foreign exchange contracts	Accrued expenses and other liabilities, current and non-current	$ 173	$ 196	$ 369
Other contracts	Accrued expenses and other liabilities, current and non-current	0	13	13
Total		$ 173	$ 209	$ 382

		As of December 31, 2020		
	Balance Sheet Location	Fair Value of Derivatives Designated as Hedging Instruments	Fair Value of Derivatives Not Designated as Hedging Instruments	Total Fair Value
Derivative Assets:				
Level 2:				
Foreign exchange contracts	Other current and non-current assets	$ 33	$ 316	$ 349
Other contracts	Other current and non-current assets	0	16	16
Total		$ 33	$ 332	$ 365
Derivative Liabilities:				
Level 2:				
Foreign exchange contracts	Accrued expenses and other liabilities, current and non-current	$ 395	$ 185	$ 580
Other contracts	Accrued expenses and other liabilities, current and non-current	0	942	942
Total		$ 395	$ 1,127	$ 1,522

The gains (losses) on derivatives in cash flow hedging and net investment hedging relationships recognized in other comprehensive income ("OCI") are summarized below (in millions):

	Gains (Losses) Recognized in OCI on Derivatives Before Tax Effect		
	Year Ended December 31,		
	2018	2019	2020
Derivatives in Cash Flow Hedging Relationship:			
Foreign exchange contracts			
Amount included in the assessment of effectiveness	$ 332	$ 38	$ 102
Amount excluded from the assessment of effectiveness	26	(14)	(37)
Derivatives in Net Investment Hedging Relationship:			
Foreign exchange contracts			
Amount included in the assessment of effectiveness	136	131	(851)
Total	$ 494	$ 155	$ (786)

The effect of derivative instruments on income is summarized below (in millions):

	Gains (Losses) Recognized in Income					
	Year Ended December 31,					
	2018		2019		2020	
	Revenues	Other income (expense), net	Revenues	Other income (expense), net	Revenues	Other income (expense), net
Total amounts presented in the Consolidated Statements of Income in which the effects of cash flow and fair value hedges are recorded	$ 136,819	$ 7,389	$ 161,857	$ 5,394	$ 182,527	$ 6,858
Gains (Losses) on Derivatives in Cash Flow Hedging Relationship:						
Foreign exchange contracts						
Amount of gains (losses) reclassified from AOCI to income	$ (139)	$ 0	$ 367	$ 0	$ 144	$ 0
Amount excluded from the assessment of effectiveness recognized in earnings based on an amortization approach	1	0	88	0	33	0
Gains (Losses) on Derivatives in Fair Value Hedging Relationship:						
Foreign exchange contracts						
Hedged items	0	(96)	0	(19)	0	18
Derivatives designated as hedging instruments	0	96	0	19	0	(18)
Amount excluded from the assessment of effectiveness	0	37	0	25	0	4
Gains (Losses) on Derivatives in Net Investment Hedging Relationship:						
Foreign exchange contracts						
Amount excluded from the assessment of effectiveness	0	78	0	243	0	151
Gains (Losses) on Derivatives Not Designated as Hedging Instruments:						
Foreign exchange contracts	0	54	0	(413)	0	718
Other Contracts	0	0	0	0	0	(906)
Total gains (losses)	$ (138)	$ 169	$ 455	$ (145)	$ 177	$ (33)

Offsetting of Derivatives

The gross amounts of our derivative instruments subject to master netting arrangements with various counterparties, and cash and non-cash collateral received and pledged under such agreements were as follows (in millions):

Offsetting of Assets

	As of December 31, 2019						
				Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset			
	Gross Amounts of Recognized Assets	Gross Amounts Offset in the Consolidated Balance Sheets	Net Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Received	Non-Cash Collateral Received	Net Assets Exposed
Derivatives	$ 366	$ (21)	$ 345	$ (88) [1]	$ (234)	$ 0	$ 23

	As of December 31, 2020						
				Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset			
	Gross Amounts of Recognized Assets	Gross Amounts Offset in the Consolidated Balance Sheets	Net Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Received	Non-Cash Collateral Received	Net Assets Exposed
Derivatives	$ 397	$ (32)	$ 365	$ (295) [1]	$ (16)	$ 0	$ 54

(1) The balances as of December 31, 2019 and 2020 were related to derivative liabilities which are allowed to be net settled against derivative assets in accordance with our master netting agreements.

Offsetting of Liabilities

	As of December 31, 2019						
				Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset			
	Gross Amounts of Recognized Liabilities	Gross Amounts Offset in the Consolidated Balance Sheets	Net Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Pledged	Non-Cash Collateral Pledged	Net Liabilities
Derivatives	$ 403	$ (21)	$ 382	$ (88) [2]	$ 0	$ 0	$ 294

	As of December 31, 2020						
				Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset			
	Gross Amounts of Recognized Liabilities	Gross Amounts Offset in the Consolidated Balance Sheets	Net Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Pledged	Non-Cash Collateral Pledged	Net Liabilities
Derivatives	$ 1,554	$ (32)	$ 1,522	$ (295) [2]	$ (1)	$ (943)	$ 283

(2) The balances as of December 31, 2019 and 2020 were related to derivative assets which are allowed to be net settled against derivative liabilities in accordance with our master netting agreements.

Note 4. Leases

We have entered into operating and finance lease agreements primarily for data centers, land and offices throughout the world with lease periods expiring between 2021 and 2063.

Components of operating lease expense were as follows (in millions):

	Year Ended December 31,	
	2019	2020
Operating lease cost	$ 1,820	$ 2,267
Variable lease cost	541	619
Total operating lease cost	$ 2,361	$ 2,886

Supplemental information related to operating leases is as follows (in millions):

	Year Ended December 31,	
	2019	2020
Cash payments for operating leases	$ 1,661	$ 2,004
New operating lease assets obtained in exchange for operating lease liabilities	$ 4,391	$ 2,765

As of December 31, 2020, our operating leases had a weighted average remaining lease term of 9 years and a weighted average discount rate of 2.6%. Future lease payments under operating leases as of December 31, 2020 were as follows (in millions):

2021	$ 2,198
2022	2,170
2023	1,995
2024	1,738
2025	1,389
Thereafter	5,601
Total future lease payments	15,091
Less imputed interest	(2,251)
Total lease liability balance	$ 12,840

As of December 31, 2020, we have entered into leases that have not yet commenced with future lease payments of $8.0 billion, excluding purchase options, that are not yet recorded on our Consolidated Balance Sheets. These leases will commence between 2021 and 2026 with non-cancelable lease terms of 1 to 25 years.

Note 5. Variable Interest Entities

Consolidated VIEs

We consolidate VIEs in which we hold a variable interest and are the primary beneficiary. The results of operations and financial position of these VIEs are included in our consolidated financial statements.

For certain consolidated VIEs, their assets are not available to us and their creditors do not have recourse to us. As of December 31, 2019 and 2020, assets that can only be used to settle obligations of these VIEs were $3.1 billion and $5.7 billion, respectively, and the liabilities for which creditors only have recourse to the VIEs were $1.2 billion and $2.3 billion, respectively.

Total noncontrolling interests ("NCI"), including redeemable noncontrolling interests ("RNCI"), in our consolidated subsidiaries increased from $1.2 billion to $3.9 billion from December 31, 2019 to December 31, 2020, primarily due to external investments in Waymo. NCI and RNCI are included within additional paid-in capital. Net loss attributable to noncontrolling interests was not material for any period presented and is included within other income (expense), net.

Waymo

aymo is an autonomous driving technology development company with a mission to make it safe and easy for people and things to get where they're going. In the first half of 2020, Waymo completed an externally led investment round raising in total $3.2 billion, which includes nvestment from Alphabet. No gain or loss was recognized. The investments related to external parties were accounted for as equity transactions and resulted in recognition of noncontrolling interests.

Unconsolidated VIEs

e have investments in some VIEs in which we are not the primary beneficiary. These VIEs include private companies that are primarily early stage companies and certain renewable energy entities in which activities involve power generation using renewable sources.

e have determined that the governance structures of these entities do not allow us to direct the activities that would significantly affect their economic performance. Therefore, we are not the primary beneficiary, and the results of operations and financial position of these VIEs are not included in our consolidated financial statements. We account for these investments as non-marketable equity investments or equity method investments.

VIEs are generally based on the current carrying value of the investments and any future funding commitments. We have determined that the single source of our exposure to these VIEs is our capital investments in them. The carrying value and maximum exposure of these unconsolidated VIEs were not material as of December 31, 2019 and 2020.

Note 6. Debt

Short-Term Debt

We have a debt financing program of up to $5.0 billion through the issuance of commercial paper. Net proceeds from this program are used for general corporate purposes. We had no commercial paper outstanding as of December 31, 2019 and 2020.

Our short-term debt balance also includes the current portion of certain long-term debt.

Long-Term Debt

In August 2020, Alphabet issued $10.0 billion of fixed-rate senior unsecured notes in six tranches (collectively, "2020 Notes"): $1.0 billion due in 2025, $1.0 billion due in 2027, $2.25 billion due in 2030, $1.25 billion due in 2040, $2.5 billion due in 2050 and $2.0 billion due in 2060. The 2020 Notes had a weighted average duration of 21.5 years and weighted average coupon rate of 1.57%. Of the total issuance, $5.75 billion was designated as Sustainability Bonds, the net proceeds of which are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response. The remaining net proceeds are used for general corporate purposes.

The total outstanding debt is summarized below (in millions, except percentages):

	Maturity	Coupon Rate	Effective Interest Rate	As of December 31, 2019	As of December 31, 2020
Debt					
2011-2016 Notes Issuances	2021 - 2026	2.00% - 3.63%	2.23% - 3.73%	$ 4,000	$ 4,000
2020 Notes Issuance	2025 - 2060	0.45% - 2.25%	0.57% - 2.33%	0	10,000
Future finance lease payments, net[1]				711	1,201
Total debt				4,711	15,201
Unamortized discount and debt issuance costs				(42)	(169)
Less: Current portion of Notes[2]				0	(999)
Less: Current portion future finance lease payments, net[1][2]				(115)	(101)
Total long-term debt				$ 4,554	$ 13,932

(1) Net of imputed interest.

(2) Total current portion of long-term debt is included within other accrued expenses and current liabilities. See Note 7.

The notes in the table above are comprised of fixed-rate senior unsecured obligations and generally rank equally with each other. We may redeem the notes at any time in whole or in part at specified redemption prices. The effective interest rates are based on proceeds received with interest payable semi-annually.

The total estimated fair value of the outstanding notes, including the current portion, was approximately $4.1 billion and $14.0 billion as of December 31, 2019 and December 31, 2020, respectively. The fair value was determined based on observable market prices of identical instruments in less active markets and is categorized accordingly as Level 2 in the fair value hierarchy.

As of December 31, 2020, the aggregate future principal payments for long-term debt, including finance lease liabilities, for each of the next five years and thereafter are as follows (in millions):

2021	$ 1,104
2022	86
2023	86
2024	1,087
2025	1,088
Thereafter	11,868
Total	$ 15,319

Credit Facility

As of December 31, 2020, we have $4.0 billion of revolving credit facilities which expire in July 2023. The interest rate for the credit facilities is determined based on a formula using certain market rates. No amounts were outstanding under the credit facilities as of December 31, 2019 and 2020.

Note 7. Supplemental Financial Statement Information

Property and Equipment, Net

Property and equipment, net, consisted of the following (in millions):

	As of December 31, 2019	As of December 31, 2020
Land and buildings	$ 39,865	$ 49,732
Information technology assets	36,840	45,906
Construction in progress	21,036	23,111
Leasehold improvements	6,310	7,516
Furniture and fixtures	156	197
Property and equipment, gross	104,207	126,462
Less: accumulated depreciation	(30,561)	(41,713)
Property and equipment, net	$ 73,646	$ 84,749

Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consisted of the following (in millions):

	As of December 31, 2019	As of December 31, 2020
European Commission fines[(1)]	$ 9,405	$ 10,409
Accrued customer liabilities	2,245	3,118
Accrued purchases of property and equipment	2,411	2,197
Current operating lease liabilities	1,199	1,694
Other accrued expenses and current liabilities	7,807	11,213
Accrued expenses and other current liabilities	$ 23,067	$ 28,631

(1) Includes the effects of foreign exchange and interest. See Note 10 for further details.

Accumulated Other Comprehensive Income (Loss)

The components of AOCI, net of tax, were as follows (in millions):

	Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Available-for-Sale Investments	Unrealized Gains (Losses) on Cash Flow Hedges	Total
Balance as of December 31, 2017	$ (1,103)	$ 233	$ (122)	$ (992)
Cumulative effect of accounting change	0	(98)	0	(98)
Other comprehensive income (loss) before reclassifications	(781)	88	264	(429)
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	26	26
Amounts reclassified from AOCI	0	(911)	98	(813)
Other comprehensive income (loss)	(781)	(823)	388	(1,216)
Balance as of December 31, 2018	(1,884)	(688)	266	(2,306)
Cumulative effect of accounting change	0	0	(30)	(30)
Other comprehensive income (loss) before reclassifications	(119)	1,611	36	1,528
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(14)	(14)
Amounts reclassified from AOCI	0	(111)	(299)	(410)
Other comprehensive income (loss)	(119)	1,500	(277)	1,104
Balance as of December 31, 2019	(2,003)	812	(41)	(1,232)
Other comprehensive income (loss) before reclassifications	1,139	1,313	79	2,531
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(37)	(37)
Amounts reclassified from AOCI	0	(513)	(116)	(629)
Other comprehensive income (loss)	1,139	800	(74)	1,865
Balance as of December 31, 2020	$ (864)	$ 1,612	$ (115)	$ 633

The effects on net income of amounts reclassified from AOCI were as follows (in millions):

		Gains (Losses) Reclassified from AOCI to the Consolidated Statements of Income		
		Year Ended December 31,		
AOCI Components	Location	2018	2019	2020
Unrealized gains (losses) on available-for-sale investments				
	Other income (expense), net	$ 1,190	$ 149	$ 650
	Benefit (provision) for income taxes	(279)	(38)	(137)
	Net of tax	911	111	513
Unrealized gains (losses) on cash flow hedges				
Foreign exchange contracts	Revenue	(139)	367	144
Interest rate contracts	Other income (expense), net	6	6	6
	Benefit (provision) for income taxes	35	(74)	(34)
	Net of tax	(98)	299	116
Total amount reclassified, net of tax		$ 813	$ 410	$ 629

Other Income (Expense), Net

The components of other income (expense), net, were as follows (in millions):

	Year Ended December 31,		
	2018	2019	2020
Interest income	$ 1,878	$ 2,427	$ 1,865
Interest expense[1]	(114)	(100)	(135)
Foreign currency exchange gain (loss), net[2]	(80)	103	(344)
Gain (loss) on debt securities, net[3]	1,190	149	725
Gain (loss) on equity securities, net	5,460	2,649	5,592
Performance fees	(1,203)	(326)	(609)
Income (loss) and impairment from equity method investments, net	(120)	390	401
Other[4]	378	102	(637)
Other income (expense), net	$ 7,389	$ 5,394	$ 6,858

(1) Interest expense is net of interest capitalized of $92 million, $167 million, and $218 million for the years ended December 31, 2018, 2019, and 2020, respectively.

(2) Our foreign currency exchange gain (loss), net, is primarily related to the forward points for our foreign currency hedging contracts and foreign exchange transaction gains and losses from the conversion of the transaction currency to the functional currency, offset by the foreign currency hedging contracts' losses and gains.

(3) During the year ended December 31, 2018, the terms of a non-marketable debt security were modified resulting in an unrealized $1.3 billion gain.

(4) During the year ended December 31, 2020, we entered into derivatives that hedged the changes in fair value of certain marketable equity securities, which resulted in a $902 million loss. The offsetting recognized gains on the marketable equity securities are reflected in Gain (loss) on equity securities, net.

Note 8. Acquisitions

2020 Acquisitions

During the year ended December 31, 2020, we completed acquisitions and purchases of intangible assets for total consideration of approximately $744 million, net of cash acquired. In aggregate, $248 million was attributed to intangible assets, $446 million to goodwill and $50 million to net assets acquired. These acquisitions generally enhance the breadth and depth of our offerings and expand our expertise in engineering and other functional areas.

Pro forma results of operations for these acquisitions have not been presented because they are not material to the consolidated results of operations, either individually or in the aggregate.

For all intangible assets acquired and purchased during the year ended December 31, 2020, patents and developed technology have a weighted-average useful life of 4.1 years, customer relationships have a weighted-average useful life of 4.7 years, and trade names and other have a weighted-average useful life of 4.6 years.

Acquisition of Fitbit

In January 2021, we closed the acquisition of Fitbit, a leading wearables brand for $2.1 billion.

Note 9. Goodwill and Other Intangible Assets

Goodwill

Changes in the carrying amount of goodwill for the years ended December 31, 2019 and 2020 were as follows (in millions):

	Google	Google Services	Google Cloud	Other Bets	Total
Balance as of December 31, 2018	$ 17,521	$ 0	$ 0	$ 367	$ 17,888
Acquisitions	2,353	0	0	475	2,828
Transfers	9	0	0	(9)	0
Foreign currency translation and other adjustments	38	0	0	(130)	(92)
Balance as of December 31, 2019	19,921	0	0	703	20,624
Acquisitions	204	0	0	0	204
Foreign currency translation and other adjustments	46	0	0	(4)	42
Allocation in the fourth quarter of 2020[(1)]	(20,171)	18,408	1,763	0	0
Acquisitions	0	53	189	0	242
Foreign currency translation and other adjustments	0	56	5	2	63
Balance as of December 31, 2020	$ 0	$ 18,517	$ 1,957	$ 701	$ 21,175

(1) Represents reallocation of goodwill as a result of our change in segments in the fourth quarter of 2020. See Note 15 for further details

Other Intangible Assets

Information regarding purchased intangible assets were as follows (in millions):

	As of December 31, 2019		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Patents and developed technology	$ 4,972	$ 3,570	$ 1,402
Customer relationships	254	30	224
Trade names and other	703	350	353
Total	$ 5,929	$ 3,950	$ 1,979

	As of December 31, 2020		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Value
Patents and developed technology	$ 4,639	$ 3,649	$ 990
Customer relationships	266	49	217
Trade names and other	699	461	238
Total	$ 5,604	$ 4,159	$ 1,445

Patents and developed technology, customer relationships, and trade names and other have weighted-average remaining useful lives of 1.6 years, 4.9 years, and 2.1 years, respectively.

Amortization expense relating to purchased intangible assets was $865 million, $795 million, and $774 million for the years ended December 31, 2018, 2019, and 2020, respectively.

As of December 31, 2020, expected amortization expense relating to purchased intangible assets for each of the next five years and thereafter is as follows (in millions):

2021	$ 719
2022	375
2023	104
2024	78
2025	53
Thereafter	116
	$ 1,445

Note 10. Commitments and Contingencies

Purchase Obligations

As of December 31, 2020, we had $10.7 billion of other non-cancelable contractual obligations, primarily related to data center operations and build-outs, digital media content licensing, information technology assets and purchases of inventory.

Indemnifications

In the normal course of business, to facilitate transactions in our services and products, we indemnify certain parties, including advertisers, Google Network Members, customers of Google Cloud offerings, and lessors with respect to certain matters. We have agreed to hold certain parties harmless against losses arising from a breach of representations or covenants, or out of intellectual property infringement or other claims made against certain parties. Several of these agreements limit the time within which an indemnification claim can be made and the amount of the claim. In addition, we have entered into indemnification agreements with our officers and directors, and our bylaws contain similar indemnification obligations to our agents.

It is not possible to make a reasonable estimate of the maximum potential amount under these indemnification agreements due to the unique facts and circumstances involved in each particular agreement. Additionally, we have a limited history of prior indemnification claims and the payments we have made under such agreements have not had a material adverse effect on our results of operations, cash flows, or financial position. However, to the extent that valid indemnification claims arise in the future, future payments by us could be significant and could have a material adverse effect on our results of operations or cash flows in a particular period.

As of December 31, 2020, we did not have any material indemnification claims that were probable or reasonably possible.

Legal Matters

Antitrust Investigations

On November 30, 2010, the EC's Directorate General for Competition opened an investigation into various antitrust-related complaints against us.

On June 27, 2017, the EC announced its decision that certain actions taken by Google regarding its display and ranking of shopping search results and ads infringed European competition law. The EC decision imposed a €2.4 billion ($2.7 billion as of June 27, 2017) fine. On September 11, 2017, we appealed the EC decision and on September 27, 2017, we implemented product changes to bring shopping ads into compliance with the EC's decision. We recognized a charge of $2.7 billion for the fine in the second quarter of 2017.

On July 18, 2018, the EC announced its decision that certain provisions in Google's Android-related distribution agreements infringed European competition law. The EC decision imposed a €4.3 billion ($5.1 billion as of June 30, 2018) fine and directed the termination of the conduct at issue. On October 9, 2018, we appealed the EC decision. On October 29, 2018, we implemented changes to certain of our Android distribution practices. We recognized a charge of $5.1 billion for the fine in the second quarter of 2018.

On March 20, 2019, the EC announced its decision that certain contractual provisions in agreements that Google had with AdSense for Search partners infringed European competition law. The EC decision imposed a fine of €1.5 billion ($1.7 billion as of March 20, 2019) and directed actions related to AdSense for Search partners' agreements, which we implemented prior to the decision. On June 4, 2019, we appealed the EC decision. We recognized a charge of $1.7 billion for the fine in the first quarter of 2019.

While each EC decision is under appeal, we included the fines in accrued expenses and other current liabilities on our Consolidated Balance Sheets as we provided bank guarantees (in lieu of a cash payment) for the fines.

From time to time we are subject to formal and informal inquiries and investigations on competition matters by regulatory authorities in the United States, Europe, and other jurisdictions. For example, in August 2019, we began receiving civil investigative demands from the U.S. Department of Justice ("DOJ") requesting information and documents relating to our prior antitrust investigations and certain aspects of our business. The DOJ and a number of state Attorneys General filed a lawsuit on October 20, 2020 alleging that Google violated U.S. antitrust laws relating to Search and Search advertising. Separately, on December 16, 2020, a number of state Attorneys General filed an antitrust complaint against Google in the United States District Court for the Eastern District of Texas, alleging that Google violated U.S. antitrust laws as well as state deceptive trade laws relating to its advertising technology. We believe these complaints are without merit and will defend ourselves vigorously. The DOJ and state Attorneys General continue their investigations into certain aspects of our business. We continue to cooperate with federal and state regulators in the United States, and other regulators around the world.

Patent and Intellectual Property Claims

e have had patent, copyright, trade secret, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe others' intellectual property rights. Adverse results in these lawsuits may include awards of substantial monetary damages, costly royalty or licensing agreements, or orders preventing us from offering certain features, functionalities, products, or services. As a result, we may have to change our business practices, and develop non-infringing products or technologies, which could result in a loss of revenues for us and otherwise harm our business. In addition, the U.S. International Trade Commission ("ITC") has increasingly become an important forum to litigate intellectual property disputes because an ultimate loss in an ITC action can result in a prohibition on importing infringing products into the U.S. Because the U.S. is an important market, a prohibition on importation could have an adverse effect on us, including preventing us from importing many important products into the U.S. or necessitating workarounds that may limit certain features of our products.

Furthermore, many of our agreements with our customers and partners require us to indemnify them against certain intellectual property infringement claims, which would increase our costs as a result of defending such claims, and may require that we pay significant damages if there were an adverse ruling in any such claims. In addition, our customers and partners may discontinue the use of our products, services, and technologies, as a result of injunctions or otherwise, which could result in loss of revenues and adversely affect our business.

n 2010, Oracle America, Inc. ("Oracle") brought a copyright lawsuit against Google in the Northern District of California, alleging that Google's Android operating system infringes Oracle's copyrights related to certain Java application programming interfaces. After trial, final judgment was entered by the district court in favor of Google on June 8, 2016, and the court decided post-trial motions in favor of Google. Oracle appealed and on March 27, 2018, the appeals court reversed and remanded the case for a trial on damages. On May 29, 2018, we filed a petition for a rehearing at the Federal Circuit, and on August 28, 2018, the Federal Circuit denied the petition. On January 24, 2019, we filed a petition to the Supreme Court of the United States to review this case. On April 29, 2019, the Supreme Court requested the views of the Solicitor General regarding our petition. On September 27, 2019, the Solicitor General recommended denying our petition, and we provided our response on October 16, 2019. On November 15, 2019, the Supreme Court granted our petition and made a decision to review the case. The Supreme Court heard oral arguments in our case on October 7, 2020. If the Supreme Court does not rule in our favor, the case will be remanded to the district court for further determination of the remaining issues in the case, including damages, if any. We believe this lawsuit is without merit and are defending ourselves vigorously. Given the nature of this case, we are unable to estimate the reasonably possible loss or range of loss, if any, arising from this matter.

Other

e are also regularly subject to claims, suits, regulatory and government investigations, and other proceedings involving competition, intellectual property, privacy, tax and related compliance, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms, personal injury, consumer protection, and other matters. Such claims, suits, regulatory and government investigations, and other proceedings could result in substantial fines and penalties, injunctive relief, ongoing auditing and monitoring obligations, changes to our products and services, alterations to our business models and operations, and collateral related civil litigation or other adverse consequences, all of which could harm our business, reputation, financial condition, and operating results.

Certain of these outstanding matters include speculative, substantial or indeterminate monetary amounts. We record a liability when we believe that it is probable that a loss has been incurred and the amount can be reasonably estimated. If we determine that a loss is reasonably possible and the loss or range of loss can be estimated, we disclose the reasonably possible loss. We evaluate developments in our legal matters that could affect the amount of liability that has been previously accrued, and the matters and related reasonably possible losses disclosed, and make adjustments as appropriate. Significant judgment is required to determine both likelihood of there being and the estimated amount of a loss related to such matters.

ith respect to our outstanding matters, based on our current knowledge, we believe that the amount or range of reasonably possible loss will not, either individually or in aggregate, have a material adverse effect on our business, consolidated financial position, results of operations, or cash flows. However, the outcome of such matters is inherently unpredictable and subject to significant uncertainties.

e expense legal fees in the period in which they are incurred.

Non-Income Taxes

e are under audit by various domestic and foreign tax authorities with regards to non-income tax matters. The subject matter of non-income tax audits primarily arises from disputes on the tax treatment and tax rate applied to the sale of our products and services in these jurisdictions and the tax treatment of certain employee benefits. We accrue non-income taxes that may result from examinations by, or any negotiated agreements with, these tax authorities when a loss is probable and reasonably estimable. If we determine that a loss is reasonably possible and the loss or range of loss can be estimated, we disclose the reasonably possible loss. Due to the inherent complexity and uncertainty of these matters and judicial process in certain jurisdictions, the final outcome may be materially different from our expectations.

For information regarding income tax contingencies, see Note 14.

Note 11. Stockholders' Equity

Convertible Preferred Stock

Our Board of Directors has authorized 100 million shares of convertible preferred stock, $0.001 par value, issuable in series. As of December 31, 2019 and 2020, no shares were issued or outstanding.

Class A and Class B Common Stock and Class C Capital Stock

Our Board of Directors has authorized three classes of stock, Class A and Class B common stock, and Class C capital stock. The rights of the holders of each class of our common and capital stock are identical, except with respect to voting. Each share of Class A common stock is entitled to one vote per share. Each share of Class B common stock is entitled to 10 votes per share. Class C capital stock has no voting rights, except as required by applicable law. Shares of Class B common stock may be converted at any time at the option of the stockholder and automatically convert upon sale or transfer to Class A common stock.

Share Repurchases

n July 2020, the Board of Directors of Alphabet authorized the company to repurchase up to an additional $28.0 billion of its Class C capital stock. The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases or privately negotiated transactions, including through Rule 10b5-1 plans. The repurchase program does not have an expiration date.

During the years ended December 31, 2019 and 2020, we repurchased and subsequently retired 15.3 million and 21.5 million shares of Alphabet Class C capital stock for an aggregate amount of $18.4 billion and $31.1 billion, respectively.

Note 12. Net Income Per Share

e compute net income per share of Class A and Class B common stock and Class C capital stock using the two-class method. Basic net income per share is computed using the weighted-average number of shares outstanding during the period. Diluted net income per share is computed using the weighted-average number of shares and the effect of potentially dilutive securities outstanding during the period. Potentially dilutive securities consist of restricted stock units and other contingently issuable shares. The dilutive effect of outstanding restricted stock units and other contingently issuable shares is reflected in diluted earnings per share by application of the treasury stock method. The computation of the diluted net income per share of Class A common stock assumes the conversion of Class B common stock, while the diluted net income per share of Class B common stock does not assume the conversion of those shares.

The rights, including the liquidation and dividend rights, of the holders of our Class A and Class B common stock and Class C capital stock are identical, except with respect to voting. Furthermore, there are a number of

safeguards built into our certificate of incorporation, as well as Delaware law, which preclude our Board of Directors from declaring or paying unequal per share dividends on our Class A and Class B common stock and Class C capital stock. Specifically, Delaware law provides that amendments to our certificate of incorporation which would have the effect of adversely altering the rights, powers, or preferences of a given class of stock must be approved by the class of stock adversely affected by the proposed amendment. In addition, our certificate of incorporation provides that before any such amendment may be put to a stockholder vote, it must be approved by the unanimous consent of our Board of Directors. As a result, the undistributed earnings for each year are allocated based on the contractual participation rights of the Class A and Class B common shares and Class C capital stock as if the earnings for the year had been distributed. As the liquidation and dividend rights are identical, the undistributed earnings are allocated on a proportionate basis.

In the years ended December 31, 2018, 2019 and 2020, the net income per share amounts are the same for Class A and Class B common stock and Class C capital stock because the holders of each class are entitled to equal per share dividends or distributions in liquidation in accordance with the Amended and Restated Certificate of Incorporation of Alphabet Inc.

The following tables set forth the computation of basic and diluted net income per share of Class A and Class B common stock and Class C capital stock (in millions, except share amounts which are reflected in thousands and per share amounts):

	Year Ended December 31,		
	2018		
	Class A	Class B	Class C
Basic net income per share:			
Numerator			
Allocation of undistributed earnings	$ 13,200	$ 2,072	$ 15,464
Denominator			
Number of shares used in per share computation	298,548	46,864	349,728
Basic net income per share	$ 44.22	$ 44.22	$ 44.22
Diluted net income per share:			
Numerator			
Allocation of undistributed earnings for basic computation	$ 13,200	$ 2,072	$ 15,464
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,072	0	0
Reallocation of undistributed earnings	(146)	(24)	146
Allocation of undistributed earnings	$ 15,126	$ 2,048	$ 15,610
Denominator			
Number of shares used in basic computation	298,548	46,864	349,728
Weighted-average effect of dilutive securities			
Add:			
Conversion of Class B to Class A common shares outstanding	46,864	0	0
Restricted stock units and other contingently issuable shares	689	0	7,456
Number of shares used in per share computation	346,101	46,864	357,184
Diluted net income per share	$ 43.70	$ 43.70	$ 43.70

	Year Ended December 31,		
	2019		
	Class A	Class B	Class C
Basic net income per share:			
Numerator			
Allocation of undistributed earnings	$ 14,846	$ 2,307	$ 17,190
Denominator			
Number of shares used in per share computation	299,402	46,527	346,667
Basic net income per share	$ 49.59	$ 49.59	$ 49.59
Diluted net income per share:			
Numerator			
Allocation of undistributed earnings for basic computation	$ 14,846	$ 2,307	$ 17,190
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,307	0	0
Reallocation of undistributed earnings	(126)	(20)	126
Allocation of undistributed earnings	$ 17,027	$ 2,287	$ 17,316
Denominator			
Number of shares used in basic computation	299,402	46,527	346,667
Weighted average effect of dilutive securities			
Add:			
Conversion of Class B to Class A common shares outstanding	46,527	0	0
Restricted stock units and other contingently issuable shares	413	0	5,547
Number of shares used in per share computation	346,342	46,527	352,214
Diluted net income per share	$ 49.16	$ 49.16	$ 49.16

	Year Ended December 31,		
	2020		
	Class A	Class B	Class C
Basic net income per share:			
Numerator			
Allocation of undistributed earnings	$ 17,733	$ 2,732	$ 19,804
Denominator			
Number of shares used in per share computation	299,815	46,182	334,819
Basic net income per share	$ 59.15	$ 59.15	$ 59.15
Diluted net income per share:			
Numerator			
Allocation of undistributed earnings for basic computation	$ 17,733	$ 2,732	$ 19,804
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,732	0	0
Reallocation of undistributed earnings	(180)	(25)	180
Allocation of undistributed earnings	$ 20,285	$ 2,707	$ 19,984
Denominator			
Number of shares used in basic computation	299,815	46,182	334,819
Weighted average effect of dilutive securities			
Add:			
Conversion of Class B to Class A common shares outstanding	46,182	0	0
Restricted stock units and other contingently issuable shares	87	0	6,125
Number of shares used in per share computation	346,084	46,182	340,944
Diluted net income per share	$ 58.61	$ 58.61	$ 58.61

Note 13. Compensation Plans

Stock Plans

Our stock plans include the Alphabet 2012 Stock Plan and Other Bet stock-based plans. Under our stock plans, RSUs and other types of awards may be granted. An RSU award is an agreement to issue shares of our publicly traded stock at the time the award vests. RSUs granted to participants under the Alphabet 2012 Stock Plan generally vest over four years contingent upon employment or service with us on the vesting date.

As of December 31, 2020, there were 38,777,813 shares of stock reserved for future issuance under our Alphabet 2012 Stock Plan.

Stock-Based Compensation

For the years ended December 31, 2018, 2019 and 2020, total stock-based compensation expense was $10.0 billion, $11.7 billion and $13.4 billion, including amounts associated with awards we expect to settle in Alphabet stock of $9.4 billion, $10.8 billion, and $12.8 billion, respectively.

For the years ended December 31, 2018, 2019 and 2020, we recognized tax benefits on total stock-based compensation expense, which are reflected in the provision for income taxes in the Consolidated Statements of Income, of $1.5 billion, $1.8 billion, and $2.7 billion, respectively.

For the years ended December 31, 2018, 2019 and 2020, tax benefit realized related to awards vested or exercised during the period was $2.1 billion, $2.2 billion and $3.6 billion, respectively. These amounts do not include the indirect effects of stock-based awards, which primarily relate to the research and development tax credit.

Stock-Based Award Activities

The following table summarizes the activities for our unvested Alphabet RSUs for the year ended December 31, 2020:

	Unvested Restricted Stock Units	
	Number of Shares	Weighted-Average Grant-Date Fair Value
Unvested as of December 31, 2019	19,394,236	$ 1,055.22
Granted	12,647,562	1,407.97
Vested	(11,643,670)	1,089.31
Forfeited/canceled	(1,109,335)	1,160.01
Unvested as of December 31, 2020	19,288,793	$ 1,262.13

The weighted-average grant-date fair value of RSUs granted during the years ended December 31, 2018 and 2019, was $1,095.89 and $1,092.36, respectively. Total fair value of RSUs, as of their respective vesting dates, during the years ended December 31, 2018, 2019, and 2020 were $14.1 billion, $15.2 billion, and $17.8 billion, respectively.

As of December 31, 2020, there was $22.8 billion of unrecognized compensation cost related to unvested employee RSUs. This amount is expected to be recognized over a weighted-average period of 2.6 years.

401(k) Plans

We have two 401(k) Savings Plans that qualify as deferred salary arrangements under Section 401(k) of the Internal Revenue Code. Under these 401(k) Plans, matching contributions are based upon the amount of the employees' contributions subject to certain limitations. We recognized expense of approximately $691 million, $724 million, and $855 million for the years ended December 31, 2018, 2019, and 2020, respectively.

Note 14. Income Taxes

Income from continuing operations before income taxes consists of the following (in millions):

	Year Ended December 31,		
	2018	2019	2020
Domestic operations	$ 15,779	$ 16,426	$ 37,576
Foreign operations	19,134	23,199	10,506
Total	$ 34,913	$ 39,625	$ 48,082

The provision for income taxes consists of the following (in millions):

	Year Ended December 31,		
	2018	2019	2020
Current:			
Federal and state	$ 2,153	$ 2,424	$ 4,789
Foreign	1,251	2,713	1,687
Total	3,404	5,137	6,476
Deferred:			
Federal and state	907	286	1,552
Foreign	(134)	(141)	(215)
Total	773	145	1,337
Provision for income taxes	$ 4,177	$ 5,282	$ 7,813

The reconciliation of federal statutory income tax rate to our effective income tax rate is as follows:

	Year Ended December 31,		
	2018	2019	2020
U.S. federal statutory tax rate	21.0 %	21.0 %	21.0 %
Foreign income taxed at different rates	(4.4)	(4.9)	(0.3)
Foreign-derived intangible income deduction	(0.5)	(0.7)	(3.0)
Stock-based compensation expense	(2.2)	(0.7)	(1.7)
Federal research credit	(2.4)	(2.5)	(2.3)
Impact of the Tax Cuts and Jobs Act	(1.3)	(0.6)	0.0
European Commission fines	3.1	1.0	0.0
Deferred tax asset valuation allowance	(2.0)	0.0	1.4
State and local income taxes	(0.4)	1.1	1.1
Other adjustments	1.1	(0.4)	0.0
Effective tax rate	12.0 %	13.3 %	16.2 %

Our effective tax rate for 2018 and 2019 was affected significantly by earnings realized in foreign jurisdictions with statutory tax rates lower than the federal statutory tax rate because substantially all of the income from foreign operations was earned by an Irish subsidiary. As of December 31, 2019, we have simplified our corporate legal entity structure and now license intellectual property from the U.S. that was previously licensed from Bermuda resulting in an increase in the portion of our income earned in the U.S.

On July 27, 2015, the United States Tax Court, in an opinion in Altera Corp. v. Commissioner, invalidated the portion of the Treasury regulations issued under IRC Section 482 requiring related-party participants in a cost sharing arrangement to share stock-based compensation costs. The U.S. Tax Court issued the final decision on December 28, 2015. As a result of that decision, we recorded a tax benefit related to the anticipated reimbursement of cost share payment for previously shared stock-based compensation costs.

On June 7, 2019, the United States Court of Appeals for the Ninth Circuit overturned the 2015 Tax Court decision in Altera Corp. v. Commissioner, and upheld the portion of the Treasury regulations issued under IRC Section 482 requiring related-party participants in a cost sharing arrangement to share stock-based compensation costs. As a result of the Ninth Circuit court decision, our cumulative net tax benefit of $418 million related to previously shared stock-based compensation costs was reversed in the year ended December 31, 2019.

In 2020, there was an increase in valuation allowance for net deferred tax assets that are not likely to be realized relating to certain of our Other Bets.

Deferred Income Taxes

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our deferred tax assets and liabilities are as follows (in millions):

	As of December 31,	
	2019	2020
Deferred tax assets:		
Stock-based compensation expense	$ 421	$ 518
Accrued employee benefits	463	580
Accruals and reserves not currently deductible	1,047	1,049
Tax credits	3,264	3,723
Net operating losses	771	1,085
Operating leases	1,876	2,620
Intangible assets	164	1,525
Other	226	463
Total deferred tax assets	8,232	11,563
Valuation allowance	(3,502)	(4,823)
Total deferred tax assets net of valuation allowance	4,730	6,740
Deferred tax liabilities:		
Property and equipment, net	(1,798)	(3,382)
Renewable energy investments	(466)	(415)
Foreign Earnings	(373)	(383)
Net investment gains	(1,074)	(1,901)
Operating leases	(1,619)	(2,354)
Other	(380)	(782)
Total deferred tax liabilities	(5,710)	(9,217)
Net deferred tax assets (liabilities)	$ (980)	$ (2,477)

As of December 31, 2020, our federal, state and foreign net operating loss carryforwards for income tax purposes were approximately $3.1 billion, $3.1 billion, and $1.4 billion respectively. If not utilized, the federal net operating loss carryforwards will begin to expire in 2023, foreign net operating loss carryforwards will begin to expire in 2024 and the state net operating loss carryforwards will begin to expire in 2028. It is more likely than not that certain net operating loss carryforwards will not be realized; therefore, we have recorded a valuation allowance against them. The net operating loss carryforwards are subject to various annual limitations under the tax laws of the different jurisdictions.

As of December 31, 2020, our California research and development credit carryforwards for income tax purposes were approximately $3.7 billion that can be carried over indefinitely. We believe the state tax credit is not likely to be realized.

As of December 31, 2020, we maintained a valuation allowance with respect to California deferred tax assets, certain federal net operating losses, certain state tax credits, net deferred tax assets relating to certain of our Other Bets, and certain foreign net operating losses that we believe are not likely to be realized. We continue to reassess the remaining valuation allowance quarterly and if future evidence allows for a partial or full release of the valuation allowance, a tax benefit will be recorded accordingly.

Uncertain Tax Positions

The following table summarizes the activity related to our gross unrecognized tax benefits (in millions):

	Year Ended December 31,		
	2018	2019	2020
Beginning gross unrecognized tax benefits	$ 4,696	$ 4,652	$ 3,377
Increases related to prior year tax positions	321	938	372
Decreases related to prior year tax positions	(623)	(143)	(557)
Decreases related to settlement with tax authorities	(191)	(2,886)	(45)
Increases related to current year tax positions	449	816	690
Ending gross unrecognized tax benefits	$ 4,652	$ 3,377	$ 3,837

The total amount of gross unrecognized tax benefits was $4.7 billion, $3.4 billion, and $3.8 billion as of December 31, 2018, 2019, and 2020, respectively, of which, $2.9 billion, $2.3 billion, and $2.6 billion, if recognized, would affect our effective tax rate, respectively. The decrease in gross unrecognized tax benefits in 2019 was primarily as a result of the resolution of multi-year audits.

As of December 31, 2019 and 2020, we accrued $130 million and $222 million in interest and penalties in provision for income taxes, respectively.

We file income tax returns in the U.S. federal jurisdiction and in many state and foreign jurisdictions, our two major tax jurisdictions are the U.S. federal and Ireland. We are subject to the continuous examination of our income tax returns by the IRS and other tax authorities. The IRS is currently examining our 2016 through 2018 tax returns. We have also received tax assessments in multiple foreign jurisdictions asserting transfer pricing adjustments or permanent establishment. We continue to defend any and all such claims as presented.

The tax years 2011 through 2019 remain subject to examination by the appropriate governmental agencies for Irish tax purposes. There are other ongoing audits in various other jurisdictions that are not material to our financial statements.

We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. We continue to monitor the progress of ongoing discussions with tax authorities and the effect, if any, of the expected expiration of the statute of limitations in various taxing jurisdictions.

We believe that an adequate provision has been made for any adjustments that may result from tax examinations. However, the outcome of tax audits cannot be predicted with certainty. If any issues addressed in our tax audits are resolved in a manner not consistent with management's expectations, we could be required to adjust our provision for income taxes in the period such resolution occurs. Although the timing of resolution, settlement, and closure of audits is not certain, we do not believe it is reasonably possible that our unrecognized tax benefits will materially change in the next 12 months.

Note 15. Information about Segments and Geographic Areas

Beginning in the fourth quarter of 2020, we report our segment results as Google Services, Google Cloud, and Other Bets:

- Google Services includes products and services such as ads, Android, Chrome, hardware, Google Maps, Google Play, Search, and YouTube. Google Services generates revenues primarily from advertising; sales of apps, in-app purchases, digital content products, and hardware; and fees received for subscription-based products such as YouTube Premium and YouTube TV.
- Google Cloud includes Google's infrastructure and data analytics platforms, collaboration tools, and other services for enterprise customers. Google Cloud generates revenues primarily from fees received for Google Cloud Platform services and Google Workspace (formerly known as G Suite) collaboration tools.
- Other Bets is a combination of multiple operating segments that are not individually material. Revenues from the Other Bets are derived primarily through the sale of internet services as well as licensing and R&D services.

Revenues and certain costs, such as costs associated with content and traffic acquisition, certain engineering, and hardware costs and other operating expenses, are directly attributable to our segments. Due to the integrated nature of Alphabet, other costs and expenses, such as technical infrastructure and office facilities, are managed

centrally at a consolidated level. The associated costs, including depreciation and impairment, are allocated to operating segments as a service cost generally based on usage or headcount.

Unallocated corporate costs primarily include corporate initiatives, corporate shared costs, such as finance and legal, including fines and settlements, as well as costs associated with certain shared research and development activities. Additionally, hedging gains (losses) related to revenue are included in corporate costs.

Our Chief Operating Decision Maker does not evaluate operating segments using asset information.

Information about segments during the periods presented were as follows (in millions). For comparative purposes, amounts in prior periods have been recast:

	Year Ended December 31,		
	2018	2019	2020
Revenues:			
Google Services	$ 130,524	$ 151,825	$ 168,635
Google Cloud	5,838	8,918	13,059
Other Bets	595	659	657
Hedging gains (losses)	(138)	455	176
Total revenues	$ 136,819	$ 161,857	$ 182,527
Operating income (loss):			
Google Services	$ 43,137	$ 48,999	$ 54,606
Google Cloud	(4,348)	(4,645)	(5,607)
Other Bets	(3,358)	(4,824)	(4,476)
Corporate costs, unallocated[1]	(7,907)	(5,299)	(3,299)
Total income from operations	$ 27,524	$ 34,231	$ 41,224

(1) Corporate costs, unallocated includes a fine of $5.1 billion for the year ended December 31, 2018 and a fine and legal settlement totaling $2.3 billion for the year ended December 31, 2019.

For revenues by geography, see Note 2.

The following table presents certain of our long-lived assets by geographic area, which includes property and equipment, net and operating lease assets (in millions).

	As of December 31, 2019	As of December 31, 2020
Long-lived assets:		
United States	$ 63,102	$ 69,315
International	21,485	27,645
Total long-lived assets	$ 84,587	$ 96,960

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Exchange Act, as of the end of the period covered by this Annual Report on Form 10-K.

Based on this evaluation, our chief executive officer and chief financial officer concluded that, as of December 31, 2020, our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

e rely extensively on information systems to manage our business and summarize and report operating results. In 2019, we began a multi-year implementation of a new global ERP system, which will replace much of our existing core financial systems. The ERP system is designed to accurately maintain our financial records, enhance the flow of financial information, improve data management and provide timely information to our management team. The implementation is expected to occur in phases over the next several years. The initial phase, which included changes to our general ledger and consolidated financial reporting systems, was completed during the third quarter of 2020. There have been no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. However, as the phased implementation of the new ERP system continues, we will change our processes and procedures, which in turn, could result in changes to our internal control over financial reporting. As such changes occur, we will evaluate quarterly whether such changes materially affect our internal control over financial reporting.

As a result of COVID-19, our global workforce continued to operate primarily in a work from home environment for the quarter ended December 31, 2020. While pre-existing controls were not specifically designed to operate in our current work from home operating environment, we believe that our internal controls over financial reporting continue to be effective. We have continued to re-evaluate and refine our financial reporting process to provide reasonable assurance that we could report our financial results accurately and timely.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) of the Exchange Act. Our management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2020. Management reviewed the results of its assessment with our Audit and Compliance Committee. The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in its report which is included in Item 8 of this Annual Report on Form 10-K.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item will be included under the caption "Directors, Executive Officers, and Corporate Governance" in our Proxy Statement for 2021 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2020 (2021 Proxy Statement) and is incorporated herein by reference. The information required by this item regarding delinquent filers pursuant to Item 405 of Regulation S-K will be included under the caption "Section 16(a) Beneficial Ownership Reporting Compliance" in the 2021 Proxy Statement and is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item will be included under the captions "Director Compensation," "Executive Compensation" and "Directors, Executive Officers, and Corporate Governance—Corporate Governance and Board Matters—Compensation Committee Interlocks and Insider Participation" in the 2021 Proxy Statement and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item will be included under the captions "Common Stock Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" in the 2021 Proxy Statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item will be included under the captions "Certain Relationships and Related Transactions" and "Directors, Executive Officers, and Corporate Governance—Corporate Governance and Board Matters—Director Independence" in the 2021 Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item will be included under the caption "Independent Registered Public Accounting Firm" in the 2021 Proxy Statement and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

We have filed the following documents as part of this Annual Report on Form 10-K:

1. Consolidated Financial Statements

2. Financial Statement Schedules

Schedule II: Valuation and Qualifying Accounts

The table below details the activity of the allowance for credit losses and sales credits for the years ended December 31, 2018, 2019 and 2020 (in millions):

	Balance at Beginning of Year	Additions	Usage	Balance at End of Year
Year ended December 31, 2018	$ 674	$ 1,115	$ (1,060)	$ 729
Year ended December 31, 2019	$ 729	$ 1,481	$ (1,457)	$ 753
Year ended December 31, 2020	$ 753	$ 2,013	$ (1,422)	$ 1,344

Note: Additions to the allowance for credit losses are charged to expense. Additions to the allowance for sales credits are charged against revenues.

All other schedules have been omitted because they are not required, not applicable, or the required information is otherwise included.

3. Exhibits

Exhibit Number	Description	Incorporated by reference herein: Form	Date
2.01	Agreement and Plan of Merger, dated October 2, 2015, by and among Google Inc., the Registrant and Maple Technologies Inc.	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
3.01	Amended and Restated Certificate of Incorporation of the Registrant, dated October 2, 2015	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
3.02	Amended and Restated Bylaws of the Registrant, dated October 21, 2020	Current Report on Form 8-K (File No. 001-37580)	October 27, 2020
4.01	Specimen Class A Common Stock certificate	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.02	Specimen Class C Capital Stock certificate	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.03	Alphabet Inc. Deferred Compensation Plan	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.04	Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Larry Page and certain of his affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015

Exhibit Number		Description	Incorporated by reference herein Form	Date
4.05		Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Sergey Brin and certain of his affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.06		Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Eric E. Schmidt and certain of its affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.07		Class C Undertaking, dated October 2, 2015, executed by the Registrant	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.08		Indenture, dated February 12, 2016, between the Registrant and The Bank of New York Mellon Trust Company, N.A., as Trustee	Registration Statement on Form S-3 (File No. 333-209510)	February 12, 2016
4.09		Registrant Registration Rights Agreement dated December 14, 2015	Registration Statement on Form S-3 (File No. 333-209518)	February 12, 2016
4.10		First Supplemental Indenture, dated April 27, 2016, between the Registrant and The Bank of New York Mellon Trust Company, N.A., as trustee	Current Report on Form 8-K (File No. 001-37580)	April 27, 2016
4.11		Form of the Registrant's 3.625% Notes due 2021 (included in Exhibit 4.10)		
4.12		Form of the Registrant's 3.375% Notes due 2024 (included in Exhibit 4.10)		
4.13		Form of the Registrant's 1.998% Note due 2026	Current Report on Form 8-K (File No. 001-37580)	August 9, 2016
4.14		Form of Global Note representing the Registrant's 0.450% notes due 2025	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.15		Form of Global Note representing the Registrant's 0.800% notes due 2027	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.16		Form of Global Note representing the Registrant's 1.100% notes due 2030	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.17		Form of Global Note representing the Registrant's 1.900% notes due 2040	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.18		Form of Global Note representing the Registrant's 2.050% notes due 2050	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.19		Form of Global Note representing the Registrant's 2.250% notes due 2060	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.20		Description of Registrant's Securities	Annual Report on Form 10-K (File No. 001-37580)	February 4, 2020
10.01	◆	Form of Indemnification Agreement entered into between the Registrant, its affiliates and its directors and officers	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
10.02	◆	Compensation Plan Agreement, dated October 2, 2015, between Google Inc. and the Registrant	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
10.03	◆	Director Arrangements Agreement, dated October 2, 2015, between Google Inc. and the Registrant	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
10.04	◆	Alphabet Inc. Deferred Compensation Plan	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
10.05	◆	Google Inc. 2004 Stock Plan, as amended	Current Report on Form 8-K (File No. 000-50726)	June 7, 2011
10.05.1	◆	Google Inc. 2004 Stock Plan - Form of Google Stock Option Agreement	Annual Report on Form 10-K (File No. 000-50726)	March 30, 2005

Exhibit Number		Description	Incorporated by reference herein Form	Date
10.05.2	◆	Google Inc. 2004 Stock Plan - Form of Google Restricted Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726)	March 30, 2005
10.05.3	◆	Google Inc. 2004 Stock Plan - Amendment to Stock Option Agreements	Registration Statement on Form S-3 (File No. 333-142243)	April 20, 2007
10.06	◆	Alphabet Inc. Amended and Restated 2012 Stock Plan	Current Report on Form 8-K (File No. 001-37580)	June 5, 2020
10.06.1	◆	Alphabet Inc. Amended and Restated 2012 Stock Plan - Form of Alphabet Restricted Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726)	February 4, 2020
10.06.2	◆	Alphabet Inc. Amended and Restated 2012 Stock Plan - Performance Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726)	February 4, 2020
10.07	◆	Motorola Mobility Holdings, Inc. 2011 Incentive Compensation Plan	Registration Statement on Form S-8 (File No. 333-181661)	May 24, 2012
14.01		Code of Conduct of the Registrant as amended on September 21, 2017	Annual Report on Form 10-K (File No. 001-37580)	February 6, 2018
21.01	*	Subsidiaries of the Registrant		
23.01	*	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm		
24.01	*	Power of Attorney (incorporated by reference to the signature page of this Annual Report on Form 10-K)		
31.01	*	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002		
31.02	*	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002		
32.01	‡	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002		
99.01		Stipulation and Agreement of Settlement	Current Report on Form 8-K (File No. 001-37580)	September 5, 2020
99.02		Notice of Pendency and Proposed Settlement of Derivative Actions	Current Report on Form 8-K (File No. 001-37580)	October 23, 2020
101.INS	*	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.		
101.SCH	*	XBRL Taxonomy Extension Schema Document		
101.CAL	*	XBRL Taxonomy Extension Calculation Linkbase Document		
101.DEF	*	XBRL Taxonomy Extension Definition Linkbase Document		
101.LAB	*	XBRL Taxonomy Extension Label Linkbase Document		

Exhibit Number		Description	Incorporated by reference herein	
			Form	Date
101.PRE	*	XBRL Taxonomy Extension Presentation Linkbase Document		
104		Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)		

◆ Indicates management compensatory plan, contract, or arrangement.
* Filed herewith.
‡ Furnished herewith.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 2, 2021

ALPHABET INC.

By: /S/ SUNDAR PICHAI

Sundar Pichai
Chief Executive Officer
(Principal Executive Officer of the Registrant)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Sundar Pichai and Ruth M. Porat, jointly and severally, his or her attorney-in-fact, with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Annual Report on Form 10-K and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/S/ SUNDAR PICHAI Sundar Pichai	Chief Executive Officer and Director (Principal Executive Officer)	February 2, 2021
/S/ RUTH M. PORAT Ruth M. Porat	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 2, 2021
/S/ AMIE THUENER O'TOOLE Amie Thuener O'Toole	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 2, 2021
/S/ FRANCES H. ARNOLD Frances H. Arnold	Director	February 2, 2021
/S/ SERGEY BRIN Sergey Brin	Co-Founder and Director	February 2, 2021
/S/ L. JOHN DOERR L. John Doerr	Director	February 2, 2021
/S/ ROGER W. FERGUSON, JR. Roger W. Ferguson, Jr.	Director	February 2, 2021
/S/ JOHN L. HENNESSY John L. Hennessy	Director, Chair	February 2, 2021
/S/ ANN MATHER Ann Mather	Director	February 2, 2021
/S/ ALAN R. MULALLY Alan R. Mulally	Director	February 2, 2021
/S/ LARRY PAGE Larry Page	Co-Founder and Director	February 2, 2021
/S/ K. RAM SHRIRAM K. Ram Shriram	Director	February 2, 2021
/S/ Robin L. Washington Robin L. Washington	Director	February 2, 2021