IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

UNITED STATES, et al.,	)	
	)	
Plaintiffs,	)	
v.	)	No. 1:23-cv-00108-LMB-JFA
	)	
GOOGLE LLC,	)	
	)	
Defendant.	)	

PLAINTIFFS' PRE-TRIAL PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

The United States and seventeen State Co-Plaintiffs bring this enforcement action to hold Google accountable for illegally acquiring and maintaining monopolies in digital advertising technology ("ad tech") tools that, as a practical matter, fund and support the internet economy and its expansion—including the content creation, journalism, and exchange of ideas that promote a free, vibrant, and open society. Through this action, Plaintiffs seek to restore competition and fairness to these vital markets.

At trial, Plaintiffs will establish through contemporaneous documents, the testimony of witnesses, and expert analysis that Google engaged in a course of conduct to subvert the competitive process and entrench its monopoly power over three distinct types of ad tech tools that website publishers use to sell ads on their websites and advertisers use to buy ads on the open internet. Google's monopolies in each of these separate markets was no accident but rather the result of a campaign to condition, control, and tax digital advertising transactions over 15 years. This campaign was exclusionary, anticompetitive, and mutually reinforcing.

First, Google used its dominance and monopoly power in general internet search and search text advertising to build a huge network of advertiser demand and data amassed through user surveillance on the open internet. Google then made the leap from monopolizing digital

advertising on its own search engine to exert equivalent power over digital ads sold on third-party websites.

Second, Google bought the largest publisher ad server by acquiring DoubleClick in 2009. With that transaction, Google acquired a large base of publishers seeking to connect to advertisers like the ones in its Google Ads network. Today, Google controls 91% of the publisher ad server market. At the same time, Google controls more than 85% of the advertiser ad network market via Google Ads.

In buying DoubleClick, Google also acquired a nascent ad exchange that, because of Google's anticompetitive conduct, now controls well over half the ad exchange market for open-web display transactions, more than 9 times its nearest rival. As a result, Google controls the tools used by both sides of advertising transactions: the tools publishers use to sell open-web display ads as well as the tools advertisers use to buy such ads. Unlike a participant in a competitive marketplace, Google does not serve the interests of its customers, be they publishers or advertisers. Indeed, Google benefits from a privileged position as the middleman, extracting monopoly rents whenever open web display ads are transacted by advertisers and publishers on its exchange. Google's own employee characterized its position as an "authoritarian intermediary."

Finally, after Google locked up both sides (and the middle) of open web display ad transactions, Google undertook an exclusionary and anticompetitive course of conduct that entrenched, expanded, and mutually reinforced its monopoly power in these three ad tech markets.

Google's internal documents reveal a plan to entrench its monopoly power over the tools website publishers need to sell their display ads by restricting publishers' ability to access

Google's pool of highly lucrative advertising customers and "overcharging its advertisers" in the process. Google conditioning access to its ad tech tools through contractual restraints foreclosed the ability of customers to use rivals' products. As one Google manager said, "[o]ur goal should be all or nothing – use [Google's ad exchange] or don't get access to our [advertiser] demand."

Google also manipulated the ad tech auctions that determine how digital advertisements are bought, sold, and shown, including by giving itself a "first look" and "last look" advantage over rival ad exchanges. When its customers attempted to innovate and bypass Google's stranglehold on the ad tech stack, Google fought back by punishing customers for trying to use rivals' products, and further conditioning access to its ad tech tools. Google was able to do so without fear of losing customers or profits because it was the dominant company at each level of the ad tech stack.

In implementing these anticompetitive policies and practices, Google deprived its own customers of freedom of choice. Google degraded the quality of its tools and its rivals' tools. And Google amassed transaction data that gave it scale advantages to raise scale barriers to entry, further cementing its monopoly power. Google's illegal monopolies drove out rivals, subverted the competitive process, inflated advertising costs (and the costs of those products sold by advertisers), reduced publishers' revenues, and thwarted innovation.

Plaintiffs bring this antitrust action to put an end to Google's myriad anticompetitive schemes, restore competition to these vital markets, and prevent the recurrence of these violations of law. Based on the evidence presented at trial, Plaintiffs respectfully request the Court find Google liable for violating Sections 1 and 2 of the Sherman Act by monopolizing the markets for publisher ad servers and advertiser ad networks; monopolizing or attempting to monopolize the market for ad exchanges; and for illegally tying its products together.

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I. Introduction and Legal Framework

A. Nature of the Action

1. The United States and seventeen States brought this action under Section 4 of the Sherman Act and Section 16 of the Clayton Act respectively, 15 U.S.C. §§ 4, 26, to prevent and restrain Google's violations of Sections 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1, 2. Plaintiffs seek to halt Google's anticompetitive and exclusionary scheme to maintain monopolies in three distinct digital advertising technology ("ad tech") markets, to unfetter and restore competition in each of these markets, and to prevent the recurrence of Google's illegal scheme in the future for the benefit of the consumers, advertisers, and publishers who rely on these markets.

B. The Parties

2. Plaintiffs are the United States and the states of Arizona, California, Colorado, Connecticut, Illinois, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Rhode Island, Tennessee, Virginia, Washington, and West Virginia.

3. Defendant Google LLC is a limited liability company organized and existing under the laws of the State of Delaware and is headquartered in Mountain View, California. Google is owned by Alphabet Inc., a publicly traded company incorporated and existing under the laws of the State of Delaware and headquartered in Mountain View, California. Google's display advertising business is part of its "Ads" unit, which consists of Google's YouTube, search, shopping, and non-search display advertising businesses. In 2021, Alphabet recorded nearly $260 billion in revenue, a 41% increase over 2020. Alphabet's "Google Network" revenue, which represents non-search display advertising revenue from Google's AdMob, Ad Manager, and AdSense products, among others, generated $31.7 billion in 2021, a 37% increase over 2020 revenue. DTX1210 at 33. Since that time, Alphabet's revenues have increased. In

2023, Alphabet recorded over $307 billion in revenue, an 8.7% increase over 2022. Alphabet 2024 10-K, p. 35.[1] "The vast majority of Alphabet's revenues (nearly 80%) come from digital advertisements." *United States v. Google LLC*, No. 20-CV-3010, 2024 WL 3647498, at *6 (D.D.C. Aug. 5, 2024).

C. Jurisdiction of this Court and Venue

4. This Court has subject matter jurisdiction over this action under Section 4 of the Sherman Act, 15 U.S.C. § 4, and 28 U.S.C. §§ 1331, 1337(a), and 1345.

5. Venue is proper in this District under Section 12 of the Clayton Act, 15 U.S.C. § 22, and under 28 U.S.C. § 1391 because Google transacts business and is found within this District.

II. Witnesses Plaintiffs May Call at Trial

A. Publishers

Witness Name	Company	Title
Blom, Ken	Buzzfeed	EVP of Strategy and Operations
Glogovsky, James	New York Times	VP of Revenue Operations and Analytics
Helfand, Jeremy	Disney	Executive VP, Advertising & Data Platforms, Disney Entertainment & ESPN Technology
Hochberger, Eric	Mediavine	Founder & CEO
Layser, Stephanie	News Corp	Former VP of Data, Identity, and Ad Tech Products & Platforms
Minkin, David	News Corp	Former SVP, Commercial Product Strategy and Digital Operations
Pauley, Ryan	Vox	President of Revenue & Growth

[1] https://abc.xyz/assets/4b/01/aae7bef55a59851b0a2d983ef18f/596de1b094c32cf0592a08edfe84ae74.pdf.

Witness Name	Company	Title
Wolfe, Tim	Gannett (USA Today)	SVP for Revenue Operations
Wheatland, Matthew	Daily Mail	Chief Digital Officer, United States
Zeng, Felix	Weather.com	Head of Programmatic

B. Advertisers

Witness Name	Company	Title
Bradbury, Bo	GSD&M	VP, Managing Director
Bumpers, Brian	Zulily	Marketing Analytics Manager
Friedman, Jay	Goodway Group	Chief Executive Officer
Lambert, Luke	Omnicom	Chief Innovation Officer
Lowcock, Josh	IPG (Universal McCann)	Former Global Chief Media Officer
Schiekofer, Susan	GroupM	Chief Digital Investment Officer

C. Ad Tech Companies

Witness Name	Company	Title
Avery, James	Kevel	Founder & CEO
Bhatia, Gopal Krishan	Comcast	Former SVP of Strategy and Development
Boland, Brian	Meta	Former VP
Cadogan, Tim	OpenX	Co-Founder and CEO
Casale, Andrew	Index Exchange	President, Founder, and CEO
Creput, Arnaud	Equativ	CEO
Crum, Henry	Meta	Senior Director of Product Management and Data Practices
Dederick, John (“Jed”)	The Trade Desk	Chief Client Officer
Farber, Omri	Meta	Product Manager
Gentry, John	OpenX	CEO
Goel, Rajeev	PubMatic	Founder & CEO
John, Benneaser (“Ben”)	Xandr (formerly AppNexus) & Microsoft	Former CTO at Xandr, Microsoft VP
Kershaw, Tom	Magnite	Former CTO
O’Kelley, Brian	Xandr (formerly AppNexus)	Co-Founder and CEO
Parsons, Todd	Criteo	Chief Product Officer
Shaughnessy, Michael	Kargo	Chief Operating Officer
Soroca, Adam	Magnite	Chief Product Officer

Witness Name	Company	Title
Whitcombe, Simon	Meta	VP of Global Business Group

D. Google Employees (Current/Former)

Witness Name	Company	Title
Amini, Ali Nasiri	Google	VP of Engineering and Data Scientist
Pappu, Aparna	Google	VP of GM Workspace
Bellack, Jonathan	Google	Former Senior Director and Project Manager of Publisher Ad Platforms
Bender, Brad	Google	Former Project Manager of Google Ads and VP of Google News & Search Ecosystems
Cox, Sam	Google	Former Group Project Manager for Ad Exchange Buyside and Policy
Craycroft, Tim	Google	Vice President and General Manager
Dischler, Jerry	Google	Former VP and General Manager of Ads
Dukellis, John (“Duke”)	Google	VP of Project Management
Giles, Jim	Google	VP of Engineering for Google Workspace
Harrison, Donald	Google	President of Global Partnerships and Corporate Development
Hsiao, Sissie	Google	VP & GM of Google Assistant and Bard
Jayaram, Nirmal	Google	Senior Director of Engineering
Kim, Woojin	Google	Senior Software Engineer
Korula, Nitish	Google	Engineering Director
LaSala, Chris	Google	Former Managing Director and Global Product Lead
Levitte, George	Google	Director of Project Management
Lipkovitz, Eisar	Google	Former VP Engineering Display and Video Ads
Loubser, Max	Google	Group Project Manager

Witness Name	Company	Title
Mohan, Neal	Google	Current Chief Product Officer of YouTube & Former SVP of Display & Video Ads
Pal, Martin	Google	Research Scientist
Rowley, Bryan	Google	Former Principal of Corporate Strategy
Sheffer, Scott	Google	Former VP of Partnerships
Sinaniyev, Vlad	Google	VP of Engineering
Shodjai, Payam	Google	Former Senior Director, Product Management, Google Assistant
Spencer, Scott	Google	Former VP of Product Management, Privacy, User Trust
Spero, Jason	Google	Former VP of GBO
Srinivasan, Rahul	Google	Former Sellside Product Manager
Stewart, Bonita	Google	VP of Global Partnerships
Verma, Alok	Google	Director of Strategic Partnerships for Ad Platforms

E. Experts

Witness Name	Company	Title
Abrantes-Metz, Rosa	Berkley Research Group	Managing Director
Hoyer, Wayne	University of Texas	Professor of Marketing
Lee, Robin	Harvard University	Professor of Economics
Lim, Adoria	Brattle	Head of Accounting Practice
Ravi, Ramamoorthi	Carnegie Mellon University	Professor of Business, Operations Research and Computer Science
Simcoe, Timothy	Boston University	Professor of Strategy and Innovation
Weintraub, Gabriel	Stanford Graduate School of Business	Professor of Operations, Information, and Technology
Wilbur, Kenneth	University of California, San Diego	Professor of Marketing and Analytics

F. Industry Background of Key Fact Witnesses

6. Plaintiffs provide the below information about the experience of certain key fact witnesses they intend to call at trial.

7. *Felix Zeng/Weather.com.* Mr. Zeng serves as Head of Programmatic at Weather.com. He has sold digital ads for website publishers and used Google's ad tech products for the past 15 years. Mr. Zeng began selling digital ads at About.com, a publisher, in 2009. Since 2014, Mr. Zeng has been selling digital ads at Weather.com and is currently the head of programmatic advertising sales. Weather.com sells over $200 million of digital ads annually and serves about 500 million impressions per day. Weather.com.com derives about 95% of its revenue from digital ad sales and is one of Google's largest publisher customers. Weather.com uses Google's publisher ad server, and most of its ads sold programmatically are sold via Google's AdX, the largest ad exchange.

8. *Andrew Casale/Index Exchange.* Andrew Casale has worked in digital advertising technology used by website publishers since 2002, when he began building and monetizing websites out of his parent's garage at the age of 15. In 2003, Mr. Casale established Casale Media, an ad tech company that focused on helping publishers monetize their websites. From 2003 to 2010, Casale Media operated an advertising network, working directly with publishers and advertisers. In the early 2010s, Casale Media transitioned to an ad exchange business, and in 2015 changed its name to Index Exchange. Mr. Casale has been President and CEO of Index Exchange for the past nine years.

9. *Joshua Lowcock/IPG.* Mr. Lowcock is an ad agency executive with significant experience in ad tech products used by advertisers and advertising agencies. From 2015 until 2023, Mr. Lowcock was the Global Chief Media Officer of Interpublic Group's Universal McCann ("IPG"), a media agency that purchases and places advertisements on behalf of its

clients. As Global Chief Media Officer, Mr. Lowcock was responsible for IPG's digital advertising technology tools as well as omnichannel media, strategy, predictive analytics, and performance marketing. Mr. Lowcock previously worked at MediaVest, an ad agency, from 2013 to 2015, and served as Head of Commercial Products and Platforms at News Corp from 2011 to 2013, where he led the launch of the company's customer data and analytics strategy. Currently, Mr. Lowcock is the President of Quad, a marketing and data company.

10. *James Avery/Kevel.* Mr. Avery has over 14 years' experience in certain publisher-side ad tech tools. He is the CEO of Kevel (formerly AdZerk), a U.S.-based publisher ad server that Mr. Avery founded in 2010. As Kevel's CEO, Mr. Avery oversees the company's leadership team and participates in making all high-level product and strategy decisions. When Kevel was first launched, Mr. Avery was responsible for writing computer code for Kevel's products and making sales to prospective customers. Mr. Avery began his career by building websites during high school and college, and before founding Kevel, worked as a computer programmer at Dell and several other software companies.

11. *Stephanie Layser/News Corp*. Ms. Layser has over 14 years of experience in ad tech tools used by website publishers. After graduating college in 2010, Ms. Layser worked at the New York Post as an account coordinator, where she managed the Post's remnant inventory. From 2010 to 2013, Ms. Layser worked at the New York Post, from 2013 to 2014, she worked for Daily Mail, and from 2014 to 2017 she was a consultant for publishers focusing on programmatic ad sales as well as revenue optimization and reporting. Between 2015 and 2016, Ms. Layser also worked for startup called A Plus where she helped publishers adopt header bidding technology made available by PreBid.org. From 2017 to 2022, Ms. Layser was the Vice

President of Data, Identity, and Ad Tech at News Corp. In 2022, she moved to Amazon, where she currently works in cloud services.

12. *Jay Friedman/Goodway Group*. Jay Friedman is the Chief Executive Officer of the Goodway Group, where he has worked for 18 years. Mr. Friedman has experience in various advertising industries since 1997. The Goodway Group is an advertising and digital media buying agency for advertisers, brands, and other ad agencies, focused on digital advertising. On behalf of advertisers and brands, the Goodway Group plans and optimizes digital advertising campaigns. For its 100 ad agency clients, mostly smaller ad agencies, Goodway helps purchase digital ads using a variety of ad tech tools.

13. *Tim Wolfe/Gannett.* Mr. Wolfe is Senior Vice President for Revenue Operations at Gannett, the largest U.S. newspaper publisher, where he leads advertising operations for all of Gannett publishing and has direct oversight of ad tech partnerships. Mr. Wolfe has over 20 years' experience with digital advertising technology used by website publishers. In 1997, he joined AOL's finance group and was responsible for AOL's digital advertising operations. In 2008, Mr. Wolfe joined Gannett, where he quickly took over the national advertising team, overseeing Gannett's programmatic monetization strategy. From 2013 to 2014, Mr. Wolfe was involved in Gannett's transition to Google's publisher ad server and its adoption of Google's ad exchange.

14. *John Dederick/The Trade Desk ("TTD").* Mr. Dederick is the Executive Vice President and Chief Client Officer at TTD, where he oversees client relationships, especially with ad agencies and large advertisers. Mr. Dederick has been at TTD since 2012 and is on the board of several digital advertising focused industry organizations. TTD is a publicly-listed demand-side platform, an ad tech tool used by large advertisers and advertising agencies to

purchase digital advertising. TTD is the second largest demand-side platform, behind Google's DV360. Advertisers use TTD to bid into auctions run by ad exchanges.

15. *Tom Kershaw/Magnite.* Mr. Kershaw was chief technology officer at Magnite from 2016 to 2021, where he oversaw all aspects of product development, platform strategy, product design, and go-to-market planning. Magnite was founded in 2007 and is a publicly-listed ad exchange that competes with Google's AdX ad exchange. Magnite is the second or third largest ad exchange. Mr. Kershaw was a co-founder and board member of Prebid.org, which provides a free, open-source software to publishers to implement an important aspect of digital advertising technology known as header bidding.

16. *Brian Boland/Meta.* Mr. Boland has worked in the ad tech industry for almost 20 years. Mr. Boland began his career in 2005, at Perfomics, an ad agency that was soon acquired by DoubleClick. Shortly after the acquisition, Mr. Boland went to Microsoft, where he worked for four years on a programmatic ad product called Ad Center. In 2009, Mr. Boland joined Meta (formerly Facebook) to help build an ad-centered revenue system and worked on those efforts until 2019. At Meta, Mr. Boland primarily focused on two projects: (i) the core Meta advertising business, and (ii) Meta's overall ad tech strategy, which included overseeing multiple acquisitions and the creation of Meta's advertiser ad network, "Facebook Audience Network." Mr. Boland left Meta in the fall of 2020.

17. *Tim Cadogan/OpenX.* Mr. Cadogan co-founded OpenX in 2008 and was its Chief Executive Officer between 2008 and 2020. OpenX currently operates an ad exchange. OpenX previously operated a publisher ad server that exited the market due to Google's alleged anticompetitive and exclusionary conduct at issue in this enforcement action. OpenX was an early participant in header bidding, which increased competition for digital display advertising

but was stifled by Google's alleged anticompetitive and exclusionary conduct at issue in this lawsuit.

18. *Matthew Wheatland/Daily Mail.* Mr. Wheatland is the Chief Digital Officer at Daily Mail, a publisher. Mr. Wheatland has had various roles in digital ad sales at Daily Mail since beginning his professional career there in 2012. Daily Mail is one of the largest news website publishers worldwide, with hundreds of millions of unique visitors monthly. Most of Daily Mail's revenue is generated through digital ad sales. Since June 2019, approximately half of Daily Mail's display advertisements sold via auctions are transacted via Google's AdX ad exchange.

III. Google's Anticompetitive Conduct To Monopolize Ad Tech Markets

A. Industry Background

1. Open-Web Display Advertising

19. A display ad is an image or text-based advertisement displayed on a website and viewed in an internet browser (e.g., Google Chrome, Microsoft Edge, Mozilla Firefox, Apple Safari, etc.). PTX1699 at 4–10 (Amazon Ads' description of "display ads" is "online ads that combine copy and visual elements . . . that links to a landing page. You typically see display ads along the top or sides of a website[.]"); Ravi (Pls. Expert) Testimony;[2] Helfand (Disney 30(b)(6) 2023)) Dep. Tr. 46:21–47:5 (a display ad is "a static image on a page adjacent to content, as opposed to embedded in a piece of video content"); Bhatia (Comcast (2023)) Dep. Tr. 25:14–22 (a display ad is "a static or animated commercial that is embedded and runs alongside a web

[2] Throughout their Proposed Findings of Fact, Plaintiffs identify anticipated testimony, trial exhibits, and designated deposition transcripts that Plaintiffs anticipate will support the proposed factual finding. Given Plaintiffs' interest in streamlining the presentation of evidence at trial and the inherent uncertainties of trial, Plaintiffs ultimately may present alternative or additional evidence to support the proposed factual finding.

page that you might be reading"); Bumpers (Zulily 30(b)(6) 2023)) Dep. Tr. 44:1–3 ("[a] display ad is on your website . . . the side of your screen").

20. Open-web display advertising is a type of display ad shown on the websites of open-web publishers and can be viewed on desktop or mobile devices. Lee (Pls. Expert) Testimony. Open-web publishers are those publishers that rely on third-party ad tech products (i.e., ad tech products that these publishers do not themselves own) to sell their display advertising. Lee (Pls. Expert) Testimony; PTX1659 at 24 (describing as "Open Web: Commonly accepted framing of the media ecosystem that exists outside of walled garden publishers like Facebook & YouTube.").

21. As described in more detail below, display ads and the ad tech tools used to buy, sell, and show them on websites are distinct from other forms of digital advertising—such as search ads, social media ads, and instream video ads—from both the perspective of website publishers and online advertisers. Zeng (Weather) Testimony; Lee (Pls. Expert) Testimony.

22. Website publishers generate money by selling advertising space on their websites to advertisers who want to show their display ads to customers and thus advertise goods, services, or messages to website users. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony; PTX1064 at -585 (advertiser "goal[s]" are for "someone to learn more about their business," or "for the user to take an action"); Sheffer (Google (2021)) Dep. Tr. 94:15-95:4 ("publisher[s] make[] a piece of ad inventory available . . . [a]nd then different [advertisers] are able to bid to win … using their different targeting technologies[.]"). These advertisers include small businesses, large corporations, agencies of federal and state governments, charitable organizations, political candidates, public interest groups, religious and community organizations, and more. Friedman (Goodway Group) Testimony. Some advertisers contract with

ad agencies that have industry experience and expertise to buy advertisements on their behalf. Lipkovitz (Google (2021)) Dep. Tr. 90:3–91:17; Friedman (Goodway Group) Testimony.

23. A single display ad shown to a particular website user at a particular time is called an "impression." Lee (Pls. Expert) Testimony; PTX1171 at -506 ("An ad impression is reported whenever an individual ad has begun to download to the user's device."); PTX1153 at -332 (website "views" is synonymous with "impressions"); O'Kelley (Xandr (2023)) Dep. Tr. 28:22–29:2 ("[I]mpression is one person who is exposed to an ad"); Sheffer (Google (2021)) Dep. Tr. 86:16–19 ("[I]mpression is . . . a specific delivered ad in a particular location or ad slot"). A publisher's "inventory" refers to the total number of impressions a publisher offers for sale to advertisers. Sheffer (Google (2021)) Dep. Tr. 85:20–86:19 (a "common industry term" for advertising slots on a publisher's web page is "inventory").

24. Not all impressions are created equal. Attributes of the website and the particular website user—such as the user's demographics and her interests as revealed through previous websites visited—can make an impression more valuable to a particular advertiser. PTX1142 at -950 (The goal of ad serving is to "deliver the right ad to the right customer at the right time."); PTX1166 at -187 (Google website explaining that "[m]atching ads to people's interests" based on demographic targeting and "the types of websites they like to visit" increases the advertiser's return on investment). For example, a parent browsing a blog about children's bike lessons who previously visited a toddler bicycle website may be particularly valuable to an advertiser that sells toddler bikes, at least relative to an advertiser that sells only full-size trucks. The ability to target more precise audiences distinguishes digital display ads from traditional TV or print ad placements, where the same ad is bought in advance and shown to all viewers of a TV show or readers of a magazine. Lee (Pls. Expert) Testimony; PTX0792 at -665 (Google

presentation describing how digital ad "technology delivers greater precision in media buying than traditional advertising[,]" which is "[b]ought in advance, in bulk" and provides "less control over who sees your ad, where and when[.]"); PTX1064 at -584 ("advertising [as] broadcasting" is merely "hoping you w[ill] reach someone").[3] It also means that data gleaned from an Internet user's internet history can be particularly valuable to advertisers looking to target particular types of users and to the ad tech tools used by those advertisers.

25. All else equal, publishers want to find the advertisers willing to pay the highest prices for their impressions while advertisers want to pay the lowest prices for impressions that meet their advertising campaign goals. Zeng (Weather) Testimony; Lowcock (IPG) Testimony; Lee (Pls. Expert) Testimony; O'Kelley (Xandr (2023)) Dep. Tr. 146:11–19 ("[A]s an advertiser . . . [y]ou should be finding the lowest price you can win an impression" while maximining "best outcome[s.]"); Levitte (Google (2021)) Dep. Tr. 61:14–16 (Publishers configure digital sales so that "the highest bid or highest expected value wins.").

26. An ad tech industry has developed around automating the matching of publishers selling inventory (the "sell-side") and advertisers buying inventory to place advertisements (the "buy-side"). PTX1064 at -583 (Google's ad tech is "the broker between publishers, advertisers, and users."); Lee (Pls. Expert) Testimony.

27. Collectively, website publishers in the United States sell more than five trillion display ads on the open-web each year—more than 13 billion display ads every day. Lee (Pls. Expert) Testimony; PTX0591 at 659 (2018 Google presentation estimating 7.2 trillion "addressable [] web" display advertisements globally). These ads provide website publishers

[3] In his report and during his deposition, Google's primary economic expert on market definition issues did not contend the relevant market is any broader than digital advertising, and therefore would not include TV or print ads, for example.

with over $12 billion in advertising revenue annually, which allows those publishers to create and maintain their websites to the benefit of Internet users. PTX0792 at -693. The advertising revenue publishers, particularly news publishers, generate fund journalists, photographers, editors, and other professionals who investigate and report stories to the public. Pauley (Vox (2023)) Dep. Tr. 57:4-6, 9-12 (revenues impact "ability to create content").

28. By virtue of the conduct described in PFOF §§ III.B-F below, Google has acquired and maintained monopoly power over each of the key ad tech tools that link website publishers with advertisers, namely (i) publisher ad servers, (ii) ad exchanges, and (iii) advertiser ad networks that transact open-web display advertising. Lee (Pls. Expert) Testimony.

2. Programmatic Advertising

29. Because display ads are generated alongside website content while a website loads, to sell inventory website publishers must quickly decide which display ads to show a particular user. For a single website publisher, such decisions would have to be made in a fraction of a second, hundreds of thousands or millions of times per day. Zeng (Weather) Testimony; Casale (Index Exchange) Testimony; Ravi (Pls. Expert) Testimony. Advertisers, likewise, must decide what impressions to bid for, on which websites, using which advertisements, and at what price. Dederick (The Trade Desk) Testimony; Lowcock (IPG) Testimony.

30. Programmatic advertising is the use of technology to automate and optimize, in real time, these publisher ad-selling (sell-side) and advertising ad-buying (buy-side, sometimes known as demand-side) processes. PTX0792 at -669 ("Programmatic advertising is the automation of buying and selling of digital advertising"); Helfand (Disney 30(b)(6) (2023)) Dep. Tr. 41:14–20 (programmatic is the "industry term for . . . automat[ing] the transaction of ad

inventory using a request sent out over the web to a demand source, and that demand source sending an ad back and placing that into the ad inventory"); Lipkovitz (Google (2021)) Dep. Tr. 24:19–25:15 (programmatic "automate[s]" advertising and "minimize[s] the number of people" needed to sell inventory and place ads); Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 96:5–17 (programmatic refers to the selling inventory and placing ads "automatically through integrations" between entities representing publishes and advertisers); Ravi (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. Automation—an innovation that pre-dates Google's conduct and was pioneered by other companies—allows publishers to sell their ad inventory to a much wider universe of advertisers, and, conversely, allows advertisers to buy ad inventory from a broader array of publishers. Pauley (Vox (2023)) Dep. Tr. 61:24–62:11 ("much larger set of potential advertisers" can buy Vox's inventory through programmatic advertising "than [it] could ever employ a sales force to talk to directly"); Bradbury (GSD&M (2023)) Dep. Tr. 136:10–23 (programmatic provides advertisers greater access to inventory "across many, many, many [web]sites" It also allows publishers to better match a particular Internet user visiting a specific website at a particular time to the advertiser most interested in showing an advertisement to that user. Weintraub (Pls. Expert) Testimony.

31. Display ads can be sold via either "direct" or "indirect" methods. PTX1145 at -254 (Google website describing "direct" and "indirect" transactions); PTX0792 at -667, -670 (Google presentation describing types of transactions); Lee (Pls. Expert) Testimony.

32. *Direct* transactions are where a publisher negotiates in advance a deal with an advertiser to sell a particular number of impressions. PTX0792 at -670 (direct sales are "[i]nventory bought at fixed prices directly from media owners"); PTX1031 at -527 (direct deal between publisher and advertiser or agency" involves "contracted quantities of impressions.");

Rowley (Google (2021)) Dep. Tr. 27:14–28:3 ("Direct" is "[a] publisher negotiating directly with advertisers or agencies to serve [advertisements] on their site"); Lee (Pls. Expert) Testimony. A direct deal may give the advertiser the right—or option—to show its advertisement at the top of the publisher's website for a set period of time or to a pre-determined set of users. Spencer (Google (2021)) Dep. Tr. 50:5-19 (publishers use ad server settings to implement the terms of a direct deal, such as "when to send the space to [a] given buyer."); Lee (Pls. Expert) Testimony.

33. Publishers cannot practicably sell their entire display ad inventory via pre-negotiated direct deals, however, because they cannot forecast with sufficient accuracy the volume or user attributes of *all* their future ad impressions. Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 209:17–210:16 (selling all impressions via direct would be "extremely challenging" because "direct sales require selling into the future," and "no [forecasting] system is that good"); Bhatia (Comcast (2023)) Dep. Tr. 68:7–69:1 ("[I]n indirect sales, you [] are able to reach a larger share of the advertising marketplace than through direct sales . . . in direct sales, we might transact with hundreds of . . . marketers[,] whereas in indirect sales, you have access to tens of thousands of smaller advertisers that use programmatic[.]"); Pauley (Vox (2023)) Dep. Tr. 64:7–23 ("it's very difficult to convert Open Auction buyers to direct buyers . . . most -- of Open Auction buyers, they are primarily looking for reaching a certain audience at a certain, typically, lower price than [] our direct ad business would support."). Additionally, publishers cannot negotiate one-to-one agreements with every advertiser interested in showing an advertisement on the publisher's website. Wheatland (Daily Mail) Testimony; Zeng (Weather) Testimony. Doing so would require a substantial salesforce and be impractical given the volume of impressions for sale and the number of interested advertisers. Bradbury (GSD&M (2023)) Dep. Tr. 138:24–139:14 (agreeing that it would be more costly to do advertising across hundreds or thousands of

websites via a direct deal: "there would be a cost [to] administering and executing that."); Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 209:24–210:16; Wheatland (Daily Mail) Testimony; Zeng (Weather) Testimony; Cadogan (OpenX) Testimony. Without an alternative mechanism for selling ad inventory, a substantial amount of publisher inventory would go unsold. PTX0106 at -354 (Google "Vision" document) ("We expect that all publishers, regardless of size, will mediate and all will want yield optimization" for programmatic inventory).

34. A publisher's ad inventory that remains after accounting for all direct transactions is known as "remnant" inventory and is typically sold via an *indirect* channel. Lipkovitz (Google (2021)) Dep. Tr. 26:25–27:8 ("remnant" is a publisher's "leftover" inventory that has not been "direct sold"); Lee (Pls. Expert) Testimony; PTX1653 at -093 (News Corp survey). Indirect transactions are those in which there is no direct relationship between the publisher and the advertiser. Abrantes-Metz (Pls. Expert) Testimony. Indirect transactions can occur through auctions involving publishers and advertisers. Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony.

35. Publishers typically sell their "remnant" inventory on an impression-by-impression basis via a real-time "open auction," i.e., an auction open to a wide swath of advertisers rather than advertisers who have a pre-existing deal with the publisher. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony; Lee (Pls. Expert) Testimony; Bhatia (Comcast (2023)) Dep. Tr. 75:18–24 ("An open auction, in essence, allows any advertiser who has access to an auction platform to buy an ad."); Spencer (Google (2021)) Dep. Tr. 85:23–25 ("[O]pen auction is auctions that go to all buyers."); PTX0792 at -689 ("open auction" happens "in real time" among "different types of buyers").

3. Ad Tech Tools

36. Website publishers, advertisers, and ad agencies use software—sometimes called "ad tech tools"—to match sellers and buyers of display ad inventory in fractions of a second. Zeng (Weather) Testimony; Casale (Index Exchange) Testimony; Dederick (The Trade Desk) Testimony. When news media and other publishers shifted to digital distribution channels, a number of innovative technology companies met the moment and developed these ad tech tools to allow publishers to generate revenue from their burgeoning digital presence to fund their operations. The critical ad tech tools for purposes of this case are (i) publisher ad servers, (ii) advertiser ad networks, (iii) demand-side platforms ("DSPs"), and (iv) ad exchanges. Zeng (Weather) Testimony; Casale (Index Exchange) Testimony; Dederick (The Trade Desk) Testimony. Together, these tools are called the "ad tech stack." Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony; John (Microsoft 30(b)(6) (2023)) Dep. Tr. 56:23–57:6 (the "stack" includes "both [the] buy side and sell side"); PTX0581 at -979–83 [redacted] PTX1562 at -011, -019 (AppNexus response to the FCA referring to the "ad tech stack" and "Google's stack of ad tech products"); PTX1690 at -454 (Xandr response to the FCA referring to the "ad tech stack").

37. *Publisher ad servers.* Website publishers use software called a "publisher ad server" to manage their sales of display ad inventory to advertisers for both direct and indirect transactions. PTX0559 at -652 ("The ad server is the backbone of publishers' ad business."); Lee (Pls. Expert) Testimony; Lipkovitz (Google (2021)) Dep. Tr. 58:2–11 (agreeing that publisher ad servers manage "both direct and remnant [indirect] sales"); Sheffer (Google (2021)) Dep. Tr. 79:23–81:22 (describing function of Google's publisher ad server). The publisher ad server decides, using rules set in part by the publisher, which ad is displayed for a given impression and then retrieves the ad from the advertiser and displays it to the website user, all in the short time it

takes for the website's content to load on the user's web browser. Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 155:15–156:7 (publisher ad server is the publisher's tool for deciding "who buys their ads" and "what those will be priced at"); Sheffer (Google (2021)) Dep. Tr. 80:13–81:17 (publishers can "monetize" inventory based on rules they set in the ad server); Bhatia (Comcast (2023)) Dep. Tr. 32:20–33:4 (publisher ad server ensures ad is delivered while the user is viewing the web page content). A publisher ad server also informs the publisher about the number of impressions sold, on what terms, and how often users are clicking on display ads, all of which helps the publisher understand how its website is generating ad revenue and can be better monetized. PTX1562 at -025–026 (publisher ad servers aggregate data into a unified reporting system); PTX1652 at -972 ("Google's Advertising Technology Business" presentation describing key functions of a publisher ad server); PTX0559 at -664–665; Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony. Since at least 2008, Google has offered a publisher ad server called "DoubleClick for Publishers" or "DFP."[4] Spencer (Google (2021)) Dep. Tr. 12:14-19; Gentry (OpenX (2023)) Dep. Tr. 12:20–22.

38. *Advertiser Ad Networks.* Advertiser ad networks provide ad buyers a simple tool for automating and optimizing the purchase of display advertising. PTX0984 at -093 ("[S]ome advertisers [] want to apply ensure their ad shows only on specific web pages or apps where the content is specifically relevant - like airline ads on a travel website for example. [] [Google's advertiser ad network] offers this [] from a granular to a broad level, using the same technology we use to index the entire web for Google.com every day."); Lipkovitz (Google (2021)) Dep. Tr.

[4] In 2018, Google rebranded its publisher ad server and ad exchange under a common name, "Google Ad Manager" or "GAM." For clarity, and because industry participants continue to refer to the legacy names of Google's publisher ad server and ad exchange to distinguish between those distinct products, Plaintiffs use the legacy names of those products throughout.

88:15–89:4 (explaining that "networks in general have a very simple UI [user interface]" and they "do[] everything automatically for [the advertiser]").

39. Advertiser ad networks are distinct from other ad buying tools such as demand-side platforms or DSPs. For example, advertiser ad networks are generally easier to use than DSPs, especially for a small advertiser that lacks technical expertise or ad targeting data or for an advertiser that needs a "hands-off" solution for buying display ads. Lipkovitz (Google (2021)) Dep. Tr. 88:15–89:8 (comparing networks with DSPs that "end up being these very complex super features" requiring "somebody super knowledgeable" to run an ad campaign); 93:3–94:3 (very small advertisers "have no reason to" use a DSP); Lee (Pls. Expert) Testimony. Typically, advertisers buying display ads via an advertiser ad network pay only when an Internet user *clicks* on the advertiser's ad or takes some other action. So, while an advertiser ad network typically bids on and pays publishers for each impression, it only charges its advertiser customer when a user *clicks* on an advertisement. PTX1096 at -610 (Google submission to the European Commission) ("When advertisers use Google Ads to buy display ads, Google Ads does not typically charge advertisers a per transaction fee, or a fixed revenue share. Instead, advertisers are typically charged when a user takes an action, such as clicking on an ad (referred to as a cost-per-click (CPC) basis)."); Amini (Google (2023)) Dep. Tr. 85:6–86:19 (describing this as "[o]ne of the key differences" between Google's DSP and its advertiser ad network); Lipkovitz (Google (2021)) Dep. Tr. 92:4–24 (networks had capability to serve buyers who "would rather buy clicks" than "buy impression[s]"); Lee (Pls. Expert) Testimony. By contrast, advertisers using DSPs bid directly on—and pay for—each display ad *impression* shown to an Internet user. Lipkovitz (Google (2021)) Dep. Tr. 310:7–17 (as a user of Google's DSP, "[y]ou are buying impressions[;] [y]ou're not buying clicks").

40. Google's advertiser ad network is called Google Ads; the pool of advertiser demand that utilizes Google Ads to purchase display ads is sometimes referred to as the "Google Display Network" or "GDN" in Google's documents. Shodjai (Google (2020)) Dep. Tr. 52:4–13 (GDN exists "within Google Ads" and "is focused on display ads."); Amini (Google (2023)) Dep. Tr. 83:21–84:16 (GDN can be considered an ad network – "it's part of the name"). Google Ads provides advertisers access to advertising on "more than 2 million websites . . . [that] reach over 90% of Internet users worldwide" with "targeting to show your ads in particular contexts . . . to particular audiences . . . in particular locations." PTX1154 (Google Ads Help page defining the "Display Network"). To target ads in this way, Google Ads uses a mix of both contextual and user targeting data that it accumulates across its businesses. Dukellis (Google (2021)) Dep. Tr. 58:19–59:11 (In response to an ad request from a publisher, "Google will take a look at that and say, okay, what do I know about the user, the device, the categories of [content] this [website] is in, things like -- so a mix of contextual and, if available, personal information or profiled information.").

41. Millions of individual advertisers use Google Ads to buy open-web display ads. Kim (Google (2021)) Dep. Tr. 81:22–82:6; DTX0122 at -952 (The Trade Desk analysis of Google Ads/GDN: "Google Display Network (GDN) spans across 2MM websites . . . It claims to help advertisers reach 90% of internet population worldwide . . . GDN operates an arbitraged ad network model and its inventory is included within AdX in a non-transparent fashion.").

42. *Demand-Side Platforms ("DSPs").* Demand-side platforms are typically used by large advertisers and ad agencies to purchase display ads programmatically. Dederick (The Trade Desk) Testimony; Lowcock (IPG) Testimony; Casale (Index Exchange (2023)) Dep. Tr. 34:20–25, 35:2–5 ("in the programmatic marketplace . . . DSPs serve[] the needs of buyers and

marketers"); Casale (Index Exchange (2023)) 119:10–25, 120:2 ("large advertisers that have large pools of ad spend" use DSPs); Lee (Pls. Expert) Testimony; Lipkovitz (Google (2021)) Dep. Tr. 88:15–19, 90:3–8 ("The vast majority" of DSP customers are "agencies acting as an agent on behalf of large advertisers."). Demand-side platforms provide customizable tools for sophisticated advertisers and ad agencies that allow them to control where and how bids are submitted for display ad inventory. Dederick (The Trade Desk) Testimony; Harrison (Google (2021)) Dep. Tr. 37:3–12 ("DSPs are a tool used by more complex advertisers"); Lipkovitz (Google (2021)) Dep. Tr. 88:15–19, 90:3–8 (DSPs give advertisers "a lot more control"); Shiekorfer (GroupM 30(b)(6) (2023)) 127:6–12 ("you can't buy social through a DSP"); Lee (Pls. Expert) Testimony. DSPs allow advertisers to use the advertiser's own proprietary data to better target the audience they want to reach and refine their bidding strategy. Dederick (The Trade Desk) Testimony; PTX1031 at -483 (DSPs let advertisers control who an ad reaches, when it is served, and from which advertiser budget); Lee (Pls. Expert) Testimony. Google's DSP offering is called "Display and Video 360" or "DV360" and was previously known as "DoubleClick Bid Manager" or "DBM." PTX1031 at -483; Bellack (Google (2020)) Dep. Tr. 121:23–122:7.

43. *Ad Exchanges.* Publishers selling ad inventory via publisher ad servers connect to advertisers buying advertising via advertiser ad networks and DSPs through an ad exchange. Ad exchanges are sometimes referred to as "supply-side platforms" or "SSPs." PTX1031 at -481 (the terms "SSP and [Ad] Exchange are" "used interchangeably."); Casale (Index Exchange) Testimony; Lee (Pls. Expert) Testimony.

44. An ad exchange is software that runs real-time auctions for a website publisher's display ad inventory, i.e., each impression they want to sell. PTX1031 at -480 (exchanges are "an

online, auction-driven marketplace, where ad impressions are sold and bought in real time"); Casale (Index Exchange) Testimony. Thus, ad exchanges are an important source for indirect advertiser demand. Zeng (Weather) Testimony; Layser (News Corp) Testimony.

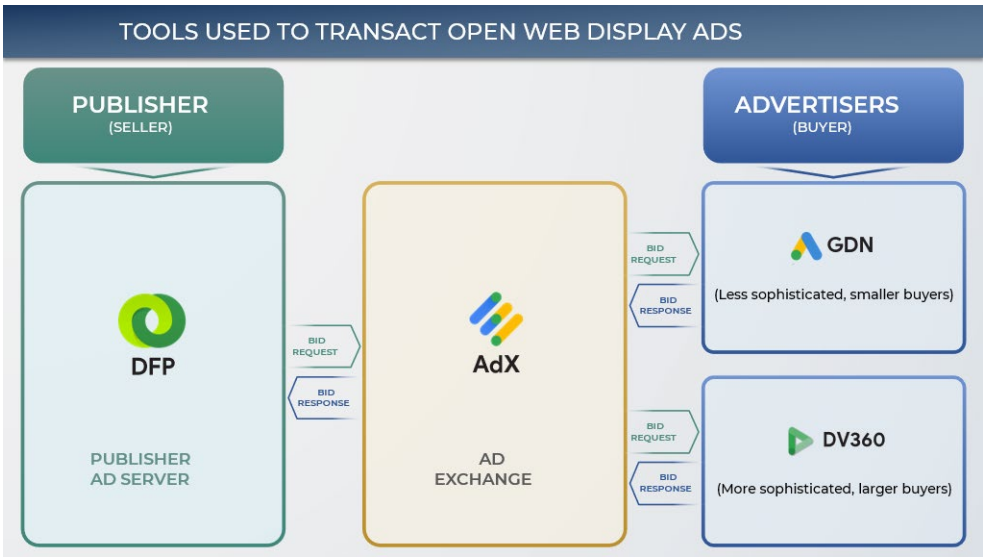
45. As part of the real-time auction, the publisher ad server (as configured by each publisher) sends information to the ad exchange about the impression being sold, including where the ad will appear on the website and data on the user who will be viewing the website, and any restrictions on the type of advertiser that can buy the impression (e.g., barring ads for certain types of products, or ads from specific companies).Sheffer (Google (2021)) Dep. Tr. 94:9–95:16 (Publishers can "specify[] things like the format of the ad. They may pass information about the user to give advertisers and agencies a sense of what the user might look like. And then that's offered up to the Ad Exchange."); PTX1031 at -501 ("Ad Exchange filter[s]" ads "against publisher defined rules"); Ravi (Pls. Expert) Testimony; Casale (Index Exchange) Testimony.

46. After the ad exchange receives information from a publisher about the impression being sold, the ad exchange requests bids from advertiser ad networks and DSPs, which run their own logic to select the top bids to submit to the ad exchange. PTX1031 at -502; Casale (Index Exchange) Testimony; Ravi (Pls. Expert) Testimony. The ad exchange evaluates the bids it receives to ensure they meet the publisher's eligibility criteria, runs an auction to select the highest eligible bidder, and sends the winning bid to the publisher ad server. PTX1031 at -502; Casale (Index Exchange) Testimony; Ravi (Pls. Expert) Testimony.

47. Since at least 2009, Google has operated its own ad exchange called "Ad Exchange" or "AdX."

4. Mechanics of Digital Display Advertising Auctions

48. Publishers and advertisers rely upon publisher ad servers, ad exchanges, demand-side platforms, and advertiser ad networks to buy and sell display advertising programmatically. Zeng (Weather) Testimony; Casale (Index Exchange) Testimony; Dederick (The Trade Desk) Testimony; Ravi (Pls. Expert) Testimony. As shown below, Google operates the dominant product within each of these markets.



49. In general, these ad tech tools work together in the following ways to match website publishers selling impressions (i.e., advertising space to be shown to a particular Internet user) with advertisers bidding on those impressions:

a. When a particular impression becomes available for sale on a website, e.g., a user loads a website on their computer, the website's publisher ad server will automatically request a bid from one or more ad exchanges (a "bid request"). PTX1031 at -502.The bid request contains information about the impression for sale and the user visiting the website. PTX1031 at -501.

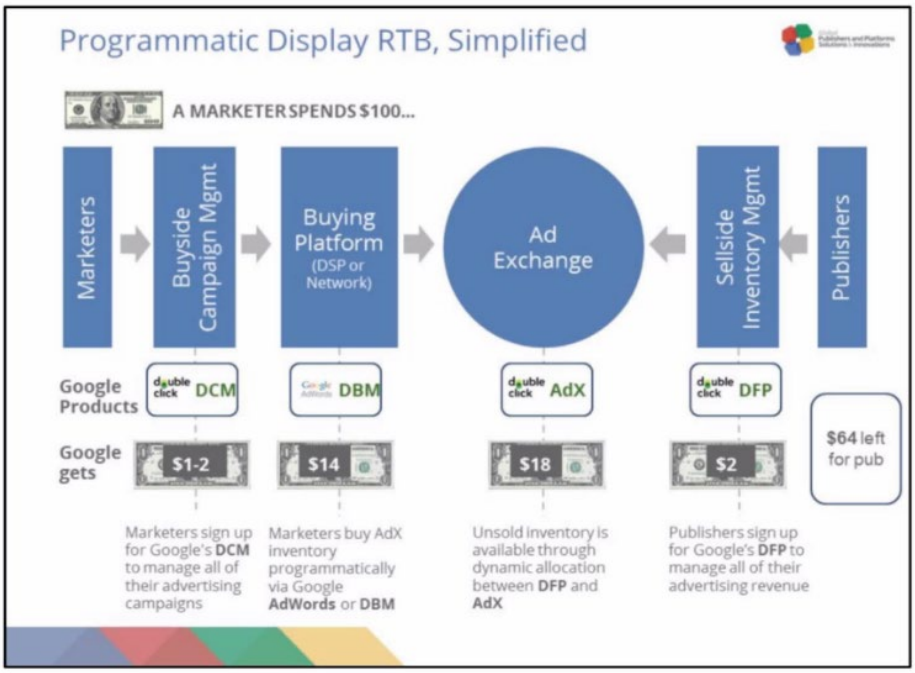
b. The ad exchange then sends its own bid request containing similar information to various advertiser buying tools or "demand sources" (e.g., advertiser ad networks and demand-side platforms). PTX1031 at -501–502.

c. Each advertiser buying tool identifies the advertiser customer willing to pay the most for the impression, and it returns a bid back to the ad exchange. PTX1031 at -480; DTX0117 at -349.

d. The ad exchange runs an auction of the bids it receives from the advertiser buying tools, and it returns a bid back to the publisher ad server. PTX 1031 at -501–502.

e. The publisher ad server compares the bids it receives from various exchanges against each other and selects a winning advertisement. PTX0559 at -652–653 (SSPs); DTX1003 at -7–8 (waterfall). The publisher ad server then loads that advertisement on the publisher's website. PTX0559 at -664–665.

50. At each step in the process above, ad tech tools deduct from advertiser bids the fees associated with using the ad tech tool, as shown in the Google-created diagram below. PTX0794 at -738 (Google presentation, "Programmatic Strategy Review"). In this illustration, Google keeps approximately $36 of every $100 in advertiser spending where the transaction goes through each of Google's ad tech tools. PTX0794 at -738.



51. These fees often are based on a percentage of the price of the underlying advertisement and are referred to as a "revenue share" (i.e., part of the revenue is shared with the ad tech tool and part ultimately shared with the website publisher). PTX0905 at -954–55; Bellack (Google (2020)) Dep. Tr. 163:4–14 (indicating that, within the exchange, revenue shares can vary by transaction type). Fees are generally only collected if the advertiser's bid wins; an ad tech tool does not receive compensation for submitting a bid that does not win the impression, even though the ad tech tool likely bears an associated cost. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 174:6–14 ("Index only generates revenue if we clear a transaction or if an auction wins[.]"); Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony; Dederick (The Trade Desk) Testimony; Ravi (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

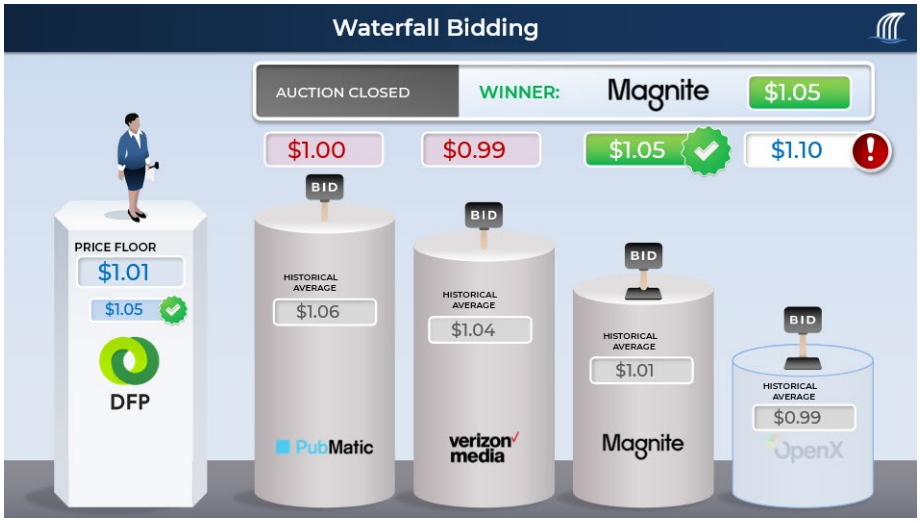
52. Historically, publishers used their ad server to sell impressions by requesting bids from ad exchanges one at a time—a process called a "waterfall." Wheatland (Daily Mail) Testimony; Ravi (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; DTX1003 at -245

("Because the ad server called exchanges sequentially, it needed a ranking mechanism to order them. Originally, publishers would organize exchanges into different waterfalls[.]"); PTX1652 at -024 ("Evolution of Ad Server Decision-Making (simplified)[:] Pre-2007: Waterfall"); Ravi (Pls. Expert) Testimony. As part of the waterfall process, the publisher ad server compares a publisher's floor price, i.e., the minimum price that a publisher is willing to accept when selling an impression, to the price offered by each eligible ad exchange, one at a time. PTX1096 at -605 (If the first exchange "would not buy remnant inventory at or above the floor price set by the publisher for a particular ad unit or impression, the ad server would call the second [exchange] etc., until the impression was filled or could not be filled.") If the price offered by an ad exchange matches or exceeds the publisher's floor price, the waterfall process ends. Levitte (Google (2021)) Dep. Tr. 24:14–24 (In the waterfall "partners are not submitting bids. They're just giving a yes/no answer."); Ravi (Pls. Expert) Testimony. If not, the publisher ad server contacts the next ad exchange in the waterfall, repeating this process until the impression is sold or the ad server fails to find a buyer. DTX1003 at -245 ("If that exchange did not win the impression, the next ranked exchange in the waterfall would submit a bid, and the process would continue until the impression sold.").

53. Typically, publishers prioritized exchanges in the waterfall based on a measure of past performance and payment. Wheatland (Daily Mail) Testimony; Layser (News Corp) Testimony; DTX1003 at -245; PTX1677 at -694 ("Through historic analysis of average CPMs from each of these demand sources, a publisher then ranks each of them in a sequential hierarchy."). For example, it was common for publishers to order ad exchanges in the waterfall based on the historical average price (expressed in cents per mille or "CPM") for inventory offered by a given exchange. PTX1652 at -017 ("One common formula for setting the value

CPM is to divide total revenue from the remnant line item over a given period by total impressions sent by the ad server to that line item to calculate the average CPM delivered by each exchange."); Wheatland (Daily Mail) Testimony; Ravi (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; Boland (Meta) Testimony. So, if an ad exchange historically paid a higher average price for impressions, it was given higher priority in the waterfall ahead of ad exchanges that historically paid a lower average price for impressions. DTX1003 at -245 ("Within each waterfall, publishers would calculate a 'static CPM' for the constituent exchanges, which estimated what each exchange might bid if the server called it to bid for an impression . . .When a user visit[s] the webpage [thus setting off the ad serving process], the server selected a waterfall and called the exchange with the highest static CPM.").

54. Waterfall bidding had serious limitations. PTX1540 at -574 (Meta presentation, "the ubiquitous DFP waterfall is broken[.] Not maximizing revenue[;] Not really "real-time"[;] Linear[;] Non-transparent / Google-y[;] Cumbersome[.]"). Because ad exchanges—besides AdX—were called one at a time, sequentially, an advertiser could "win" the impression even if another advertiser bidding through a lower-ranked exchange, which had not yet been called in the waterfall, would have been willing to pay more for the impression. DTX1003 at -245 (in the waterfall, "calling exchanges sequentially introduced a major inefficiency – lower ranked exchange might never [submit] a bid even if it would have outbid the exchange that won[]."); Bhatia (Comcast (2023)) Dep. Tr. 91:20–92:13 (confirming that the waterfall set up created "scenarios in which the [third-party] exchange that would have paid the highest [bid]. . .didn't actually get a chance to bid[.]"). As a result, a publisher can lose out on revenue that it could have earned from selling the impression to an advertiser willing to pay (as shown below). PTX1540 at -574.



55. Consider the example above. In the waterfall process, the website publisher's ad server would have offered to sell an impression first to PubMatic, then to Verizon Media, then to Magnite, based on the ranking of their historical average prices ($1.06, $1.04, $1.01, and $0.99, respectively). If neither PubMatic nor Verizon Media were able to offer a price above the publisher's $1.01 price floor, the advertiser bidding through Magnite would win the auction because they were willing to pay $1.05 for the impression, which cleared the $1.10 price floor, even though another advertiser was willing to pay more for the impression. In cases like this one, the publisher would lose out on revenue that it could have earned from selling this impression to the advertiser willing to pay the most (e.g., the advertiser willing to pay $1.10 on OpenX). Lee (Pls. Expert) Testimony. This also would result in a poorer match between the publisher and the advertiser (e.g., the advertiser on OpenX may have had a more relevant advertisement for the internet user). Weintraub (Pls. Expert) Testimony.

56. As explained in greater detail below, Google engaged in conduct that allowed its ad exchange (AdX) to compete outside of the waterfall process by granting itself a "First Look" at the impressions before offering rival ad exchanges a chance to bid on an impression. *See infra* PFOF §B.2.a; Ravi (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; PTX0368 at -315 ("We

managed historically to have an advantage [] vs other sources of demand . . . so our demand could win even if we did not provide the best CPM on a specific impression.").

5. Importance of Scale

57. In every layer of the ad tech stack, scale is critical to an ad tech company's ability to compete. Scale therefore represents a significant barrier to entry and expansion as well as a key ingredient in the ability of an ad tech company to improve its products and better serve its customers.

58. There are four key means through which ad tech companies with greater scale are able to compete more effectively: stronger indirect network effects, more data for developing and training algorithms, more data for experimentation, and improved cost efficiencies. Weintraub (Pls. Expert) Testimony. These scale effects create a flywheel effect (or what Google and commentators refer to as a "virtuous cycle") through which a firm with greater scale today is able to grow even more tomorrow and, conversely, a firm that loses scale today will struggle to catch up with a larger rival tomorrow and may ultimately be forced to exit the market. Gentry (OpenX (2023)) Dep. Tr. 54:7–21 ("scale begets scale" "in the display exchange business"); Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 250:16–18, 250:20-251:7 [redacted] John (Microsoft 30(b)(6) (2023)) Dep. Tr. 213:5–19 (describing the "vicious cycle" of network effects); PTX0814 at -764 (Google 2019 "Strategy Book" depicting "flywheel" strategy and noting that "[t]o bootstrap this flywheel in the past, we used Google's scale and technology advantage to offer better reach, performance and access to exclusive inventory."); DTX0173 at -180 (Google document depicting "The Virtuous Cycle" and noting Google's ad tech

"monetization platform is the foundation for adoption of many other products" in part through "data culled from opted-in pub[lishers]"). Weintraub (Pls. Expert) Testimony; Dederick (The Trade Desk) Testimony.

59. Scale encompasses both "thickness" (the number of publishers and advertisers using an ad tech product) and transaction scale or traffic (the volume of queries seen and transactions completed). Ravi (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

60. First, when more advertisers and more diverse advertisers use an ad tech product (i.e., making the advertiser-side of the product "thicker"), the product becomes more attractive to publishers, and vice-versa. PTX0795 at -014–15 (Google document explaining the "interconnectedness" between the buy and sell sides); Casale (Index Exchange) Testimony; Gentry (Open X) Testimony; Boland (Meta) Testimony; Ravi (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony. The dynamic through which more participants on one side of a two-sided platform will attract more participants on the other side of the platform is a well-known concept in economics commonly called "indirect network effects." Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony. Thicker ad tech products, especially ad exchanges, increase the likelihood that a publisher will find a high-quality match—or a match at all—with an advertiser. Weintraub (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony.

61. Second, seeing and winning more impressions enables ad tech products to utilize more data to improve the quality of their algorithms in real time, effectively improving the quality of their products. John (Microsoft 30(b)(6) (2023)) Dep. Tr. 215:21–216:9 ("the more the publisher wins, the [more] algorithms learn and get optimized."). For example, ad tech products can use data to create more accurate algorithms that help their publisher customers determine

how to optimally set reserve prices for different demand sources. PTX1021 at -920 (Google is "able to segment inventory more granularly than publisher do today, do [sic] to the modeling, experimentation, and analysis necessary to . . . automatically update floor prices as market conditions change. We also have access to much more data than a single publisher does[.]"); Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 147:16–148:20 ("Scale is a very valuable input to a lot of optimization. . . .we work on behalf of publishers to determine the floor of any given piece of media, which is very dynamic and changes all the time."); Gentry (OpenX (2023)) Dep. Tr. 70:11–20 ("the more knowledge we [an exchange] know about the value of inventory . . . the more we're able to give a specific publisher guidance in terms of the value of their inventory."); Casale (Index Exchange) Testimony; Soroca (Magnite) Testimony; Cadogan (OpenX) Testimony; Weintraub (Pls. Expert) Testimony.

62. Third, seeing and winning more impressions enables ad tech products and other participants in the ecosystem to conduct more experiments more quickly. Ad tech companies conduct experiments to update their products and test new features. Weintraub (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony; Cadogan (Open X) Testimony; Casale (Index Exchange) Testimony. Advertisers take advantage of high thickness and traffic to conduct more effective and better-targeted experiments to measure the value of different advertising decisions. Ravi (Pls. Expert) Testimony.

63. Fourth, ad tech platforms exhibit substantial cost efficiencies as they grow larger, also known as "economies of scale." Weintraub (Pls. Expert) Testimony. In addition to typical cost economies of scale common to many industries, such as spreading administrative costs over more sales, ad tech products incur substantial costs for processing all transactions they observe. Dederick (Trade Desk 30(b)(6) (2023)) Dep. Tr. 247:18–20, 247:22–248:19 [redacted]

[redacted] Casale (Index Exchange) Testimony; Soroca (Magnite) Testimony; Dederick (Trade Desk) Testimony. A firm that wins more often can spread these processing costs out over more sales, generating cost savings that can be used to lower prices or invest in R&D. PTX1691 at -395 (Xandr document listing costs including "[r]esearch, product development & product maintenance"); Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony; Soroca (Magnite) Testimony; Dederick (The Trade Desk) Testimony.

64. Scale effects are global. Ad tech firms often operate in many countries and benefit from indirect network effects, data scale, and cost economies of scale across multiple countries. PTX1691 at -395 ("To support their business models, ad tech platform must [] operate on a regional or global basis to achieve the requisite economies of scale"); PTX1560 at -108[redacted] Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony.

65. Certain aspects of scale affect match quality, meaning how well the advertiser matched with an impression that they valued, or how highly the advertiser values the impression that it wins. Shaughnessy (Kargo (2023)) Dep. Tr. 21:7–14 (scale increases match quality); John (Microsoft 30(b)(6) (2023)) Dep. Tr. 229:9–230:13 (scale is necessary for match quality); Creput (Equativ (2023)) Dep. Tr. 34:5–35:4 (data scale increases match quality); Abrantes-Metz (Pls. Expert) Testimony.

B. Google Has Illegally Maintained Monopolies in Each Relevant Market

66. Google has monopoly power in the markets for publisher ad servers for open-web display advertising, ad exchanges for open-web display advertising, and advertiser ad networks for open-web display advertising. *See* PFOF § III.F, *infra*.

67. Over the past 15 years, Google has engaged in a wide-ranging course of conduct designed to and with the effect of acquiring and maintaining monopoly positions in these markets.

68. Google first established its dominant positions through acquisition, acquiring the leading publisher ad server (DFP) and a nascent ad exchange (AdX), before tying those products to Google's advertiser ad network (Google Ads). By conditioning effective access to any one of its tools on customers also using Google's other ad tech tools, Google locked publishers and advertisers into using its own ad tech tools rather than those offered by competitors.

69. Google then thwarted the ability of rivals to compete by impairing its customers' ability to partner with Google's rivals; acquiring and killing off a nascent rival; distorting the competitive playing field to disadvantage rivals and degrade their products; depriving rivals of scale needed to improve their products and attract customers; and blocking innovation by rivals.

1. Establishing Control Across the Ad Tech Stack

a) DoubleClick Acquisition

70. The DoubleClick acquisition was the first step in Google's exclusionary course of conduct and set the stage for Google acquiring and maintaining monopolies in the relevant markets alleged here. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

71. Google first considered acquiring DoubleClick in 2007 and ultimately closed the deal in May 2008. At the time, DoubleClick's publisher ad server product, DFP, was already the

dominant publisher ad server for open-web display advertising. PTX0014 at -246 (DoubleClick had "9 of Top 10 US, 8 of Top 10 European sites" and "35 of Top 50 web publishers"); PTX0013 at -845 (DoubleClick had "60% share" of publishers).

72. Google's acquisition of DoubleClick cemented its dominance over publishers. The acquisition provided Google with a pool of captive publishers that now had fewer alternatives and faced substantial switching costs associated with changing to another publisher ad server. PTX0038 at -669.

73. The acquisition exacerbated scale and network effects that protected Google's dominant position in the publisher ad server and advertiser ad network markets through what Google called a "virtuous cycle," i.e., "more pubs from DFP mean[t] more attractive to advertisers" and "more advertisers mean[t] more desire for pubs to get on DFP." PTX0795 at -014–15.

74. As part of the same transaction, Google acquired DoubleClick's "AdX," then a nascent ad exchange. Google's Statement of Undisputed Facts ("SUF"), ECF No. 570 ¶ 31. Prior to the DoubleClick acquisition, ad exchanges, including AdX, were not yet widely used by publishers. For instance, in merger filings, Google represented that AdX prior to the acquisition had "generated only about US$8,200 in [total U.S.] revenue from *beta* testing." PTX0019 at -229. But Google recognized that acquiring the largest publisher ad server was foundational to achieving "the biggest and most liquid [ad] exchange." PTX0038 at -670. In fact, Google "[d]idn't buy [DoubleClick for Publishers] for the revenue (& growth) – [Google] bought it for enabling the [Ad] Exchange" strategy and its plan to capture publisher inventory that had not been directly sold to advertisers. PTX0051 at -726; PTX0060 at -487 ("getting backfill revenue

through the combo of DFP and AdX was a fundamental component of our strategy (and one of the reasons why Google bought DCLK in the first place).").

75. The price that Google paid for DoubleClick reflected the value it believed it could derive from its long-term, anticompetitive strategy. Indeed, Google internally valued DoubleClick as worth approximately $1.8 to $2.2 billion, but it ultimately offered to pay $3.1 billion (overpaying by approximately $1 billion) to secure the acquisition over other technology companies. PTX0017 at -648 (April 2007 email stating that a Microsoft-DoubleClick deal would increase RPMs and "enable MSFT/Y! to steal some of [Google's] existing inventory/publishers"); PTX0015 at -991 (March 2007 email to Google's Board of Directors stating that "[a] Microsoft-owned DoubleClick represents a major competitive threat" to Google's advertising technology).

76. Google recognized that control over the publisher ad server market made Google a critical gatekeeper in the sale of open-web display advertising and let it dominate the entire ad tech stack. Even if Google's rivals could build better ad tech products, with a single company—Google—in control of the publisher ad server market, these rivals would always be at a disadvantage. PTX0041 at -005 (Google employee noting that "[i]f we [Google] lose [publisher ad server] platform share, we can build the best [Google Ads] in the world but will still be at a severe risk of being disintermediated.").

77. Accordingly, following the DoubleClick acquisition, Google worked to manipulate the rest of the open-web display advertising ecosystem to "protect [DFP's] position" as the dominant "operating system for publishers globally[,]" PTX0062 at -625, by deploying a "three pillar" strategy to enhance its dominance in each relevant market, including: (i) the publisher ad server "Platform to ACCESS the desired inventory," (ii) the "Ad exchange to

AGGREGATE that inventory that the platform piece gives" Google, and (iii) the "Google Content Network [Google Ads] to MONETIZE the inventory [Google] aggregate[s] via Ad Exchange." PTX0033 at -919.

b) Conditions on Access to Google Ads' Advertiser Demand and AdX

78. After the DoubleClick acquisition, Google took steps designed to force publishers to remain on its newly acquired publisher ad server instead of switching to rivals. Google took these steps because it recognized that acquiring and maintaining dominance in the publisher ad server market was necessary to control the flow of transactions across the ad tech stack, which enhanced and protected its monopolies in the ad exchange and advertiser ad network markets as well. PTX0041 at -005 (March 2009 email from N. Mohan stating that "the most strategic battle is about the publisher platform"); PTX0474 at -425 (Google's strategy is to keep DFP as the "must-call" publisher ad server); Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. For Google, "the most important thing in display is having access to the right inventory." PTX0041 at -006.

79. To implement its strategy, Google imposed two key conditions on publishers: (1) Google conditioned publishers' access to Google's advertiser ad network demand, Google Ads, on publishers using its AdX ad exchange; and (2) Google conditioned publishers' access to AdX's real-time bids for publisher inventory on publishers using Google's publisher ad server, DFP. PTX0049 at -445–46 ("AdExchange Primer," explaining that part of the "value proposition" for advertisers of AdX at its relaunch after the DoubleClick acquisition was "access to more publishers and more ad space"); PTX0600 at -517 ("Our 2 differentiators with publishers were: dynamic allocation exclusivity and AdX exclusivity. We may lose both if start buying on AdX just like any other exchange."); PTX0882 at -719 (Google document noting a publisher complaint that "keeping your AdX demand from working optimally with other adserver tech

feels like flexing monopolistic power here" and acknowledging, "not all google Ads demand is currently available on 3rd party exchanges"); Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. In doing so, Google used its ad exchange as "glue that seals DFP to [Google Ads]." PTX0041 at -006. Put another way, Google tied the AdX ad exchange to Google Ads and in turn tied AdX to its publisher ad server, DFP.

80. As explained below, these conditions allowed Google to leverage its unique and sizeable advertising demand (via Google Ads) to acquire and maintain dominance in both the publisher ad server and ad exchange markets. PTX0041 at -006 (March 2009 email from N. Mohan stating that "we need tight [D]FP-Adx / GCN (sic) bundles" as part of strategy to get "the most extensive platform footprint to give us access to inventory"); Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. Google's conduct thus guaranteed that Google's rivals would not be able to compete effectively on the merits of their products to acquire enough publishers, advertisers, or transaction scale to their platforms to threaten Google. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

81. The effects of these dual ties were no accident but rather the result of a deliberate strategy by Google launched soon after the DoubleClick acquisition. At that time, Google was already planning to utilize AdX as an essential link between its valuable advertiser demand (on Google Ads) and its newly acquired publisher ad server, DFP. PTX0025 at -045 ("The ad exchange is our best tool for linking the display footprint of DoubleClick's products to AdWords / AdSense so we can start to be a more significant player in the display market."). The strategy was not intended to make any individual product offered by Google better for publisher or advertiser customers but rather to enhance Google's market power across the ad tech stack.

Google recognized the "value of Google's ad tech stack is less in each individual product, but in the connections across all of them." PTX0551 at -048.

(1) Google Provides AdX Nearly Exclusive Access to Google Ads Advertiser Demand.

82. When Google relaunched the AdX ad exchange it acquired from DoubleClick in 2009, Google required advertisers using Google's advertiser ad network to bid on inventory exclusively through AdX and not through rival ad exchanges. PTX0110 at -083; SUF ¶ 38 ("When Google re-launched AdX on its own infrastructure in 2009, Google Ads bid only into AdX"). Google did so to condition publisher access to Google Ads advertising demand on publishers transacting via Google's ad exchange rather than rivals. In the words of the Google employee who originally built the AdX ad exchange, Google's "goal should be all or nothing – use AdX as your SSP [exchange] or don't get access to our demand." PTX0124 at -216; PTX0509 at -002 ("AdX is still the only source to get access to all of GDNs [Google Ads'] demand. If they chose another monetization partner they loose [sic] access to all of GDN [Google Ads].").

83. This "all or nothing" strategy enabled Google to acquire and maintain monopoly power in the ad exchange market because publishers could not forgo advertising demand from Google Ads and so were forced to make their inventory available for purchase on AdX. Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 175:15–20 (Google Ads demand "is only accessible through AdX"); Rowley (Google (2021)) Dep. Tr. 108:25–109:3 ("[w]hen [advertising] demand can only be found through certain sources, it compels publishers to work with that product."); PTX0451 at -820 (Google executive observing Hearst "wouldn't want to take the risk of ripping [AdX] out wholesale to move to [another exchange]" because they do not "want . . . [their] top-line [to] drop during the change."); Lee (Pls. Expert) Testimony. Publishers

remain keenly aware that the value they derive from Google Ads demand "is only accessible through AdX." Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 175:15–20. In practice, this means that publishers must make much or all of their inventory available for purchase on AdX to all advertisers buying via the AdX ad exchange, including but not limited to advertisers using Google Ads, rendering AdX an important and relatively "thicker" ad exchange that attracts advertisers. PTX1031 at -500 ("Google Ad Manager is the only way to access Google Ad Exchange as a publisher"); PTX1691 at -403 (Xandr's response to the Australian Competition and Consumer Commission, stating "there is a perception amongst publishers that they must use Google's SSP in order to gain full access to advertiser demand via Google's DSP."); Weintraub (Pls. Expert) Testimony.

84. Analysis of Google's data further demonstrates that publishers rely upon demand from Google Ads advertisers. Between 2018 and 2022, Google Ads advertising demand transacted through AdX represented approximately 30-40% of worldwide indirect open-web display impressions transacted through ad exchanges. Lee (Pls. Expert) Testimony. If a publisher chose to forgo access to Google Ads advertising demand, that publisher would see some of their revenue from Google Ads replaced by advertising demand from other sources, but the size and uniqueness of Google Ads advertising demand means the publisher would still sacrifice a significant amount of overall revenue. Prof. Lee's quantitative analysis of auction-level data from June 2023 indicates that removing Google Ads advertising demand from auctions would decrease publishers' overall revenue by approximately 14%. Lee (Pls. Expert) Testimony; PTX1444. This analysis of June 2023 data also predicts that removing Google Ads advertising demand would reduce the number of transactions won by the AdX ad exchange by approximately 40.2%. Lee (Pls. Expert) Testimony. This result is consistent with a similar

experiment performed in the ordinary course by Google in 2014 that predicted that removing Google Ads demand from auctions at that time would reduce the number of transactions won by AdX by 51%. Lee (Pls. Expert) Testimony; PTX0324 at -608–09 (estimating via a simulation that without Google Ads' bids, the number of impressions won daily on AdX would drop from 7.49 billion to 3.64 billion and 70% of the impressions previously won by Google Ads would receive no advertiser bids at all).

85. By conditioning access to important Google Ads advertiser demand on publishers' use of AdX, Google foreclosed competition among ad exchanges because it denied rival exchanges access to customers, i.e., publishers and advertisers, and diminished rivals' scale as well as their ability to use that scale to further improve their products. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; Cadogan (OpenX) Testimony; John (Microsoft) Testimony; Soroca (Magnite) Testimony; Kershaw (Magnite) Testimony; Goel (PubMatic) Testimony; Weintraub (Pls. Expert) Testimony. Google's conduct also enhanced barriers to entry and expansion by denying rival ad exchanges the scale (both in terms of thickness and transaction volume) needed to grow into meaningful competitors to AdX. Kershaw (Magnite) Testimony. Publishers were forced to use Google's publisher ad server (DFP) and Google's ad exchange (AdX) not because Google offered a better product, but because Google used its dominance to secure an unfair advantage over rivals. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; PTX0110 at -083.009 (noting that Google was "artificially handicapping our buyside ([Google Ads]) to boost the attractiveness of our sellside (AdX)" by "choos[ing] to limit [Google Ads] to buying only on AdX, an exclusivity that makes AdX more attractive to sellers"); PTX0049 at -447 (noting AdX's differentiator is "Real-time . . .

Access to [Google Ads] advertisers); PTX0600 at -517; PTX0124 at -216; Weintraub (Pls. Expert) Testimony.

86. Google itself conducted an experiment to quantify what would happen in a competitive market absent Google's restrictions, i.e., what would happen if Google Ads were permitted to bid freely in the interest of its advertisers. That 2011 experiment concluded that Google Ads advertisers would shift to buying on rival ad exchanges—which could offer publisher inventory on better terms than AdX—such that "AdX will lose 20% to 30% of its publishers due to sell side pressure" (i.e., competitive pressure from rival exchanges attracting those publisher customers). DTX0085 at -539. Additionally, Google's publisher ad server, "DFP will lose 20% of its publishers" to rival publisher ad servers if those ad servers were able to compete on the merits to connect publisher customers with Google Ads advertiser demand, free of the disadvantage imposed by Google's ties. DTX0085 at -539.

87. The available evidence suggests that Google's conduct was motivated by anticompetitive intent. For example, a 2017 internal Google analysis estimated that expanding Google Ads' advertisers ability to bid on inventory on non-Google exchanges would have resulted in an additional $863 million in advertising spend by Google Ads' advertisers. PTX0839 at -924. Google was willing to sacrifice this short-term revenue, however, to protect the long-term revenues it expected to generate through the exercise of its monopoly power in a less competitive market.

88. Moreover, Google imposed these restrictions even though the technology for Google Ads to bid on rival exchanges already existed and was used by Google's other advertiser buying tool, DV360, to bid widely across exchanges. Utilizing that technology, advertisers using DV360 chose to buy over half of their advertising on non-Google exchanges through 2018,

before Google implemented conduct (Project Poirot) that skewed the spend of DV360 advertisers. PTX1467 (reporting that even after 2018, approximately 40% of DV360 ad spend [] flowed through non-Google ad exchanges); Weintraub (Pls. Expert) Testimony. But Google Ads advertisers did not have that choice. Google prevented them from bidding through Google Ads on non-Google ad exchanges, aware that that restriction would make AdX "more attractive" to publishers than it otherwise would be. PTX0110 at -009 ("[W]e have chosen to limit GDN [Google Ads] to buying only on AdX, an exclusivity that makes AdX more attractive to sellers.").

89. Over time, Google has somewhat relaxed the exclusivity of its Google Ads demand on AdX, but not in a manner that meaningfully alters its competitive effects. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. In 2011, Google became concerned that restricting Google Ads buyers to purchasing display advertising inventory only on AdX could ultimately allow a competitor to win over Google Ads advertisers. PTX0074 at -784 ("We are assuming that in . . . order to stay relevant and win these deals the GDN [Google Ads] will also need to become cross-exchange."). At the same time, Google recognized that allowing Google Ads advertisers to bid for inventory on rival exchanges would increase the risk that publishers would terminate their relationship with AdX and DFP, because Google Ads demand would no longer represent a "unique sales proposition" for AdX. PTX0074 at -784 (further noting "if publishers can get the same AdWords RTB demand from any yield management/exchange partner, there is a risk that many publishers would terminate their AdX relationship in favor of their preferred alternate vendor."); PTX0330 at -771 ("[I]f we go all-demand AWBid, that fully compromises AdX's competitive advantage w.r.t. its exclusivity to GDN [Google Ads] demand."); PTX0333 at -486 ("Funnily enough, their question is about

whether GDN [Google Ads] should go bigger on x-exchange beyond RMKT. But if we do that, we need to wait for AdX to redefine its value prop in the absence of exclusive demand.").

90. In response, Google established a program known as AwBid (shorthand for "AdWords Cross Exchange Bidder") in 2013. PTX0144 at -434. AwBid slightly relaxed the complete restriction Google had placed on Google Ads advertisers' ability to bid for inventory on non-Google ad exchange. Shodjai (Google (2020)) Dep. Tr. 66:21–67:5. However, "AwBid demand" was "capped at 10% of AdWords spend," Google was "not obligated to bid on any inventory," and "Google [could] not bid on majority of available impressions from partner exchanges." PTX0208 at -551.

91. To a limited extent, AwBid benefited Google Ads advertisers by expanding inventory access and choice. Bender (Google (2020)) Dep. Tr. 225:5–18 ("it's really about, you know, ultimately giving buyers the choices that they wanted"); Loubser (Google 2021)) Dep. Tr. 215:2–10 (AwBid's "goal was to find ways to get access to more inventory for GDN buyers."). Initially, however, AwBid did not "allow[]" Google Ads customers to bid into non-Google ad exchanges, except for a narrow category of advertising called "remarketing"—highly tailored advertisements that show the advertiser's specific products to customers who had previously expressed interest in those products. PTX0514 at -330–31 (suggesting AwBid should be expanded beyond remarketing because Google Ads Web was at 237% compared to the annual plan because of buying on other exchanges, but there would need to be a "change[] with the political winds" in order to expand the program); LaSala (Google (2023)) Dep. Tr. 224:20–225:15; PTX0208 at -551 (AwBid was a "defensive priority for [Google's] remarketing business," rather than an attempt to move demand beyond AdX for the benefit of Google's customers); Bender (Google (2020)) Dep. Tr. 223:15–23; PTX0144 at -435. Although Google

has somewhat expanded the categories of advertising campaigns eligible for AwBid, Google Ads customers are still limited to bidding for a small subset of advertising on non-Google ad exchanges, which means publishers still must make their inventory available on AdX in order to sell impressions to those advertisers. PTX0791 at -218; Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; Kershaw (Magnite) Testimony.

92. In addition to allowing only a limited subset of Google Ads advertisers' advertising campaigns to even participate in the AwBid program, Google took steps to systematically disadvantage any bids submitted into rival exchanges. Contrary to the interests of Google's advertiser customers, Google added a 32% fee to any remarketing-related bids submitted by Google Ads advertisers on rival exchanges, more than twice the standard 15% fee Google Ads advertisers are charged for bidding on AdX. PTX1098 at -264 (Google submission to the European Commission). Later, when Google expanded AwBid to include a few other highly specialized campaign types, Google Ads applied a 50% fee—effectively a 50% reduction in the advertiser's bid—when the Google Ads advertiser bid into a rival exchange. PTX1098 at -264. By design, this makes the limited volume of bids submitted by Google Ads via AwBid less likely to actually win—even if the advertiser could win the impression for less on a non-Google exchange. Lee (Pls. Expert) Testimony. This limitation is demonstrated by Prof. Lee's analysis of granular auction-level data for June 2023. During this month, when Google Ads bid into a rival exchange, it only won the final auction about 1% of the time, whereas when Google Ads bid into AdX, it won the final auction about 26% of the time. Lee (Pls. Expert) Testimony.

93. Because AwBid was limited to a narrow set of advertisements and because Google intentionally designed the program to highly disfavor any bids submitted on rival exchanges, AwBid never accounted for more than a small fraction of Google Ads, with the vast

majority of Google Ads' advertising demand in practice remaining exclusively available to AdX. PTX0278 at -613 (Google reporting in November 2015 that AwBid represented only 1.2% of total Google Ads spend); Lee (Pls. Expert) Testimony. In 2022, "non-Google inventory" accounted for less than 6% of Google Ads' impressions. Lee (Pls. Expert) Testimony; PTX 1245. According to Google's historical data, between the introduction of AwBid in January 2014 and March 2023, AwBid accounted for approximately 3% of Google Ads' total open-web display impressions. Lee (Pls. Expert) Testimony; Cadogan (OpenX) Testimony.

(2) Google Provides Effective Access to Real-time AdX Bids Exclusively to Publishers Using DFP.

94. As the second component of its strategy, Google conditioned access to real-time bids from AdX (and its unique Google Ads advertiser demand) on publishers using Google's publisher ad server, DFP. In effect these double-ties—linking Google Ads to AdX and AdX to DFP—allowed Google to acquire and maintain its dominant positions in each of the relevant markets across the ad tech stack. Layser (News Corp) Testimony; Pauley (Vox (2023)) Dep. Tr. 36:19–22, 36:25–37:13, 38:3–9 (explaining that there is no reasonable alternative to Google Ad Manager for Vox because of the unique "programmatic revenue opportunity"); Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 142:9–143:2 (explaining that one of the reasons the New York Times switched from using their own proprietary publisher ad server to Google's DFP was the "capability of utilizing Google's programmatic [Google Ads] demand"); Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

95. Google implemented this restriction both via technology and policy. Technologically, the only way for publishers to receive real-time bids from AdX was to request a bid via the DFP publisher ad server. Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony; Creput (Equativ) Testimony; PTX0116 at -462–63 ("[I]t is too early to give AdX to

non-XFP [DFP] partners . . . This is an amazing time to 'lock in' impressions by offering XFP [DFP] to publishers with full AdX dynamic allocation. AdX can serve as a tool to pull publishers onto XFP [DFP]. By allowing third parties to integrate with AdX mobile/web we are giving away this advantage."); PTX0234 at -236 ("[W]e are giving away a cheap form of dynamic allocation for free to all our competitors. This would have a large distorting effect on our rate card as one of the largest advantages to AdX is real time competition."). Publishers choosing to use any other publisher ad server could not obtain a real-time bid from AdX or put such a bid into real-time competition with other sources of demand. O'Kelley (Xandr (2023)) Dep. Tr. 116:10–13, 116:16-118:8 ("[P]ublishers would see that AdX was producing 60 percent of their programmatic revenue"); PTX1031 at -500 ("Google Ad Manager [DFP] is the only way to access Google Ad Exchange as a publisher . . . as of June 2019[,] there is still a legacy way to access AdX standalone, but it will go away in a near future"); PTX1562 at -033–34 (AppNexus submission to the European Commission) (Google's restrictions between AdX and DFP "impos[e] contractual restrictions on publishers that prohibit the use of mediation or other analytic tools to help publishers maximize revenue by pitting AdX prices and ROI against those offered by competing exchanges" and "prohibit[ing] publishers from using tools to compare Google's prices against the competition.").

96. Google also implemented a written policy to ensure publishers could not undermine its technological restriction. Google's "Partner Guidelines," which are binding on all publishers that use Google's publisher ad server, prohibit publishers from using any technology that would put the bid response from AdX into competition with other sources of advertising demand, such as bids from rival ad exchanges. Specifically, the policy provides: "Once Partner has made an ad call for Google Monetization of a given impression, [the publisher] Partner is not

permitted to pass that impression through any other system (including Partner's own system) that dynamically or programmatically allocates ad calls based on actual or estimated real-time pricing information." PTX0971 at -771. While publishers can use Google's publisher ad server to allocate (i.e., select on a per-impression basis) based on "actual . . . real-time pricing information" between AdX demand and other sources of advertising demand—on terms dictated by Google—they may not do so using a rival's ad tech tools that would allow publishers to make their own choices as to how their inventory is allocated. These terms of service effectively prohibited publishers from putting AdX into real-time competition with other ad exchanges or sources of advertising demand. Abrantes-Metz (Pls. Expert) Testimony.

97. These technological and policy restrictions were acknowledged in Google's contemporaneous business records that "Google Ad Manager [DFP] is the only way to access Google Ad Exchange as a publisher." PTX1031 at -500 (Google Ad Manager Ecosystem 101 internal presentation).

98. Restricting publishers from accessing real-time bids in AdX unless they used DFP foreclosed competition in the publisher ad server market. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. In effect, the restrictions coerced publishers to use Google's DFP publisher ad server over rival publisher ad servers not because Google offered a better publisher ad server product, but because leaving DFP would mean losing access to a significant source of publisher revenue: real-time bids from Google Ads advertisers available exclusively on AdX. Layser (News Corp) Testimony; Creput (Equativ (2023)) Dep. Tr. 18:10–19:2 ("So if a publisher switched to a rival ad server, he accepts actually to lose a significant part of its digital advertising revenues"); Shaughnessy (Kargo (2023)) Dep. Tr. 60:10–17 (Google's display demand contributes significantly to publishers' top-line revenues); PTX1643 at -135, -144 (News Corp

analysis estimating a "severe drop" in revenue in the event of a switch to a rival publisher ad server "given the tight connection between DFP and [Google Ads]"). Quantitative analysis of auction data from June 2023 indicates that publishers' payouts would decrease by 27.9% if AdX were removed, while removing any other exchange would decrease publisher payouts by at most 0.5%. PTX1395; Lee (Pls. Expert) Testimony. This negative impact is even greater for small publishers, who would experience a 64% decrease in monetization from indirect advertising without AdX. Lee (Pls Expert) Testimony.

99. Google recognized that if it had to compete with rival publisher ad servers on a level playing field, publishers would likely choose rival publisher ad servers instead of Google's publisher ad server (DFP). PTX0786 at -716 (Google strategy paper observing that "Header [bidding] . . . technology and adoption has grown rapidly in the past 12 months, representing an existential threat to our business, and necessitating a response that maintains D[FP]'s 'Must Call' status in the ecosystem. . . . The header ecosystem relies on our unwillingness to open our systems to the types of transactions, policies and innovations that buyers and sellers wish to transact."). As another Google employee explained, "Launching AdX into a non-DFP server," e.g., allowing publishers to call AdX via header bidding, "destroys this competitive first look advantage and would most likely lead to AdX (1) losing access to overall queries, and (2) losing access to the *highest-value* queries." PTX0551 at -048. Header bidding threatened to undo the disadvantage created by Google's restrictions on its publisher customers and allow rivals to access more queries (opportunities to bid) and win more transactions through competition on the merits. Lee (Pls. Expert) Testimony.

100. By conditioning real-time AdX bids on a publishers' use of DFP, Google locked customers into using Google's publisher ad server. Abrantes-Metz (Pls. Expert) Testimony; Lee

(Pls. Expert) Testimony. As a result, Google also funneled more transactions through AdX, giving Google access to more auction data while at the same time guaranteeing that less auction data was accessible to rivals. Creput (Equativ (2023)) Dep. Tr. 33:11–24, 35:16–19, 35:25–36:7; Weintraub (Pls. Expert) Testimony. Google's conduct thus resulted in less scale (both in terms of thickness of publishers and advertisers as well as transaction volume) on rivals' ad exchanges and publisher ad servers, inhibiting their ability to compete. Weintraub (Pls. Expert) Testimony. In doing so, the conduct exacerbated scale and network effects that protect Google's dominance in the publisher ad server and ad exchange markets by (i) enhancing barriers to entry in both markets and (ii) inhibiting the ability of rivals to expand through fair competition for more transactions and through product improvement enabled by additional scale. Weintraub (Pls. Expert) Testimony.

101. Google's anticompetitive conduct was remarkably effective. Within a few years, Google acquired significant market share in the publisher ad server market while many third-party publisher ad servers were forced to exit the market for open-web display publisher ad servers. Avery (Kevel) Testimony; Cadogan (OpenX) Testimony; Casale (Index Exchange) Testimony; Creput (Equativ (2023)) Dep. Tr. 40:19–21, 40:23–41:6; Avery (Kevel (2023)) Dep. Tr. 89:4–90:7, 92:21–92:25.

102. Google imposed restrictions on the ability of publishers to integrate real-time AdX bids into non-Google publisher ad servers even though the technology to do so already existed. At least by 2012, the technology was deployed in beta form with only "[m]inimal effort [] required to roll it out more." PTX0113 at -803–04 ("[A] development that makes publishers more revenue and brings additional inventory into the Ad Exchange (and therefore GDN). Google should be more aggressive in DFP integrations that achieve this and more open to third

party integrations that do the same. The press release we could issue if we do this: 'DoubleCkick Ad Exchange doubles again.'"). Google internally acknowledged the reason for these restrictions: relaxing them would "[t]ake[] away a key differentiator for DFP," even if doing so would benefit both publishers and advertisers. PTX0113 at -804 (also reporting a broader rollout would provide advertisers with $100–$200 million in additional inventory); PTX0445 at -802 ("Google could pursue 3 models to improve high value AdX access in a third party ad server which could unlock a $103M revenue opportunity for Google."). Other market participants have confirmed such integration is not difficult and is widely used by other exchanges. Avery (Kevel (2023)) Dep. Tr. 37:14–24, 39:9–4 (Avery (Kevel)) (explaining how other exchanges integrate with publisher ad servers using the standard OpenRTB protocol).

103. Google technically offers a mechanism for publishers using rival publisher ad servers to offer inventory to AdX. PTX0937 at -215. This mechanism, known as AdX Direct, does not offer publishers access to real-time bids from AdX and does not offset or mitigate the effects of Google's conditions on access AdX. PTX0555 at -115 ("AdX does not integrate with other ad servers as well as it does with DFP (no dynamic allocation), so AdX does not pass through real-time bids to these other ad servers (instead it passes through a 'dumb' flat CPM based on historical averages)."); Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

104. In 2009, Google introduced AdX Direct tag integrations that allowed third party publisher ad servers to access AdX demand in a manner significantly different from the way publishers are able to access real-time AdX demand when using DFP. Abrantes-Metz (Pls. Expert) Testimony; PTX0937 at -215 ("AdX Direct allows publishers to use AdX as a standalone product. This is done by generating AdX ad tags (different from GPT tags) which allows pubs

with non-Google ad servers to access AdX (OA & PA only)."); PTX0945 at -139 (AdX Direct Deprecation Plan). AdX Direct tag integrations are admittedly "not equivalent to the way AdX integrates" into Google's publisher ad server, which made the AdX Direct Tag method for accessing AdX demand outside of DFP commercially impractical. PTX0845 at -937; PTX0927 at -256; Abrantes-Metz (Pls. Expert) Testimony. Rather, Google employees described AdX Direct "as a concept for antitrust." PTX0933 at -183 (Nitish Korula, in response to engineer concerns that the PR message was that the product was poorly designed due to budget constraints).

105. AdX Direct Tags do not allow third party publisher ad servers access to real-time bidding within AdX, and do not integrate AdX into the external ad servers' auctions. PTX0338 at -677 ("[W]e do not submit a real-time bid or price for any of these integrations today AFAIK."). Rather, these tags provide an "interface . . . where the [non-DFP] ad server passes a minCPM to AdX, and if AdX can beat this minCPM, then the query must serve." DTX0196 at -004; PTX0555 at -115 ("AdX is disadvantaged in 'AdX Direct' relationships because AdX does not integrate with other ad servers as well as it does with DFP (no dynamic allocation), so AdX does not pass through real-time bids to these other ad servers (instead it passes through a 'dumb' flat CPM based on historical averages)." The "minCPM" is a static price set by the publisher within the third-party ad server. PTX0568 at -648; PTX0242 at -563.

106. The practical result of AdX Direct tag integrations is a simplified "yes or no" call and response system, where AdX either "wins" by bidding above the static floor price, PTX0758 at -945, or AdX decides not to bid and so does not serve an ad and leaves the impression unfilled, costing the publisher revenue. Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 148:7–19 (If Google decides not to serve an ad in response to the AdX Direct call, the impression "will go unfilled and . . . the publisher would not earn revenue."). Under either scenario, AdX does not

return an actual bid to the rival publisher ad server, and when AdX wins, the publisher "never actually find[s] out the price it won at." PTX0758 at -945.

107. Market participants view AdX Direct Tags as outdated and inefficient. Avery (Kevel) Testimony; Avery (Kevel (2023)) Dep. Tr. 35:4–15, 17–25, 36:1–8. Third-party publisher ad servers forced to access AdX via this solution understand that this "method of directing inventory to Google has negative consequences for publishers' ability to monetize inventory" which is simply another incentive for publishers "to use Google's publisher ad server together with [AdX]." PTX1689 at -436.

108. Publishers' inability to realistically use AdX Direct Tags is borne out in Google's data. The share of display advertising spend on AdX that flowed via AdX Direct to publishers using rival publisher ad servers (including any proprietary in-house publisher ad server) has declined from about 12% in 2015 to less than 1% in 2023. PTX1302; Lee (Pls. Expert) Testimony.

109. Publishers have evaluated and rejected as commercially unfeasible other potential means of obtaining AdX advertising demand while using a competing publisher ad server. Publishers can, in theory, use both GAM and a second publisher ad server in tandem. PTX0559 at -652 ("It is exceedingly rare for a publisher to use more than one ad server simultaneously other than where format specific ad servers are needed such as for mobile and video."). However, in reality, publishers have determined that this workaround is not practical, because, among other drawbacks, dual publisher ad servers (also called "hybrid" setups) increase costs and latency. Layser (News Corp) Testimony; PTX0949 at -481–82 (Google employee chat asking, "How likely is the dual ad server setup to get real adoption" and observing such a setup introduces latency resulting in lost revenue for website publishers). Importantly, such a dual publisher ad

server does not actually overcome the tie Google has created between its ad exchange and publisher ad server: the publisher must continue to use Google's publisher ad server *in addition to* the rival publisher ad server of its choosing. PTX1674 at -022; Lee (Pls. Expert) Testimony.

2. Google Eliminated Potential Threats and Asserted Dominance Across the Ad Tech Stack

a) Google Forced DFP Publishers to Grant AdX a Right of First Refusal or "First Look."

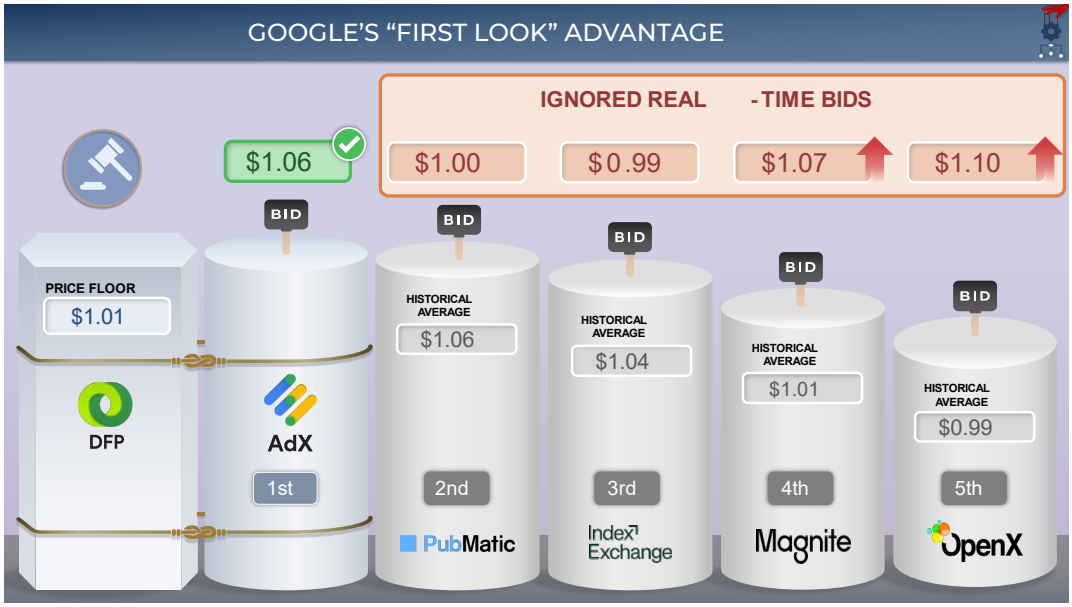
110. With publishers increasingly captive to DFP, Google required publishers to offer their inventory to AdX—but not other exchanges—on preferential terms by giving Google's ad exchange a "First Look" or right of first refusal at each impression. This funneled transactions to AdX and away from rival exchanges that publishers and advertisers might have preferred in a competitive market.

111. Traditionally, publishers that wanted to offer inventory to multiple ad exchanges and advertiser ad networks via DFP used a process known as the "waterfall." Under the waterfall process, as described in more detail in PFOF § III.A.4 above, DFP would send offers to sell advertising inventory to ad exchanges and other demand sources one at a time in a static sequence, typically based on their average historical performance, until it found an eligible buyer.

112. But Google used its dominance in the publisher ad server market to give itself an advantage in the waterfall. Rather than competing with rival exchanges for a position in the waterfall, Google forced publishers, using the auction logic it controlled within DFP, to grant AdX a right of first refusal (or "First Look") ahead of all other ad exchanges and ad networks. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. As a result, publishers could not rank rival ad exchanges in the waterfall ahead of Google either because they preferred

those ad exchanges or negotiated a deal to be compensated for ranking a rival ad exchange first. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. Instead, Google was always first in line and could win the auction even when advertisers using rival ad exchanges were willing to pay a higher price that would generate more revenue for the publisher. PTX0368 at -315; PTX0551 at -048; Boland (Meta) Testimony.

113. A publisher using DFP could not deactivate First Look for AdX. PTX1099 at -866 ("Google does not provide a "toggle" control within the [DFP] interface to turn off [First Look]."); PTX1093 at -796 (Google's response to the French Competition Authority states that "[i]f publishers are using [DFP's] ad serving function, then [First Look] is applied to the request made to AdX as this is built into the processes that [DFP] carries out"); PTX1539 at -105 (First Look is "enabled on all DFP publishers[.]").



114. As shown in the demonstrative above, First Look provided the highest historical average price of non-Google ad exchanges to Google's AdX (here the $1.06 historical average price on PubMatic). PTX0308 at -243 ("Publishers have historically had to book an average CPM rate which would not allow for [exchanges] to compete effectively for higher-value

impressions.); PTX0883 at -255 (bids were "called in their decreasing order of their average historical CPMs"); PTX0093 at -157–58; Ravi (Pls. Expert) Testimony. AdX would run its own auction using the $1.06 historical average price from PubMatic as its price floor. If AdX had one advertiser bid that could beat that price, then AdX won the impression at the price floor ($1.06), and no other ad exchange had a chance to compete for it. PTX0093 at -157 (demonstrating that AdX $4 bid would win over a non-AdX $4.50 bid because of First Look (also called "Dynamic Allocation"); Ravi (Pls. Expert) Testimony.

115. Through First Look, Google forced publishers to give Google—and Google alone—the "[a]bility to 'cherry-pick' inventory" by virtue of AdX's exclusive integration with DFP. PTX0013 at -729; Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 196:12–197:7 (describing Google's First Look). This meant that AdX was able to preferentially buy the "highest paying impressions," which left non-Google exchanges with less valuable impressions (i.e., only those that AdX had passed over). PTX0231 at -064; Gentry (OpenX (2023)) Dep. Tr. 36:14–16, 18–25 (explaining that First Look prevented ad exchanges like OpenX from having the opportunity to compete); PTX0443 at -008 ("Clearly it's strategic for us to have the AdServer being the decision maker to ensure GDN and DBM has first look access..."); Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. Over time, this decreased the historical average CPM for rival exchanges, further disadvantaging them in the waterfall, and in turn, further reducing the price floor fed into AdX via "First Look." Lee (Pls. Expert) Testimony; Cadogan (OpenX) Testimony; Ravi (Pls. Expert) Testimony.

116. First Look also allowed Google "access to the most valuable cookies," i.e., data on the user viewing the advertisement. PTX0231 at -064. Armed with its First Look advantage, Google estimated that as of early 2014, AdX was able to win 53% of publisher inventory on DFP

made available for auction. PTX0174 at -635. This means that rival ad exchanges never even saw more than half of publisher inventory available for sale, let alone had an opportunity to compete on the merits for that inventory or improve their products based on data tied to those opportunities. Ravi (Pls. Expert) Testimony. Google recognized First Look relegated rivals to a disadvantageous position, regardless of whether publishers would have preferred to robust, fair competition: "[w]ithout first look, we are left with inventory that other buyers have had a look into and didn't want to pay for." PTX0231 at -064. Via First Look, Google forced publishers to place all other exchanges in this position instead. PTX0587 at -794 ("Publishers felt locked-in by dynamic allocation [First Look] in DFP, which only gave AdX [the] ability to compete . . . ."); PTX0551 at -048 ("Our [advertisers] enjoy a competitive advantage from dynamic allocation [First Look] because they receive first look on inventory, which inherently provides higher CPMs (from which Google benefits on the rev share)."); Layser (News Corp) Testimony.

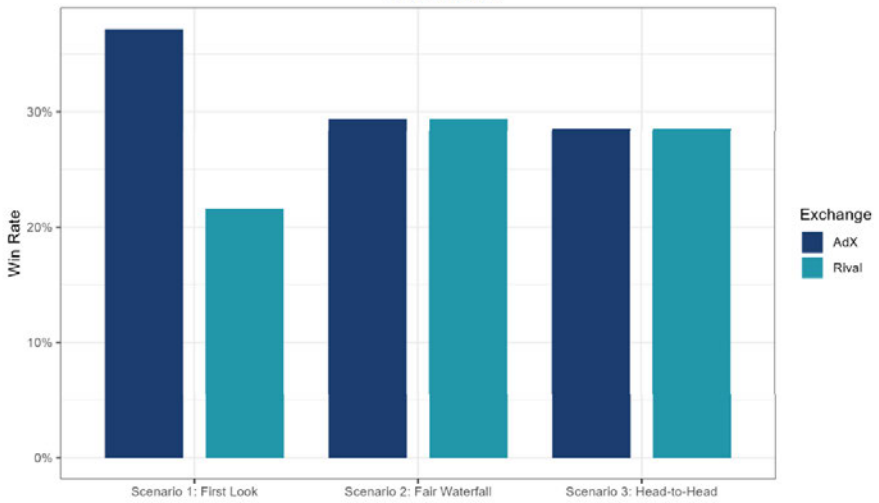
117. Google recognized that its monopoly position as the "defacto. . . ad server of choice for 90% of publishers" is what allowed Google to implement actions like First Look notwithstanding the interests of its own publisher customers. PTX0254 at -238. As a Strategic Partner Lead at Google explained, Google's dominant publisher ad server enabled Google to "(a) have a relationship with all pubs (b) get to see all their inventory, even that which we don't monetize (c) (almost) always give AdX demand access to their inventory (d) maybe even allow AdX first look at every single impression." PTX0254 at -238. "[A]ll of that is predicated on the fact that publishers need an ad serve[.]" PTX0254 at -238.

118. Ultimately, the effect of First Look was to foreclose and diminish competition in the ad exchange market. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. Over time, rival ad exchanges became less attractive to publishers not based on competition on

the merits, but because Google used its monopoly power to give itself an unfair advantage. Lipkovitz (Google (2023)) Dep. Tr. 106:1–21 (explaining that First Look access was "valuable" because it provided Google with information to "train [its] models"). That in turn further entrenched Google's monopoly power. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

119. Prof. Weintraub estimated the first-order impact of First Look on the ability of rivals to compete for publisher inventory. Weintraub (Pls. Expert) Testimony. Based on a simulation, calibrated using Google's data, he estimated that while Google and its closest rival ad exchange would be expected to win the same number of impressions in a "fair" auction where they bid head-to-head simultaneously, First Look skewed impressions towards AdX, allowing it to win almost twice as many as its closest rival. Weintraub (Pls. Expert) Testimony; PTX1322 (reproduced below).

FIGURE 14: COMPARISON OF WIN RATES FOR ADX AND RIVAL EXCHANGE BY SCENARIO



120. Because AdX faced less competition from rivals, as a result of First Look, Google prevented publishers from obtaining the highest possible bid for each impression. Gentry (OpenX (2023)) Dep. Tr. 38:24–39:6 ("Because AdX could transact in what is a noncompetitive

dynamic, that resulted in a publisher not receiving the highest possible bid for their inventory"); Lipkovitz (Google (2023)) Dep. Tr. 111:8–12 (acknowledging that "giving another exchange the opportunity to bid after AdX has met the floor price would have potentially been good for publishers"); Weintraub (Pls. Expert) Testimony. Google also harmed advertisers via First Look by forcing them to transact on AdX and by preventing advertisers not transacting on AdX from bidding for impressions. Gentry (OpenX (2023)) Dep. Tr. 39:14–39:22, 39:24–40:7 ("[First Look] created a single channel by which an advertiser could access a publisher's inventory" so advertisers without that access to that channel could not access inventory). Google also reduced the quality of matches between publishers and advertisers, preventing the advertiser who valued the impression the most from being able to bid for and win the impression offered by the publisher. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

121. At times, Google and its experts have contended incorrectly that publishers could evade First Look by configuring DFP to allow rival ad exchanges an earlier look than AdX at some publisher inventory. However, such setups did not allow publishers to put any rival ad exchange in a similar place as AdX, and, as explained above, such setups were prohibited by Google policies. Abrantes-Metz (Pls. Expert) Testimony.

b) AdMeld Acquisition

122. In 2011, Google acquired AdMeld, which Google saw as a "Direct Competitor[]" that threatened to "disintermediate" or take away the direct control Google had over publishers and advertisers via DFP and AdX. PTX0089 at -12 ("YMs [like AdMeld] now manage the decision as to which ad network should monetize remnant inventory for a publisher . . . As a result, Google's platform strategy to "own the tag" in order to ensure optimal control over inventory for monetization (Adx and AdSense) is at risk."); PTX0056 at -783, -789–90; PTX0112 at -976 (indicating that a "Strategic Rationale" for acquiring AdMeld was to "Reduce

risk of disintermediation"); PTX0054 at -015 (discussing how yield managers like "Rubicon, AdMeld, and PubMatic represent a very real competitive threat to DFP."); PTX0085 at -714 ("Yield managers are disintermediating our access to inventory, inhibiting our overall display strategy"). In doing so, Google eliminated a direct or potential competitor by "parking" it, PTX0058 at -800, and then eliminated features of AdMeld that pre-acquisition threatened to unwind the tie that Google had created between its ad exchange and publisher ad server. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

123. AdMeld offered website publishers yield management software. Yield managers better predicted the prices publishers could expect to receive from advertiser ad networks and other demand sources as compared to using average historical prices to order the sequence of the waterfall. LaSala (Google (2020)) Dep. Tr. 72:18-24 ("My definition of yield management is to be able to look at the multiple demand sources that participate, right, in the ad server. . . and help a publisher optimize their revenue plans."). For its part, AdMeld "opened up reporting down to the bid level, allowing publishers to fully understand just who was bidding on their inventory, and their relative price points. This enabled publishers to set intelligent price floors against various combinations of their inventory, including the advertiser and the agency." PTX0104 at -299 (internal Google summary post-deal); O'Kelley (Xandr (2023)) Dep. Tr. 86:6–18 ("AdMeld had much more consultative, managed service and yield optimization capabilities that were what publishers actually needed[.]"); PTX0089 at -16 (Google presentation, yield managers like AdMeld "Simplif[ied] Remnant Inventory Management Through Services and Technology"). Pre-acquisition, Admeld also "strove for transparency" and "tackled the black box industry perception of Google ads products." PTX0104 at -299. AdMeld was also developing ad

exchange functionality. PTX0056 at -783; PTX 0044 at -913 (Google email exchange from April 2009 observing that yield managers like AdMeld are "moving towards the exchange model.").

124. Google's own documents recognize that AdMeld was "break[ing]" Google's ability to enforce policies such as First Look. PTX0088 at -597; PTX0054 at -009 (noting that "60%+ of paying DFP publishers are using a third party yield manager or a competitive exchange").

125. Google also recognized that yield managers provided publishers with more choice, resulting in "more price competition" for AdX and "threaten[ing] margins." PTX0025 at -044. In other words, a yield manager like AdMeld was a direct or at least a potential competitor to AdX. PTX0056 at -783; PTX0057 at -169 (summarizing a conversation with FoxNews, which had transitioned more of its inventory on AdMeld over AdX); PTX0026 at -066 (suggesting that yield managers threatened gaining a "foothold in Google's' market, which would dilute one of the primary reasons" Google acquired DoubleClick); PTX0104 at -298 ("It was not uncommon for AdMeld to compete against ad exchanges, including the DoubleClick Ad Exchange[.]"); PTX0089 at -228 ("the threat of yield managers is the number one strategic area of focus for the exchange team.")

126. After losing key publishers to AdMeld, Google considered competing directly against AdMeld and other yield managers in part by copying their features. But Google ultimately adopted a different strategy—acquire and destroy the competition. PTX0057 at -169; PTX0064 at -376; Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

127. Internally, Google identified three potential targets: AdMeld, PubMatic, and Rubicon. Google recognized at the time that the latter two companies were "far behind" AdMeld. PTX0064 at -377. AdMeld was Google's "largest concern." PTX0088 at -597.

128. Contemporaneous documents evince Google's anticompetitive intent behind the acquisition. For example, Google acknowledged AdMeld's "technology is irrelevant to [Google]" and the acquisition would not result in "buying customers," as Google had done with DoubleClick. PTX0079 at -106. Google, however, believed that if it "bought [a yield manager] and parked it, it would let us solve the problems" posed by yield managers "from a position of strength." PTX0058 at -800.

129. Google's valuation of AdMeld reflects its anticompetitive intent as well. Google internally recognized AdMeld was worth approximately $110 million based on venture capital valuations, but Google offered to pay $380 million in order to remove AdMeld from the market. PTX0112 at -976.

130. Google's acquisition of AdMeld eliminated a nascent "direct competitor" to AdX, as AdMeld was in the process of developing and launching its own ad exchange. PTX0056 at -783, -789–90; PTX0044 at -913.

131. After acquiring AdMeld, Google shut down its nascent ad exchange and maintained within AdX and DFP only some of the features AdMeld previously provided publisher customers. PTX0115 at -421; PTX0104 at -299; Layser (News Corp) Testimony. Google's conduct thus reinforced Google's monopoly in the relevant markets by eliminating a direct competitor to AdX and cutting off access to technology that threatened to unwind the ties that Google had created between its AdX ad exchange and DFP publisher ad server, thereby protecting DFP's advantages. PTX0089 at -12 (Google was concerned that AdMeld would undo its "own the tag" strategy and put AdX "at risk"); PTX0115 at -423–24 (post-acquisition "automated migration of each AdMeld customer" included DFP "replac[ing] the existing Admeld tags with AdX tags. For customers [using DFP and AdX], dynamic allocation [First Look] to

AdX_may_be used as the default method."); Lee (Pls. Expert) Testimony. It also insulated Google's prices and margins, which were significantly higher than those charged by AdMeld. PTX0056 at -783, -789–90; PTX0088 at -597 (noting that AdMeld typically charged only a 7% revenue share).

132. For example, Google recognized that AdMeld's existing integrations with rival publisher ad servers could be used to "pass real-time AdX pricing into a non-DFP ad server," which raised "policy implications" for Google, i.e., the integration threatened to upend Google's conditioning of access to real-time AdX bids on publishers using Google's publisher ad server. PTX0141 at -448. Maintaining this existing AdMeld functionality could create for Google a "[m]assive risk of losing a number of existing publishers, and a difficulty in engaging the non-US markets where DFP has a lower foot-print." PTX0105 at -029. In other words, it would create opportunities for rival publisher ad servers and ad exchanges to compete with Google. Unsurprisingly, Google sunset this feature. SUF ¶ 72.

133. Google's acquisition of AdMeld harmed competition in the publisher ad server and ad exchange markets in other ways, too. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; PTX0140 at -412–16 (discussing a client's question about how to "implement the integration they used to have with AdMeld" and other ad tech products). For example, the real-time bid information provided by AdMeld helped publishers to better "multi-home" (i.e., use multiple ad tech products at the same time) across exchanges. PTX0115 at -421 (Google did not migrate AdMeld's unified, bid-level reporting tools or data, which it had provided to publishers in a transparent manner to help publishers set more intelligent floor prices across all demand sources). Multi-homing also reduces barriers to entry for new entrants to a

market and naturally results in transactions flowing through the lowest cost ad exchange. Abrantes-Metz (Pls. Expert) Testimony.

134. Acquiring and shutting down AdMeld diminished publishers' ability to multi-home across ad exchanges and other sources of advertising demand. Abrantes-Metz (Pls. Expert) Testimony. Instead, publishers were locked into using Google's publisher ad server and providing Google's ad exchange preferential access to the publishers' inventory as compared to rivals with whom publishers may have preferred to partner. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. This foreclosed competition in the ad exchange market, and also diminished competition among publisher ad servers to the extent it reinforced Google's restriction of effective access to real-time AdX bids to publishers using third-party publisher ad servers. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

135. The acquisition also emboldened Google to ramp up enforcement of its existing terms of service that conditioned effective access to real-time bids from AdX on publishers using Google's publisher ad server. Abrantes-Metz (Pls. Expert) Testimony. Specifically, Google took steps to crack down on publishers that tried to use technology like AdMeld's to overcome the contractual and technological ties it had created between its ad exchange and publisher ad server. PTX0129 at -057 (discussing how pre-acquisition publishers had been using AdMeld and other yield manager technology to contravene Google's policy and that Google planned to "block publishers from running AdX inside of SSPs from a policy perspective" by the end of 2013).

c) Google Required Publishers to Provide AdX a Right of Last Refusal or "Last Look" Over Rival Ad Exchanges

136. In response to Google's imposition of a "First Look" for AdX, among other things, publishers and rival ad exchanges cobbled together a solution known as header bidding so that other ad exchanges could better compete with Google. Header bidding allowed publishers to

request real-time, per-impression bids from rival exchanges for their ad inventory before Google's ad tech tools—and the restrictions that came with them—were ever called. While header bidding allowed publishers to evade Google's "First Look" advantage, Google afforded itself a new "Last Look" advantage. This allowed Google's ad exchange—and Google's ad exchange alone—to see the highest bid from a rival ad exchange and use it as a price floor in the auction run by Google's ad exchange. Because of the way Google ran those auctions (i.e., what was known as a second-price auction), Google's ad exchange could win any impression by simply matching the price. This shifted transactions away from rival exchanges, denying them important scale needed to compete effectively and improve their products. Publishers could not disable Last Look or provide such an advantage to any other exchange.

137. Header bidding "dramatically increase[d]" publisher revenue by increasing real-time, head-to-head competition among ad exchanges. PTX0507 at -218 ("per-query bids from exchanges dramatically increases yield, so pubs [publishers] are clamouring for this functionality" (triple emphasis in original)); PTX0501 at -985 ("Header bidding allows publishers to choose which partners they want to work with . . . With header bidding, everyone bids at once, which often drives up the price and in turn gives publishers more money. At the same time, it gives advertisers a more even shot at the inventory they most want."); PTX0520 at -391 ("Why do publishers want header bidding? 1. Higher yields, 2. Full control over the ad decision . . . 3. More simplicity."); PTX1124 at -601; PTX0589 at -825; Bellack (Google (2023)) Dep. Tr. 106:21–107:4 (acknowledging publisher "frustration that Google's ad tech products would not allow them to reach out to more than one exchange for simultaneous realtime auctions of their inventory"); Farber (Meta 30(b)(6) (2023)) Dep. Tr. 141:11–143:13 (explaining that header bidding "was a bit of a hack or workaround" to remove the waterfall "sequencing" and

remove the deficiencies arising from First Look); PTX0234 at -236 ("We do not want to fully embrace header bidding as we are giving away a cheap form of dynamic allocation for free to all of our competitors. This would have a large distorting effect on our rate card as one of the largest advantages to AdX is real time competition."); PTX0373 at -092 (Google employees acknowledging that the development of header bidding "was in reaction to the integration between ADX and DFP which gave ADX real time pricing, but other exchanges only average pricing"); PTX1587 at -512 ("Publishers felt locked-in by dynamic allocation in DFP, which only gave AdX ability to compete, so [header bidding] was born. [Header bidding] gives many publishers better yield, so it's a no-brainer for a publisher to adopt it."); PTX0988 at -212 ("Overtime [sic], other demand sources did not feel it was fair that AdX was given unique treatment in DFP. This led networks and subsequently exchanges to develop the ability to submit near real-time prices to DFP (and other ad servers) to inform ad serving logic via the technology called header bidding. This has also led to significant yield improvements for pub[lishers]."); PTX0371 at -138 ("The header ecosystem relies on our unwillingness to open our systems to the types of transactions, policies, and innovations that buyers and sellers wish to transact.").

138. Header bidding increased competition between Google's AdX and rival exchanges because it [redacted]; Kershaw (Magnite) Testimony; PTX0275 at -492; Shaughnessy (Kargo (2023) Dep. Tr. 86:14–21 ("Header bidding is an opportunity for companies to see when a page is loading to understand the value that they place on . . . the ad inventory on the page and be able to respond with a dynamic price for that

inventory based on the value that they place on it."); Boland (Meta) Testimony; PTX1710 ("Header bidding benefits everyone but Google. It takes away the unfair advantage which granted only AdX full viewability of publishers' entire inventory and the opportunity to cherry pick the impressions it wanted. Header bidding therefore threatens Google's monopoly which ensured AdX always won the great majority of impressions").

139. Google viewed the ability of publishers to transact more directly through non-Google exchanges as an "existential threat." PTX0786 at -716; PTX0433 at -601. As one Google employee explained, Google feared that header bidding could ultimately create an auction that supplanted the need for publishers to use its DFP publisher ad server at all: "By invalidating the need for an ad server we are setting the stage for Google to actually have to compete alongside the SSPs [exchanges] (or whatever these platforms are called then) for any access to any publisher inventory in the future. And we'll be disadvantaged at that point because, unlike our competitors, pubs have been viewing us as a necessary evil, instead of a responsive, innovative partner, so they are eager to figure out how to cut us out altogether." PTX0254 at -238–39 ("Customers have consistently looked to Google to solve the industry's problems and trends, and we've consistently watched smaller companies respond, and then followed . . . when our publishers came to us and said: *how are you going to . . . maximize my revenue by allowing all demand sources to compete in real time* . . . we didn't respond" (emphasis in original)). In the same vein, another Google employee commented on the role of Google as the leading exchange operator in light of the potential for heading bidding technology: "with header bidding we're finally entering a world of true, multi-sourced RTB [real-time bidding] with all 'buyer participation' . . . is this basically a decentralized exchange where there is no authoritarian

intermediary in the form of an exchange operator that inhibited buyer participation?" PTX0284 at -290.

140. Because header bidding created new opportunities for rival ad exchanges to compete with Google, header bidding in turn increased revenues for publishers by providing publishers with real-time, per-impression pricing from all exchanges from which a publisher could select the highest bid. PTX0308 at -243 (internal Google email acknowledging that "HB does in fact yield higher revenue for publishers because it allows SSPs to compete with AdX more on an impression-by-impression basis instead of based on average CPM."); PTX0335 at -258 ("Publishers want realtime pricing from all exchanges because it generates significant yield (approx +30% anecdotally) so they resort to header bidding setups"); Bellack (Google(2023)) Dep. Tr. 101:11–20, 231:5–13; PTX0285 at -406 ("Injecting in multiple exchanges via header bidding means that pub[lishers] can find the right auction dynamics for that moment. It can also act as a higher floor on adx which in turn can drive up overall yield for the pub[lisher]."); PTX0507 at -218; Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 205:19–25; Pauley (Vox (2023)) Dep. Tr. 26:22–27:4; Boland (Meta) Testimony. PTX0363 at -629 ("Header bidding benefits pubs and advertisers, challenges DRX...Publisher: more money"); PTX0239 at -816 ("If we are committed to competition, and we believe competition drives revenue, we should allow for all sources of demand to compete fairly, in real time (or as close to real-time) as possible."); Layser (News Corp) Testimony. Header bidding also provided publishers with "more insight into bids, number of bids from different partners, the price of those bids, [and] the price of impressions won. So, ultimately, it provided more insight into the . . . value of inventory than [publishers] had previously." Pauley (Vox (2023)) Dep. Tr. 27:5–17;

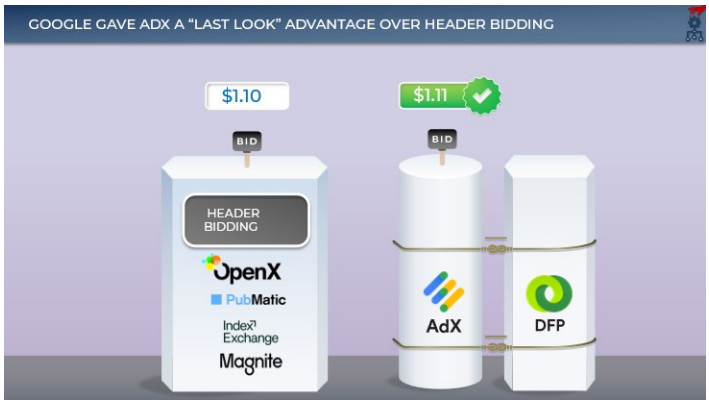
PTX0364 at -663 ("[Header bidding] impact to pubs: -improves liquidity for impressions, improving publisher yield.").

141. Header bidding also benefited advertisers by allowing all advertisers across all the ad exchanges participating in header bidding to have a chance to bid for a particular impression. Friedman (Goodway Group) Testimony; PTX0520 at -390 ("Header bidding offers superior buy-side access to ad server inventory" than the waterfall set up under Google); Casale (Index Exchange 30(b)(6(2023)) Dep. Tr. 188:17–188:25 ("header bidding served to expose advertisers to the entirety of the available scale of the open web"). According to Google, buyers also "embraced header bidding" "[d]ue to the lower margin . . . ability to leverage first party cookie[s]" and "transparent pricing." PTX0520 at -390, -392.

142. Header bidding was not a complete solution to the competitive restraints imposed on publishers by Google. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. It also was complicated to set up and maintain, and because of the way publishers had to implement certain early versions (to partially circumvent Google's restrictions in DFP), some publishers experienced potential additional latency in displaying ads on their web pages. PTX0275 at -492; Blom (Buzzfeed (2023)) Dep. Tr. 130:4–131:25 (explaining that while there is more competition in a header bidding auction, there can be increased latency issues). This additional latency decreased over time as newer versions of header bidding were introduced, such as server-to-server integrations. Moreover, AdX did not provide real-time bids that could be used in header bidding as doing so would further validate the benefits of increased competition brought about by header bidding. PTX0260 at -818; PTX0754 at -321; PTX0234 at -236 ("We do not want to fully embrace header bidding as we are giving away a cheap form of dynamic allocation for free to all our competitors. This would have a large distorting effect on our rate

card as one of the largest advantages to AdX is real time competition."); PTX0824 at -999 ("Header Bidding has . . . increas[ed] competition and deliver[ed] publishers 30–40% lift in programmatic revenues.").

143. In the face of competition from other ad exchanges brought about by header bidding, Google leveraged DFP's dominance to require publishers to provide AdX with a right of last refusal or "Last Look" over bids from rival ad exchanges, via the decision-making rules programmed by Google into DFP. PTX0507 at -221; PTX0752 at -709; Soroca (Magnite (2023)) Dep. Tr. 34:4–20 (explaining that Google could provide AdX with Last Look because of Google's dominance in the publisher ad server market); PTX0502 at -890.



144. As part of the header bidding process, participating ad exchanges submitted their bids at the same time, so that the participating ad exchanges did not know beforehand what their rivals were bidding. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 211:25–212:18. In the illustration above, the result of that header bidding auction is a winning bid of $1.10. But Google forced publishers using DFP to then provide AdX with information about that competing bid. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 210:23–211:18; O'Kelley (AppNexus (2023)) Dep. 210:23–211:18; O'Kelley (Xandr (2023)) Dep. Tr. 78:9–15 ("We could run . . . a header bidding auction . . . but we still had to send all the results to Google. So Google got to see those bids and then make a decision."), 78:24–79:10; Boland (Meta) Testimony; AdX then got a "last

look," i.e., an opportunity to outbid the highest bid offered by rival ad exchanges. PTX0429 at -757 ("We see the same auction dynamics play out in header bidding where AdX get[s] last look"). Because Google could use the rival ad exchange's bid as its own price floor, AdX could win the impression by simply matching or paying slightly more ($1.11 in the illustration); Google never needed to bid more to win as Google (and only Google) was able to see the price to beat before submitting its own bid.

145. Google recognized that Last Look provided Google with an unfair advantage over rival ad exchanges. Because of Last Look, "AdX gets to pay high and win whenever [a third-party exchange] is present with a high CPM, [sic] and can pay low when [a third-party exchange] bids low." PTX0542 at -335. A third-party exchange "in contrast can't reliably [bid low] where AdX bids low because it doesn't know AdX bids." PTX0542 at -335. In all DFP auctions, therefore, "AdX helps itself at the cost of" third party exchanges. PTX0542 at -335. In the words of a former Google employee, to the extent Google "played" against header bidding, "if we play, we'd rather play at the end" because "you know what price you need to beat" and can "increase your win rate." Lipkovitz (Google (2023)) Dep. Tr. 163:3–25.

146. Based on Google's internal experiments around removing Last Look, Prof. Weintraub estimated that but for Last Look, Google's ad exchange rivals would have won nearly 500 billion additional impressions annually (a 14.25% increase), the equivalent of an additional $473 million in ad spend (an 8.72% increase). Weintraub (Pls. Expert) Testimony; PTX1326; PTX1035 at -359. This represents an enormous amount of revenue, impressions, and auction transaction data. For context, 500 billion impressions are roughly equivalent to the total number of impressions transacted by AdX's largest rival ad exchange in a year, and an 8.72%

increase in ad spend was roughly equivalent to the average growth rate of advertiser spend of all of Google's rivals combined. Weintraub (Pls. Expert) Testimony; PTX1314.

147. Denying rivals revenue, impressions, and auction data reinforced Google's dominance by denying rival exchanges the scale needed to compete effectively for publisher and advertiser customers. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. For example, the additional bid and transaction data that rival exchanges would have obtained by winning these impressions—as they would have done in a competitive market—could have helped rival exchanges improve their products and ultimately compete with Google. Weintraub (Pls. Expert) Testimony. Instead, Google used its dominance to acquire and maintain its monopolies.

148. In addition to depriving rivals of scale that could be used to more effectively innovate and compete against Google, Last Look also resulted in poorer matches between publishers and advertisers. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

d) Google Used Sell-Side Dynamic Revenue Share ("SSDRS") to Further Exploit Its Last Look Advantage.

149. Last Look allowed Google's ad exchange to win any impression offered for sale by a publisher simply by matching the price of the highest rival ad exchange. Google then doubled-down on its Last Look advantage by implementing a program known as Sell-Side Dynamic Revenue Share ("SSDRS") to further exploit this advantage. PTX0541 at -326. Through SSDRS, Google further altered the preferential manner in which AdX—and only AdX—was allowed to bid for impressions offered for sale by a publisher using DFP. Through SSDRS, Google could dynamically adjust its standard 20% AdX take rate—after seeing the highest competing bid from another exchange—so that it could "pay high and win" for

competitive transactions and "pay low," i.e., charge a higher take rate for, less competitive transactions. PTX0541 at -326; Creput (Equativ (2023)) Dep. Tr. 62:1–3, 62:5–19. With SSDRS, AdX could just bid a penny more than the highest header bidding bid to win the impression. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 212:2–18; Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 199:6–22 [redacted] Farber (Meta 30(b)(6) (2023)) Dep. Tr. 183:2–25, 184:2–5 (analogizing Last Look to an auction where, after all the bids have been submitted, Google as the auctioneer "add[s] one cent and sell[s] it to [it]self"); O'Kelley (Xandr (2023)) Dep. Tr. 123:6–22, 124:1–125:11, 125:13–126:19 (Google "even built a feature that let them bump prices by a couple pennies to win auctions, and then they'd . . . make it up on the next auction."); Soroca (Magnite) (2023)) Dep. Tr. 31:9–10, 31:12–17. Google's Last Look informational advantage let it "effectively manipulate auctions and manipulate the decisioning process, in their benefit." O'Kelley (Xandr (2023)) Dep. Tr. 126:15–19; Shaughnessy (Kargo (2023)) Dep. Tr. 82:14–15, 82:17–83:10; PTX0816 at -161 (discussing Last Look's informational advantage and recognizing that it "is also sensitive from a competition perspective so one should be careful about notes"); PTX0431 at -372 (Google employee observing that giving up Last Look would "increase[e] the risk of a price war" among ad exchanges).

150. By exploiting the informational advantage afforded by Last Look using SSDRS, Google could shift even more transactions away from rival exchanges and to AdX by adjusting AdX's advertisers' bids up or down, all without sacrificing any of its own margins. PTX0697 at -355–56. In early versions of SSDRS, Google reduced its revenue share for "competitive

transactions" just enough to win over a competing exchange (after seeing that exchange's final bid), essentially affording Google a right of refusal. PTX1040 at -262–63; PTX0209 at -338; Ravi (Pls. Expert) Testimony.

151. Google did not compensate publishers for this preferential right over other ad exchanges that is analogous to a right of last refusal. Because Google had perfect information when bidding, it could reduce its AdX revenue share by precisely the amount needed to win additional transactions without significantly reducing its average AdX revenue share across all transactions. PTX0541 at -326. In later versions of SSDRS, Google ensured it would not sacrifice any AdX revenue share at all, by charging a higher revenues share—in excess of 20%—on transactions that were not "competitive" because there was no eligible bid from a competing exchange. PTX1193 at 11, ¶ 33; Ravi (Pls. Expert) Testimony.

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153. Rival ad exchanges could not achieve the same result because they did not have AdX's Last Look advantage. PTX0541 at -326; Gentry (OpenX (2023)) Dep. Tr. 33:20–22, 33:24-34:9; Shaughnessy (Kargo (2023)) Dep. Tr. 81:15–16, 81:18; Soroca (Magnite (2023)) Dep. Tr. 31:9–10, 31:12–17, 34:10–14. Consequently, Last Look and SSDRS unfairly funneled

more transactions to AdX, depriving rival ad exchanges of transaction volume and the data needed to compete. Casale (Index Exchange 30(b)(6) 2023)) Dep. Tr. 213:3–5, 213:8–18; Creput (Equativ (2023)) Dep. Tr. 62:1–3, 62:5–19; O'Kelley (Xandr) (2023)) Dep. Tr. 123:6–22, 124:1–125:11; Shaughnessy (Kargo) (2023)) Dep. Tr. 81:25-82:2, 82:4-13; Soroca (Magnite) (2023)) Dep. Tr. 31:21–22, 32:2–7, 32:21–33:1, 33:3–33:6; Cadogan (OpenX) Testimony; Abrantes-Metz (Pls. Expert) Testimony. Using Google's experiment data, Prof. Weintraub estimated that SSDRS had the effect of potentially depriving rival exchanges of over 81 billion impressions and $161 in gross advertising spend annually, approximately 2.74% of rivals' scale. Weintraub (Pls. Expert) Testimony; PTX1328; PTX0432. As an enhancement of Last Look, SSDRS also reduced the quality of matches between publishers and advertisers. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony.

154. As a result, Google's AdX won more auctions—and acquired more transaction data—not by offering a better product, but because Google used its monopoly power in the relevant markets to give Google an unfair advantage over rivals. Without the ability to win auctions, and acquire valuable transaction data, rivals were deprived of critical scale and could not compete effectively to attract additional publisher and advertiser customers or innovate and improve the quality of their products. Weintraub (Pls. Expert) Testimony.

155. Google's employees recognized that AdX's Last Look "only benefits us [(Google)]." PTX0534 at -305; PTX0438 at -479. Publishers did not earn significantly more revenue because of Last Look or SSDRS. Layser (News Corp) Testimony. In fact, publishers complained about AdX's Last Look advantage, but they had no meaningful option to disable it and were not fully informed of how AdX used its Last Look advantage to implement SSDRS. PTX1099 at -866; PTX1093 at -796; PTX0731 at -837 ("Last look has been viewed as unfair by

the market, and hence unsustainable."). But for these programs that afforded AdX an informational advantage and preferential bidding rights, AdX might have needed to bid higher for publisher inventory to ensure it won over competitors. Doing so would have increased publisher revenue. Abrantes-Metz (Pls. Expert) Testimony.

156. Advertisers were similarly harmed by Last Look and SSDRS to the extent that transactions were unfairly funneled to AdX, where Google charged a supracompetitive take rate. Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 199:23–200:14 [redacted] Lipkovitz (Google) (2021)) Dep. Tr. 124:22–126:8 ("I just think [Last Look is] more problematic from an advertiser standpoint"); PTX0527 at -171 ("Currently, AdX has an advantage where its closing price can depend on bid from another exchange. By giving up last look, we make Adx closing price independent of exchange bids.").

157. Google ultimately removed AdX's Last Look advantage in stages. It first removed Last Look over rival exchanges that participated in its Open Bidding product (previously known as Exchange Bidding and discussed further below), a competitor to header bidding. Lipkovitz (Google (2023)) Dep. Tr. 164:23–165:15. Recognizing the value of AdX's Last Look advantage, Google offered to share that advantage over header bidding with ad exchanges willing to join Google's Open Bidding program. With this change, both AdX and certain participating rival ad exchanges were able to use the Last Look advantage to increase their chances of winning transactions via Open Bidding rather than header bidding, diminishing the scale of transactions flowing through header bidding. Internally, Google did not see giving up Last Look for Open Bidding as a concession because giving up Last Look for the limited Open Bidding program—which came with other significant disadvantages for rival ad exchanges—would not "los[e] [us]

much money" and because Last Look "creates a clear differentiation between EB [Open Bidding] and HB [header bidding] -- exchanges that go through HB [header bidding] are subject to last look, and those that go through EB [Open Bidding] are not. This gives a pretty big incentive to switch." PTX0438 at -479.

158. Google finally gave up a formal Last Look over header bidding in 2019, but only as part of a package of discrete changes that included new anticompetitive conduct, Unified Pricing Rules, described in more detail below. At the time, Google employees acknowledged Last Look had created an uneven competitive playing field for ad exchanges. PTX0429 at -757 ("Primary benefit of giving up last look is creating a level playing field for all exchanges[.] Currently AdX has an advantage where its closing price can depend on bid from another exchange. By giving up last look, we make Adx closing price independent of exchange bids. This addresses a key concern other exchanges have with [Exchange Bidding] and prove to the market that we are running a fair and competitive auction.").

3. Other Responses to Header Bidding

159. In light of the "existential threat" Google perceived from header bidding, Google engaged in a variety of conduct described below to penalize publishers who partnered with rival ad exchanges that had adopted header bidding technology. Google took these steps to "dry out" those rival ad exchanges by further depriving them of important scale, and to impede publishers' ability to choose where and on what terms their impressions were sold via rival ad exchanges. In doing so, Google muted the competitive impact of header bidding and further forced publishers and advertisers to transact via each of Google's ad tech products in the relevant markets.

a) Project Bell

160. By 2014, Google became increasingly concerned about publishers working with third-party ad tech tools to try to offer third-parties (rather than Google) a chance to buy inventory ahead of DFP, circumventing DFP's First Look advantage. PTX0275 at -495; PTX0716 at -694; PTX0236 at -194; PTX1098 at -262. For example, companies like Criteo had developed an early form of header bidding that allowed publishers—with certain important drawbacks—to offer Criteo its own first look at inventory. PTX0295 at -470–73; Ravi (Pls. Expert) Testimony.

161. As a result, Google contemplated implementing Project Bell, which would lower Google Ads' bids to publishers that did not provide Google with the "first call" opportunity to purchase their inventory. PTX0202 at -394; PTX0716 at -701; PTX0220 at -550. Google warned publishers they would get lower yield if they did not call AdX first, unconcerned that lower publisher revenues would cause publishers to switch to rival publisher ad servers or ad exchanges. PTX0716 at -704. Google never fully commercialized Project Bell because it was unable technically to develop a mechanism to detect whether a publisher was in fact calling rival demand sources first. PTX0259 at -326. Nonetheless, Project Bell evinces an anticompetitive intent to interfere with publishers' choice of ad tech tools to maintain Google's dominant positions in the publisher ad server and ad exchange markets. PTX0716 at -701; PTX0220 at -550.

b) Project Poirot

162. Not content with its Last Look advantage, Google also implemented Project Poirot "to combat the effects of header bidding," which fully launched on July 19, 2017. PTX0545 at -115; PTX0589 at -825; PTX1587 at -512. Project Poirot advanced Google's strategy to "[o]nly buy on AdX impressions that are exposed through AdX and multiple SSP

[exchanges] (ie, dry out HB [header bidding] SSP),” even where its advertiser customers might prefer to transact through rival exchanges that offered better prices or technology. PTX0426 at -741. Rather than empower its advertiser customers to choose where to transact based on competition on the merits, Google instead decided “the most urgent step [for Google] to take is make our buying approach even more intelligent for GDN, Awbid and DBM,” Google’s advertiser buying tools, i.e., force advertisers using those tools to spend more on AdX than rival ad exchanges. PTX0426 at -741; PTX 1587 at -512 (recognizing that stopping DV360 (formerly known as DBM), “the largest buyer on many exchanges . . . [and] of HB [header bidding] inventory” from “buying HB inventory would mean for DBM to *stop buying on 3P exchanges*” and would “ha[ve] major competitive implications.”) (emphasis in original).

163. To effectively participate in header bidding auctions, ad exchanges had to change their internal auction mechanics from second-price auctions to first-price auctions. PTX1137 at -532; PTX1587 at -512; PTX0699 at -260 (“it would be fundamentally impossible to do #2 (unified auction) without #1 (AdX moving to first-price”). Poirot systematically lowered bids submitted by DV360, Google’s advertiser buying tool for larger advertisers, to these rival exchanges that had moved to “first price auctions . . . to compete in the header bidding auction.” PTX1137 at -532 (showing that “Fair second-price auction[s]” had dropped from 75.1% in December 2017 to 32.8% in March 2018 and that “First-price auction[s]” had correspondingly increased from 5.8% to 43.3%); PTX1587 at -512; PTX0701 at -011 (“We leveled the playing field through buyside changes[.] Adx is now dominant to the point where we need to communicate to advertisers (and sometimes even to exchanges) why over 70% of DBM spend happens on Adx”); PTX0589 at -825 (discussing how Google performed experiments to turn off

DBM buying on known header bidding requests). Thus, in effect, Poirot targeted ad exchanges for trying to compete on a more level playing field with Google.

164. Without disclosing the details of Poirot to DV360 advertisers, and by default opting *in* all advertisers, Google lowered its advertisers' bids into rival exchanges initially by as much as 40%. Ravi (Pls. Expert) Testimony; DTX536 at -066. Later, as part of version 2 of Poirot, Google lowered bids by as much as 90% for all bids submitted to a particular exchange. Ravi (Pls. Expert) Testimony; PTX0860 at -682 ("Lower the floor on bid shaving from 0.6 to 0.1.").

165. Google did not reduce any DV360 bids submitted to AdX, ostensibly because AdX continued to operate a second-price auction, and therefore bid-shading would not necessarily help advertisers. However, Google internally recognized AdX did not operate a "clean" second-price auction at the time Poirot was launched. PTX0191 at -183, -186; PTX1769 at -598. By that time, Google had made a number of changes to DFP and AdX that meant AdX had "not been a true 2nd price auction for some time." PTX0707 at -221. For example, "[t]hings like RPO [Reserve Price Optimization], Dynamic Rev Share . . . all have the impact of optimizing the 2nd price [auction] in someway." PTX0317 at -549. As a result of AdX not being a "true 2nd price auction," bidders "like Criteo [we]re already sha[d]ing their bid on" AdX, recognizing that bid shading, i.e., reducing bids, into AdX was in the interest of advertisers. PTX0707 at -221; PTX0227 at -564. Indeed, Google recognized that "[w]hen buyers realize [Google was] training [RPO] on bids, they may implement logic to strategically shade bids. DBM has a system called Poirot built for this purpose." PTX0584 at -051. By creating incentives for buyers to shade their bids, the implementation of RPO on AdX meant that AdX was not running a true second-price auction, and yet Google did not shade DV360 advertisers' bids on

AdX. Ravi (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

166. Additionally, Google even tweaked the design of RPO on AdX specifically to avoid the triggering mechanism used by Project Poirot to decide whether to shade bids, although RPO continued to run in some form and even this version of RPO may have made bid-shading by DV360 on AdX beneficial to Google's advertiser customers. Ravi (Pls. Expert) Testimony; PTX0583 at -652 ("The online RPO launch candidate we proposed has been watered down to the point that it's indistinguishable from vanilla adx auction (more aggressive tunings of online-RPO were detected by current implementation of Poirot, although still within tolerance intervals).") Therefore, despite AdX not running a true second-price auction (the purported trigger for the application of Project Poirot), Google did not shade DV360's bids on AdX, even if it might have been in the interest of advertiser customers to do so. PTX0707 at -221 ("We have not been a true 2nd price auction for some time now.").

167. Poirot also built upon AdX's Last Look advantage. PTX0815 at -391 ("As part of the migration to AdX first-price auctions, we are giving up a significant advantage Google has retained over the past few years, namely, last look."). To the extent Poirot resulted in a DV360 advertiser's bid losing on a rival exchange—because Poirot shaded the bid too much for the advertiser to win—DV360 was almost always able to compete again for that impression on AdX, where it had a greater chance of winning through a combination of Last Look, SSDRS, and the lack of any Poirot bid shading. Ravi (Pls. Expert) Testimony; Lipkovitz (Google (2023)) Dep. Tr. 175:8—18 ("I think what would happen though is that all things equal, because Project Poirot does nothing on AdX, and in other exchanges it would either lower the win rate or lower the

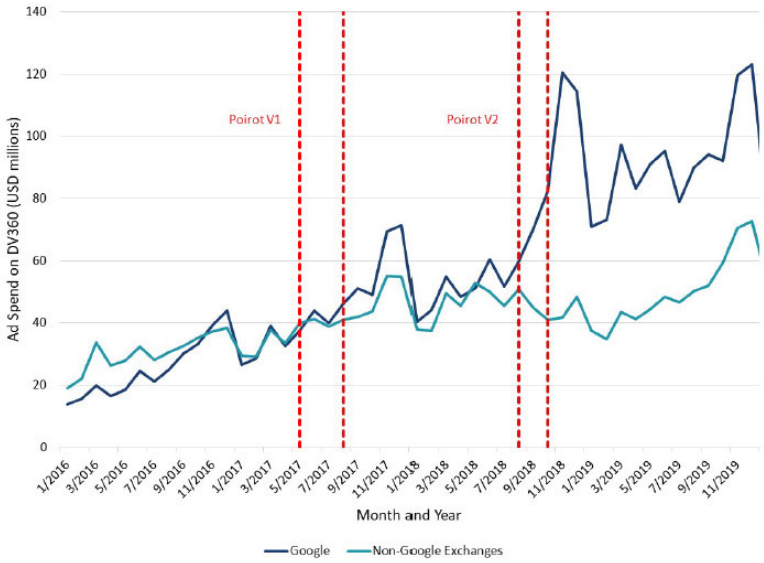
price, and campaigns are the same, more money would move to AdX for sure. That's an obvious one").

168. Poirot was "quite effective" at diminishing the amount of DV360 demand that went through third party exchanges, and thus header bidding auctions, depriving the rival exchanges running those auctions of important scale. PTX0587 at -794; Weintraub (Pls. Expert) Testimony. Poirot shifted DV360 spend toward AdX and away from rival exchanges participating in header bidding. PTX0537 at -674 (one month after fully launching Poirot, Google calculated an "[i]ncrease in AdX spend because of Poirot [of] +8% [and an] [i]ncrease in [third-party] Exchange spend because of Poirot [of] -7%"); PTX0529 at -106 ("we do worry about AdX share shift. That's one reason Tobias proactively engaged PR to see if they wanted to get ahead of the story but they didn't want to call attention to this."); PTX1587 at -512; PTX0854 at -310; PTX0589 at -825; PTX0686 at -027–28 (2018 Google presentation explaining the "Overarching Buyside Strategy: Be the Decision Engine" and showing how the spend of an advertiser using DV360 skews towards AdX and away from rival ad exchanges).

169. The shift in DV360 spend from rival exchanges to Google's AdX was pronounced, especially after the launch of Poirot version 2, which increased the exchange-level discount applied to all DV360 bids to some exchanges by as much as 90%. PTX0701 at -011 ("AdX is now dominant to the point where we need to communicate to advertisers (and sometimes even to exchanges) why over 70% of DBM spend happens on AdX."); DTX0931 at -624 ("Upon investigation by our teams, it looks like DV360's first price auction protection (AKA: Poirot) is too aggressively with its bid lowering. The main reason being that the algorithms apply an advertiser calibrated exchange level adjustment that is not explicitly nuanced for specific publisher, format or devices."). The figure below illustrates how prior to Poirot,

DV360 historically spent more on rival exchanges than AdX, but, following Poirot version 2, DV360 spent substantially more on AdX. PTX0545 at -115 (just one month after fully launching Poirot, Google estimated it had increased DV360 spend on AdX by ~9% and decreased DV360 spend on "non-AdX" exchanges by ~10%, with no change in DV360 spend overall).

FIGURE 3: THE TRENDS IN AD SPEND ON DV360 FOR GOOGLE AND NON-GOOGLE EXCHANGES USING DR. ISRAEL'S DATA SHOW DIVERGENCE IN GROWTH AFTER SEPTEMBER 2018



PTX1466

170. Google's implementation of Project Poirot had a "devastating impact" on header bidding exchanges like OpenX, "resulting in severe financial consequences" and a "large layoff." Gentry (OpenX (2023)) Dep. Tr. 21:15–16, 21:18–22; PTX0684 at -482, -484; Cadogan (OpenX) Testimony; PTX0723 at -325 (identifying Poirot as the "root cause" for the drop in spending on Rubicon).

171. Project Poirot exacerbated the effects of Google's other anticompetitive conduct, and also is probative of Google's market power and anticompetitive intent. Abrantes-Metz (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony. Based on Google's internal experiment data, Prof. Weintraub estimated that

version 2 of Poirot deprived rival exchanges of approximately 59 billion impressions and $390.7 million in gross advertising spend annually, approximately 6.37% of rivals' scale by ad spend. Weintraub (Pls. Expert) Testimony; PTX1330; PTX0860 at -683.

c) Open Bidding

172. Google also planned to overcome the threat of header bidding by coopting the technology and rivals using it. Google launched Exchange Bidding (also called "Open Bidding"), its alternative to header bidding, as a way of "mov[ing] header bidding"—and rival ad exchanges—"to [Google's] platform." PTX0474 at -426 (Exchange Bidding addressed the threat of header bidding, including the threat consolidation of advertiser demand outside of the Google ecosystem); PTX0351 at -591 ("In 2016, we will launch Exchange Bidding . . .Created to combat the risk of Header Bidding"); PTX0398 at -931 ("Our high rev share creates a market opportunity for header [bidding] infra, exploiting the fact that other SSPs have lower rev shares."); PTX0428 at -913 ("One of the objectives for Google was to make [exchange bidding] *just a little better than the* HB" (emphasis in original)).

173. While Open Bidding incorporated aspects of header bidding—allowing rival ad exchanges to compete simultaneously for inventory publishers sold via Google's publisher ad server—it did not meaningfully increase competitive pressure on Google. For example, Open Bidding did not make available "an integration like" the one Google's ad exchange has with DFP, because Google charges a 5–10% fee and because exchanges cannot use it "to bid in with demand from their own DSPs." PTX0281 at -939–940; PTX1193 at -401; PTX0352 at -579; PTX0428 at -913; Gentry (OpenX (2023)) Dep. Tr. 109:20–21, 23–25, 110:1–22, 110:24–111:5, 8–9, 11–18, 111:20–112:15, 113:1–5, 7–20, 113:23–114:24; O'Kelley (Xandr (2023)) Dep. Tr. 153:8–24, 154:1–2, 5–24.155:3–6, 9–12. Google's data demonstrate that Open Bidding has not provided an avenue for third-party exchanges to compete effectively with AdX. In 2022, AdX

transacted about [redacted] more revenue and impressions than the largest participant in Open Bidding (PubMatic). Lee (Pls Expert) Testimony; PTX1408; PTX1409. Open Bidding also required exchanges to share their bid data with Google, which could be used to program Google's bidding algorithms for its advertiser buying tools, and only Google was permitted to control the billing relationship with the publisher, further disintermediating rival exchanges from their publisher customers. Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 222:22–223:3; Gentry (OpenX (2023)) Dep. Tr. 111:11–112:15, 113:1–5, 113:7–20; Kershaw (Magnite) Testimony.

d) Unified Pricing Rules

174. Open Bidding provided Google with unprecedented access to data on impression-by-impression bidding behavior of rival ad exchanges. PTX0628 at -967 (Google internal email observing that "[w]hat is unique about Jedi [Open Bidding] is that it provides us with unprecedented visibility, because we can validate exactly what is going on a per-query basis and understand the auction dynamics on the same inventory offered across multiple exchanges."). Google "capitalize[d] on the intelligence provided by" Open Bidding to identify another impediment to the continued growth of its AdX ad exchange: publishers setting lower price floors for rival ad exchanges. PTX0628 at -967. In response, Google set out to degrade its own publisher ad server product to control how publishers could set price floors.

175. Historically, publishers using Google's publisher ad server (DFP) were permitted, but not obligated, to separately set price floors for different ad exchanges or advertiser buying tools (advertiser ad networks or DSPs). PTX0611 at -802; PTX0748 at -626 (Google employees discussing why publishers set different pricing floors).

176. The ability to set different price floors for different ad exchanges put competitive pressure on Google. Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony; Abrantes-Metz (Pls. Expert) Testimony. For example, some publishers used their ability to set

higher floors on AdX and/or Google Ads relative to rival exchanges and advertiser ad networks to shift transactions to lower-cost rivals and reduce their dependence on Google.PTX0611 at -802; Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony. Google employees recognized publishers used differential floors to "reduce[] dependence on Google as a whole." PTX0611 at -802; PTX0609 at -146 (Google employee recognizing that publishers sometimes set higher price floors for AdX because they have "some perceived benefit from wanting revenue diversity" and publishers have been "willing to tolerate some revenue loss in exchange for reduced dependence on both [Google Ads/DV360] and Google . . . as a whole.").

177. Other publishers varied price floors across different demand sources to put competitive pressure on AdX and Google Ads—an attempt to push back against Google's conduct discussed above—and maximize the overall value of their inventory. PTX0535 at -334 (publisher set higher price floors for AdX to justify Google's 20% revenue cut); PTX0469 at -512 (Publishers "are also rationale when they decide to diversify their source of revenues. It helps them to keep Google at bay and put pressure on us [Google] (similar to any industry)."); PTX0564 at -173 (noting that publishers use higher floors on AdX because they "feel they need to 'push AdX harder' to extract maximum value from a yield management perspective"); PTX0530 at -671 (clarifying policies on the use of AdX in combination with other yield management platforms to restrict passing an impression from AdX to another system); PTX0609 at -146 (since "AdX has last look against remnant line items," publishers "want[ed] AdX to 'work harder'"); PTX0321 at -521 (explaining that rather than maximizing AdX revenue, publishers cared more about "grow[ing] total revenue" and set a floor for AdX that "kept AdX revenues flat but minimized the # queries that went to AdX"); PTX0676 at -362–364 (demonstrating how Google increases its revenue by shifting spend from sell side to buy side

resulting in a lower payout to publishers); PTX1853 (video), PTX1854 at 1:19:43–01:21:02 (transcript of PTX1853) (Google-publisher meeting announcing UPR where publishers explained the need for differential floors); Layser (News Corp) Testimony; PTX0882 at -722.

178. The ability to set different price floors for different ad exchanges and advertiser ad networks benefited publishers and advertisers in other ways as well. PTX0803 at -151 ("Publishers Lash Out Against Google Over 'Unified Pricing' Changes."); PTX0803 at -151 ("Publishers Lash Out Against Google Over 'Unified Pricing' Changes'."); Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony. For example, Google recognized that publishers set higher floors on AdX to prevent AdX from showing less-desirable ads. PTX0534 at -306; PTX0823 at -955–56. As one Google employee wrote, "[e]ach [exchange], including AdX, has controls/rules/floors that [a] publisher can set and these rules are important to them for a variety of reasons -- an example is a publisher not trusting a particular buyer very much, so they only want higher quality (higher priced) demand from them where others they [sic] will take whatever." PTX0534 at -306. In fact, Google decided against price floor controls in Exchange Bidding because it would have "add[ed] a barrier to [publisher] adoption." PTX0534 at -305.

179. Yet in 2019, Google imposed so-called Uniform Pricing Rules ("UPR") to control how publishers could interact with rival exchanges and advertiser ad networks by setting different price floors for each. These rules, imposed by fiat at the request of the "Adx team," acted like an anti-steering clause on all of Google's DFP customers. PTX0762 at -291 ("Adx team want[s] to use this migration as an opportunity to significantly limit the ability of publishers to set floor prices per buyers (which is a good goal to have).").

180. UPR "required publishers using DFP to set a single price floor for all exchanges." SUF ¶ 82. The rules were also inconsistent with how other major publisher ad servers operated.

PTX0751 at -120; Pauley (Vox (2023)) Dep. Tr. 19:2–3, 19:6–8 (before UPR, publishers set "different floor prices for different SSPs and [] partners."); John (Microsoft 30(b)(6) (2023)) Dep. Tr. 192:3–193:8 ("We give the controls to the publisher, how they want to set the price."). Although publishers technically were still able to set up to 200 advertiser-specific floors, that ability was not a practical replacement for the benefits they previously received from setting differential floors at the exchange level. Lee (Pls. Expert) Testimony. In addition to increased technical complexity, because the top 200 advertisers only account for about 70% of total publisher payouts, such an approach could only encompass at most 70% of a typical publisher's revenue. PTX1404; Lee (Pls. Expert) Testimony.

181. Publishers recognized that UPR "[l]imit[ed] revenue potential" for their inventory and "increased the[ir] dependence on AdX." Pauley (Vox (2023)) Dep. Tr. 25:15–23, 28:17–18, 28:21–24; PTX0762 at -291 (noting "Publishers backlash" as a result of UPR "look[ed] serious"). UPR took away publisher control and was not in their best interest. Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony. Google, however, denied publisher requests not to impose UPR. Pauley (Vox (2023)) Dep. Tr. 253:5–22, 253:25

182. Indeed, even Google's own employees expressed concern that UPR was adverse to the interests of Google's publisher customers and amounted to a degradation of Google's publisher ad server product. PTX0750 at -481 (discussing a "fairly negative" story about unified pricing changes and commenting "It is exactly what I was fearing. Bundling things that should not be bundled.").

183. As Google intended, UPR harmed competition. Abrantes-Metz (Pls. Expert) Testimony. UPR increased spending on AdX at the expense of rival ad exchanges and prevented publishers from transacting with rival advertiser ad networks they might have preferred.

PTX0818 at -933; PTX0826 at -038–39; PTX0823 at -955–56; Pauley (Vox (2023)) Dep. Tr. 31:20–24, 32:3–7; Wheatland (Daily Mail) Testimony; PTX1633 at -123–38. UPR also prevented publishers from entering into agreements with Google's rivals that maximized publisher revenue overall. PTX0778 at -783–84; PTX0882 at -722; Abrantes-Metz (Pls. Expert) Testimony. Average prices for open-web display ads decreased after UPR, resulting in lower publisher revenue. Wheatland (Daily Mail) Testimony; PTX1633 at -123–38.

184. UPR also shifted more transactions to AdX, at the expense of advertisers who had to pay Google's supracompetitive fees. Weintraub (Pls. Expert) Testimony. Overall, publishers increased floors on Google's rivals relative to the floors that had been imposed on AdX prior to UPR. PTX1606 at -492 (Daily Mail internal email) ("[I]t means that pubs cannot floor google, nor google buyers (i.e. ad words) at a different rate than any other source of demand…They are limiting the rules that we use to optimize and control demand access so that no advanced flooring/blocking can take place. Essentially turns other exchanges into dumb pipes that funnel in demand but that cannot be used to push up google pricing."). Prof. Weintraub estimated that UPR had the effect of depriving rival exchanges of 366–494 billion impressions and $172–220 million in gross advertising spend annually, approximately 7.95%–10.41% of rivals' scale as measured by impressions. Weintraub (Pls. Expert) Testimony; PTX1331; PTX1035 at -360. Others in the industry arrived at similar estimates. PTX1621 at -158 (PubMatic estimating "best guess" of UPR impact of 6% to 7%). By depriving rival ad exchanges and advertiser ad networks of additional scale, Google impeded their ability to effectively compete for publishers, customers, and transaction volume, and denied them the ability to further improve their products in response to customer demand. Weintraub (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

185. Although Google transitioned DFP and AdX to a Unified First Price Auction (UFPA) at the same time Google implemented UPR, the change in DFP and AdX auction format is unrelated to UPR. PTX0699 at -260 (Google "s[old]" UPR to publishers "as part of this broader change . . . it would be very hard for us to take [floor pricing] away later: [UPR] would be viewed as a pure loss of functionality that we're doing for our own (perceived 'nefarious' / self-serving reasons), rather than (if we do it together) removing (or never building in the first place) functionality [sic] [.]"). A transition of AdX to a first price auction or DFP to a unified auction did not require Google to remove the existing differential flooring capabilities made available to publisher customers within DFP. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

186. Google's contemporaneous business communications make clear the true purpose and intent behind the bundled changes: providing additional pretextual "justification" to address the "backlash among publisher[s]" that Google experienced when launching UPR. PTX0763 at -165–66 (Google employee asking for the real "motivation behind removing publisher controls . . . Couldn't we just make the changes to [UFPA] without removing the controls?" and later observing "that the primary objective of these changes is to help the buyside," i.e. Google's advertiser buying tools including Google Ads.").

187. Google's experts suggest publishers could still effectively floor AdX higher than other exchanges even after UPR by "inflating" the values assigned to other exchanges in DFP. But even if it is possible in theory, in practice, it is inconsistent with the evidence of what publishers actually did following UPR. Abrantes-Metz (Pls. Expert) Testimony. Additionally, such a workaround still would not have allowed publishers to replicate the pre-UPR floor functionality in DFP. For example, publishers would still not be able to steer impressions away

from AdX and to rivals participating in Open Bidding. Abrantes-Metz (Pls. Expert) Testimony. Likewise, Google's experts' argument that publishers could use advertiser-specific price floors to replicate pre-UPR price floors ignores the limit Google set for price floors (200) versus the number of advertisers who typically bid on inventory of major publishers. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. An analysis of a single day of auction-level data from June 2023 demonstrated that publishers selling ads to more than 200 unique advertisers accounted for 99% of all impressions and ad revenue on DFP that day; major publishers, such as Vox, sold advertisements to almost 27,000 unique advertisers that day. Lee (Pls. Expert) Testimony.

C. Anticompetitive Effects of Google's Conduct

188. Google's conduct has harmed competition in the publisher ad server, ad exchange, and advertiser ad network markets and are direct evidence of Google's monopoly power in each relevant market. Abrantes-Metz (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. Google has impaired the ability of publishers and advertisers to choose the ad tech tools they would prefer to use and diminished the number and quality of viable options available to them. Google has done so not simply by succeeding on the merits by creating the best or most innovative products, but rather because it engaged in anti-competitive conduct. Layser (News Corp) Testimony; John (Microsoft 30(b)(6) (2023)) Dep. Tr. 186:1–13; Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 130:19–131:9; Gentry (OpenX 30(b)(6) (2023)) Dep. Tr. 102:2–17.

189. Contrary to Google's expert's claims, anticompetitive conduct can harm competition during a period in which overall industry output has expanded, which is evidenced by contemporaneous industry expansion alongside anticompetitive conduct by Standard Oil

around the turn of the 20th century, by AT&T in the 1960s and 1970s, and by Microsoft in the 1990s. Lee (Pls. Expert) Testimony; PTX1410; PTX1411; PTX1412.

1. Google's Conduct Harms Everyone Who Uses the Open-Web.

190. As a result of Google's conduct, and as explained in more detail below, Google extracted extraordinary fees at the expense of the website publishers who make the open internet vibrant and valuable. This includes newspapers, popular resources like Weather.com, and thousands of other small businesses and content creators.

191. As publishers generate less money from selling their advertising inventory, publishers are pushed to put more ads on their websites, to put more content behind costly paywalls, or to cease business altogether. Wheatland (Daily Mail) Testimony; Abrantes-Metz (Pls. Expert) Testimony. That makes the open internet worse for everyone—except Google.

2. Google's Conduct Allows It to Charge Supracompetitive Prices.

192. Google's conduct has enabled it to charge publishers and advertisers supracompetitive prices for AdX, even accounting for any potential differences in quality between exchanges. Lee (Pls. Expert) Testimony; Simcoe (Pls. Expert) Testimony.

193. Google has internally recognized for years that the 20% average fee it charges publishers and advertisers on all open auction transactions via AdX is not justified by the value of the service provided but a result of the anticompetitive conduct described above, including Google's restriction on Google Ads' advertisers' ability to bid on inventory outside of AdX. PTX0624 at -169 ("The AdX sell-side fee of 20% holds today not because there is 20% of value in comparing 2 bids to one another, but because it comes with unique demand via AdWords that is not available any other way. . . I think we are all in agreement that 'exchange functionality' is not worth 20% and value comes from sourcing demand."); PTX0719 at -463-004–05 ("we can

only retain 20% rev share given AdX mostly brings unique demand in [Google Ads] . . . I'm still convinced that is the only reason we can sustain 20%.") (noting competing exchanges charge only 8.5% and 12% and AdX "shouldn't be double the price."); PTX0639 at -965 ("If [Google Ads] bought liberally through all [competing exchanges], I think the [AdX] 20% would crater . . . What I am suggesting is that 'comparing two bids and running an auction' is proven to not be worth 20% . . . ."); PTX0759 at -751 ("Everyone in this room would point to unique Google Display Ad demand as one of the justifications for why we can charge 20% in the market for O[pen]A[uction] transactions."); PTX0578 at -402 ("Getting away w/ 20% b/c [Google Ads] demand still exclusive.").

194. Google felt no need to compete on the merits to justify pricing with customer value and to explain the difference between its price and those of rival ad exchanges. Google's publisher-facing team supported increasing fees even further despite advice to "be competitive in our pricing . . . not abuse market power, and [] build better products with better economics rather than changing the pricing of existing products wherever possible." PTX0631 at -418.

195. Notwithstanding the market forces that would have driven prices down in a competitive market—as predicted by Google's own employees—Google's conduct has allowed it to persistently charge materially higher fees in the ad exchange market. Lee (Pls. Expert) Testimony; Simcoe (Pls. Expert) Testimony. While it is appropriate to consider prices at the level of the ad exchange product market, Google's fees are also higher than those of third parties when considering total fees charged by combinations of Google and non-Google ad tech tools across the full ad tech stack. Lee (Pls. Expert) Testimony; PTX1398. Prof. Timothy Simcoe employed two complementary quantitative methods to estimate what AdX's take rate would be for the period January 2019 through January 2023 without Google's anticompetitive conduct (the "but-

for take rate"). Simcoe (Pls. Expert) Testimony. First, Prof. Simcoe used an "event study" analysis around Google's implementation of UPR to estimate the take rate in a competitive market for ad exchanges absent Google's tying and UPR conducts. Simcoe (Pls. Expert) Testimony. This method accounts for potential differences in quality across exchanges by using an econometric tool called "fixed effects." Simcoe (Pls. Expert) Testimony. Second, Prof. Simcoe used a "comparables" method that compares AdX's take rate to the weighted average of other exchanges. Simcoe (Pls. Expert) Testimony. Both approaches predict that absent Google's anticompetitive conduct, AdX would charge approximately 15% less than it does, with Google's but-for take rate estimated to be at most 16.6%. Simcoe (Pls. Expert) Testimony. This estimated overcharge is likely conservative, as evidenced by the internal Google business records discussed above predicting a lower ad exchange fee in a competitive market. Simcoe (Pls. Expert) Testimony.

196. Prof. Simcoe also used quantitative methods to estimate the share of the overcharge that was borne by advertisers and the share borne by publishers. Simcoe (Pls. Expert) Testimony. Under the tax incidence model employed by Prof. Simcoe, advertisers would bear between 19.2% and 29.4% of the overcharge; publishers would bear the majority of the overcharge. Simcoe (Pls. Expert) Testimony.

197. Ms. Lim utilized Prof. Simcoe's but-for take rates and other rates consistent with Google's contemporary business communications to estimate the harm to publishers and advertisers from some aspects of Google's conduct. She estimated that on a worldwide basis for the period January 2019 through January 2023, publishers and advertisers were harmed between $484 million and $1.7 billion. Lim (Pls. Expert) Testimony. Focusing on U.S. publishers and

advertisers, Ms. Lim estimated harm from Google's conduct for the same time period of between $209 million and $765 million. Lim (Pls. Expert) Testimony.

198. Google's conduct not only allowed Google to charge supracompetitive fees for its AdX ad exchange, but also funnel more transactions through Google's ad exchange on which these fees were assessed. Google employees recognized Google's ability to "secure" the publisher ad server platform drove a "+20% monetization advantage due to dynamic allocation" and other manipulations of ad auction processes. PTX0031 at -757. As one employee explained, "because we control the ad server, we can more efficiently enter our ads into the auction and win more auctions." PTX0031 at -757. This further increased Google's revenues and profits by amplifying the effect of the supracompetitive AdX fees. PTX0795 at -014–15 (Google describes AdX's share of indirect impressions as a "cash cow" of its display business.).

199. Furthermore, Google Ads limiting its bids to AdX, and in turn AdX limiting effective real-time bids to publishers using DFP, meant that publishers were forced to use DFP in order to access demand. DFP in turn charged quality-adjusted supracompetitive prices and also forced more transactions to flow to AdX, which was able to charge its own supracompetitive prices on a larger base of transactions. Lee (Pls. Expert) Testimony.

200. Even in the face of UPR, publishers could not switch ad servers because they were locked into DFP by these limitations. PTX0751 at -122 (Google reminded publishers who were unhappy with UPR and "want to change ad servers" that "AdWords finds it more advantageous to buy more on AdX," validating publishers' concerns that switching away from DFP meant losing AdX access and thus access to AdWords buyers).

3. Google Has Prevented Rivals in the Ad Tech Industry From Gaining Scale and Reduced Scale Directly Reduces the Ability of Rivals to

Improve Their Products and Meaningfully Compete for Future Transactions.

201. Google's anticompetitive conduct substantially reduced the scale of rival ad exchanges and publisher ad servers, not by winning scale away from rivals on the merits of Google's products but by imposing the restrictions, restraints, and other anticompetitive conducts outlined above. Abrantes-Metz (Pls. Expert) Testimony. In addition to directly preventing rivals from effectively competing for hundreds of billions of individual transactions, Google's conduct had a long-run self-reinforcing effect by depriving rivals of the ability to use data, revenue, and better publisher-advertiser matches to grow their business, experiment to create a better product, and attract additional publisher and advertiser customers. This deprivation of scale made Google's rivals less able to compete effectively for publisher and advertiser customers, to bring more innovative products to market, and to identify high-quality matches between publishers and advertisers. Weintraub (Pls. Expert) Testimony.

202. Some of Google's conduct, such as the acquisition of AdMeld, had a particularly direct impact on the ability of rivals to compete for scale and then use that scale to better serve customers. As discussed above, Google acquired and then sunset key features of AdMeld, eliminating entirely a nascent ad exchange competitor and depriving the market of the innovative product offerings that AdMeld was beginning to offer as it accumulated scale. *See* PFOF §III.B.2.b, above.

203. Google's ordinary course documents estimate the impact of Google's other conduct on the scale of AdX and in turn has substantial effects in the marketplace. PTX0818 at -934 ("Last Look allows us to win queries that account for 7.8% of Adx revenue"); PTX0819 at -318 (Giving up Last Look results in an 8% decrease in AdX revenue and a 7.6% decrease in impressions); PTX0860 at -682–84 (Showing that Poirot Version 2 reduced DV360's spending

on Appnexus (Xandr) by 31.4%, on CasaleMedia (Index Exchange) by 26.5%; on Rubicon (Magnite) by 22.3%, on OpenX by 42.0%, and on PubMatic by 26.4%); PTX0819 at -318 (The effect of UPR "is estimated at a 6.4% increase in value of open auction + private auction impressions won by AdX and a 32.6% increase in impressions, which are currently blocked due to high legacy pricing floor rules"); PTX826 at -039–040 (Rubicon (Magnite) observes following the introduction of UPR that its win rate declined significantly resulting in revenue losses of $100,000 per day); PTX0839 at -924 (A 2017 Google analyses estimating that expanding AwBid to provide Google Ads bids more widely could generate $863 in incremental revenues).

204. Prof. Weintraub also conducted his own analysis, based on Google experiment data and auction-level data, to estimate the impact of Google's conduct on the ability of rivals to gain scale. In particular, Prof. Weintraub estimated the likely impact on rivals' scale caused by Google's conditioning of access to Google Ads on publishers' use of AdX and DFP; First Look, Last Look, Sell-side Dynamic Revenue Share, Project Poirot, and Unified Pricing Rules. These estimates were conservative because they examined short-run effects of single pieces of conduct, and to the extent they relied on auction-level data, were based on recent data that likely was impacted by Google's conduct. Weintraub (Pls. Expert) Testimony.

205. Google's tie of nearly all of Google Ads' demand to AdX substantially reduced rival exchanges' scale. As one benchmark to approximate the magnitude of this effect, Prof. Weintraub estimated that if Google Ads had instead bid into rival exchanges at the rate that DV360 did between 2017 and 2023, rival exchanges would have won 6.88 trillion more impressions, which amounts to estimated decrease in rival exchanges' scale of 26.7%. Weintraub (Pls. Expert) Testimony.

206. Google's exclusive provision of a First Look to AdX also caused AdX to win a large share of impressions that would have been won by rival exchanges with higher valuations of the impression if these auctions occurred on a level playing field. PTX1322; Weintraub (Pls. Expert) Testimony; PTX0551 at –048 ("Launching AdX into a non-DFP server destroys this competitive first look advantage and would most likely lead to AdX (1) losing access to overall queries, and (2) losing access to the *highest-value* queries. From there, it becomes a self-fulfilling prophecy in that less-valuable inventory begets lower CPMs, publishers react by decreasing inventory access, which begets even lower CPMs.").

207. Prof. Gabriel Weintraub quantitatively estimated the effects of Last Look, SSDRS, UPR, and Poirot on rival exchanges by combining results from Google experiments with historical data collected from Google and third parties. Weintraub (Pls. Expert) Testimony. Prof. Weintraub estimates that Last Look, while in effect, likely reduced rival exchanges' impression scale by approximately 14.75% and reduced rival exchanges' revenues by approximately 8.72%. PTX1326. Prior to Google's elimination of AdX's Last Look over Open Bidding participants in early 2017, there was likely an additional negative impact of Last Look on rival exchanges. PTX0452 at -808. Prof. Weintraub estimates that the initial version of Poirot, while in effect, reduced rival exchanges' impression scale by 1.26% and reduced rival exchanges' revenue scale by 4.1%, and that a second version of Poirot introduced in 2018 reduced rival exchanges' impression scale by a further 1.76% and reduced rival exchanges' revenue scale by a further 4.45%. PTX1330. Due to data limitations, Prof. Weintraub estimated a range of potential effects for SSDRS and UPR, where the lower bound of the range is conservative due to both data availability and the nature of the conduct. Weintraub (Pls. Expert) Testimony. Prof. Weintraub estimates that SSDRS likely reduced rival exchanges' impression

scale by between 0.34% and 2.39% and reduced rival exchanges' revenues by between 0.53% and 2.74%. PTX1328; PTX1329; PTX1330. Prof. Weintraub estimates that UPR likely reduced rival exchanges' impression scale by between 1.18% and 7.95% and reduced rival exchanges' revenue scale by between 0.53% and 2.75%. PTX1331; PTX1332. Because UPR was implemented in late 2019 after the other anticompetitive conduct discussed above had been in effect, the lower-end of this range, which is based on recent auction-level data likely understates, the effect of UPR. Weintraub (Pls. Expert) Testimony. That is because Prof. Weintraub's auction-level method of estimating impact on rivals relies on the number and level of competitive bids from rivals, which likely have been significantly depressed over time by virtue of the earlier conduct. Weintraub (Pls. Expert) Testimony.

208. These estimates of effects on rivals from quantitative analysis conducted by Prof. Gabriel Weintraub are consistent in magnitude with estimates of effects on Google's products and on rivals relied upon by Google in the ordinary course for Last Look, SSDRS, Poirot, UPR. These effect sizes are also comparable to typical growth rates of advertising exchanges. For example, between 2019 to 2022, the average growth rate of rival exchanges that produced data in this litigation was approximately 9.81%. Weintraub (Pls. Expert) Testimony. In absolute terms, they correspond to hundreds of billions of impressions and hundreds of millions of dollars of lost revenues annually.

209. Moreover, the estimates that rely on short-term experimental results likely understate the long-term effects of Google's conduct on rivals. Because Google's conduct persisted for several years and was mutually-reinforcing, it is likely that the magnitude of the effects persisted and increased over time by virtue of indirect network effects and a self-

reinforcing data feedback loop. Weintraub (Pls. Expert) Testimony. This is true even for conduct that may have ended. Weintraub (Pls. Expert) Testimony.

210. Consequently, throughout the entire period alleged in the complaint, Google has maintained a substantial scale advantage over rivals, range from 300% to 1200% the size of its next-closest competitor. PTX1314 (relying on Google and third-party aggregate data).

211. Because rival exchanges had less scale due to Google's conduct, they were less able to compete effectively with AdX. Rival exchanges had less revenue available to invest in improving their products and developing new features. Gentry (OpenX (2023)) Dep. Tr. 59:11-60:6. Rival exchanges were not able to utilize as much data as they could have otherwise to improve the quality of their algorithms. Casale (Index Exchange) Testimony; Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 240:4–7, 240:10–18; Gentry (OpenX (2023)) Dep. Tr. 71:8–11, 71:13–16; Kershaw (Magnite) Testimony. Rival exchanges were not able to run as many experiments to improve the products as they would have been able to otherwise. Weintraub (Pls. Expert) Testimony; Gentry (OpenX (2023)) Dep. Tr. 78:18-21, 78:23-79:6. Rival exchanges struggled to attract new publisher customers and negotiate favorable terms with existing customers. Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony. With diminished ability to lower prices, improve quality, and innovate, rival exchanges were less able to exert competitive pressure on Google to lower AdX's prices, improve its quality, or innovate. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls Expert) Testimony.

212. Because UPR prohibited publishers from dealing with ad exchanges or advertiser ad networks (other than Google) on preferential terms, publishers could not steer additional scale to those rival ad tech firms. Lee (Pls. Expert) Testimony. These firms could have used the additional scale to further improve their products to the benefit of publisher and advertiser

customers and increase the intensity of competition with Google's dominant ad tech products. Weintraub (Pls. Expert) Testimony.

D. Google's Pro-Competitive Justifications Lack Factual Support And Do Not Outweigh Harms In Relevant Markets

213. Below, Plaintiffs address why certain purported justifications raised by Google's experts or in its prior filings are unsubstantiated, insufficient, or inapposite for purposes of assessing whether Google's conduct was anticompetitive.[5]

1. Google's Restriction of Google Ads to AdX Is Not Justified by Concerns About Safety/Security/Malware.

214. To the extent Google claims its restriction of access to Google Ads advertising demand to its AdX ad exchange is based on safety, security, or malware concerns, Google's documents demonstrate that it has already accounted for those risks in the context of AwBid and widespread bidding of DV360 advertisers across exchanges. DTX0180 at -469-70; DTX0083 at -608. Google found that the "Inventory Quality" of rival exchanges met "AdX policy ratings and compares to [its own] Adsense Longtail," and that "Click Spam is at acceptable levels in most exchanges." PTX0199 at -240–41. Likewise, other major advertiser buying tools bid on inventory across a variety of exchanges and in doing so address their own customers' interest in addressing inventory quality risks. O'Kelley (AppNexus (2023)) Dep. O'Kelley (Xandr (2023)) Dep. Tr. 307:12-16. Thus, while "[q]uality stuff like anti-fraud" is appreciated by industry participants, "everyone [still] needs to use third party validators, too." PTX1547 at -161.

[5] Pending before the Court is Plaintiffs' Motion for Adverse Inference, ECF. No. 1115, seeking an adverse inference or other appropriate sanction for Google's intentional deletion of chat evidence. If granted, such an adverse inference would provide additional support for Plaintiffs' claims including with respect to anticompetitive effects, market definition, Google's monopoly power, lack of procompetitive justifications, and intent to monopolize.

215. Google's AdX and Open Bidding are not better at preventing cybersecurity issues than other exchanges or header bidding. DTX0180 at -469; Cadogan (OpenX) Testimony; Layser (News Corp) Testimony; PTX1687 at –059 ("[Xandr] make[s] significant investments...that buyers will not pay for third-party verified fraud....we formed a twenty-person group...whose sole purpose is to identify and eradicate inventory fraud); PTX1518 at -059 (OpenX ranked ahead of AdX on Pixalate's May 2015 Global Seller Trust Index, which among other factors, reflects perceptions of seller fraud.); DTX0180 at -469–70; DTX0083 at –608–09.

2. Google Conflates AdX's Ability to Provide Real-Time Bids with Its Restriction of Real-Time Bids to DFP Publishers.

216. At times, Google appears to argue that the benefits to publisher of AdX's real-time bidding for publisher impressions made available via its publisher ad server offset any harm caused by Google's technological and policy restriction of AdX's real-time bids to DFP. Google Motion for Summary Judgment, ECF No. 570 at 11-12. But any benefits of AdX real-time bidding are attainable regardless of Google's separate restriction of access to AdX real-time bids to publishers not working with a rival publisher ad server, and therefore the restriction itself is not an improvement to Google's products. Avery (Kevel (2023)) Dep. Tr. 40:14- 41:12 ("[I]f every other exchange can integrate with us in a server-to-server fashion that it should definitely be technically possible for Google to do the same.").

217. Google's stated risks of submitting AdX's real-time bids to header bidding auctions or non-Google ad servers is belied by the numerous ad exchanges that provide real-time bids into header bidding auctions they do not run or into the few remaining alternative publisher ad servers that they do not own. Soroca (Magnite (2023)) Dep. Tr. 41:17-41:6 ("When header bidding came, it gave the exchanges the ability to all get a bid in at the same for all of the ad impressions."); Casale (Index Exchange (2023)) Dep. Tr. 196:11-22 ("Q: Is there anything about

header bidding that makes it more susceptible to fraud or bots?: A: Anything that you can do in Header bidding you can do in the waterfall")

218. Moreover, Google admits that non-DFP publishers can already "access the advertiser demand that bids into AdX by using 'AdX Direct' tags." SUF ¶ 48. Although, as explained above, AdX Direct is not a practical alternative to real-time AdX bids for nearly any website publisher, its existence reflects a business decision by Google to allow AdX to buy inventory from publishers using rival ad servers. PTX0485 at -338–39 ("If we rolled out an AdX header bidding product, we could leverage the GPT tag on the majority of the DRX indirect functionality. This could accomplish several things. AdX Only Competitiveness: We could increase the AdX stand-alone product competitiveness. Today, with most other exchanges participating in header bidding, AdX-only implementations are at a disadvantage. This product launch could help preserve AdX revenue (and Google margin) outside of DFP. ... Two downsides to evolving AdX direct to be a direct header bidding offering include potential cannibalization of our DRX stack and contradicting other products Google supports in the current market."). Google, however, fails to provide any procompetitive justification for prohibiting those publishers that choose to use rival ad servers from obtaining real-time pricing information and real-time bids from AdX. PTX0258 at -606; PTX0260 at -818 ("We agreed some time ago that we are not going to be doing real-time bidding integrations with other ad servers,").

219. Google tied its publisher-side products together not because of quality concerns, but because it wanted to foreclose competition. PTX0116 at -462–63 (Google wants AdX to "serve as a tool to pull publishers onto [D]FP."); PTX0234 at -236. Rivals repeatedly asked Google for access to AdX's real-time bids but were denied, despite getting such access to non-Google ad exchanges. Avery (Kevel) Testimony; Goel (PubMatic) Testimony; Avery (Kevel

(2023)) Dep. Tr. 39:5–41:20; PTX0755 at -331 ("AdX is currently tied to DFP functionality … That behavior - seems like a way that Google is forcing publishers onto their adserver and hindering fair competition in the adserver market and freedom to switch should the publisher community be unhappy with changes.").

3. Google Offers No Valid Procompetitive Justifications for First Look and Last Look

220. Google offers no procompetitive justifications for requiring publishers to grant AdX—and only AdX—a "First Look" or a right of first refusal for DFP publishers' inventory. *See* PFOF § II.B.2.a above. Google likewise offers no procompetitive justifications for requiring publishers to grant AdX—and only AdX—a "Last Look" or a right of last refusal to buy inventory after the header bidding auction had been conducted, informed by the clearing price of the header bidding auction. *See* PFOF § II.B.2.c above. Nor has Google offered a procompetitive justification for further leveraging its Last Look advantage through SSDRS, i.e., adjusting AdX's fee upward or downward. In particular, these conducts did not necessarily result in more revenue for publishers, such as where a header bidding exchange would have paid the publisher the same price, and could result in greater revenue for Google in the form of higher fees on less competitive auctions. *See* PFOF § II.B.2.d above.

221. Google at times has conflated AdX's functionality as an ad exchange that facilitates real-time bidding between publishers and advertisers with "First Look" and "Last Look." Plaintiffs do not dispute that real-time bidding was beneficial to both advertisers and publishers.

222. Similarly, Google conflates the development of Enhanced Dynamic Allocation, which allows remnant demand to compete against direct sales, with "First Look" and "Last

Look." Plaintiffs do not allege that allowing remnant demand to compete against direct sales is inherently anticompetitive.

4. Google's Contention that UPR Benefited AdX's Advertiser Customers Ignores Harm to DFP Publishers.

223. Google's DFP publisher ad server customers are publishers. PTX0013 at -713 ("DFP is the ad delivery, inventory management, targeting and reporting tool for leading publishers").

224. Google's purported "procompetitive justification" for UPR, a restriction imposed on DFP *publishers***,** is that the restraint benefited AdX's advertiser customers by reducing "self-competition" and price-fishing. DTX0705 at -243 ("And the overlap is not even as clean as the previous slide suggests. It's even more complex, with multiple auctioneers, multiple calls [and] multiple layers of overlap ... This results in self competition for the buyer"). Google fails to explain how publishers—the sole customers of DFP—were benefited or how the conduct did not interfere with the competitive process among ad exchanges.

225. Additionally, Google's alleged justifications for UPR are pretextual insofar as UPR did not remove the ability to floor other exchanges and advertiser buying tools *higher* than AdX and Google Ads. UPR only prohibited publishers from flooring rival ad exchanges and advertiser ad networks *lower* than AdX and Google Ads. Layser (News Corp) Testimony; PTX1193 at -406 (Korula declaration acknowledging that post-UPR, "publishers could continue to set different price floors for different ad exchanges using the tools made available by other ad exchanges, and these price floors would apply in addition to those from Unified Pricing Rules," i.e., they could be higher).

226. Industry participants recognize the pretextual nature of Google's procompetitive justification for UPR. As The Trade Desk explained, it is the "point of *buy-side platforms*," and

not sell-side platforms like DFP, to "handle difficult supply issues like duplication" or self-competition. Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 211:5–9, 211:11–213:21 (emphasis added).

227. Moreover, self-competition, especially in the context of first-price auctions, "really hasn't risen to the level of something that most marketers worry about. It hasn't been a huge issue in the industry … We rarely hear of a marketer asking about this … it was not obvious that it was – self-competition was detrimental." Soroca (Magnite (2023)) Dep. Tr. 80:18–81:18; DTX0141 at -956 (Google analysis showing self-competition only occurred in 1.22%–2.19% of cases examined, and the impact on AdX buyers in those cases was minimal).

228. Google's claim that publishers benefited from UPR substantially simplifying the floor-setting process for publishers is unsupported by any publisher testimony. In fact, multiple publishers will testify that the ability to set variable price floors was valuable, and they registered complaints with Google when it imposed UPR. PTX0763 at -166 (observing "some backlash among publisher[s]"); Pauley (Vox (2023)) Dep. Tr. 31:11–31:17, 25:13–25:19, 28:17–18, 28:21–24, 21:14–20, 21:19–22:2 (observing that AdX's share of Vox's transactions increased with UPR; the overall impact of UPR was to limit Vox's revenue potential from its deals with AdX competitors); Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 226:24–227:2, 227:5–12 ("I think anything that limits the functionality of publishers in pursuing yield is, you know, negative for publishers."). Likewise, Google has not proven that other less restrictive alternatives could not address Google's proffered concern of "self-competition." In fact, Google implemented or considered alternatives such as query double-call protection and Project Elmo to address this issue with less anticompetitive effects. DTX0544 at -944.

5. Project Poirot Did Not Meet Its Purported Procompetitive Objectives Because It Did Not Apply to AdX.

229. Google contends Project Poirot was procompetitive because it benefited advertisers by bid-shading on non-Google ad exchanges that had shifted away from a pure second-price auction format. But Google fails to explain why it did not bid-shade on its own AdX ad exchange even though it was well-known within Google that AdX did not run a clean second-price auction, and therefore bid-shading would benefit advertisers. PTX0227 at -564; Ravi (Pls. Expert) Testimony.

230. In a first-price auction, where the bidder with the highest bid wins and pays the price equal to their own bid, bidders have an economic incentive to bid shade or bid strictly below their valuation. Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony; PTX0349 at -392 ("Buyers in the first price auction have strong incentive to shade bids."); DTX0235 at -669.

231. The optimal level of shading depends on the bidder's estimates or guesses about what others might bid: the bidder should reduce its bid more if it expects lower bids from others. Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony.

232. In a pure second-price auction, where the bidder with the highest bid wins but pays the price that equals the bid submitted by the *second-highest* bidder, bidders do not gain from bid shading because from each bidder's perspective, its bid does not affect the price it pays, which is determined by the bid of the second-highest bidder, over which it has no control. Lee (Pls. Expert) Testimony; Ravi (Pls. Expert) Testimony.

233. Google claims that the [redacted] PTX0746 at -862.

234. As Google employees understood, Google itself had introduced product design changes that meant that AdX had "not been a true 2nd price auction for some time." PTX0707 at -221. For example, "[t]hings like RPO [Reserve Price Optimization], Dynamic Rev Share ... all have the impact of optimizing the 2nd price [auction] in someway [sic]." PTX0317 at -549. As a result of AdX not being a "true 2nd price auction," bidders "like Criteo [we]re already shaving their bid" on AdX. PTX0707 at -221; PTX0227 at -564. Indeed, Google recognized that "[w]hen buyers realize [Google was] training [RPO] on bids, they may implement logic to strategically shade bids. DBM has a system called Poirot built for this purpose." PTX0584 at -051. By creating incentives for buyers to shade their bids, the implementation of RPO on AdX meant that AdX was not running a true second-price auction. Ravi (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony. Nonetheless, despite AdX running something other than a true second-price auction, Google did not shade DV360's bids into AdX as it did on rival ad exchanges.

E. Market Definitions[6]

1. Publisher Ad Servers For Open-Web Display Advertising Are a Relevant Product Market.

235. Publisher ad servers for open-web display advertising constitute a distinct product market based on the economic realities of the market. Zeng (Weather) Testimony; Wolfe (Gannett) Testimony; Lee (Pls. Expert) Testimony; PTX0015 at -990 ("Google's Rationale for Acquiring DoubleClick: [] Own DoubleClick's customer footprint to accelerate time to market for our own advertiser and publisher ad serving products"); PTX0847 at -261 (diagram of the

[6] Google has not affirmatively proposed any alternative relevant product markets it believes the Court should adopt. Rather, Google has limited its advocacy to criticizing the boundaries of Plaintiffs' proposed markets.

display ads landscape, identifying "Publisher Ad Server" as a distinct product that includes DFP, OpenX, and FreeWheel); PTX1653 at -093 (News Corp response to European Commission inquiry) ("No, we do not consider ad networks as alternatives to publisher ad servers."); PTX1689 at -426 (Xandr response to European Commission inquiry; "("Generally speaking, each layer of the ad tech stack plays a different role in the delivery of ad tech services. Publisher ad servers can be differentiated from other ad technologies in multiple ways.").

236. Major publishers that operate websites and wish to generate revenue from those websites by selling open-web display ad inventory must use a publisher ad server to do so. As discussed below, no other ad tech tool (e.g., ad exchanges) serves as a reasonable substitute for the function served by a publisher ad server. And while theoretically a publisher could build its own ad server as an alternative to using one publicly available for sale, in reality, that alternative is not viable for almost any website publisher. Finally, while Google has pointed to publisher ad servers that allow publishers to sell space for video ads or in-app ads, those are not reasonable substitutes for a website publisher that also (or only) wants to sell display ads on their website.

237. *Other types of ad tech tools are not reasonable substitutes.* Publisher ad servers are software products that serve a distinct role in allowing website publishers to manage, sell, and track their ad inventory. Website publishers use publisher ad servers to select which advertisement fills each ad slot on their webpage in real-time to maximize display ad revenue and meet other commercial goals. PTX1642 at -203 (News Corp response to Australian Competition and Consumer Commission inquiry); PTX1642 at -203 ("**Publisher ad servers are tools that publishers use to manage their inventory**. A publisher ad server stores a publisher's ad inventory and records criteria about how the publisher wants to manage and fill their ad spaces.") (emphasis in original); Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony.

238. Publisher ad servers work by allowing a publisher to set rules and goals that determine which advertisement will be shown to each Internet user. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony. Among other functions, publisher ad servers allow a website publisher to determine whether to show an advertisement based upon a pre-existing direct deal with an advertiser or whether to auction off the impression via an indirect demand channel, such as an ad exchange. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony; PTX1689 at -425 (Xandr response to European Commission inquiry) ("Ad inventory management by a publisher ad server involves deciding whether to fill the inventory directly, through agreements that the publisher has with advertisers, or indirectly, through the programmatic sale of ad inventory via the ad tech stack. The decision will be made pursuant to the parallel objectives of meeting contractual obligations under direct agreements with advertisers and maximising inventory yield by obtaining higher prices for the inventory in question.") No other type of ad tech tool reasonably allows publishers to configure such rules.

239. When a publisher decides to auction off advertising space via an ad exchange, the publisher ad server sends bid requests to each ad exchange, receives back bid responses, and compares those bids to decide which advertisement to show. Only publisher ad servers allow a publisher to send these requests to various exchanges and compare those bids to any pre-existing direct deals the publisher may have with advertisers in order to select a winning advertiser bid. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony.

240. Publisher ad servers also uniquely track ad performance and monetization, as well as collect and utilize targeting information. Zeng (Weather) Testimony; Wheatland (Daily Mail) Testimony; PTX 1653 at -095 (News Corp response to European Commission inquiry) ("The key factors that impact our decision as a publisher to select a particular publisher ad server are:

global presence and integration with partners in Australia, Europe, and the US, the ad server's ability to provide holistic management for direct and indirect deals, integration with important programmatic demand (e.g., AdX, as well as Google Ads and DV360), forecasting technology, technical reliability, ease of use, as well as any learning costs required"). In doing so, the publisher ad server tracks data across transactions that may occur on various ad exchanges.

241. Industry participants and observers routinely recognize publisher ad servers as a distinct product. For example, Google's own documents distinguish between publisher ad servers and other ad tech products such as ad exchanges and advertiser ad networks, noting different competitors for each. PTX0979 at -588 ("The 'Display' business is a set of products with distinctly different economics. The distinct components … are: Ad Serving Platforms: ... Google Ad Manager (fka DFP) … Network Buying Doors: DV360, GDA … Network Inventories: … Ad Manager (fka AdX), 3rd Party Exchanges"); PTX0847 at -261 (diagram of the display ads landscape, "grouping "Publisher Ad Server" as a distinct product that includes" DFP, OpenX, and FreeWheel); PTX0993 at -310 (in diagram of ad tech ecosystem, Google draws a separate category for "ad servers" on the publisher side, with DFP, OpenX, and Adzerk (Kevel) in the same box). Non-parties including publishers and other ad tech companies likewise recognize publisher ad servers as a distinct product providing a distinct service as compared to other ad tech tools. PTX0559 at -664 (Microsoft response to French competition authority inquiry) ("Nevertheless, ad servers and SSPs remain functionally different. Publishers and advertisers cannot replace their ad servers with an SSP. Ad servers are essential components of the ad tech stack, and potentially the most important because they are the central 'operating system' for publishers' ad businesses."); Zeng (Weather) Testimony; Wolfe (Gannett) Testimony; Casale (Index Exchange) Testimony; Creput (Equativ 2023)) Dep. Tr. 22:23–25 ("from the supply side,

the ad server or advertiser contract is different from the SSP contract"); PTX1642 at -207 (News Corp response to Australian inquiry) ("Publishers use publisher ad servers to organise and manage ad inventory and opportunities on their website. Publisher ad servers are not substitutable for other ad tech services including ad exchanges or advertiser ad servers.").

242. The differences in the services offered by a publisher ad server and other types of ad tech tools are also reflected in the fees they charge. Publisher ad servers, including the one offered by Google, typically charge publishers a flat fee each time they sell an impression. PTX1687 at -118; PTX1626 at -683; Zeng (Weather) Testimony; Lee (Pls. Expert) Testimony. By contrast, ad exchanges and tools that advertisers use to buy display advertising charge based on a percentage of the price advertisers pay for an impression. Lee (Pls. Expert) Testimony; PTX0547 at -804 (Google charges 20% revenue share for "Open Auction" and "Private Auctions"); PTX0188 at -963 (Chart listing all of Google's ad tech products and pricing. "Price is eCPM in $¢ for . . . DFP, % of media for . . . AdX").

243. *In-house ad servers are not a viable alternative.* Publishers have testified—and will testify at trial—that in-house ad servers are not reasonable alternatives given their cost and inability to access important advertiser demand. Pauley (Vox (2023)) Dep. Tr. 96:7–22 ("[I]t would be quite difficult to build our own ad server to replace Google Ad Manager … The cost … would be prohibitive."); Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 188:22–189:2 ("[W]e don't have the resources or the expertise" to build an in-house ad server, and "we would lose the unique demand tied to Google Ad Manager."); Layser (News Corp) Testimony; Wheatland (Daily Mail) Testimony. Other market participants agree. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 109:24–110:17 (stating that one of its publisher customers building its own ad

server as "completely impractical. ... Ad servers have many features which would be onerous for any given publisher to develop ...").

244. Google internally has recognized that in-house ad servers have increasingly become a less feasible option for major publishers. PTX0174 at -633 ("Increasingly complex landscape means that in-house / independent ad servers will find it more difficult to keep pace with the market …"). While a few website publishers had in-house ad servers in the past, nearly all have switched to a publisher ad server offered by a third party; almost none have switched to an in-house ad server. Developing an in-house publisher ad server is not a practical alternative given the substantial cost and risk to develop and maintain such a product. Helfand (Disney 30(b)(6) (2023)) Dep. Tr. 113:12–20, 121:1–15 [redacted] Lee (Pls. Expert) Testimony.

245. Moreover, even if a publisher were willing to expend the resources to create its own publisher ad server in-house, that ad server necessarily would lack effective access to real-time bids from Google's AdX ad exchange and the important, unique Google Ads advertising demand available nearly exclusively on AdX. Layser (News Corp.) Testimony; PTX1031 at -500 ("Google Ad Manager is the only way to access Google Ad Exchange as a publisher"); PTX0166 at -434 ("AdWords advertiser demand is currently limited to buying inventory that is available on GDN and inventory managed through AdX."); PTX0600 at -517 (identifying "the key differentiator of AdX" as "[Google Ads] exclusivity and dynamic exclusivity."). It therefore would not be a reasonable substitute to Google's publisher ad server.

246. Likewise, while publisher-facing ad networks can potentially serve the needs of some small publishers, by making ad inventory available for sale to a defined group of

advertisers within the network, it is not a reasonable alternative for most publishers. Layser (News Corp) Testimony; Lee (Pls. Expert) Testimony. Most significant publishers seek to sell display ads via a wide range of channels, such as through multiple ad exchanges and via both direct and indirect sales channels. Publisher-facing ad networks do not allow publishers to utilize all of these various channels to sell advertising. Wheatland (Daily Mail) Testimony; Pauley (Vox (2023)) Dep. Tr. 33:12–34:8 (explaining the publisher ad server "is a critical part of the ad technology infrastructure"); PTX0063 at -482.

247. *Publisher ad servers that facilitate the sale of other forms of advertising are not reasonable substitutes.* Publisher ad servers used to transact open-web display advertising—the type of advertising relevant to this case—are technologically distinct from tools used to transact other forms of digital advertising, as recognized in the industry and Google's own documents. PTX1659 at -24 (describing "Open Web" as "[c]ommonly accepted framing of the media ecosystem that exists outside of walled garden publishers like Facebook & YouTube."); PTX1086 at -647 (discussing the "open web display advertising market"); PTX0764 at -251 (analyzing profitability of "Display Web" business); Lambert (Omnicom 30(b)(6) (2023)) Dep. Tr. 82:15–25 (describing display ads as distinct from social networks and private marketplaces); Kozlowski (Comcast 30(b)(6) (2023)) Dep. Tr. 185:2–22 (recognizing and explaining the term "open web"); PTX1524 at 3 ("Digital spend split into four main channels: search, social, IO & programmatic. Each channel managed by separate teams within an agency."); PTX1670 at 22–23 (identifying key distinctions between display advertising and social, retail media, native, instream, and connected TV advertising.).

248. Publisher ad servers that are made available to website publishers to sell display advertising on their websites fall within the relevant market. Lee (Pls. Expert) Testimony.

Publisher ad servers that do not transact display ads (i.e., publisher ad servers that transact only video and social ads) are not substitutes for a publisher looking to sell display ads and therefore fall outside the relevant market.[7] Likewise, proprietary ad tech tools (such as those used exclusively to sell advertisements on social media websites like Meta) cannot be used by a website publisher (e.g., the New York Times) looking to sell a display ad on its own website, and therefore are not reasonable substitutes to publisher ad servers that transact open-web display ads. PTX0657 at -350 (Facebook, Amazon are not "addressable" for Google's sellside display business); Wolfe (Gannett) Testimony; Wheatland (Daily Mail) Testimony; Layser (News Corp) Testimony; Zeng (Weather) Testimony.

249. While a website publisher may *also* sell ad inventory on an app, a social media site, or a streaming video service—if they operate one or more of these services—a website publisher also has a desire to sell display ad inventory available on its website. Wheatland (Daily Mail) Testimony; PTX0063 and DTX0078 at -482; Pauley (Vox (2023)) Dep. Tr. 62:21–67:12. To sell this display ad inventory—potentially in addition to these other forms of ad inventory—website publishers must use a publisher ad server capable of selling open-web display advertising. Wheatland (Daily Mail) Testimony; Zeng (Weather) Testimony; PTX0657 at -350; Helfand (Disney 30(b)(6) (2023)) Dep. Tr. 132:9-13 (explaining Disney uses Google's publisher ad server for open-web display ads while it uses another ad server for ads shown within its premium video content). This is true even though other types of ads (such as premium video ads) might earn a publisher more money: a publisher operating both a website and a premium video

[7] To the extent a publisher ad server transacts both open-web display advertising as well as other forms of advertising (e.g., app advertising), the product falls within the relevant market to the extent it transacts open-web display ads. Lee (Pls. Expert) Testimony.

website would seek to monetize both using the appropriate ad tech tools for each. Lee (Pls Expert) Testimony; Wheatland (Daily Mail) Testimony.

250. Industry participants regularly distinguish between ad tech tools based on the type of ad they are technically capable of transacting. For example, industry participants, including Google, recognize there are different technologies and competitors for publisher ad servers that transact open-web display ads versus those that transact mobile app ads or instream video ads. PTX0953 at -532 ("Web, App, Instream Video, and Search. These tranches of inventory have different industry and competitive dynamics, different types of partners with different business models and different technology challenges."); PTX0511 at -028 ("The apps market dynamics are different."); PTX0581 at -992 [redacted]

251. App publishers—unlike open-web publishers—generally use ad tech tools (including publisher ad servers) specifically designed to sell in-app advertisements, rather than tools that primarily are used to sell open-web display advertising. PTX0233 at -124 (describing AdMob users as "'Pure Play' App developers first (not an existing company that launched an app). Contrasted with companies like NYT or Domino's."); PTX1120 at -477 (users of Google's mobile app ad tech product AdMob are "Mobile app developers who only develop mobile apps" because "it's built specifically for mobile apps"); PTX1120 at -478 (comparing "AdMob vs Ad Manager"). Notably, Google offers a separate ad tech product, AdMob, for app publishers seeking to sell ads within their mobile apps.

252. Likewise, publisher ad servers that allow publishers to sell instream video ads offer distinct technology that is not a substitute for the technology used to sell display ads. Helfand (Disney (2023)) Dep. Tr. 44:18–45:1, 128:22-129:17, 132:9-13 (explaining that Disney's

in-house ad server only sells instream video and Disney uses Google's DFP publisher ad server to sell display ads).

253. *A publisher ad server for open-web display advertising market passes the hypothetical monopolist test.* A hypothetical monopolist of publisher ad servers that transact open-web display advertisements would likely be able to profitably exercise monopoly power either through an increase in price or a degradation in quality. Lee (Pls. Expert) Testimony. Because of the lack of close alternatives available to open-web publishers, a hypothetical monopolist would be able to raise prices without the risk of significant substitution that would render the price increase unprofitable. Lee (Pls. Expert) Testimony.

254. Additionally, here, there is direct evidence that Google has degraded its product in various way, such as by removing the ability of publishers to implement different price floors for different sources of advertising demand (Unified Pricing Rules), without meaningful substitution away from Google's publisher ad server.

255. Moreover, quantitative analyses in Google's business planning documents indicate that Google could profitably impose a price increase for its publisher ad server without significant number of publishers switching away to alternative products to defeat such a price increase. PTX0611 at -798 (estimating a $40-$50 million increase in overall revenue by raising DFP prices by around 20%); PTX0814 at -809 (reporting that "the market will bear" a price increase, and planning to increase fees "by 10% or more"). Therefore, under the hypothetical monopolist test routinely employed by economists, publisher ad servers for open-web display advertising are a relevant product market for antitrust purposes. Lee (Pls. Expert) Testimony.

256. Google's publisher ad server product is commonly referred to in the industry as DoubleClick for Publishers or DFP. Other publisher ad servers include those offered by Xandr

(formerly AppNexus) and Equativ; previously OpenX offered a publisher ad server but ultimately exited the market. Gentry (OpenX 30(b)(6) (2023)) Dep. Tr. 12:20–13:15; Gentry (OpenX) Testimony; Cadogan (OpenX) Testimony; Layser (News Corp) Testimony; Lee (Pls. Expert) Testimony.

2. Advertiser Ad Networks for Open-Web Display Advertising Are a Relevant Product Market.

257. Advertiser ad networks that transact open-web display advertisements constitute a relevant product market. Lee (Pls. Expert) Testimony.

258. Advertiser ad networks are simple buying tools used by advertisers—especially but not exclusively smaller advertisers—to purchase display advertisements. For many advertisers, they are the only ad tech tool reasonably available to purchase open-web display ads. For others, they represent a distinct ad buying tool (as compared to demand-side platforms) that sells advertisers ad *clicks* rather than simply ad *impressions*. While advertisers may also use other ad buying tools to purchase other forms of advertising, those tools do not transact open-web display ads and are complements to the services offered by advertiser ad networks for open-web display ads. Lee (Pls. Expert) Testimony.

259. *Other types of ad tech tools are not reasonable substitutes.* Advertiser ad networks are easy-to-use, "turnkey" buying tools that automate the ad purchasing process and require less engagement and expertise than other ad buying tools. Lee (Pls. Expert) Testimony; Bender (Google (2020)) Dep. Tr. 224:8–25 ("[T]he reasons people chose Google Display Network relative to Display & Video 360, or other DSPs, was that we were going to provide a simple, automated, brand safe, turnkey solution for them."); Bender (Google (2020)) Dep. Tr. 90:25-91:8 ("The Google Display Network Solution, as we brought it to buyers, was to enable [advertisers] to simply execute their campaigns across inventory and automate the process as

much as possible so that they could reach their business objectives, whatever those may be, from a branding goal to more of a direct goal."); Lipkovitz (Google (2021)) Dep. Tr. 88:13–90:2 (advertiser ad networks "in general have a very simple UI, right, where you give us your objective, you know, try to get clicks or conversions or whatnot, and the network does everything automatically for you and you get a good outcome"); PTX0071 at -847 (emphasis in original) ("GDN is a **network**, which means that Google sales and technology is managing the buy for you and delivering conversions.").

260. As a result, advertiser ad networks are particularly important for smaller, less sophisticated advertisers, who are not able to effectively utilize complex buying tools such as demand-side platforms and might have modest advertising budgets. Lee (Pls. Expert) Testimony; PTX0917 at -993 (portraying Google's advertiser ad network as a "simple" tool compared to DV360 as more "sophisticated"); PTX1234 (showing lower average spend levels for Google Ads advertisers compared to advertisers using DV360); Lipkovitz (Google (2021)) Dep. Tr. 93:22–25, 94:1–6, 94:8–19, 100:13–15, 100:17–25 (observing a very small advertiser would "have no reason" to use a DSP because DSPs are "high maintenance" and "complicated" and that the benefits of Google's demand side platform "would be extremely useless" to an advertiser with $1,000 in monthly ad spend); Dederick (The Trade Desk) Testimony; PTX1121 at -540, -550 (Google Ads "Focuses on Buying to Your Goals" while DV360 allows advertisers to "[d]efine your own objective").

261. An additional aspect of advertiser ad networks that is distinct from demand-side platforms and other ad tech tools is their pricing model. Advertiser ad networks typically charge advertisers for the number of clicks by an Internet user on the advertiser's ad (cost-per-click (CPC) pricing). This differs from impression-based (e.g., CPM) pricing that assesses fees for

each ad impression rendered on a publisher's website regardless of whether the Internet user clicks on the ad. Publisher ad servers, ad exchanges, and demand-side platforms typically charge based on a CPM pricing model. Lee (Pls. Expert) Testimony; Bender (Google (2020)) Dep. Tr. 88:2–16 ("[T]he majority of [Google Display Network] buyers [] were buying on a cost-per-click basis. So they would only pay if a user actually clicked on an ad. Of course, that's very valuable to the buyers because they can run their campaigns, you know, diminishing their risk because they only have to pay when a user has clicked."); Parsons (Criteo 30(b)(6) (2023)) Dep. Tr. 170:20–23 (noting most of Criteo's advertiser customers pay Criteo on a cost-per-click basis); PTX0743 at -323 ("Advertisers who want the tightest control on how they spend" use CPM bidding to "Drive Impressions" while "Traditional advertisers" use CPC bidding to "Drive both website traffic and/or conversions"); PTX1230 (showing that approximately 82% of Google Ads transactions charge advertisers on a CPC basis while 98% of transactions on DV360 charge advertisers on a CPM basis).

262. Because advertisers are only charged for clicks rather than each ad impression purchased, Google generally did not disclose to advertisers many details on how Google carried out their advertising campaigns. Google generally did not disclose the bids it submitted on advertisers' behalf (or how they were calculated) or the fees retained by Google for any particular ad or click, unlike demand-side platforms that provide this level of transparency to provide advertisers greater control over their advertising spend. Lipkovitz (Google (2021)) Dep. Tr. 89:21–24 ("And now if you are an advertiser . . . well, [the] network look[s] like a black box . . . ."); Lipkovitz (Google (2023)) Dep. Tr. 157:3–20 (explaining why Google Ads "was sort of like a black box").

263. Modern advertiser ad networks[8] allow their advertiser customers to buy from a variety of sources of publisher ad inventory (e.g., publisher networks and ad exchanges). Lee (Pls. Expert) Testimony. Advertisers cannot bid directly into an ad exchange but rather must use a buying tool like an advertiser ad network; therefore an ad exchange is not a substitute for an advertiser ad network. Lee (Pls. Expert) Testimony.

264. Because of these distinct features of advertiser ad networks, many small advertisers exclusively use advertiser ad networks to purchase open-web display ads. Lee (Pls. Expert) Testimony; PTX1231 (showing that over 99% of advertisers who used Google Ads to purchase indirect open-web display ad inventory did not also use DV360, Google's demand-side platform).

265. Large advertisers also use advertiser ad networks, however, often as complements to demand-side platforms because of the different services advertise ad networks provide. Lee (Pls. Expert) Testimony; PTX1121 at -556–64. For example, advertiser ad networks typically provide advertisers with proprietary data to enable audience targeting or contextual, whereas generally demand-side platforms require the advertiser to use its own data or separately purchased third-party data for targeting. PTX 1529 at -023 ("Key differences" between Google's DSP and ad network products include "targeting," where "DBM [Google's DSP product] provides access to extensive 3rd party data and allow advertisers to use their own data while "GDN [Google Ads] offers Google proprietary audience targeting and contextual targeting capabilities.") Lee (Pls. Expert) Testimony; Lipkovitz (Google (2021)) Dep. Tr. 93:3–93:15,

[8] Although advertiser ad networks are still referred to in the industry by their legacy name ("networks"), advertiser ad networks generally do not operate as closed networks buying only from publishers within the same network, but rather bid for and purchase publisher ad inventory from a variety of sources both within and outside any associated publisher network. Lee (Pls. Expert) Testimony.

93:17–93:20, 93:22–94:3, 100:10–15, 100:17-101:5, 315:20–317:8; Taylor (Google (2021)) Dep. Tr. 41:14–44:18.

266. Industry participants recognize advertiser ad networks as a distinct product from other ad tech tools, including demand-side platforms. Lee (Pls. Expert) Testimony; Dederick (The Trade Desk) Testimony; Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 221:21–222:9

[redacted] PTX0559 at -664–65 (AppNexus submission to the French Competition Authority distinguishing advertiser ad networks from other ad tech products); PTX1653 at -092-93 (ad networks are a distinct product from other ad tech tools such as DSPs and ad exchanges).

267. Notably, Google offers two different tools for advertisers to purchase open-web display advertising: an advertiser ad network, Google Ads, and a demand side platform, DV360. It acknowledges each is "positioned differently in the marketplace and do not share the same competition." PTX0965 at -505. This difference in competition is reflected in the "significantly different revshares" Google commands for the two products. PTX0917 at -972. Google differentiates its advertiser ad network and demand side platform along several dimensions, including inventory, cross channel features, reservation capabilities, pricing, and access to advanced features. Lee (Pls. Expert) Testimony; PTX0667 at -025–26.

268. *Direct deals are not reasonable substitutes.* Advertisers utilizing advertiser ad networks could not turn to direct deals with publishers as an alternative to purchasing open-web display ads via an advertiser ad network. Lee (Pls. Expert) Testimony. Small advertisers lack the resources and ability to directly negotiate with each publisher from whom they might buy ad

inventory via an advertiser ad network. Lipkovitz (Google (2021)) Dep. Tr. 315:20–316:3, 316:6–316:14 ("Q. I guess the thing that I'm trying to understand is, is it [GDN demand] differentiated because of the targeting and targeting technology? Is it differentiated because it's using different data signals? Is it differentiated because it's using -- it has small advertisers that are able to buy programmatically through it?... A. I mean, Tim, literally it's all of the above, right. Really, the key point there is the advertiser is not in full control of each impression, because the advertiser chose to outsource that work to GDN, right. And if it's a small advertiser, frankly, that's the only thing they can do. Like they have no idea how to do anything better, right.").

269. *Advertiser ad networks that facilitate the purchase of other forms of advertising are not reasonable substitutes.* Advertiser ad networks for open-web display ads allow advertisers to purchase advertisements with a different format, reach, cost, and other attributes as compared to tools that allow advertisers to buy other types of advertisements. Kozlowski (Comcast 30(b)(6) (2023)) Dep. Tr. 185:2-10, 15–11, 13–22; Lee (Pls. Expert) Testimony; PTX0978 at -625; PTX0904 at -543.

270. In general, these other forms of advertising—such as in-app, native, retail media, and instream/connected TV advertising—are complements rather than close substitutes to open-web display advertising, and so are the separate tools used by advertisers to purchase them. Lee (Pls. Expert) Testimony; Friedman (Goodway Group) Testimony; Friedman (Goodway Group) Testimony; Lowcock (IPG) Testimony; Lambert (Omnicom) Testimony Schiekofer (GroupM 30(b)(6) (2023)) Dep. Tr. 154:25–155:16 (in-app and social are "complements" and not substitutes for open-web display advertising); Bradbury (GSD&M (2023)) Dep. Tr. 143:7–144:1 (It is important for GSD&M's clients to have access to both digital display advertising and social

because "power of a combination, a mix, if you will, where a presence of a message in multiple communications forms has greater likelihood of being creating an impact and being seen. So there would be a benefit to be in both channels, so to speak, using that terminology."); PTX0406 at -374 (display buying tools "co-exist" with "walled gardens … so buyers will use multiple tools regardless"); PTX1699 at 8 ("Display advertising offers many benefits, but the most important are that it is measurable, is cost-effective, complements other channels, and is flexible and accessible."); PTX1017 at -168 ("Different Ads products (Display, YT, Search) can be used for different parts of the marketing funnel."); Bumpers (Zulily 30(b)(6) (2023)) Dep. Tr. 94:11–95:9 (Q. "And does Zulily consider the different parts of the marketing funnel in choosing which advertising channel to use? … A. Yes."); Schiekofer (GroupM 30(b)(6) (2023)) Dep. Tr. 35:20-36:23 (display is "more [] lower funnel" than video advertising).

271. Social media advertising—such as advertising on Meta—reaches a defined population of consumers that is distinct from the open-web, uses some unique advertising formats, and is more appealing to particular types of advertisers. Schiekofer (GroupM 30(b)(6) (2023)) Dep. Tr. 103:25–104:16 (explaining that open-web display "extends the audience" for advertisers when coupled with social advertising: "if they're not on social. . .you want to get them on display.") PTX1645 at -329 ("We estimate that by 2023, $30-35B of advertiser budgets will be specifically dedicated to non-social programmatic spend, and hence inaccessible to Facebook's O&O advertising."); PTX1620 at -238 ("Facebook currently does not have a strategy to access programmatic budgets outside of social and video."); John (Microsoft 30(b)(6) (2023)) Dep. Tr. 234:11–235:10; Lee (Pls. Expert) Testimony; PTX1670 at 6-7 (illuminating key distinctions between display advertising and social advertising); PTX1700 (distinguishing display advertising from social media advertising); Friedman (Goodway Group) Testimony;

Lowcock (IPG) Testimony. For these reasons, ad tech companies do not view open-web and social advertising as substitutes. John (Microsoft 30(b)(6) (2023)) Dep. Tr. 234:23–235:10 (Social and display are "not substitutes. . .there's a separate group or team that. . .buy[s] social media advertising . . .one won't be able to replace or substitute the other.); Gentry (OpenX (2023)) Dep. Tr. 275:2—18 ("Advertisers look at Facebook as a specific advertising channel. And they look at what we do, an omnichannel exchange, what I call the open web, as another channel, a different separate channel for advertising.").

272. Advertisers do not typically substitute between buying tools (such as advertiser ad networks) used to purchase open-web display ads and social media ads, although advertisers may use both types of tools as part of their overall marketing plans. Whitcombe (Meta 30(b)(6) (2023)) Dep. Tr. 200:18-201:16 ("If advertisers were moving . . .significant budgets between Meta and programmatic, I would have an understanding of that. That simply isn't the case."); Schiekofer (GroupM 30(b)(6) (2023)) Dep. Tr. 102:9–104:16 (For advertisers who want broad reach, display and social are "complements" rather than "substitutes," because buying both "extends the audience" by allowing advertisers to reach users who are "not on social" or by reaching users multiple times to "reinforc[e] the message"); Bradbury (GSD&M (2023)) Dep. Tr. 143:7–144:1 (It is important for GSD&M's clients to have access to both digital display advertising and social because "[a]udiences . . .may favor one channel, if you will, over another.").

273. To the extent advertisers utilize multiple forms of advertising, advertisers do not seamlessly adjust their spending between open-web display and other types of advertising spending. Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 228:21–230:2 [redacted]

[redacted] Friedman (Goodway Group) Testimony; Lambert (Omnicom) Testimony.

274. The same is true with respect to other forms of advertising. As a result, advertisers that want to purchase display ads on the open web to capture the unique audiences and ad formats available through this advertising channel must use buying tools (such as advertiser ad networks for open-web display advertising) to purchase those ads, potentially alongside other buying tools to purchase other types of advertisements.

275. For example, mobile app advertising reaches a defined population of consumers that is distinct from the open web, uses some unique advertising formats, and is more appealing to particular types of advertisers, especially those seeking to advertise their own apps.PTX1658 at 6-10 (identifying various unique characteristics of in-app advertising); Lee (Pls. Expert) Testimony. There are distinct ad software tools that specialize in the sale of mobile app ads, such as Google's AdMob product. Lee (Pls. Expert) Testimony.

276. Likewise, native advertising has distinct characteristics and uses and is sold via separate ad tech tools. PTX1695 at 1 ("Native ads are different from standard ads in that they're designed to fit neatly inside the user's path through your site or app."); PTX1670 at 23 ("Unlike standard ads, native ads typically follow the natural design, location, and ad behavior of the environment in which they are placed."). Lowcock (IPG) Testimony; Lee (Pls. Expert) Testimony. At one time, Google attempted to develop and launch distinct ad tech tools to sell native advertising. PTX0110 at -027–29 (Google document discussing developing a separate

platform for native advertising); PTX0600 at -449 (Google document discussing programmatic plans, specifically needing a "better understanding for how native will be adopted").

277. Likewise, in-stream video and connected TV advertising have distinct features that make them complements of display advertising and are purchased through specialized buying tools. PTX1696 (Google Help Page identifying key distinctions between instream and non-instream video ads); PTX1670 at 5-9, 23-24 (illuminating key distinctions between display advertising, instream video and CTV advertising); Lowcock (IPG) Testimony; Lee (Pls. Expert) Testimony. As with other forms of advertisements, in-stream video and connected TV advertisements are complements to open-web display advertising, and so are their associated ad buying tools. Schiekofer (GroupM 30(b)(6) (2023)) Dep. Tr. 38:24–40:6 ("Q. For your clients, do you view premium video as display -- premium video and display as more of substitutes for each other or complements? Or how do you see it? A…It's different. Display is almost like an extension media."); Lowcock (IPG) Testimony; Lambert (Omnicom) Testimony. Google itself accounts for revenue from display, search, and video advertising separately. PTX0531 at -197 (Google Ads P&L).

278. *An advertiser ad network for open-web display advertising market passes the hypothetical monopolist test.* A hypothetical monopolist of advertiser ad networks for open-web display ads could likely charge prices that significantly exceed competitive levels. In addition to the qualitative evidence described above, Google's own quantitative analyses confirm a hypothetical monopolist would be able to profitably raise prices in excess of competitive levels. In 2014, Google experimented with increasing Google Ads' fee from 14% to 15%—a 7% increase—and found that this would increase Google Ads' profit by 5.3% and overall Google profit by 2.2%. PTX1808 at -186. Google then implemented this price increase. PTX0858

at -246 (reflecting Google Ads fee at 15%). In 2018, Google performed simulations in which it altered Google Ads' fee and found that it could profitably raise Google Ads' fee further from 15% up to 20%, which would have been a 33% increase (although Google ultimately opted not to implement this change). PTX0858.

279. There is additional direct evidence, in the form of the conduct discussed above, that indicates advertiser ad networks constitute a relevant product market. For example, Google was able to restrict access to Google Ads advertising demand to Google's AdX ad exchange even though it would have been better for advertisers to be able to bid more freely across rival ad exchanges. Nonetheless, Google was able to maintain such restrictions for years without a significant number of advertisers substituting away to other products. Lee (Pls. Expert) Testimony. Even when those restrictions were partially relaxed via AwBid, Google was able to charge significantly higher fees for transactions that occurred on rival ad exchanges (32% to 50%), which amounts to a significant price increase borne by Google Ads' advertisers without a competitive response capable of disciplining Google. Lee (Pls. Expert) Testimony.

280. Therefore, advertiser ad networks for open-web display advertising pass the hypothetical monopolist test and are a relevant product market. Lee (Pls. Expert) Testimony.

281. Google's advertiser ad network is known as Google Ads or the Google Display Network (GDN). Other advertiser ad networks include Criteo, and previously, Facebook Advertiser Network (FAN), which stopped buying open-web display advertising in recent years. PTX1653 at -093; PTX0993 at -312-13 (Google presentation identifying Criteo and FAN as Google's main advertiser ad network competitors for display advertising).

3. Ad Exchanges for Open-Web Display Advertising Are a Relevant Product Market.

282. Ad exchanges that transact open-web display advertising constitute a relevant product market. Lee (Pls. Expert) Testimony.

283. Ad exchanges that transact open-web display ads[9] are software products that connect publishers using publisher ad servers with advertisers using advertiser buying tools, such as advertiser ad networks, and conduct real-time auctions for advertising inventory. PTX1031 at -480-81. There are no other types of ad tech tools that allow publishers to offer their ad inventory for sale to a large number of potential advertisers in a comparable way. While many publishers also sell a portion of their ad inventory directly, it is not realistic for publishers to sell all of their ad inventory in that way. Although direct connections between advertiser buying tools and publisher ad servers exist, they are incredibly limited in nature and do not reflect a reasonable alternative to publishers or advertisers looking to transact open-web display ads. Lee (Pls. Expert) Testimony,

284. *Other types of ad tech tools are not reasonable substitutes.* Ad exchanges provide publishers access to real-time bids from multiple advertising demand sources simultaneously without having to form individual relationships with each source of demand. Casale (Index Exchange) Testimony; Kershaw (Magnite) Testimony; Pauley (Vox (2023)) Dep. Tr. 62:21–63:7 ((“Q. Why is Vox able to sell display ads to more advertisers through Open Auction than through direct display? A. Because of the nature of programmatic ad technology, there are -- there can be many more buyers that -- in an automated way that can have access to any individual display impression including those that Vox Media owns and sells.”). Similarly, ad exchanges provide

[9] Once a publisher has decided to sell an open-web display ad via its publisher ad server and an advertiser has decided to bid for open-web display ads utilizing a buying tool, the only type of exchange that connects the two would be an ad exchange that transacts open-web display ads.

advertisers access to a wide variety of open-web display inventory without the need to negotiate with each publisher directly. PTX0559 at -664-65 ("Ad exchanges…use more programmatic means to enable advertisers to access difficult-to-reach inventory such as user-generated content or niche sites where ad networks may not have existing relationships.").

285. Internal Google documents and depictions of the ad tech stack identify ad exchanges as a distinct product from other ad tech tools like publisher ad servers and advertiser ad networks with unique competitors. PTX1646 at -469 (depiction of the ad tech stack with ad exchange separate); PTX0847 at -261(internal depiction of the ad tech stack where AdX is separate from DFP and Ad Networks.). Publishers, advertisers, and other providers of ad tech likewise view ad exchanges as distinct products within the broader ad tech stack. Wolfe (Gannett) Testimony; Zeng (Weather) Testimony; Friedman (Goodway Group) Testimony; Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony; Dederick (The Trade Desk) Testimony. Wolfe (Gannett) Testimony; Zeng (Weather) Testimony; Kershaw (Magnite) Testimony; Friedman (Goodway Group) Testimony; Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony; Dederick (The Trade Desk) Testimony.

286. Although certain demand-side platforms, such as the Trade Desk, have recently launched some programs that allow advertisers to bid directly into a publisher ad server—without going through an ad exchange—such programs are incredibly limited. As a result, they do not represent a meaningful and reasonable alternative for publishers seeking to auction off inventory to a large number of buyers or advertisers looking to bid widely on publisher inventory. Lee (Pls. Expert) Testimony. [redacted] Dederick (The Trade Desk 30(b)(6) (2023)) Dep. Tr. 70:5–15.

287. Likewise, advertiser ad networks are not close substitutes for ad exchanges because unlike ad exchanges, they generally do not provide real-time bids into publisher ad servers or many publisher controls. Casale (Index Exchange) Testimony; PTX0656 at -393. Advertiser ad networks therefore cannot be used by publishers to compare bids against those received from other bidding sources. Wheatland (Daily Mail) Testimony; Lee (Pls. Expert) Testimony.

288. *Direct transactions are not a reasonable substitute.* Industry participants and observers recognize ad exchanges as a distinct product from other means of buying and selling display advertising, such as direct transactions between publishers and advertisers. Pauley (Vox (2023)) Dep. Tr. 62:23–64:21 ("[In] our experience, it would -- it's very difficult to convert Open Auction buyers to direct buyers"; open auction demand allows for "many more buyers" to buy in an "automated way," and open auction buyers are "performance oriented" while direct buyers "primarily in the brand advertising upper funnel part of the marketing, sort of, tactics."); Pauley (Vox (2023)) Dep. Tr. 66:25–67:12 (Direct and open auction are "complements," not substitutes.); Gentry (OpenX (2023)) Dep. Tr. 283:1–6, 283:8–23 ("It's extremely difficult" for a publisher to shift impressions from open auction to direct display."); Casale (Index Exchange 30(b)(6) (2023) Dep. Tr. 58:4–7, 58:10–14 (noting that Index Exchange does not view direct deals as competitors).

289. Publishers and advertisers cannot reasonably substitute away from ad exchanges by increasing their reliance on direct deals. Publishers view direct deals and open auction as complements and not substitutes. Layser (News Corp.) Testimony; Sheffer (Google (2021)) Dep. Tr. 79:23–81:22 (describing "typical publisher" having inventory sold by a "direct sales team"

and "other inventory that a publisher may wish to monetize"); Wheatland (Daily Mail) Testimony.

290. Direct deals between publishers and advertisers require significant resources to negotiate and require publishers and advertisers to enter into one-to-one agreements in advance of an Internet user visiting a website, and accordingly are used for higher-value transactions. Bradbury (GSD&M (2023)) Dep. Tr. 138:24–139:1, 139:3–14. Indeed, although the average value of ads transacted via direct deals was approximately 5.5 to 6.5 times higher than the average value of ads sold through indirect channels (e.g., ad exchange auctions), publishers continued to transact both directly and via ad exchange auctions, reflecting their complementary nature. Lee (Pls Expert) Testimony; PTX1229 at -1; PTX1253 at -1; Layser (News Corp) Testimony.

291. Given the volume of ad inventory for sale, the number of potential advertisers interested in purchasing that ad inventory, and the unique characteristics of each impression available for sale, it is not practical for most significant website publishers to sell all of their ad inventory via direct deals. Bradbury (GSD&M (2023)) Dep. Tr. 138:24–140:5; Layser (News Corp) Testimony. The widespread adoption of ad exchanges by publishers and advertisers to transact indirect display inventory demonstrates that ad exchanges serve a need previously unfulfilled by direct transaction types and allow website publishers to monetize inventory that would either go unsold or be sold on less optimal terms. Lee (Pls. Expert) Testimony.

292. Google documents acknowledge that shifts between direct deals and indirect channels of advertising demand, such as ad exchanges, would be "highly unlikely" in part because of "[e]fforts required to make and maintain direct connections" and "supply and demand dynamics." PTX0978 at -625.

293. In addition to selling impressions via an open auction—but not as a substitute for doing so—some publishers sell a portion of their advertising inventory in auctions with a limited number of advertisers (selected by the publisher) eligible to compete. These are known as private auctions. Lee (Pls. Expert) Testimony. Additionally, some publishers sell a portion of their advertising inventory using programmatic ad tech tools but based on pre-agreed terms individually negotiated with advertisers, akin to traditional direct deals between publishers and advertisers. Wheatland (Daily Mail) Testimony; Pauley (Vox (2023)) Dep. Tr. 67:13–23. These transactions, referred to as programmatic guaranteed ("PG") or preferred deals ("PD") often provide an advertiser with the right to buy certain advertising inventory, e.g., the top of website when shown to a particular demographic, at a set price. Lee (Pls. Expert) Testimony. Pauley (Vox (2023)) Dep. Tr. 67:13–23. Because these transactions resemble traditional non-programmatic direct deals, they require the publisher to utilize an advertising sales force and involve significant time and resources, but often allow the publisher to charge meaningfully higher prices. Pauley (Vox (2023)) Dep. Tr. 67:24–68:15; Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 209:24–210:16, 212:2-12. Because of these differences between PG/PD and open auction transactions, Google and publishers view them as complements of each other, with neither likely to fully cannibalize the other. PTX0978 at -625 (Google analysis concluding that "Cannibalization" and "Any [advertising] budgets moving from O[pen] A[uction] to PG would be highly unlikely" due to "efforts required to make and maintain direct connections," "supply and demand dynamics," and "Google's product Strategy"); Pauley (Vox (2023)) Dep. Tr. 68:16–21; Glowgovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 216:11-217:4.

294. *An ad exchanges for open-web display advertising market passes the hypothetical monopolist test.* A hypothetical monopolist of ad exchanges for open-web display ads could

likely charge prices that significantly exceed competitive levels. In addition to qualitative evidence discussed above, Google's own quantitative analyses indicate that Google prices AdX significantly above competitive levels, reflecting the lack of reasonable substitutes to ad exchanges. PTX0499 at -703; PTX0423 at -043.

295. Because there is evidence that prevailing rates in the ad exchange market are not competitive but are instead inflated due to Google's anticompetitive conduct and exercise of market power, as described below, an analysis of a hypothetical monopolist's ability to raise exchange prices at prevailing prices will understate that monopolist's ability to raise prices. *See* PCOL ¶ 24, *infra*; Lee (Pls. Expert) Testimony.

296. Analyses performed by Google in 2014 and 2016 showed that reducing AdX's fee from 20% to 15%—a 25% decrease—would have reduced AdX's total revenues, implying publishers and advertisers are not sensitive enough to changes in price to prevent a hypothetical monopolist from charging prices significantly above competitive levels. PTX0188 at -012-17; PTX0423 at -043.

297. In addition to Google's contemporaneous analysis of its ability to raise and lower fees on the AdX ad exchange, Prof. Simcoe concluded that Google has been able to profitably charge supracompetitive fees for AdX without a meaningful competitive response in the form of publishers or advertisers switching to other ad tech products. Simcoe (Pls. Expert) Testimony.

298. Importantly, it is not dispositive under the hypothetical monopolist test whether one side of a two-sided market, like the ad exchange market, has reasonably close substitutes. Rather, even if only one side of the market lacks reasonably close substitutes, a hypothetical monopolist could profitably raise prices above competitive levels. Lee (Pls. Expert) Testimony; Simcoe (Pls. Expert) Testimony. Here, website publishers are relatively inelastic compared to

advertisers because a website publisher seeking to sell display ads on its website cannot transform those ads into other forms of advertisements to be sold on different types of ad exchanges (e.g., ad exchanges that transact video advertisements). By contrast, advertisers have at least some ability to shift budgets towards tools that transact different ad formats. Lee (Pls. Expert) Testimony; Simcoe (Pls. Expert) Testimony.

299. The way AdX's fees are paid illustrates this economic principle in practice. The revenue share fee Google charges for its ad exchange is negotiated between the website publisher and ad exchange and formally "paid" by the publisher when the ad exchange deducts for itself a portion of the winning advertiser bid before passing the remaining funds to the publisher. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 86:5-19;Pauley (Vox (2023)) Dep. Tr. 10:11-11:2. However, because ad exchanges are two-sided platforms the fees charged by the ad exchange are in reality borne by both sides of the market (publishers and advertisers). Simcoe (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. Like a sales tax, the exchange fee acts as an additional cost taken out of the sale of the advertisement, part of which is paid by the advertiser and part of which is paid by the publisher. Simcoe (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony. The portion of the tax paid by each side of the platform is based on the degree to which that side has close substitutes to the platform; the side of the platform with fewer close substitutes to turn to will bear most of the tax or fee. Simcoe (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

300. So long as one side of the platform is relatively inelastic (i.e., it has few close substitutes to turn to), a hypothetical monopolist of the platform could increase prices of the platform overall, even if customers on the other side of the platform have relatively elastic demand (i.e., they have many close substitutes). Lee (Pls. Expert) Testimony. Here, open-web publishers have particularly inelastic demand for ad exchanges, such that their lack of close

substitutes contributes substantially to Google's ability to raise prices above competitive levels and accordingly they will bear most of the burden of price increases above a competitive level. Simcoe (Pls. Expert) Testimony; Lee (Pls. Expert) Testimony.

301. Additionally, as discussed at length above, much of Google's conduct coerced publishers or advertisers to transact via Google's ad exchange without triggering a significant enough competitive response from publishers or advertisers (such as substitution to other ad tech tools) to constrain Google from acting. Therefore, ad exchanges are a relevant product market. Lee (Pls. Expert) Testimony.

302. Google's ad exchange is AdX. Although in 2018 Google rebranded DFP and AdX under the combined name Google Ad Manager (GAM), DFP and AdX remained distinct products that serve the same distinct functions. Google continued to identify its publisher ad server and ad exchange as separate products in its internal documents, as do other industry participants. PTX0847 at -261 (Chart that shows DFP separately from AdX). Google also prices the publisher ad server (DFP) and ad exchange (AdX) components of GAM separately. PTX0656 at -393–94 (internal Google document titled "What are the guiding principles and approaches for our publisher strategy, given the ecosystem changes?"). Other ad exchanges include those offered by OpenX, Pubmatic, Magnite (formerly Rubicon), Xandr (formerly AppNexus), and Index Exchange. Lee (Pls. Expert) Testimony.

4. Worldwide and the United States are Relevant Geographic Markets For Each Product.

303. Worldwide[10] is a relevant geographic market for each of the product markets defined above. A worldwide hypothetical monopolist of any one of these products would be able to profitably raise prices above competitive levels. Lee (Pls. Expert) Testimony.

304. Additionally, several attributes of the ad tech markets at issue in this case make analysis at the worldwide level appropriate:

a. Advertisers and open-web publishers that use these ad tech tools are located in countries around the world and transact across national boundaries, making it challenging to assign any particular customer to a particular smaller geographic market. PTX1755 at -298 (Google "2019 Display Highlights: GDA + DV360 (Excl App Promo, Incl YouTube)" deck); PTX0978 at -577 (Google "Business Forecast Meeting: Sell-Side" deck); PTX0904 at -553 ("Welcome to the Sell-Side world!").

b. Open-web display advertising spend is global in nature, with many website publishers selling impressions shown to Internet users around the world, who may be of interest to advertisers located in a wide variety of locations, e.g., a hotel in Norway advertising to a user in Virginia looking to escape the summer heat. PTX0904 at -553 ("Welcome to the Sell-Side World!") (showing that nearly 30% of advertising spend within the "Americas" originates from another region).

[10] A worldwide market excludes a limited number of countries such as China, Iran, North Korea, Syria, Cuba, Crimea, Donetsk People's Republic (DNR), and Luhansk People's Republic (LNR), where government regulation of the internet or U.S. sanctions limit the operation of digital advertising technology companies. Lee (Pls. Expert) Testimony.

c. Suppliers of the ad tech products described above typically offer the same ad tech tools regardless of the location of the publisher or advertiser customer, and advertisers and publishers around the world face similar competitive options (or lack thereof) in choosing ad tech tools to use. Google, for example, sells the same publisher ad server, ad exchange, and advertiser ad network products globally. PTX1099 at -864, 879; PTX0694 at -660; PTX0976 at -373.

d. Google's fees for its AdX ad exchange are generally consistent worldwide, including the 20% fee it charges for open auction transactions. Lee (Pls. Expert) Testimony.

e. The conduct described below was implemented without distinction as to regional or national boundaries, and therefore its competitive effects are felt globally. PTX1099 at -864, -879; DTX0014 at -480.

f. Google typically conducts experiments to test changes to its products on a worldwide basis, utilizing data from customers throughout the world interchangeably. PTX0410 at -191 (explaining Google experiments); PTX1190 at -131 (showing experiment results broken out by global, Americas, EMEA, and APAC); PTX0432 at -227; Weintraub (Pls. Expert) Testimony.

g. Scale and network effects, which play a significant role in the ability of ad tech companies to compete effectively, can be aggregated across national and regional boundaries. Weintraub (Pls. Expert) Testimony. An ad tech firm's worldwide scale with respect to the number of advertising transactions processed and the data derived from those transactions impacts the firm's ability to compete for customers and transactions globally. Weintraub (Pls. Expert) Testimony. In part

for this reason, Google typically conducts experiments to test changes in its products on a worldwide basis, utilizing data samples that are global in scope. PTX0326 at -837; DTX339 at -025; Weintraub (Pls. Expert) Testimony.

h. Google organizes its ad tech businesses and tracks their performance on a global basis. PTX1099 at -864, 879; PTX0694 at -660; PTX0976 at -373.

305. In the alternative to a worldwide market, Plaintiffs allege a United States market for each of the ad tech products identified above.[11] A hypothetical monopolist of each of these ad tech products within a United States market would be able to profitably increase prices above competitive levels. Lee (Pls. Expert) Testimony.

306. While Google globally offers each of its publisher ad server, ad exchange, and advertiser ad network products, Google exerts monopolist control over customers located in the United States:

a. For its publisher ad server, Google offers different prices to website publishers located in different countries, including the United States. Lee (Pls. Expert) testimony; PTX1392 (average worldwide DFP fees); PTX1473 (average U.S. DFP fees).

b. For its ad exchange and advertiser ad network, Google is able to dynamically adjust the fees it charges across publishers and advertisers, allowing it to charge different prices based on the respective location of each. PTX0209 at -338 ("DRS works by charging less when a bid [on AdX] would otherwise be cut [by Google's fee] to below the auction reserve at the normal rev[evenue] share."); PTX1096 at -

[11] Google—and its primary expert on market definition issues—does not appear to contest that the United States is a relevant geographic market.

593; PTX0214 at -012–13; O'Kelley (Xandr (2023)) Dep. Tr. 161:13–19 ("Dynamic revenue share is the idea of . . . changing the rev share that an exchange takes . . . to increase the likely that it wins an auction.").

307. Google's ordinary course documents are consistent with the existence of a distinct United States submarket. Google regularly tracks the performance of its products within the United States—in addition to globally or regionally. PTX0694 at -664 ("Global Ads Financials Fact Pack: Q3 2019"); PTX0976 at -373 ("Global Ads Financials Fact Pack: Q2 2020"); PTX0978 at -597 ("Business Forecast Meeting: Sell-Side"). The United States also accounts for a significant portion of the revenues and profits tied to Google's overall open-web display ad tech business. Lee (Pls. Expert) Testimony (relying upon Google-produced data).

F. Google's Monopoly Power in Each Market

308. Google has monopoly power in each of the relevant markets. Its monopoly power in each market is mutually reinforcing markets across the ad tech stack, such that its power in each market is even stronger than it would be if Google had substantial power in that market alone. Google's employees have recognized the enhanced power that comes from dominant positions across the ad tech stack: "The analogy would be if Goldman or Citibank owned the NYSE [New York Stock Exchange]." PTX1547 at -163; PTX0059 at -077("[O]ne other very very important reason to keep adx out of the buy side team is that would be a HUGE conflict perception in the market.").

1. Google Has Monopoly Power in the Publisher Ad Server for Open-Web Display Advertising Market.

a) There Is Substantial Direct Evidence of Google's Market Power in the Publisher Ad Server Market.

309. Google has been able to degrade its publisher ad server product without considering whether doing so will cause publishers to switch in significant numbers to a potential substitute. Layser (News Corp) Testimony. Publishers have to accept these changes because they have no meaningful alternatives for publisher ad servers. Layser (News Corp) Testimony. For example, as described above, Google degraded its publisher ad server by removing an existing feature that allowed publishers to set different price floors for different sources of advertising demand. PTX1853 (recording of meeting where publishers explained to Google harm caused by UPR); PTX1854 at 25:1-11, 26:18-27:9 (transcript); PFOF § III.B.3.d above. Although publishers complained, Google proceeded with the change, and publishers remained on Google's publisher ad server. Layser (News Corp.) Testimony; Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony. When Google estimated the impact of UPR, it did not account for whether a significant number of publishers would switch away from its publisher ad servers in response, largely because there are almost no publisher ad servers in the market left for publishers to switch to. PTX1035 at -360.

310. Additionally, Google has been able to charge publishers quality-adjusted prices above competitive levels. Lee (Pls. Expert) Testimony. Google is able to leverage its dominant position in publisher ad servers to direct more transactions through its other, relatively higher margin ad tech products, including the AdX ad exchange, while also collecting valuable transaction data at scale. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

b) Google's High Market Shares Provide Indirect Evidence of Google's Substantial and Sustained Market Power in the Publisher Ad Server Market.

311. In 2022, Google had a 91% market share of the worldwide publisher ad server market for open-web display advertising and an 87% share of the United States market, as measured by the number of impressions served. Lee (Pls. Expert) Testimony; PTX1236; PTX1277; PTX 1278. The remaining 2022 worldwide shares (9%) and U.S. shares (13%) are split among five much smaller rivals. Lee (Pls. Expert) Testimony.

312. Prof. Lee's share calculations are supported by Google's own documents and the testimony of its own current and former employees. PTX1689 at -425 (estimating up to 90% share in 2021); PTX0604 at -314 (90% market share in 2018); PTX0946 at -807 (estimating 85%); PTX0901 at -997 (2019 strategy document stating that "Google has a monopoly on the ad server"); PTX0468 at -551 ("DFP has near 100% market penetration as an *ad server*"); PTX0767 at -775 (84% market share in global web display).

313. Google's high market share of open-web display publisher ad serving has been durable. Lee (Pls. Expert) Testimony. In 2020, Google executives even joked that they might be "willing" to "give up" market share "in the short term," as it would "demonstrat[e] to regulators that … we [Google] [a]re not a monopoly." PTX 0949 at -481.

314. Since acquiring DoubleClick's publisher ad server, Google's share in the market has risen from approximately 60% to over 90% globally. PTX0015 at -6 (Google estimated that DoubleClick had "60% share" of publishers by 2008); PTX0051 at -726 (estimating 75% share in 2010). By 2014, [redacted] PTX0581 at -986.

c) There Are Substantial Barriers to Entry and Expansion in the Publisher Ad Server Market.

315. Google's market share is durable in part because of the significant barriers to entry and expansion in this market. First, building and maintaining a new publisher ad server takes significant time and resources, which must be offset by a high volume of transactions at scale to cover those fixed costs. Lee (Pls Expert) Testimony; Weintraub (Pls. Expert) Testimony.

[redacted]

PTX1572 at -699–700[redacted]

[redacted]

PTX0581 at -977, -[redacted]

[redacted]

Cadogan (OpenX) Testimony.

316. Second, building a new ad server also requires substantial investments in developing and maintaining publisher relationships. PTX0581 at -983 (Meta observing, [redacted]

[redacted]

Helfand (Disney 30(b)(6) (2023)) Dep. Tr. 223:14–223:22.

317. Third, there are high switching costs for publishers looking to move from one publisher ad server to another. PTX0038 at -669. Most publishers use a single publisher ad server for web display advertising. Lee (Pls. Expert) Testimony; Wheatland (Daily Mail) Testimony; PTX0559 at -652 ("It is exceedingly rare for a publisher to use more than one ad server simultaneously other than where format specific ad servers are needed such as for mobile and video . . . Using more than one ad server may be technically feasible (particularly for different ad formats), but it would be highly inefficient."); Casale (Index Exchange (2021)) Dep. Tr. 112:12–25 ."). To gain share, rival ad servers would have to convince publishers to switch or "migrate" ad servers. Lee (Pls. Expert) Testimony; John (Microsoft 30(b)(6) (2023) Dep. Tr. 158:25–161:9.

318. Switching costs are high because of the ad server's "position as the operating system for ad sales," PTX0013 at -713, and because publisher ad servers are "operationally complex, [and] require a substantial amount of . . . technical resources [and] capital infrastructure." Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 188:25–189:8. According to David Rosenblatt, the former CEO of DoubleClick and later Google executive, "[n]othing has such high switching costs [as publisher ad servers]. If there's a better network or exchange, you can just switch to it. Switching platforms is a nightmare. Takes an act of God to do it." PTX0038 at -669; Avery (Kevel) Testimony; Farber (Meta) Testimony; Cadogan (OpenX) Testimony; Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 188:19–189:8 ("[A] migration would be a challenge."); PTX1572 at -694 (getting publishers to switch away from DFP would be challenge because of [redacted] PTX0451 at -821 (Google "d[id] not believe Hearst's commitment to DFP as

its ad server [wa]s at risk" because "the switching costs are very high."); PTX0515 at -395 ("gTech estimates that Hearst Magazines lost ~$17k per day as a result of turning off AdX demand for two weeks.").

319. Publisher ad servers are integrated with other publisher systems, increasing the work related to switching. Layser (News Corp.) Testimony. In addition, it is hard to find personnel who are familiar with publisher ad servers other than Google's DFP. Layser (News Corp.) Testimony.

320. Migration can also be challenging due to Google's conduct, discussed above, wherein Google has made real-time Google Ads demand effectively accessible only to publishers that use Google's AdX ad exchange and DFP publisher ad server. Because publishers can only access valuable Google advertiser demand on a real-time basis through DFP and AdX, if a publisher were to switch away from DFP they would lose access to AdX demand, likely leaving behind a significant amount of revenues. Glogovsky (New York Times 30(b)(6) (2023)) Dep. Tr. 182:23–25, 183:5–10, 183:22–184:9 ("[T]he revenue we are earning from AdX is worth not missing" and "[t]urning off revenue from a predominant revenue source [AdX open auction] would be harder to turn off, because it would create a [revenue] gap that would be harder and likely take more time to fill."); Layser (News Corp.) Testimony; Wheatland (Daily Mail) Testimony.

321. The publisher ad server market has seen no significant entry in recent years. Rather, rival publisher ad servers have remained on the fringes of the market or exited the market entirely. Kevel, one of the few publisher ad servers left in the market, has grown smaller because it could not keep—let alone attract—publisher customers without access to the demand in Google's AdX. Avery (Kevel) Testimony; PTX0758 at -945 ("People who are doing banner ads

are so tied to GAM it's not even funny. When OpenX and AdTech shutdown [their publisher ad servers] [Adzerk] got some good customers, but they weren't general display . . . If you want to play the header bidding, ad exchange game you pretty much need [Google's publisher ad server]. We even tell customers that.").

322. OpenX had operated a publisher ad server, but exited the market because DFP had better access to Google demand than OpenX. Cadogan (Open X) Testimony. Even technology giants like Meta have been unable to gain scale to compete with Google's publisher ad server. Meta once had a limited publisher ad server offering, but ultimately determined it could not expand in light of barriers to entry in the publisher ad server market. Boland (Meta) Testimony; PTX1709 at -934 [redacted] Instead, Meta opted to shut down its publisher ad server and exit the market. Boland (Meta) Testimony.

2. Google Has Monopoly Power in the Advertiser Ad Network for Open-Web Display Advertising Market.

323. Google has long maintained monopoly power in the advertiser ad network market with no rival approaching even a fraction of its scale, both in terms of the number and diversity of advertiser customers and the number of advertising transactions cleared. Only two niche competitors remain, focusing on particular types of display advertising or particular types of advertisers. As with the publisher ad server market, even technology behemoths like Meta have failed to gain scale and ultimately exited the market, ceding it to Google.

324. Google's initial power in the advertiser ad network market derived from its existing relationship with a large and unique set of advertisers that separately purchased search advertising on Google Search. PTX1012 at -650 (Google deck reporting that Google Ads

advertising spend "comes primarily from advertisers who are also on Search"). That provided Google a significant advantage initially, although it still enjoys a similar advantage today because Google products remain the only way to access other Google inventory such as YouTube. Lee (Pls. Expert) Testimony; Lipkovitz (Google) Testimony; PTX0547 at -798 (infographic showing Google products have exclusive access to YouTube inventory); PTX1648 at -025–26; PTX0892 at -975–76 (noting that in 2019 approximately one-third of new Google Ads advertisers were existing customers of Google's search advertising business). For millions of smaller advertisers and those with simple needs who will use a single buying tool for open-web display ads, Google Ads has been and remains the only way to access Google inventory. Lee (Pls. Expert) Testimony; Lipkovitz (Google) Testimony; PTX1231 (showing over 4 million advertisers that use Google Ads do not also use Google's demand-side platform DV360, which is used by less than 50,000 advertisers in total).

325. Google Ads benefits from its significant scale. For example, having the largest transaction volume of any competitor provides Google with scale and data advantages to develop better targeting algorithms for its advertiser customers. Kershaw (Magnite) Testimony; Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony; PTX0473 at -583–85 (listing a selection of 20 adjustments to algorithms Google launched in 2017 alone); PTX0984 at -127 ("What's unique about Google's cross-device remarketing solution is Scale: Google has one of the largest bases of signed in users across devices on many different products . . . Breadth: Cross-device targeting enabled across our entire network of 2M websites and 1M apps."); PTX0551 at -048 ("The value of Google's ad tech stack is less in each individual product, but in the **connections across all of them**. Google-scale data is Google's competitive advantage, and that's where we

should focus efforts to increase profitability via media transactions that originate via DFP." (emphasis in original)).

a) There Is Substantial Direct Evidence of Google's Market Power in the Advertiser Ad Network Market.

326. Google can charge supracompetitive fees and vary those fees significantly across impressions to win auctions and increase profits. PTX0147 at -189, -190. This is direct evidence of its monopoly power.

327. Google targets a 15% fee for its Google Ads products when Google Ads transacts on Google's AdX ad exchange. PTX1098 at -264. Google has performed multiple analyses showing that Google can significantly increase margins for its advertiser ad network product, Google Ads, while increasing Google's profit and net revenue, which are indicators of Google Ads' market power. Lee (Pls. Expert) Testimony; PTX1808 at -186–87 (March 2014 gTrade document proposing "to increase the [Google Ads] buy-side margin to 15%," from 14% "[f]or [Google Ads] on AdX" resulting in a change of Google Ads' net revenues on AdX transactions of "+5.3%"); PTX0423 at -043–44 (additional Google experiment showing reduction in Google Ads' margin would decrease total advertiser spend and Google profits). Google targets a 15% Google Ads margin on auctions through AdX, in addition the 20% AdX margin. PTX1098 at -264; PTX0832 at -424 (Total target margin for Google Ads is 32%, which results from first applying a 15% Google Ads fee and then a 20% AdX fee to advertiser spend). There is evidence that Google has not historically faced price pressure on either portion of the Google Ads revenue share. PTX0712 at -645 ("[Google Ads] and AdMob have not historically faced price pressure on their 32% revenue share"); PTX0639 at -965 (2018 Google chat, "we are NOT seeing pressure on the AdX 20%"); PTX1098 at -264 (2022 Google submission to the European Commission

indicating Google increased its AwBid [AdWords/non-AdX] buy-side take rates over time, all while maintaining a 15% take rate for AdWords/AdX bids).

328. Google can afford to deviate from competitive behavior while maintaining its market share, without fear that advertisers will switch to alternative products. For example, Google has maintained a dominant market share while restricting Google Ads' ability to bid into rival exchanges, benefiting AdX, without losing significant transaction volume despite the restriction being a disadvantage to Google Ads relative to other ad networks. Lee (Pls. Expert) Testimony; PTX0110 at -009 ("we have chosen to limit GDN to buying only on AdX, an exclusivity that makes AdX more attractive to [publishers] . . . why would advertiser buy thru GDN when they can do the same retargeting on Criteo on the same inventory *plus more inventory*.") (emphasis in original).

329. Multiple analyses show that Google Ads can meaningfully affect publisher payouts through Google Ads' participation in ad exchange auctions. Prof. Lee performed a simulation exercise removing all Google Ads' bids from a sample of AdX auctions run in 2003, showing a significant negative effect on publisher revenue. The results of this showed a similar result to analysis with similar auction simulations performed by Google examining the effects of Google Ads. Lee (Pls. Expert) Testimony; PTX0324 at -608–09 (Google simulation summary on the "Impact of GDN not participating in AdX Auctions").

b) Google Has a Very High, Sustained Share of the Advertiser Ad Network Market Whether Measured by Impressions or Fees.

330. From 2018–2022, Google's worldwide market share was consistently above 85% as measured by impressions among advertiser ad networks. Lee (Pls. Expert) Testimony; PTX1243. Google's market share in the United States is similarly high at approximately 90% throughout the same period. Lee (Pls. Expert) Testimony; PTX1268 (Figure 95 of Lee Initial

Report). Google's share in both the worldwide and U.S. markets has remained above 80% since at least 2015. Lee (Pls. Expert) Testimony.

331. Google's market share is also substantial as measured by share of fees collected in the advertiser ad network market from at least 2018–2022. PTX1244 (Figure 57 of Lee Initial Report); Lee (Pls. Expert) Testimony. In 2022, Google accounted for 81% of worldwide net revenues from indirect open-web display transactions among Google Ads, Criteo, and FAN. Lee (Pls. Expert) Testimony; PTX1267 (Figure 97 of Lee Initial Report). Limiting to fees from impressions served to U.S. advertisers or users, Google Ads' share of net revenues among the three networks was 73% in 2022. Lee (Pls. Expert) Testimony; PTX1268 (Figure 98 of Lee Initial Report).

332. Even if demand-side platforms and other advertiser buying tools were folded into the relevant market, Google's shares would still have a 65% share in 2022 as measured by impressions. Lee (Pls. Expert) Testimony. Those shares have remained consistently high since at least 2018. Lee (Pls. Expert) Testimony.

c) There Are Substantial Barriers to Entry and Expansion in the Ad Network Market.

333. Google's market share is durable in part because of the significant barriers to entry and expansion in this market.

334. To be successful, an advertiser ad network must attract advertisers. That requires offering advertisers compelling inventory, i.e., impressions to buy, necessary targeting data, and a quality product.

335. Google's advertiser ad network, Google Ads, attracts advertisers not only by offering access to open-web display advertising but also other forms of advertising using different components of Google Ads: search ads (via Google Search) and video ads (via

YouTube). PTX1012 at -650 (Google Ads advertising spend "comes primarily from advertisers who are also on Search."); PTX0547 at -798 (flowchart showing AdWords and DBM buyers can purchase YouTube inventory directly); PTX0904 at -549 (discussing Search and "AdSense for Search"); Lee (Pls. Expert) Testimony. Other ad networks do not have the same access to this Google inventory or comparable inventory and therefore find it more challenging to attract a diverse and numerous set of advertisers (especially small advertisers that likely use a single buying tool). Lee (Pls. Expert) Testimony. For example, [redacted] Boland (Meta) Testimony. [redacted] PTX1762 at -008–10 [redacted] PTX1762 at -009; Boland (Meta) Testimony.

336. Building a quality advertiser ad network also depends on scale. If an advertiser ad network cannot attract a sufficient quantity of advertisers, the advertise ad network will lack

critical data for developing targeting algorithms, predicting CPC-to-CPM conversions, predicting the probability of an advertiser clicking on an ad, and running experiments to evaluate new features and products. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

3. Google Has Monopoly Power in the Ad Exchange for Open-Web-Display Advertising Market.

337. Google has sustained monopoly power in the ad exchange market. Google derives that power largely from its anticompetitive conduct, including the conditions it imposes on publishers to access unique and valuable Google Ads advertiser demand and the restraints it imposes on publishers and advertisers from working with other ad tech tools in the same way. Lee (Pls. Expert) Testimony; Abrantes-Metz (Pls. Expert) Testimony; PTX0426 at -741 (rival ad exchanges are "in a very different situation than AdX [because] they don't own a[] [publisher Adserver [sic][.]"). Google has also been able to impose the same supracompetitive 20% fee on open auction transactions for over a decade, even though its own employees have recognized that fees in a competitive market would be much lower and Google's rivals have reduced their own fees over time. But Google does not consider the fees charged by those rivals given their relative size—AdX has remained at least nine times the size of its closest rival—and the insulation Google's conduct has created from the competitive process.

338. Publishers value the additional revenue generated by additional demand and rely upon the additional Google Ads advertising demand uniquely available on Google's ad exchange. Lee (Pls. Expert) Testimony; Minkin (News Corp 30(b)(6) (2023)) Dep. Tr. 69:11–15, 20–25 (for publishers, not using AdX is tantamount to "cut[ting] off your arm"); Pauley (Vox (2023)) Dep. Tr. 13:19–24 ("AdX has the [] largest share of Open Auction demand, and, thus, [is] able to deliver the most amount of revenue[.]"); Soroca (Magnite (2023)) Dep. Tr. 25:22–

26:1, 26:3–4 ("Publishers tell us how much they rely on the money flow that comes from [AdX demand]."); Cadogan (OpenX) Testimony; Layser (News Corp) Testimony.

339. Google can also meaningfully influence transaction volume on its ad exchange by imposing preferential bidding rights for AdX (First Look and Last Look), adjusting AdX's bid based on information about rivals' bids (Last Look and SSDRS), and skewing the bids of its demand-side platform, DV360, to punish rivals that work with publishers in innovative ways (Project Poirot), all while deprecating the few tools that publishers could use to direct transactions away from AdX and to their preferred ad exchanges (Unified Pricing Rules)

340. The importance and durability of network and scale effects means that the impact of Google's actions have had a synergistic effect that amplifies its monopoly power, and those effects likely persist even for conduct that has been discontinued. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

a) There Is Substantial Direct Evidence of Google's Market Power in the Ad Exchange Market.

341. Direct evidence of Google's substantial and sustained market power in the ad exchange market includes Google's ability to charge supracompetitive prices without regard to competitors' prices or concern that customers will switch to rival ad exchanges. Lee (Pls. Expert) Testimony; Soroca (Magnite (2023)) Dep. Tr. 60:17–20, 22, 61:1–10, 12–16, 18–20 (Google can "command whatever take rate they so choose.. . .they have the ability to win inventory or they had the ability to win inventory at whatever take rate they put out there."); Gentry (OpenX (2023)) Dep. Tr. 94:17–19, 21–25 ("I have never heard any advertiser, buyer, or holding co[mpany] tell us that Google AdX was providing a lower rate than us in the marketplace[.]"). Google documents indicate that AdX charges higher take rates than rival ad exchanges—and Google was able to sustain these prices even after other exchanges lowered their take rates.

PTX0451 at -818 (Google did not foresee losing material AdX business to AppNexus despite AppNexus charging just 5%); PTX0712 at -646 ("our rev share (20%) is much higher than other exchanges (generally 10%)."

342. Since 2012, Google has charged a roughly 20% take rate (or revenue share fee) for open auction transactions through its ad exchange, AdX. Other exchanges charge lower fees and have lowered their take rates over time. Lee (Pl.'s Expert) Testimony. Google has considered reducing the AdX take rate but concluded that it would not be beneficial to Google and so there is no reason to do so. PTX0421 at -227; PTX0417 at -758 (Google employees discussing "data that lowering the sell-side [AdX] revshare does not look like it is going to have tactical benefit. It doesn't win many queries compared to the profit lost, and sales does not think it will help them win deals."); PTX0451 at -818 (Google did not foresee losing material AdX business to AppNexus despite AppNexus charging a 5% ad exchange fee); Lee (Pls. Expert) Testimony; PTX0423 at -043–44.

343. AdX's take rate has remained largely constant over time even though other ad exchanges have reduced their take rates. PTX0686 at -043–44 (Google presentation noting "margin compression" on rival ad exchanges that had "slashed take rate in half" and "reduced their take rate even further" in 2017). This pattern of Google's take rate remaining steadily higher than its rivals' is also present in the data produced by Google and other ad exchanges. PTX1241 (comparison of worldwide ad exchange fees for open-web display ads); PTX1242 (comparison of worldwide fees for AdX versus average third-party ad exchange fee for open-web display ads); Lee (Pls. Expert) Testimony.

344. Google employees recognize that AdX's 20% take rate is high and likely facilitated only by the tie between Google Ads and AdX. *See* PFOF § II.B.1.b above; PTX0562

at -259–60; PTX0198 at -703. According to these employees, Google's take rate would be between 5% and 15% in a competitive market. PTX0562 at -259–260 (by 2017 "[ad exchange] margins [we]re coming down, way down, because the technology, demand and supply that [ad exchanges] offer ha[d] been commoditized to a large extent" and were estimated to "stabilize at around 5%" resulting in a "race to the bottom" for take rates among third-party exchanges, but not Google); PTX0461 at -145 ("We never originally intended to have AdX as a premium over other exchanges, that was market price. Now that Index is at l0% and AppNexus is offering 5% at least as a promotion, the question is whether we can defend a 50% or 100% premium...I do not think it is feasible to try to defend a 3–4x premium (15–20% vs 5%) on third party AdX buyers."). Google considered reducing the AdX take rate but concluded that it would not be economically beneficial. PTX0421 at -227; PTX0417 at -758.

345. [redacted] PTX1280; PTX0359 at -325 (Yieldmo is a "specialist native network[]"); PTX1396; Lee (Pls. Expert) Testimony.

346. Direct evidence of Google's substantial and sustained market power in the ad exchange market includes its ability to degrade AdX's quality by limiting unrestricted access and use of its real-time bids to DFP. Restricting access and use of real-time bids from AdX to rival publisher ad servers restricts access to the supply of inventory for AdX to buy on those third-party publisher ad servers. PTX0128 at -046 ("I am an eng[ineer] on AdX, thinking about our integration with third party ad servers. If [real-time bidding requests] from third party ad servers is explicitly prohibited by our terms of service, that seems pretty bad."); PTX0551 at -048

("Launching AdX into a non-DFP server destroys this competitive first look advantage and would most likely lead to AdX [ ] losing access to overall queries, and [ ] losing access to the *highest-value* queries.") (emphasis in original); PTX1031 at -500; PTX1517 at -420. In a competitive market, an ad exchange would likely not be able to profitably restrict access to the supply of inventory available to advertiser customers, since doing so would risk losing a large amount of its transaction volume to ad exchange rivals that did not impose such restrictions. Lee (Pls. Expert) Testimony. But Google recognizes that it can profitably do so without losing a significant number of customers.

347. For example, between 2012 and 2014, Kevel's customers requested to integrate their publisher ad server with AdX, but Google blocked Kevel's publisher customers from obtaining access to real-time bids from AdX. Avery (Kevel) Testimony. By contrast, Kevel integrated its publisher ad server with non-Google ad exchanges, which is not technically difficult because of the industry standard OpenRTB protocol that all ad tech tools use to communicate. Avery (Kevel) Testimony.

348. Direct evidence of Google's substantial and sustained market power in the ad exchange market also includes its ability to vary its revenue share and reserve prices significantly across impressions. Through Sell-Side Dynamic Revenue Sharing (SSDRS), discussed further above, launched in August 2015 and persisting until September 2019, Google changed the take rate that AdX levied at the impression (or query) level. PTX1040 at -264 ("In dynamic sell-side revshare [sic] bids are NOT taken out [of] revshare before comparing with reserve price.") (emphasis in original). Google experiments run in 2014 predicted that SSDRS would increase auctions won, revenue, and profit. PTX0214 at -012–13. According to Google, assuming "an agreed[-]upon aggregate revenue share of 20% with a [DFP] publisher," AdX was able to charge

a take rate as high as 40% "on a per-query basis." PTX1096 at -593. The ability to vary its take rate at will, essentially doubling the take rate on a given query from the average fee, is consistent with Google possessing monopoly power. Lee (Pls. Expert) Testimony.

349. Similarly, Google's Reserve Price Optimization (RPO) program, launched in April 2015, is also direct evidence of Google's monopoly power. As opposed to using information on bids from the current auction to adjust Google's margin in AdX (as in SSDRS), RPO used historical bid information to dynamically set reserve prices for subsequent auctions (while exempting Google Ads from RPO). Ravi (Pls. Expert) Testimony; PTX0584 at -051 ("RPO historically had a delay in the training-serving loop due to running the training pipeline daily. Online RPO shrinks this feedback delay from a day down to a second."). Google therefore raised the price that advertisers using non-Google bidding tools paid for impressions transacted through AdX. Ravi (Pls. Expert) Testimony. In a competitive market, Google would not be able to extract more money from advertisers without losing significant business to alternative ad exchanges. Because Google possesses monopoly power, however, it could directly control prices across transactions and collect higher fees. Lee (Pls. Expert) Testimony.

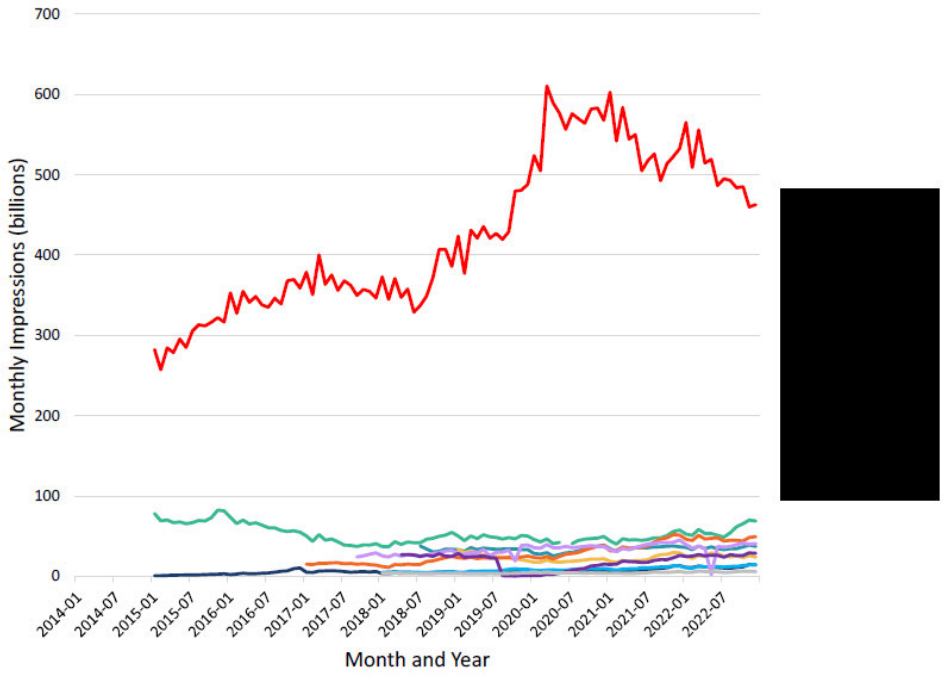
b) Google's High Market Shares Provide Indirect Evidence of Google's Substantial and Sustained Market Power in the Ad Exchange Market.

350. According to data produced by Google and rival ad exchanges, between 2018 and 2022, Google had a market share of roughly 63% to 71% in the ad exchange market worldwide based on the number of impressions sold. PTX1258; Lee (Pls. Expert) Testimony. Even by a more conservative estimate, extrapolating from data produced by DSPs and advertiser ad

networks, Google's market share was approximately 54% to 66% between 2018 and 2022.[12] PTX1258; PTX1237; Lee (Pls. Expert) Testimony. Even by this more conservative measure, Google's worldwide market share was roughly nine times the size of its nearest rival in 2022, no rival had more than 6% share of impressions in 2022, and only six exchanges that produced data had more than a 1% share. PTX1237; PTX1238; Lee (Pls. Expert) Testimony.

351. Google's market share has been remarkably durable and has grown over time:

FIGURE 6: MONTHLY VOLUME OF IMPRESSIONS WON FOR ADX AND RIVAL EXCHANGES



PTX1314.

352. Based on revenue, AdX accounts for over 55% of total fees collected by ad exchanges for which data was available. PTX1239; Lee (Pls. Expert) Testimony. Google's net revenue shares were over 5 times higher than the net reviews for the next largest ad exchange. PTX1240; Lee (Pls. Expert) Testimony.

[12] Plaintiffs do not have access to data from all the ad exchanges that buy and sell impressions in the market. To address this, Prof. Lee will offer an alternative calculation of Google's market share using data from DSPs and advertiser ad networks, showing the number of impressions they bought and from which ad exchanges.

353. In the United States, for impressions shown to U.S. Internet users, AdX's share is between 46% and 56% from 2018 through 2022. PTX1259; PTX1260; Lee (Pls. Expert) Testimony. By this measure, AdX's market share in 2022 was five times as large as the next largest ad exchange competitor. PTX1261; Lee (Pls. Expert) Testimony.

354. Google's most significant competitors and customers view AdX as the dominant ad exchange. Soroca (Magnite (2023)) Dep. Tr. 60:17–61:20 (Google can "command whatever take rate they so choose" for AdX, which has "the ability to win inventory at whatever take rate they put out there."); Pauley (Vox (2023)) Dep. Tr. 12:8–13:24 (describing "limited leverage" in negotiations over AdX's fees due to lack of "any reasonable alternatives"); Wheatland (Daily Mail) Testimony; Layser (News Corp) Testimony. Critically, AdX demand is not entirely replaceable by using other ad exchanges, which lack the number and diversity of advertisers buying via Google's ad exchange. Wheatland (Daily Mail) Testimony; PTX1717 at -644 (Daily Mail analysis estimating nearly half of the impressions it sells via AdX are unique to AdX); Layser (News Corp) Testimony.

c) There are Substantial Barriers to Entry and Expansion in the Ad Exchange Market.

355. Ad exchanges are complex, expensive products to engineer. These costs provide significant barriers to entry in the ad exchange market. PTX1616 at -057 (PubMatic submission to U.K. Competition and Markets Authority: "There is significant cost and scale to maintain an SSP [ad exchange]. On top of research and development required to build the platform, the infrastructure costs are high to support the scale . . . ."); Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony; Kershaw (Magnite) Testimony.

356. Ad exchanges benefit from network effects. Ad exchanges are more highly valued by publishers to the extent they can connect publishers to advertiser demand, and vice versa. A

new entrant in the ad exchange market lacking access to substantial publisher supply or advertiser demand will find it hard to build an attractive exchange. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony; Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 234:12–236:7; Casale (Index Exchange) Testimony; Cadogan (OpenX) Testimony.

357. Access to user data gives existing exchanges a substantial advantage over new exchanges without access to the same data. Exchanges with additional auction and targeting data help publishers and advertisers value and monetize their inventory. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony; PTX1092 at -448–49 (Google submission to the French Competition Authority identifying the various types of targeting data received with each ad request); PTX0165 at -197, -202 (Google document reporting that "Google currently has largest remarketing demand source in the world," which are advertising campaigns used to follow potentially interested customers across the open-web); PTX0893 at -459 (Google submission to the French Competition Authority stating, "Google's 'value add' represents optimised targeting technology that enables customers to maximise their return on invested marketing spend by reaching their target audience at the right price"). Rival exchanges have recognized the lack of data as a barrier to competing successfully in the exchange market. Casale (Index Exchange 30(b)(6) (2023)) Dep. Tr. 234:12–24, 235:24–236:7; Casale (Index Exchange) Testimony. Furthermore, Google's conduct has impaired the competitiveness of non-Google ad exchanges. Lee (Pls. Expert) Testimony; Weintraub (Pls. Expert) Testimony.

PLAINTIFFS' PRE-TRIAL PROPOSED CONCLUSIONS OF LAW

I. Introduction And Legal Framework

1. Section 2 of the Sherman Act makes it unlawful to "monopolize, or attempt to monopolize . . . any part of the trade or commerce among the several States." 15 U.S.C. § 2.

2. The offense of monopolization under Section 2 of the Sherman Act has two elements: (1) "possession of monopoly power in the relevant market" and (2) "'willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.'" *United States v. Microsoft Corp.*, 253 F.3d 34, 50 (D.C. Cir. 2001) (en banc) (per curiam) (quoting *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966)); *see also Duke Energy Carolinas, LLC v. NTE Carolinas II, LLC*, 2024 WL 3642432, at *11 (4th Cir. Aug. 5, 2024).

3. The first element requires either direct or indirect proof of the defendant's monopoly power in a relevant market or markets. *See infra* Plaintiffs' Pre-Trial Proposed Conclusions of Law (PCOL) Sections II.A–II.B.

4. The second element requires proof that the defendant engaged in exclusionary conduct. *See infra* PCOL Section II.C. Courts apply a flexible burden-shifting approach to determine whether a defendant's conduct is exclusionary, *Microsoft*, 253 F.3d at 58–59, recognizing that the ultimate question is whether the monopolist's conduct "as a whole" has "harm[ed] the competitive process and thereby harm[ed] consumers," *Duke Energy*, 2024 WL 3642432, at *11 (quoting *Microsoft*, 253 F.3d at 58). Under that framework, a plaintiff bears the initial burden of showing that monopolist's conduct is exclusionary—i.e., that it has an "anticompetitive effect" by harming the competitive process. *Id*. at 58–59. Second, "if a plaintiff successfully establishes a prima facie case under § 2 by demonstrating anticompetitive effect, then the monopolist may proffer a 'procompetitive justification' for its conduct." *Id*. If a defendant establishes a nonpretextual procompetitive justification, "then the burden shifts back to the plaintiff to rebut that claim." *Id*. Finally, "if the monopolist's procompetitive justification

stands unrebutted, then the plaintiff must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit." *Id*.

5. The offense of attempted monopolization has three elements: "(1) that the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power." *Spectrum Sports v. McQuillan*, 506 U.S. 447, 456 (1993); *see also E. I. du Pont de Nemours & Co. v. Kolon Indus*., 637 F.3d 435, 441 (4th Cir. 2011). The first element is satisfied by exclusionary conduct. *See infra* PCOL Sections II.C, III. The second element can be inferred from exclusionary conduct or proven directly. *See infra* PCOL Sections II.C, III. The third element can be demonstrated through an assessment of the relevant market. *See infra* PCOL Sections II.B III.

6. The offense of tying under Section 1 of the Sherman Act has four elements: "(1) the defendant linked two separate and distinct product markets; (2) the defendant conditioned the sale of one product on the purchasing of a different, 'tied' product; (3) the seller possessed sufficient market power to 'appreciably restrain market competition' through the tying arrangement; and (4) the tying arrangement affected a 'not insubstantial' amount of commerce." *It's My Party, Inc. v. Live Nation, Inc.*, 88 F. Supp. 3d 475, 490 (D. Md. 2015) (citing *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451 (1992)); *see also Microsoft*, 253 F.3d at 85. But "when the defendant is a dominant firm," tying is assessed under the "more general standards" of Section 2. *Viamedia, Inc. v. Comcast Corp*., 951 F.3d 429, 468 (7th Cir. 2020). *See infra* PCOL Section IV.

7. In antitrust litigation, courts give "greater weight to the contemporaneous statements contained in [Google's] internal records, than later trial testimony in which Google employees declined to ratify those statements." *United States v. Google LLC*, No. 20-CV-3010,

2024 WL 3647498, at *41 n.2 (D.D.C. Aug. 5, 2024); *see also id.* at *71 (giving weight to Google's internal documents regarding market share); *In re High-Tech Emple. Antitrust Litig.*, 289 F.R.D. 555, 576 (N.D. Cal. 2013) ("The Court is more persuaded by the internal, contemporaneous documents created by Defendants before and during the anti-solicitation agreements" than by "Defendants' own employees' declarations, which were drafted specifically" in the context of litigation); *FTC v. Sysco Corp.*, 113 F. Supp. 3d 1, 64–65, 69–70 (D.D.C. 2015) (predicting anticompetitive harm based on "[t]he parties' ordinary course documents" and testimony from a "number of industry actors"). Such evidence carries significant weight because courts "assume that economic actors usually have accurate perceptions of economic realities." *Rothery Storage & Van Co. v. Atlas Van Lines, Inc.*, 792 F.2d 210, 218 n.4 (D.C. Cir. 1986). Conversely, courts often give "little weight to subjective evidence and statements provided by [a defendant's] employees during the course of [antitrust] litigation" because "the bias affiliated with such ex post facto testimony is widely recognized and unavoidable." *FTC v. Meta Platforms Inc.*, 654 F. Supp. 3d 892, 932 (N.D. Cal. 2023*); accord FTC v. OSF Healthcare Sys.*, 852 F. Supp. 2d 1069, 1087–88 (N.D. Ill. 2012) (Defendant's executives' testimony "add[ed] little to the analysis" because the executives "would be expected to publicly disavow any improper conduct and not condone such conduct in the future."); *High-Tech.*, 289 F.R.D. at 576. Accordingly, the Court should credit contemporaneous documents and statements therein over inconsistent testimony from defendant employees.

II. Google Has Illegally Acquired And Maintained Monopolies In The Relevant Markets

8. The evidence at trial will establish that Google has monopoly power in several relevant antitrust markets and that Google has acquired and maintained that power through exclusionary conduct. As discussed in PCOL Section II.A, *infra*, each of the relevant markets

defined by Plaintiffs—(1) publisher ad servers for open-web display advertising ("publisher ad servers"), (2) advertiser ad networks for open-web display advertising ("advertiser ad networks"), and (3) ad exchanges for open-web display advertising ("ad exchanges")—are properly defined antitrust markets. As discussed in PCOL Section II.B, *infra*, direct and indirect evidence will establish that Google has monopoly power in the market for publisher ad servers, the market for advertiser ad networks, and the market for ad exchanges. And as discussed in PCOL Sections II.C.1–2, *infra*, the evidence at trial will demonstrate that Google has engaged in exclusionary course of conduct that has had an anticompetitive effect and harmed the competitive process in each relevant market, satisfying Plaintiffs' burden at the first step of the *Microsoft* burden-shifting framework. As discussed separately in PCOL Section II.C.3, *infra*, the evidence at trial will likewise establish the absence of any cognizable, nonpretextual procompetitive justifications for Google's conduct. In any case, as discussed in PCOL Section II.C.4, *infra*, any of Google's proffered justifications (to the extent they are found to exist) are outweighed by the anticompetitive harms of its conduct.

A. Publisher Ad Servers, Advertiser Ad Networks, And Ad Exchanges For Open-Web Display Advertising In The United States And Worldwide Are Relevant Antitrust Markets

9. In antitrust cases, the exercise of defining a relevant market "serves as a tool to determine the defendant's market power." *E. I. du Pont de Nemours & Co. v. Kolon Indus.*, 637 F.3d 435, 442 (2011). A relevant market is "the area of effective competition," *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 328 (1961), and typically denotes "[t]he arena within which significant substitution in consumption or production occurs," *Ohio v. American Express Co.*, 585 U.S. 529, 543–44 (2018) ("*Amex*"). Defining the market is not an end in itself, but instead a way of identifying the zone of competition where competitive effects are the most likely. *See*

Geneva Pharms. Tech. Corp. v. Barr Labs. Inc., 386 F.3d 485, 496 (2d Cir. 2004) (market definition "provides the context against which to measure the competitive effects" of the challenged conduct); *United States v. Brown Shoe*, 370 U.S. 294, 324 (1962) (market definition helps a court to ascertain the "locus of competition" in which competitive effects are to be assessed).

10. "[M]arket definition has two components—the relevant product market and the relevant geographic market." *Kolon*, 637 F.3d at 441 (citing *RCM Supply Co., Inc. v. Hunter Douglas, Inc.*, 686 F.2d 1074, 1076 (4th Cir. 1982)).

11. Defining the relevant market is a "pragmatic, factual" analysis and not a "formal, legalistic" one. *Brown Shoe*, 370 U.S. at 336; *see also Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 482 (1992). There is no one true market: "[d]efining a relevant market sometimes requires a line-drawing exercise around product features, such as size, quality, distances, customer segment, or prices," and "[t]here can be many places to draw that line and properly define a relevant market." U.S. Dep't of Justice & Fed. Trade Comm., *Merger Guidelines* § 4.3 (2023) ("Merger Guidelines"). Thus, as courts have consistently recognized, plaintiffs may prevail on their claims even if the court finds a relevant market that differs from the market as defined by the plaintiffs—or if the court agrees with only a subset of the relevant markets alleged—so long as evidence establishes that a relevant market exists in which to evaluate plaintiffs' claims. *See United States v. Continental Can Co.*, 378 U.S. 441, 452–53 (1964) (proposed merger would harm competition in relevant market as defined by the Court); *Epic Games, Inc. v. Apple, Inc.*, 67 F.4th 946, 978 n.9 (court may find "in-between" market rather than adopting plaintiff's or defendant's proposed market); *United States v. Energy Solns.,*

Inc., 265 F. Supp. 3d 415, 436–37 (D. Del. 2017) (declining to accept plaintiff's specific market definition while adopting court's own found relevant markets).

1. Publisher Ad Servers, Advertiser Ad Networks, And Ad Exchanges For Open-Web Display Advertising Are Relevant Product Markets

12. Plaintiffs have properly defined three relevant product markets: (1) a product market for publisher ad servers for open-web display advertising; (2) a product market for advertiser ad networks for open-web display advertising; and (3) a product market for ad exchanges for open-web display advertising.

a) Each Of The Relevant Product Markets Are Properly Defined By Reference To Reasonable Interchangeability

13. A relevant product market must be defined to include only "reasonably interchangeable" products. *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 404 (1956); *see also Todd v. Exxon Corp.*, 275 F.3d 191, 201 (2d Cir. 2001) (Sotomayor, J.) (relevant product markets are "composed of products that have reasonable interchangeability for the purposes for which they are produced—price, use, and qualities considered") (citation omitted).

14. To draw this line, courts often refer to the economic concept of "cross-elasticity of demand." *See, e.g., In re Zetia (Ezetimibe) Antitrust Litig.*, 587 F. Supp. 3d 356, 361 (E.D. Va. 2022) (quoting *It's My Party, Inc. v. Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016)). Cross-elasticity of demand measures "the extent to which consumers will change their consumption of one product in response to a price change in another." *In re Zetia*, 587 F. Supp. 3d at 361 (internal quotation marks omitted). When courts draw on this formulation, they generally use the term "cross-elasticity of demand" not to mean a specific quantitative measurement, but instead to express the more general concept of economic substitutability at the heart of market definition. *See, e.g.*, *Twin City Sportservice, Inc. v. Charles O. Finley & Co., Inc.*, 512 F.2d 1264, 1271 (9th

Cir. 1975) ("[W]here there is a high degree of substitutability in the use of two commodities, it may be said that the cross-elasticity of demand between them is relatively high, and therefore the two should be considered in the same market."); 1 Am. Bar Ass'n, *Antitrust Law Developments* § 6B.1.b (2016) ("[C]ourts often use the term 'cross-elasticity of demand' as a synonym for 'reasonable interchangeability of use' rather than as a mathematic measure that may help estimate interchangeability."). Thus, at bottom, a relevant market should include all reasonably interchangeable substitutes and "exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn." *In re Zetia.*, 587 F. Supp. 3d at 361.

15. In assessing reasonable interchangeability, the question is not whether there is *any* substitution at all between products—or whether certain products have similar functionalities—but whether the products exhibit a high degree of substitution in response to an exercise of market power like a price increase. "For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range." *Times-Picayune Pub. Co. v. United States*, 345 U.S. 594, 612 n.31 (1953). Thus, even if products are interchangeable to some degree, they are not in the same market if consumers would not "respond to a slight increase in the price of one product by switching to another product." *Todd*, 275 F.3d at 201–02; *see also FTC v. Syngenta Crop Protection AG*, 22-CV-828, 2024 WL 149552, at *9 (Jan. 12, 2024) (reasonable interchangeability is "more than simply technical interchangeability"). And the mere fact that customers may move "some spending" between two products does not alone justify treating them as reasonably interchangeable substitutes for antitrust purposes—"[p]roducts are reasonably interchangeable only if 'significant' substitution occurs in response to a price increase." *United States v. Google LLC*, 2024 WL 3647498, at *85 (D.D.C. Aug. 5, 2024).

16. Likewise, where a relevant product has multiple functions, a single function of that product may constitute a relevant product market. A market is properly defined by "the output of suppliers to which a group of customers can turn for their requirements of a given product," and "services are not in the same product market merely because they have a common provider." *United States v. Rockford Mem. Corp.*, 898 F.2d 1278, 1283–84 (7th Cir. 1990). Courts have consistently applied this principle across industries to find separate markets, for example, for leisure and business airlines passengers, despite both flying alongside each other on the same airplanes, *Spirit Airlines, Inc. v. Nw. Airlines, Inc.*, 431 F.3d 917, 933–34 (6th Cir. 2004); for consumable and non-consumable office supplies, despite both being sold at the same stores, *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1075 (D.D.C. 1997); and for championship boxing matches and all professional boxing matches, despite the "physical identity of the products." *Int'l Boxing Club of N.Y., Inc. v. United States*, 358 U.S. 242, 250 (1959). Accordingly, a well-defined market can include some products or services made with a given set of assets while excluding other products or services made with those same assets.

17. At the same time, products need not be included in the same relevant market simply because they serve a similar function. *See, e.g.*, *In re Zetia*, 587 F. Supp. 3d at 365 (drugs treating the same conditions not in the same relevant market despite "substitutability . . . in certain circumstances" because "something more than mere therapeutic equivalency is required to define the relevant antitrust market"); *Regeneron Pharms., Inc. v. Novartis Pharma AG*, 96 F.4th 327, 339–40 (2d Cir. 2024) (drug sold in pre-filled syringe not necessarily in the same market as same drug sold in vial, notwithstanding "real-world functional similarities," because "the applicable analysis is whether or not the products are *economic* substitutes, not whether they appear to be functionally similar"); *Omni Outdoor Advertising, Inc. v. Columbia Outdoor*

Advertising, Inc., 891 F.2d 1127, 1140–41 (4th Cir. 1989), *rev'd on other grounds City of Columbia v. Omni Outdoor Advertising, Inc.*, 499 U.S. 365 (1991) (no "general competition between all types of media advertising," despite broad claims that "all of the media competed for the advertising dollar").

18. Likewise, "the mere fact that a firm may be termed a competitor in the overall marketplace does not necessarily require that it be included in the relevant product market for antitrust purposes." *Google*, 2024 WL 3647498, at *72 (citing *Staples*, 970 F. Supp. at 1075). In other words, even if consumers "cross-shop[]" between two providers, that does not necessarily mean that those two providers must be in the same market. *See, e.g.*, *Staples*, 970 F. Supp. at 1079 (office supply superstores constitute a relevant product market even though consumers also purchase office supplies at other retail outlets); *FTC v. Whole Foods Mkt., Inc.*, 648 F.3d 1028, 1040 (D.C. Cir. 2008) (the fact that consumers may "cross-shop[]" between premium and organic supermarkets and ordinary supermarkets does not mean that they belong in the same market).

19. Courts use both qualitative and quantitative tools to aid their determinations of the relevant markets, but "market definition turns on the actual dynamics of the market rather than rote application of any formula." *Regeneron*, 96 F.4th at 340 n.8 (citation omitted). "Thus, so long as an antitrust plaintiff adequately references one or more of the legal frameworks [] recognized as supporting a proposed market, 'there is no requirement to use any specific methodology.'" *Id.* (citing *Optronic Techs., Inc. v. Ningbo Sunny Elec. Co.*, 20 F.4th 466, 482 (9th Cir. 2021)).

20. One way of determining whether products are reasonably interchangeable is what courts have come to refer to as the *Brown Shoe* practical indicia: qualitative analyses of "industry

or public recognition of the [market] as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors." 370 U.S. at 325. Applying the well-established principle that a relevant market must be grounded in "commercial realities," *Kodak*, 504 U.S. at 482, courts consider these practical indicia by reference to whether the product reflects a meaningfully distinct good in the industry, even if different participants use different "nomenclature[s]" to describe the same product, *United States v. Bertelsmann SE & Co. KGaA*, 646 F. Supp. 3d 1, 32 (D.D.C. 2022) ("Although the defendants proclaim that no one in the industry uses the term 'anticipated top seller,' that does not mean that such books do not exist.") (citation omitted); *see also FTC v. Wilh. Wilhelmsen Holding ASA*, 341 F. Supp. 3d 27, 51 (D.D.C. 2018) (noting that the fact that industry participants did not "use the FTC's definition" of the term "global fleets" was not dispositive, but rather whether economic conditions were such that it would make it possible to raise prices for that market segment); *Le v. Zuffa, LLC*, 216 F. Supp. 3d 1154, 1165 (D. Nev. 2016) (declining to dismiss Section 2 claim based on argument that "Elite Professional MMA Fighters" was not a term used in the industry).

21. The *Brown Shoe* factors can independently support a product market definition. *See Google*, 2024 WL 3647498, at *68 (stating that "[t]here is no legal requirement that a plaintiff supply quantitative proof to define a relevant market" and applying *Brown Shoe*); *Polypore Intern., Inc. v. FTC*, 686 F.3d 1208, 1217–18 (11th Cir. 2012) (allowing market definition on the basis of *Brown Shoe* factors without any quantitative econometric analysis); *Illumina, Inc. v. FTC*, 88 F.4th 1036, 1049 (5th Cir. 2023) (same); *Regeneron*, 96 F.4th at 340–41 & n.8 (same); *FTC v. Meta Platforms Inc.*, 654 F. Supp. 3d 892, 912 (N.D. Cal. 2023) (courts have determined relevant markets using "only the *Brown Shoe* factors"). A relevant market "can

exist even if only some [*Brown Shoe*] factors are present." *Staples*, 970 F. Supp. at 1075; *FTC v. IQVIA Holdings Inc.*, 2024 WL 81232, at *23–24 (S.D.N.Y. Jan. 8, 2024) (healthcare programmatic advertising was properly-defined relevant market based on some but not all *Brown Shoe* factors); *Google*, 2024 WL 3647498, at *81 (search advertising was properly-defined relevant market based on some but not all *Brown Shoe* factors).

22. Here, the facts established at trial will show that each of plaintiffs' relevant product markets are supported by the *Brown Shoe* practical indicia. *See* Plaintiffs' Pre-Trial Proposed Findings of Fact (PFOF) §§ III.E.1–3. Among other salient factors, each is recognized in the industry as a distinct product serving a distinct customer base, which employs each product for their own peculiar characteristics and uses; moreover, the lack of reasonable interchangeability between each of the defined products and other ad tech tools is reflected in the way the fees they charge are structured, as well as the demonstrated unviability of other products to serve the unique purposes for which they are used. PFOF §§ III.E.1–3.

23. Another framework for defining a relevant product market is the hypothetical monopolist test (HMT), which can be conducted with quantitative or qualitative information. The HMT asks whether a hypothetical monopolist of a product or group of products would find it profitable to impose a small, significant, non-transitory increase in price (SSNIP) or similar reduction in product quality. Merger Guidelines §§ 4.3.A–C. "If so, the products may comprise the relevant product market." *Google*, 2024 WL 3647498, at *67. Where a plaintiff employs the HMT to define a relevant market, courts have permitted, but declined to require, the use of a technical econometric analysis proffered by a plaintiff's expert. *See, e.g.*, *McWane, Inc. v. FTC,* 783 F.3d 814, 829–30 (11th Cir. 2015) (crediting testimony of economic expert applying HMT using qualitative evidence rather than econometric analysis). Where quantitative proof is

proffered, a defendant's real-world tests measuring the effect of price increases on consumer demand can serve as a "'real-world' hypothetical monopolist inquir[y]" supporting a relevant market definition. *Google*, 2024 WL 3647498, at *68.

24. Importantly, in Section 2 cases where a firm has been operating as a monopolist for many years, the fact that some customers may switch away from a certain product in response to a SSNIP at prevailing monopoly prices—that is, prices already above the competitive level—does not necessarily mean that the market is wrongly defined. In what has come to be known as the "*Cellophane* fallacy," customers *already facing* monopoly prices may respond to a further increase in price by choosing a poor substitute rather than accepting a price increase. In other words, "[a]t a high enough price, even poor substitutes look good to the consumer." *United States v. Eastman Kodak Co.*, 63 F.3d 95, 105 (2d Cir. 1995) (citation omitted); *see also Kodak*, 504 U.S. at 471 ("[T]he existence of significant substitution in the event of *further* price increases or even at the *current* price does not tell us whether the defendant *already* exercises significant market power.") (citation omitted). Thus, courts have cautioned that in "markets in which a defendant has substantial market power or monopoly power (and has *already* exercised that power to charge a supracompetitive price)," the HMT "must not be used uncritically, and alternative indicia of market power"—including the "several 'practical indicia' that the Supreme Court highlighted in *Brown Shoe*"—"should be explored." *Epic Games*, 67 F.4th at 975–76 & n.7 (citation and internal quotation marks omitted).

25. Here, too, the facts established at trial will show that a hypothetical monopolist in each market would find it profitable to raise prices significantly above competitive levels or reduce quality significantly below competitive levels. PFOF ¶¶ 253–256 (publisher ad server); PFOF ¶¶ 278–281 (advertiser ad network); PFOF ¶¶ 294–302 (ad exchange). Because Google

has already engaged in monopoly pricing for a number of years, PFOF §§ III.C.2, III.F.1.a, III.F.2.a, III.F.3.a, the Court should be careful to consider competitive prices—not contemporary prices—as the baseline for the HMT.

b) Contrary To Google's Assertions, The Concept Of Supply-Side Substitution Is Inapplicable To The Market Definition Analysis Here

26. Reasonable interchangeability from the perspective of the consumer is the touchstone of the market-definition analysis, *see supra* PCOL Section II.A.1.a, and courts generally consider whether firms *not* presently in the market can shift their production to compete in the market for the relevant product as a question of competitive effects, not market definition, *see United States v. H&R Block, Inc.*, 833 F. Supp. 2d 36, 88 (D.D.C. 2011); *FTC v. Penn State Hershey Med. Ctr.*, 838 F.3d 327, 351 (3d Cir. 2016). Nevertheless, some courts have recognized a narrow "exception to that general rule when 'supply side substitution' may be used to aggregate products that are not demand substitutes into one market." *FTC v. RAG-Stiftung*, 436 F. Supp. 3d 278, 293 (D.D.C. 2020). "Rather than relying on consumers' ability to constrain prices, supply-side substitution or elasticity focuses on *suppliers'* responsiveness to price increases and their ability to constrain anticompetitive pricing by readily shifting what they produce." *Id.* Those courts have permitted consideration of supply-side substitution at the market-definition stage only where such substitution has been proven to be "(1) nearly universal among the firms selling one or more of a group of products, (2) easy, and (3) profitable," and "proof of each of these three conditions is required before a relevant product market may be defined based on supply-side considerations." *Id.* at 293–94 (internal quotation marks omitted).

27. The narrow exception permitting consideration of supply-side substitution at the market definition stage is inapplicable here. Ad exchanges' ability to grow their display ad business is limited by Google's conduct, PFOF § III.C.3, as well as substantial barriers to entry,

PFOF § III.F.3.c; *see also infra* PCOL Section II.B.2.d. Even the largest non-Google exchanges that are already active in both open-web display and other types of advertising believe their ability to grow in the open-web display market is limited by those factors. PFOF §§ III.C.3, III.F.3.c. Similarly, Google has not identified firms outside of the publisher ad server or advertiser ad network markets that could expand sufficiently within those markets to prevent a price increase. In fact, entry into those markets has been limited, and several competitors have exited, PFOF §§ III.C.3, III.F.1.c, III.F.2.c.

c) Contrary to Google's Assertions, Amex *Does Not Change the Market Definition Analysis Here*

28. In *Amex*, the Supreme Court identified a distinct category of products called "two-sided transaction platforms": products that "facilitate a single, simultaneous transaction between participants." 585 U.S. at 545. Two-sided transaction platform exhibit "indirect network effects," where "the value of the two-sided platform to one group of participants depends on how many members of a different group participate." *Id.* at 535. Because of these "indirect network effects," *Amex* held that product markets involving two-sided transaction platforms must be defined to account for purchasers of the product on both sides of the "single, simultaneous transaction." *Id.* at 544–45.

29. By contrast, *Amex* held that "[a] market should be treated as one sided when the impacts of indirect network effects . . . in that market are minor." *Id.* at 544. *Amex* pointed to "[n]ewspapers that sell advertisements" as an example of a market with weak indirect network effects: although those newspapers "arguably operate a two-sided platform because the value of an advertisement increases as more people read the newspaper," the "indirect network effects operate in only one direction; newspaper readers are largely indifferent to the amount of

advertising that a newspaper contains." *Id.* Thus, *Amex* concluded, "the market for newspaper advertising behaves much like a one-sided market and should be analyzed as such." *Id.*

30. Courts have interpreted *Amex* as setting forth four relevant features of two-sided transaction platforms: they "'(1) offer[] different products or services, (2) to different groups of customers, (3) whom the 'platform' connects, (4) in simultaneous transactions.'" *US Airways, Inc. v. Sabre Holdings Corp.*, 938 F.3d 43, 58 (2d Cir. 2019) (quoting *Amex*, 528 U.S. at 566 (Breyer, J., dissenting)).

31. Each of the three relevant product markets here is defined consistent with *Amex*. The markets for publisher ad servers for open-web display advertising is not a two-sided transaction platform—publisher ad servers are sold only to publishers, and provide tools for reporting, tracking, forecasting, and otherwise managing their inventory. PFOF §§ III.A.3, III.E.1. The market for advertiser ad networks for open-web display advertising likewise is not a two-sided transaction platform. Advertiser ad networks are sold only to advertisers, and function as buying tools to help advertisers manage their ad campaigns. PFOF §§ III.A.3, III.E.2.

32. The market for ad exchanges for open-web display advertising is a two-sided transaction platform under *Amex*. *See* PFOF ¶ 299. But that does not affect the end result: ad exchanges are a relevant market defined to account for both sides of the platform, PFOF § III.E.3, and Plaintiffs will establish net harm accounting for both sides of the market, PFOF § III.C; *see also PLS.Com, LLC v. Nat'l Ass'n of Realtors*, 32 F.4th 824, 839–40 (9th Cir. 2022) (net harm accounting for both sides of the market sufficient to establish effects under *Amex*).

2. The "Broad" Worldwide Market And The "Narrow" United States Market Are Relevant Geographic Markets

33. Courts apply similar principles to define geographic markets and product markets. The relevant geographic market is the area "within which the defendant's customers who are

affected by the challenged practice can practicably turn to alternative suppliers if the defendant were to raise its prices or restrict its output." *Kolon*, 637 F.3d at 441. Like the product-market analysis, defining the geographic market is a "fact-intensive exercise centered on the commercial realities of the market and competition." *Id.* at 442. But a geographic market "need not . . . be defined with scientific precision." *United States v. Conn. Nat'l Bank*, 418 U.S. 656, 669 (1974).

34. Courts have consistently recognized that "there may be more than one relevant geographic market." *United States v. Marine Bancorporation, Inc.*, 418 U.S. 602, 621 & n.20 (1974); *see also United States v. Pabst Brewing Co.*, 384 U.S. 546, 549 (1966). For example, there may be a worldwide or national market as well as submarkets that cover a specific geographic region or local market. *See, e.g.*, *New York v. Deutsche Telekom AG*, 439 F. Supp. 3d 179, 203–05 (S.D.N.Y. 2020) (national market and "additional local markets" were relevant geographic markets); *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 51 (D.D.C. 1998) (national market and "Los Angeles, San Francisco, and Seattle regions" were relevant geographic markets). No legal principle requires a plaintiff to rely on the smallest geographic submarket possible. *See Pabst*, 384 U.S. at 551–52 (relevant geographic markets included "Wisconsin," "the three-state area of Wisconsin, Illinois, and Michigan," and "the entire country"); *accord Consul, Ltd. v. Transco Energy Co.*, 805 F.2d 490, 495 (4th Cir. 1986) ("The geographic demarcation should not be too tightly drawn, unless clear evidence exists that potential competitors outside the region are hindered from entering.").

35. The United States and the entire world are both appropriate geographic markets for each of Plaintiffs' relevant product markets. PFOF ¶¶ 305–307 (United States market); PFOF ¶¶ 303–304 (worldwide market).

B. Google Has Monopoly Power In Each Of The Relevant Markets

36. Monopoly power is the "power to control prices or exclude competition." *Dickson v. Microsoft Corp.*, 309 F.3d 193, 199 n.1 (4th Cir. 2002) (quoting *du Pont*, 351 U.S. at 391). Monopoly power may be proven in one of two ways: directly through "'evidence of the control of prices or the exclusion of competition,'" *R.J. Reynolds Tobacco Co. v. Philip Morris Inc.*, 199 F. Supp. 2d 362, 394 (M.D.N.C. 2002) (quoting *Tops Mkts., Inc. v. Quality Mkts., Inc.*, 142 F.3d 90, 98 (2d Cir. 1990)), or indirectly "from the structure and composition of the relevant market," *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 2013 WL 6682981, at *4 (E.D. Va. Dec. 18, 2013) (citation omitted).

37. The evidence at trial will establish Google's monopoly power in each of the relevant markets defined by plaintiffs: (1) the market for publisher ad servers for open-web display advertising, (2) the market for advertiser ad networks for open-web display advertising, and the (3) market for ad exchanges for open-web display advertising. *See supra* PCOL Section II.A.1.

1. There Is Ample Direct Evidence That Google Has Monopoly Power In Each Relevant Market

38. Direct evidence of monopoly power is "evidence of the control of prices or the exclusion of competition." *R.J. Reynolds*, 199 F. Supp. 2d at 394 (internal quotation marks and citation omitted). It is behavior that is "difficult to explain unless [a firm has] a monopoly," including evidence of price-setting "without considering rivals' prices" or conduct that "could only be rational if the firm knew that it possessed monopoly power." *United States v. Microsoft Corp.*, 253 F.3d 34, 57–58 (D.C. Cir. 2001) (en banc) (per curiam); *see also Google*, 2024 WL 3647498, at *75 ("The fact that Google makes product changes without concern that its users might go elsewhere is something only a firm with monopoly power would do."); *id.* at *92

("Google does not consider competitors' pricing when it sets text ads prices. That is something a firm without a monopoly would have been unable to do.") (citation and internal quotation marks omitted); *McWane*, 783 F.3d at 832 (competitors' "inability to constrain McWane's pricing" may serve as direct evidence of monopoly power). In addition, where a firm has monopoly power in a "closely related" market, the "unique qualities" of that market and "its close relationship" to the relevant market may in certain instances constitute direct evidence of monopoly power in the relevant market. *See In re Tether and Bitfinex Crypto Asset Litig.*, 576 F. Supp. 3d 55, 97–98 (S.D.N.Y. 2021) ("near-100% share in the stablecoin market" could serve as direct evidence of pricing power in the relevant "cryptocommodity market," given specific relationship and cross-cutting conduct between the two markets).

39. Although sustained supracompetitive pricing and restricted output are direct evidence of monopoly power, neither one is required. *Microsoft*, 253 F.3d at 56–58. For example, if prices are falling overall in a market, but would have fallen more rapidly in a competitive market, pricing may still be evidence of a firm's monopoly power. *See, e.g.*, *id.* at 57 ("[A] price lower than the short-term profit-maximizing price is not inconsistent with possession or improper use of monopoly power."). Otherwise, "a great many defendants with market power, such as Alcoa in the 1920s and perhaps even the former AT&T telephone monopoly could be insulated from antitrust attack." *Allen-Myland, Inc. v. Int'l Bus. Machs. Corp.*, 33 F.3d 194, 211 (3d Cir. 1994).

40. Likewise, although courts have acknowledged "the ability to restrict output" as an avenue of showing monopoly power through direct evidence*, R.J. Reynolds*, 199 F. Supp. 2d at 394, in some circumstances "a dominant firm [may have] no incentive to restrict output to earn monopoly profits," *Google*, 2024 WL 3647498, at *80. For example, in *Google*, the district court

noted that "Google's marginal cost of responding to one additional query is near zero." *Id.* The court therefore concluded that "reduced output [was] an ill-fitting indicia of monopoly power." *Id.* ("[T]he fact that search output has grown is not inconsistent with monopoly power in search.").

41. Here, direct evidence of Google's monopoly power will include Google's ability to degrade quality and set durable, supracompetitive prices without considering its rivals' prices, PFOF §§ III.F.1.a, III.F.2.a, III.F.3.a; the lack of a competitive response to its pricing practices, PFOF §§ III.F.1.a, III.F.2.a, III.F.3.a; limited switching by customers, PFOF §§ III.F.1.a, III.F.2.a, III.F.3.a; its exclusion of competitors, PFOF §§ III.B.2, PFOF III.C.3; and the cumulative and reinforcing effects of its monopoly positions in several related markets, PFOF III.B.1, III.F.

2. Indirect Evidence Also Proves That Google Has Monopoly Power In Each Relevant Market

42. Monopoly power may also be found indirectly from a firm's possession of a "dominant share of a relevant market that is protected by entry barriers." *Microsoft*, 253 F.3d at 51 (citing *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1434 (9th Cir. 1995)). Such evidence is not required to prevail on a Section 2 claim where plaintiffs have established monopoly power through direct evidence. *See Meijer, Inc. v. Barr Pharms., Inc.*, 572 F. Supp. 2d 38, 54 (D.D.C. 2008); *see also Re/Max Int'l, Inc. v. Realty One, Inc.*, 173 F.3d 995, 1018, 1026 (6th Cir. 1999) ("[A]n antitrust plaintiff is not required to rely on indirect evidence of a defendant's monopoly power, such as high market share within a defined market, when there is direct evidence that the defendant has actually set prices or excluded competition."). Nevertheless, indirect evidence independently satisfies Plaintiffs' burden here: Plaintiffs have properly defined three relevant product markets, each of which exists both in the United States and worldwide; Google has a

durable and dominant market share in each relevant market; and high barriers to entry and expansion protect that dominant position.

a) Google's Market Shares In The United States And Worldwide Markets For Publisher Ad Servers For Open-Web Display Advertising Are Evidence Of Monopoly Power

43. As discussed above, in PCOL Section II.A.1, the markets for publisher ad servers for open-web display advertising in the United States and worldwide are properly-defined relevant markets. Both qualitative and quantitative evidence will establish that publisher ad servers are not reasonably interchangeable with other products, PFOF § III.E.1, and the United States and the entire world are both geographic areas within which the defendant's customers who are affected by the challenged practice can practicably turn to alternative suppliers if Google were to raise its prices or restrict its output, PFOF § III.E.4.

44. Here, the evidence at trial will show that Google's share of the market for publisher ad servers is 87% in the United States market, and 91% in the worldwide market. PFOF § III.F.1.b. That, alongside other factors tending to establish Google's dominance and durability in the United States and worldwide markets for publisher ad servers, PFOF § III.F.1.b, as well as the barriers to entry characterizing those markets, PFOF § III.F.1.c, is sufficient to establish that Google has a monopoly share in those markets, *see, e.g.*, *Kolon Indus. Inc. v. E.I. DuPont de Nemours & Co.,* 748 F.3d 160, 174 (4th Cir. 2014) (market shares above 70% presumptively sufficient to constitute indirect evidence of monopoly power); *see also, e.g.*, *Intellectual Ventures*, 99 F. Supp. 3d at 624.

b) Google's Market Shares In The United States And Worldwide Markets For Advertiser Ad Networks For Open-Web Display Advertising Are Evidence Of Monopoly Power

45. As discussed above, in PCOL Section II.A.1, the markets for advertiser ad networks for open-web display advertising in the United States and worldwide are properly-

defined relevant markets. Both qualitative and quantitative evidence will establish that advertiser ad networks are not reasonably interchangeable with other products, PFOF § III.E.2, and the United States and the entire world are both geographic areas within which the defendant's customers who are affected by the challenged practice can practicably turn to alternative suppliers if Google were to raise its prices or restrict its output, PFOF § III.E.4.

46. Here, the evidence at trial will show that Google's share of the market for advertiser ad networks is 90% in the United States market, and 85% in the worldwide market. PFOF § III.F.2.b. As discussed above, these shares are presumptively sufficient to constitute indirect proof of monopoly power, *Kolon*, 748 F.3d at 174, and taken in conjunction with other factors tending to establish Google's dominance and durability in the United States and worldwide markets for advertiser ad networks, PFOF § III.F.2.b, as well as the barriers to entry characterizing those markets, PFOF § III.F.2.c, they are sufficient to establish that Google has a monopoly share in those markets.

c) Google's Market Shares In The United States And Worldwide Markets For Ad Exchanges For Open-Web Display Advertising Are Evidence Of Monopoly Power

47. As discussed above, in PCOL Section II.A.1, the markets for ad exchanges for open-web display advertising in the United States and worldwide are properly-defined relevant markets. Both qualitative and quantitative evidence will establish that ad exchanges are not reasonably interchangeable with other products, PFOF § III.E.3, and the United States and the entire world are both geographic areas within which the defendant's customers who are affected by the challenged practice can practicably turn to alternative suppliers if Google were to raise its prices or restrict its output, PFOF § III.E.4.

48. While shares above 70% are presumptively *sufficient* to establish monopoly power, *Kolon*, 748 F.3d at 174, courts are clear that there is "no minimum percentage" *necessary*

to make an indirect-evidence showing of monopoly power, *Google*, 2024 WL 3647498, at *76. Indeed, the Fourth Circuit has cited approvingly to cases holding that market shares as low as 50%—in conjunction with other factors such as the "durability of the defendant's market power"—may give rise to a finding of monopoly power. *Kolon*, 637 F.3d at 450–51 (citing *Domed Stadium Hotel, Inc. v. Holiday Inns, Inc.*, 732 F.2d 480, 489 (5th Cir. 1984)); *see also Hayden Publ'g Co., Inc. v. Cox Broad. Corp.*, 730 F.2d 64, 69 n.7 (2d Cir. 1984) ("[A] party may have monopoly power in a particular market, even though its market share is less than 50%."); *Bailey v. Allgas, Inc.*, 284 F.3d 1237, 1250 (11th Cir. 2002); *Rebel Oil*, 51 F.3d at 1438.

49. Courts are reluctant to impose bright-line market share requirements for monopolization claims because percentages alone are "not the only consideration" in determining whether a firm has monopoly power. *Kolon Indus., Inc. v. E.I. du Pont De Nemours & Co.*, No. 11-CV-622, 2012 WL 1155218, at *11 (E.D. Va. Apr. 5, 2012). For example, in addition to the "durability of the defendant's market power," *Kolon*, 637 F.3d at 451, courts consider "the size and strength of competing firms, freedom of entry, pricing trends and practices in the industry, ability of consumers to substitute comparable goods, and consumer demand," *United States v. Dentsply Intern., Inc.*, 399 F.3d 181, 187 (3d Cir. 2005). Market share percentages may also understate monopoly power where a firm's market shares are closer to 50% but significantly larger than those of a defendant's next-closest rivals. *See, e.g.*, *Syufy Enters. v. Am. Multicinema, Inc.*, 793 F.2d 990, 995 (9th Cir. 1986) (finding "60-69% market share . . . accompanied by a fragmentation of competition," where "no competing exhibitor . . . ever had a greater share than 24.7%" sufficient to infer monopoly power); *Kolon*, 2012 WL 1155218, at *11 (jury "reasonably could have found that the defendant had monopoly power" based in part on "difference in the defending party's market share and the next closest competitors' share");

Fineman v. Armstrong World Indus., Inc., 980 F.2d 171, 203 (3d Cir. 1992) (finding "persuasive" a 48% market share "exceed[ing] even the combined market share of its three closest competitors and equal[ing] over three times the market share of its nearest competitor"); *Reazin v. Blue Cross & Blue Shield of Kan.*, 899 F.2d 951, 969 (10th Cir. 1990) (sufficient evidence to support monopoly power notwithstanding market-share estimates of "somewhere between forty-seven and sixty-two percent" given that defendant was "by far the largest private source of health care financing in its service area").

50. Here, the evidence at trial will show that Google's share of the market for ad exchanges is between 45% and 55% in the United States market, and between 63% and 71% in the worldwide market. PFOF § III.F.3.b. Google's shares are high, durable, have grown over time, PFOF § III.F.3.b, and they lead their next-largest competitor's shares by roughly nine times in the worldwide market and five times in the United States market, PFOF § III.F.3.b. Taken in conjunction with the barriers to entry characterizing those markets, PFOF § III.F.3.c, as well as Google's monopoly power in related markets, PFOF §§ III.F.1–2, Google's shares in the markets for ad exchanges are sufficient to establish that Google had monopoly power in the United States and global markets for ad exchanges.

d) Google's Shares In Each Relevant Market Are Protected by Significant Barriers To Entry

51. "Entry barriers are particular characteristics of a market which impede entry by new firms into that market." *Kolon*, 2012 WL 1155218, at *11 (quoting *Reazin*, 899 F.2d at 968). In other words, "[a]ny market condition that makes entry more costly or time-consuming and thus reduces the effectiveness of potential competition as a constraint on the pricing behavior of the dominant firm should be considered a barrier to entry, regardless of who is responsible for

the existence of that condition." *FTC v. Surescripts, LLC*, 665 F. Supp. 3d 14, 44 (D.D.C. 2023) (quoting *S. Pac. Commc'ns Co. v. Am. Tel & Tel. Co.*, 740 F.2d 980, 1001 (D.C. Cir. 1984)).

52. Courts have recognized as barriers to entry and expansion high capital costs, economies of scale, network effects, entrenched brand preferences, previous failed entry by potential rivals, control of key distribution channels, mutually reinforcing monopolies in related markets, and the existence of exclusive contracts. *See, e.g.*, *Google*, 2024 WL 3647498, at *76, 111 (capital costs, control of key distribution channels, brand preferences, scale, previous failed entry by potential rivals, network effects, and exclusive contracts); *Microsoft*, 253 F.3d at 54–56 (indirect network effects); *Surescripts*, 665 F. Supp. 3d at 45 (indirect network effects); *FTC v. Sysco Corp*., 113 F. Supp. 3d 1, 80 (D.D.C. 2015) (capital costs and incumbency); *United States v. H&R Block Co.*, 833 F. Supp. 2d 36, 75 (D.D.C. 2011) (reputation and brand impacts on consumer behavior); *Image Tech. Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1208 (9th Cir. 1997) (control of essential or superior resources, entrenched buyer preferences, high capital costs, and economies of scale); *United States v. Syufy Enters.*, 903 F.2d 659, 667 (9th Cir. 1990) (recognizing the existence of exclusive contracts designed to lock out potential competitors as a barrier to entry); *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 14 (1984) (tying can create barriers to entry in the market for the tied product); *United States v. Am. Tel. & Tel. Co.*, 552 F. Supp. 131, 171 (D.D.C. 1982) (control of "strategic bottleneck" products); *Cardinal Health*, 12 F. Supp. 2d at 56–57 ("The history of entry into the relevant market is a central factor in assessing the likelihood of entry in the future.").

53. Each relevant market is characterized by significant barriers to entry. Google's monopolies are flanked by other monopolies in closely-related markets, PFOF §§ III.B.1, III.F, significant power over distribution and demand sources, PFOF §§ III.F.1.c, III.F.2.c, III.F.3.c,

and data at scale, PFOF §§ III.F.1.c, III.F.2.c, III.F.3.c. Moreover, the relevant markets are characterized by high capital costs, network effects, entrenched brand preferences, high switching costs, previous failed entry by potential rivals, and restrictions on expansion as a result of Google's conduct. PFOF §§ III.F.1.c, III.F.2.c, III.F.3.c.

C. Google Has Engaged In Exclusionary Conduct To Protect Its Monopolies

54. Courts evaluate whether conduct is exclusionary under a fact-specific, burden-shifting standard akin to the rule-of-reason standard in Section 1 cases. *See Microsoft*, 253 F.3d 34, 58–59. First, the plaintiff must show that the challenged conduct has an "anticompetitive effect"—that it "harm[s] the competitive process and thereby harm[s] consumers." *Id*. at 58. If the plaintiff does so, the burden shifts to the monopolist to show a sufficient "procompetitive justification" for its conduct. *Id*. at 59. If that is established, the plaintiff has the burden "to rebut that claim" or "demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit." *Id.*

1. Google's Conduct Harms The Competitive Process

55. A plaintiff satisfies its initial burden under *Microsoft* by showing that the challenged conduct has an "anticompetitive effect," meaning that it "harm[s] the competitive process." *Id*. at 58. In the words of the Fourth Circuit, "a monopolist violates § 2 when it uses its monopoly power to foreclose competition, to gain a competitive advantage, or to destroy a competitor," and "it is fair to characterize a monopolist's behavior as predatory if it has been attempting to exclude rivals on some basis other than efficiency." *Duke Energy Carolinas, LLC v. NTE Carolinas II,* LLC, 2024 WL 3642432, at *11, 17 (4th Cir. Aug. 5, 2024) (internal quotation marks and citations omitted).

56. Evidence of an anticompetitive effect may take the form of "proof of actual ***or*** threatened consumer harm," but the proof "need not invariably be elaborate." *Google*, 2024 WL 3647498, at *103 (emphasis added) (internal quotation marks and citations omitted). Indeed, anticompetitive effects can come in many forms. *See id.* at *114 ("The loss of nascent competitors is a clear anticompetitive effect."); *Viamedia, Inc. v. Comcast Corp.*, 951 F.3d 429, 475 (7th Cir. 2020) (reduced innovation is an anticompetitive effect); *Dentsply*, 399 F.3d at 194 (limiting consumer choice is another anticompetitive effect); *Microsoft*, 253 F.3d at 71 (keeping rivals' usage below the critical level necessary to pose a threat to defendant's monopoly is an anticompetitive effect).

57. "[A]nticompetitive conduct comes in many different forms that cannot always be categorized." *Duke Energy,* 2024 WL 3642432, at *11. "Section 2 focuses on anticompetitive conduct, not on court-made subcategories of that conduct." *Id*. Indeed, "the purpose of identifying these categories of conduct is to help determine the presence or absence of harmful effects." *Viamedia,* 951 F.3d at 453 (quotation marks omitted). The key question in Section 2 cases is whether a monopolist has acquired or maintained its power "through a means other than competition on the merits[.]" *Microsoft*, 253 F.3d at 62; *Google*, 2024 WL 3647498, at *97.

58. "Conduct that might otherwise be lawful may be impermissibly exclusionary under antitrust law when practiced by a monopolist." *Kolon*, 637 F.3d at 441; *see also Dentsply*, 399 F.3d at 187 ("Behavior that otherwise might comply with antitrust law may be impermissibly exclusionary when practiced by a monopolist."); *McWane*, 783 F.3d at 836 ("[T]he behavior of monopolists faces more exacting scrutiny under the antitrust statutes."); *Kodak*, 504 U.S. at 488 (Scalia, J., dissenting) ("Behavior that might otherwise not be of concern to the antitrust laws—

or that might even be viewed as procompetitive—can take on exclusionary connotations when practiced by a monopolist.").

59. In evaluating whether conduct is anticompetitive, courts must consider market realities, i.e., "the particular structure and circumstances of the industry at issue." *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411 (2004); *accord NCAA v. Alston*, 594 U.S. 69, 93 (2021) ("Whether an antitrust violation exists necessarily depends on a careful analysis of market realities."). That includes the real-world behavior of customers and competitors. *See, e.g.*, *Google*, 2024 WL 3647498, at *78 ("Though the Chrome default is not alleged to be exclusionary conduct, it is a market reality that significantly narrows the available channels of distribution and thus disincentivizes the emergence of new competition.").

60. Two market realities are particularly important here. First, Google's power in each relevant market and across the ad tech stack give it a unique ability to "use [its] economic power in one market to restrict competition on the merits in another" *Northern Pac. Ry. Co. v. United States*, 356 U.S. 1, 11 (1958), and create "bottlenecks" to influence auctions and competition, *see, e.g.*, *AT&T*, 552 F. Supp. at 171 (control of companies with "strategic bottleneck position" allowed firm to maintain monopoly). Second, while both advertisers and publishers *pay* for transactions (typically through a revenue share), submitting and selecting bids for available impressions is largely outsourced to ad tech tools. This creates a price disconnect that makes ad tech markets susceptible to manipulation. *See New York ex rel. Schneiderman v. Actavis PLC,* 787 F.3d 638, 646 (2d Cir. 2015) (forces of competition do not work as well when the entity that selects a product does not fully bear its costs).

61. Additionally, "when a plaintiff alleges that a scheme or course of conduct was anticompetitive, the scheme or conduct must be considered as alleged, not in manufactured

subcategories." *Duke Energy*, 2024 WL 3642432, at *12. Thus a court must consider how different parts of an anticompetitive scheme impact the market "as a whole" and help a firm acquire or maintain monopoly power. *Id.* at *11. This is particularly true where, as here, a defendant engaged in mutually reinforcing actions to achieve an anticompetitive end. *See, e.g., Continental Ore Co. v. Union Carbide & Carbon Corp.*, 370 U.S. 690, 698–99 (1962) (an antitrust matter is "not to be judged by dismembering it and viewing its separate parts, but only by looking at it as a whole," as such, "plaintiffs should be given the full benefit of their proof without tightly compartmentalizing the various factual components and wiping this slate clean after scrutiny of each."); *City of Anaheim v. S. Cal. Edison Co.*, 955 F.2d 1373, 1376 (9th Cir. 1992) ("[I]t would not be proper to focus on specific individual acts of an accused monopolist while refusing to consider their overall combined effect.").

62. In addition to considering market realities and a course of conduct "as a whole," evidence of a defendant's anticompetitive intent may also be relevant "to the extent it helps [the court] understand the likely effect of the monopolist's conduct," *Microsoft*, 253 F.3d at 58–59, as "knowledge of intent may help the court to interpret facts and to predict consequences," *Board of Trade of City of Chicago v. United States*, 246 U.S. 231, 238 (1918); *see also Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 602 (1985) ("[E]vidence of intent is merely relevant to the question whether the challenged conduct is fairly characterized as 'exclusionary' or 'anticompetitive' . . . or 'predatory'"); *LePage's, Inc. v. 3M*, 324 F.3d 141, 163 (3d Cir. 2003) (en banc) ("The Supreme Court has made clear that intent is relevant to proving monopolization.").

63. Finally, a plaintiff is not required to show that the defendant's conduct is the "but-for" cause of any anticompetitive effects. The evidence need only show that the challenged

conduct "reasonably appear[s] capable of making a significant contribution to . . . maintaining monopoly power" or "acquiring monopoly power." *Microsoft,* 253 F.3d at 79 (citation omitted); *Google*, 2024 WL 3647498, at *104 ("The key question then is this: Do Google's exclusive distribution contracts reasonably appear capable of significantly contributing to maintaining Google's monopoly power in the [relevant market]?").

64. Here, the anticompetitive conduct that Google has employed to willfully acquire and maintain monopoly power in the relevant markets can be organized into three general buckets. First, Google has bought competitors to establish and enhance its control in the relevant markets and protect itself against competitive threats in those markets. PFOF §§ III.B.1.a (DoubleClick), III.B.2.b (AdMeld); s*ee Kodak*, 504 U.S. at 482–83 (eliminating competitors as part of scheme to willfully acquire or maintain monopoly power violates Section 2); *Duke Energy*, 2024 WL 3642432, at *11 (same). Second, Google impedes the ability of customers to work with rival ad exchanges and publisher ad servers to "prevent [rivals] from eroding its monopolistic position." *Otter Tail Power Co. v. United States*, 410 U.S. 366, 378 (1973); PFOF §§ III.B.1.b (conditions on access to Google Ads' advertiser demand and AdX), III.B.3.d (Unified Pricing Rules); *see also Microsoft,* 253 F.3d at 71 (finding Microsoft's licensing agreements that prevented customers from dealing with rivals to be anticompetitive); *Lorain Journal Co. v. United States*, 342 U.S. 143, 152–53 (1951) (condemning monopolist newspaper publisher's restrictions on advertisers who wanted to advertise with rival radio station). Third, Google uses its power across the ad tech stack to engineer a "competitive advantage" by subverting and manipulating auction mechanics to protect its monopolies. PFOF §§ III.B.2.a (First Look); III.B.2.c (Last Look); III.B.2.d (Sell-Side Dynamic Revenue Share); III.B.3.b (Project Poirot); *Duke Energy*, 2024 WL 3642432, at *11 (quoting *Kodak*, 504 U.S. 451, 482–

83); *see also In re Google Digit. Advert. Antitrust Litig.*, 627 F. Supp. 3d 346, 387–93 (S.D.N.Y. 2022) (evaluating whether various forms of alleged auction manipulation harmed competition). Google's conduct has led to higher prices, lower quality, less innovation, and reduced choice for publishers and advertisers, while foreclosing rivals of opportunities to compete for customers and impressions and depriving them of critical scale needed to compete.

65. The anticompetitive effects of each component of Google's course of conduct—each of which is sufficient to establish harm to the competitive process—are described below. The synergistic, mutually-reinforcing effects of Google's course of conduct, "considered as a whole" *Duke Energy*, 2024 WL 3642432, at *11, are further described below, in PCOL Section II.C.2.

a) DoubleClick Acquisition

66. Google's 2008 acquisition of DoubleClick gave Google an ad exchange, cemented Google's position in the publisher ad server market, established Google's control across the ad tech stack, and enabled Google's subsequent conduct by securing Google's dominance over publishers and their display advertising inventory. PFOF § III.B.1.a. As a prerequisite to Google's future conduct, buying DoubleClick gave Google the tools to lock in publishers (reducing consumer choice) and dictate auction rules to prevent rivals from achieving scale. *See, e.g.*, *Microsoft*, 253 F.3d at 71 (exclusive deals were anticompetitive because they kept usage of rivals' products "below the critical level necessary . . . to pose a real threat" to Microsoft); *Google*, 2024 WL 3647498, at *109 ("Google's exclusive agreements have a second important anticompetitive effect: They deny rivals access to user queries, or scale, needed to effectively compete.").

b) Google Imposes Anticompetitive Conditions On Its Publisher Customers

67. Google imposes two critical restraints on its publisher customers: First, Google restricts access to demand from its advertiser ad network, Google Ads, unless publishers also use Google's ad exchange, AdX. Second, Google restricts the ability to meaningfully compare real-time bids from advertisers using AdX unless publishers also use Google's publisher ad server, DFP. PFOF § III.B.1.b.

68. These restrictions had at least two anticompetitive effects. First, they inhibited rival ad exchanges and publisher ad servers from attracting and retaining publisher customers and foreclosed rivals from gaining scale (by matching more advertiser bids with publisher inventory). *Microsoft*, 253 F.3d at 71. This is true regardless of the price or quality of rival products—rivals could not compete with bids they are blocked from receiving. And Google's restrictions do not "improve" its products; rather, they serve as a standing threat to publishers: choose a publisher ad server other than DFP, and lose significant revenue. PFOF ¶ 84; *see Viamedia*, 951 F.3d at 435, 476 (noting that if firms worked with preferred ad rep services vendor, they "would have remained cut off from a large percentage of their advertising revenue."). Second, publishers suffer reduced choice and control: by restricting advertiser demand to Google's own products, publishers are "compelled," PFOF ¶ 83, to use AdX and DFP, even if publishers might have preferred to use different tools, or work with rivals who offered better terms. *Jefferson Parish*, 466 U.S. at 12; *Faulkner Advert. Assocs., Inc. v. Nissan Motor Corp. in U.S.A.,* 905 F.2d 769, 772 (4th Cir. 1990).

c) Google Forced DFP Publishers To Grant AdX A Right Of First Refusal Or "First Look"

69. Google exploited its control of its publisher ad server, DFP, to grant its ad exchange, AdX, a right of first refusal (or "First Look") at publisher inventory, ahead of rival ad

exchanges and other demand sources. PFOF § III.B.2.a. This allowed Google to "cherry pick" publisher impressions and gain a "competitive advantage" over rivals. PFOF ¶ 115.

70. Google's forced "right of first refusal" had at least two anticompetitive effects in the ad exchange market. First, Google was able to "gain a competitive advantage" in the ad exchange market by exercising its power in the publisher ad server market (through DFP) to manipulate auctions, rather than by offering a superior product or otherwise competing on the merits. *Duke Energy*, 2024 WL 3642432, at *11 (quoting *Kodak*, 504 U.S. at 482–83). Second, Google diminished rivals' ability to compete for customers based on price and diverted impressions away from rival ad exchanges, helping keep rivals below the levels of scale necessary to threaten Google. *Microsoft*, 253 F.3d at 71

d) AdMeld Acquisition

71. Google's 2011 acquisition of AdMeld eliminated what Google saw as a "direct competitor" and its "largest concern." PFOF § III.B.2.b, ¶¶ 120, 127, 130–31.

72. Google's acquisition of AdMeld had at least two anticompetitive effects in the ad exchange and publisher ad server markets. First, Google removed an emerging competitor and captured (and eventually destroyed) a nascent technology that could have facilitated a more open, real-time competitive bidding environment. PFOF ¶ 132. Second, Google extinguished competition that threatened to "break" the ties between Google's products and to undercut Google's ability to manipulate ad auctions. PFOF ¶ 124. This is anticompetitive. *See, e.g.*, *FTC v. Facebook, Inc.,* 581 F. Supp. 3d 34, 53–55 (D.D.C. 2022) ("It is well established" that acquisitions of actual or potential competitors by a monopolist can violate Section 2); *see also United States v. Grinnell Corp*., 384 U.S. 563, 576 (1966) (acquisitions can constitute "unlawful and exclusionary practices" under Section 2); *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1, 70–77 (1911) (same); *Microsoft*, 253 F.3d at 79 ("[S]uffice it to say that it would be inimical to

the purpose of the Sherman Act to allow monopolists free reign to squash nascent, albeit unproven, competitors at will").

e) Google Required Publishers To Provide AdX A Right Of Last Refusal Or "Last Look" Over Rival Ad Exchanges

73. Even as market participants tried to evade some of Google's restrictions by developing header bidding, Google was able to maintain control over publishers by leveraging its publisher ad server, DFP, to establish a right of last refusal, or "Last Look," over rival ad exchanges. PFOF § III.B.2.c.

74. Last Look had at least three anticompetitive effects in the ad exchange market. First, Google exploited its power in the publisher ad server market through DFP to manipulate auctions and "gain a competitive advantage" in the ad exchange market. PFOF ¶ 145; *Duke Energy*, 2024 WL 3642432, at *11 (quoting *Kodak*, 504 U.S. at 482–83). Second, Google's competitive advantage deprived rival exchanges of scale and inhibited rivals' ability to compete for publisher and advertiser customers and impressions. PFOF ¶ 146–47; *Microsoft*, 253 F.3d at 71. Finally, Last Look protected Google's products in the publisher ad server market and ad exchange market from the competitive and innovative threat of header bidding, not by making Google's products "more attractive to consumers," but by discouraging transactions on rival platforms. *Microsoft,* 253 F.3d at 65.

f) Google Used Sell-Side Dynamic Revenue Share ("SSDRS") To Exploit Its Last Look Advantage

75. Through its Sell-Side Dynamic Revenue Share program, Google further exploited its control over publisher ad servers (through DFP) and its Last Look competitive advantage. PFOF §§ II.B.2.d. SSDRS enhanced the anticompetitive effects of Google's Last Look advantage and had similar anticompetitive effects in the ad exchange market, for the same reasons.

g) Project Poirot

76. To "combat" and "dry out" the competitive threat of header bidding, PFOF ¶ 162, Google implemented a program—Project Poirot—to systematically lower bids into rival exchanges that it believed were not running "true" second price auctions, including header bidding auctions. PFOF § III.B.3.b. In doing so, Google neither disclosed the details of Poirot to advertisers nor reduced bids into its own ad exchange, AdX—even though AdX was also not running a "true" second price auction. PFOF ¶¶ 164–66.

77. Project Poirot had at least two anticompetitive effects in the ad exchange market. First, it helped Google blunt the competitive threat of header bidding and protected its ad exchange, AdX, not by making AdX "more attractive to customers," *Microsoft*, 253 F.3d at 65, but by diverting bids and transactions away from rival exchanges. Second, by reducing bids into and diverting transactions away from rival ad exchanges, Project Poirot deprived rival ad exchanges of scale needed to effectively compete for transactions and customers. *Id.*; *see also Google*, 2024 WL 3647498, at *109 (finding "Google's exclusive agreements" denied "rivals access to user queries, or scale, needed to effectively compete").

h) Unified Pricing Rules

78. In 2019, Google imposed what it called Unified Pricing Rules ("UPR") on publishers using its publisher ad server, DFP. PFOF § III.B.3.d. These rules revoked publishers' ability to set different price floors for different demand sources, including various ad exchanges and advertiser ad networks. Google imposed this restriction on publishers because it thought publishers were offering inventory on AdX at higher prices than rival ad exchanges. PFOF ¶¶ 176–78.

79. Google's Unified Pricing Rules had at least four anticompetitive effects in the ad exchange and advertiser ad network markets. First, Google eliminated a choice that publisher

customers valued and reduced publishers' control over how to price and sell their own inventory. *See Dentsply*, 399 F.3d at 194 (finding "exclusionary practice" that "limits the choices of products open to . . . the ultimate users" an "anti-competitive effect"). Second, UPR deprived rival ad exchanges and advertiser ad networks of scale and share. *Microsoft*, 253 F.3d at 65; *see Google*, 2024 WL 3647498, at *109 (Google's conduct "deny[ing] rivals . . . scale needed to effectively compete" was an "anticompetitive effect"). Third, UPR shifted transactions to a higher-priced ad exchange, AdX, which improved Google's revenue but forced advertisers to pay more and publishers to receive less for impressions. PFOF ¶¶ 183–84; s*ee Merced Irrigation Dist. v. Barclays Bank PLC*, 165 F. Supp. 3d 122, 140–43 (S.D.N.Y. 2016) (When a monopolist uses its power to "artificially inflate or deflate market prices and constrain the market for other buyers and sellers," that conduct can be "exclusionary and anticompetitive"); *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 221 (1940) ("Even though the members of the price-fixing group were in no position to control the market, to the extent that they raised, lowered, or stabilized prices they would be directly interfering with the free play of market forces."). Finally, UPR limited the abilities of third parties (publisher customers) to deal with Google's rivals (ad exchanges and advertiser ad networks) by restricting the prices at which publishers could offer inventory on rival platforms, and inhibiting publishers from steering inventory to preferred partners. *See Microsoft*, 253 F.3d at 61 (finding that Microsoft's restrictions prevented third parties (OEMs) from dealing with Microsoft's rivals); *Lorain Journal,* 342 U.S. at 152–53 (condemning monopolist newspaper publisher's restrictions on advertisers who wanted to advertise with rival radio station).

2. The Anticompetitive Consequences Of Google's Course Of Conduct As A Whole Protect Google's Monopolies In Each Relevant Market

80. While each individual act described above has an independently anticompetitive effect, the anticompetitive consequences of Google's course of conduct are most evident when considered as a whole. "It is foundational that alleged anticompetitive conduct must be considered as a whole. Section 2 focuses on anticompetitive conduct, not on court-made subcategories of that conduct." *Duke Energy*, 2024 WL 3642432, at *11. Market participants experience and react to Google's conduct as a whole, not piecemeal.

81. Here, Plaintiffs will establish that Google has engaged in an "exclusionary campaign," *id.*, to acquire and protect its monopolies in the markets for publisher ad servers, advertiser ad networks, and ad exchanges for open-web display advertising. This anticompetitive course of conduct was intentional and effective. And each part of Google's scheme was mutually reinforcing, in part because Google's monopoly power in one of these markets helped it acquire and maintain power in the others. *See Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 275 (2d Cir. 1979) ("It is clear that a firm may not employ its market position as a lever to create or attempt to create a monopoly in another market."). Each of Google's individual anticompetitive acts thus "reinforced the exclusionary effect" of its other conduct. *LePage's*, 324 F.3d at 162.

82. Although an anticompetitive "scheme or [course of] conduct must be considered as alleged, not in manufactured subcategories," *Duke Energy*, 2024 WL 3642432, at *12, much of Google's conduct nonetheless resembles categories of conduct that courts have found to be anticompetitive. For example, acquisitions—like Google's acquisitions of DoubleClick and AdMeld—can constitute "unlawful and exclusionary practices" under Section 2. *Grinnell*, 384 U.S. at 576; *see also United States v. E.I. du Pont de Nemours & Co.*, 353 U.S. 586, 598, 607

(1957) (finding 30-year-old acquisition violated the Clayton Act because of post-acquisition conduct); *Standard Oil,* 221 U.S. at 70–77 (finding past acquisitions and subsequent course of conduct to violate Section 2 of the Sherman Act); *Facebook*, 581 F. Supp. 3d at 53–55 (noting that it is "well established" that acquisitions of actual or potential competitors by a monopolist can violate Section 2 when they "lead to poorer services and less choice for consumers"). Courts are also wary of rights of first refusal–like First Look and its analogue, Last Look–because "[a] firm blessed with a right of first refusal can by exercising its option exclude competition with it." *MISO Transmission Owners v. FERC*, 819 F.3d 329, 333 (7th Cir. 2016) (Posner, J.); *Theme Promotions, Inc. v. News Am. Mktg. FSI*, 546 F.3d 991, 1002–03 (9th Cir. 2008) (affirming jury finding that "right of first refusal contracts" harmed competition). Google's Unified Pricing Rules are akin to anti-steering provisions and most favored nation clauses—conduct found exclusionary in other cases—as they inhibit publishers from directing impressions to preferred ad exchanges and advertiser ad networks of their choice, and prevent publishers from listing impressions at lower prices on rival platforms. *See, e.g.*, *Sabre*, 938 F.3d at 51, 62–63 (holding that reasonable jury could have found that anti-steering provision of contract was exclusionary); *De Coster v. Amazon.com, Inc.*, No. C21-693RSM, 2023 WL 372377, at *2–3 (W.D. Wash. Jan. 24, 2023) (pricing policies can be anticompetitive when they prevent sellers from listing goods at lower prices on other platforms). And finally, Google's restrictions of Google Ads advertiser demand to AdX, and effective real-time AdX access to DFP, function as well-recognized anticompetitive ties that exploit Google's control over advertiser demand to force publishers to use AdX and DFP, discourage publishers from using rival products that they might prefer, and prevent advertisers from bidding on desirable impressions on rival ad exchanges. *Jefferson Par.,* 466 U.S. at 14; *Kodak*, 504 U.S. at 461–62, 464; *Microsoft*, 253 F.3d at 65–66.

83. But "a firm's exclusionary efforts [must] be considered in their totality." *Duke Energy,* 2024 WL 3642432, at *12. And the "anticompetitive *consequences* of [Google's] *campaign as a whole*," *id.*, have been felt across the ad tech stack, in each relevant market, and by the consumers—publishers and advertisers—that ad tech tools are designed to serve. Among these are: (1) higher prices for advertisers and publishers; (2) lower quality and less innovative ad tech products for advertisers and publishers; (3) reduced choice for publishers and advertisers, as to the tools they use and how they buy and sell impressions; and (4) rivals deprived of critical scale because they are obstructed and foreclosed from competing for both customers and open-web display impressions.

84. "[I]ncreased prices" are "[d]irect evidence" of an "actual detrimental effect[] [on competition]." *Amex*, 585 U.S. at 542 (quoting *FTC v. Ind. Fed'n of Dentists*, 476 U.S. 447, 460 (1986)); *see also Duke Energy,* 2024 WL 3642432, at *11. Here, the evidence—including contemporaneous internal Google documents and communications—will show that Google's 20% average take rate for open auction transactions on its ad exchange, AdX, is propped up and protected by the restrictions Google places on its products and restraints it imposes on its customers. PFOF § III.C.2. This take rate is supracompetitive, or above the price Google could charge in a competitive market. And Google's fee has been extremely durable: it has endured for years in the face of what Google otherwise describes as a competitive market. *See In re Crude Oil Commodity Futures Litig*., 913 F. Supp. 2d 41, 55 (S.D.N.Y. 2012) ("One measure of the degree of market power is the persistence of a firm's ability to profitably charge monopoly prices.") (quoting *Colo. Interstate Gas Co. v. Nat. Gas Pipeline Co. of Am*., 885 F.2d 683, 695 (10th Cir. 1989)). Google's elevated fee means that for each dollar an advertiser spends to buy

display advertising on publisher websites, advertisers get less advertising, publishers get less revenue, and Google gets more.

85. "[D]ecreased quality" is also "direct evidence" of an "actual detrimental effect[] on competition." *Amex*, 585 U.S. at 542; *see also Viamedia*, 951 F.3d at 476. Reduced product innovation and variety are anticompetitive effects as well. *FTC v. Hackensack Meridian Health, Inc.*, 30 F.4th 160, 172 (3d Cir. 2022); *Viamedia*, 951 F.3d at 475. Here, the evidence will show that Google has reduced quality, innovation, and variety in the relevant markets in at least two ways. First, Google restrains the quality of its own products and slow rolls innovations: its advertiser ad network, Google Ads, cannot buy freely on rival exchanges, and its ad exchange, AdX, cannot fully interoperate with rival publisher ad servers. PFOF ¶ 346. Google also, for example, removed certain controls in its publisher ad server, DFP, that allowed publishers to set different price floors for different sources of advertising demand. PFOF ¶ 309. Header bidding emerged, in part, because of Google's "unwillingness" to provide "innovations" that buyers and sellers demanded. PFOF ¶¶ 137–39. Second, Google web of restrictions and restraints inhibit advertisers and publishers from finding higher-quality "matches," leading to higher-quality transactions on an ad exchange. *See, e.g.,* PFOF ¶¶ 36, 55, 60, 65, 120, 148, 153.

86. Google's conduct has also "reduced consumer choice," *Duke Energy*, 2024 WL 3642432, at *11, both as to which ad tech tools publishers and advertisers use, and how publishers use those tools to buy and sell impressions. "[T]he market can determine whether one product is superior to another only 'so long as the free choice of consumers is preserved.'" *Actavis*, 787 F.3d at 654–55 (quoting *Berkey Photo*, 603 F.2d at 287); *see also United States v. JetBlue Airways Corp.*, No. CV 23-10511-WGY, 2024 WL 162876, at *28 (D. Mass. Jan. 16, 2024) (elimination of consumer choice is a "cognizable harm to competition"); *Google*, 2024

WL 3647498, at *15–17, 110 (discussing Google's use of "choice friction" to influence consumer behavior). The Seventh Circuit, for example, has found it would constitute exclusionary conduct for a monopolist to present potential consumers with only a "Hobson's choice"—to purchase an unwanted additional services from the monopolist to gain access to the monopolist's platform, or to go elsewhere for those additional services and lose the access "needed to compete effectively." *Viamedia*, 951 F.3d at 435, 465.

87. Here, Google forces publishers to make a "Hobson's choice": use DFP as their publisher ad server and gain full access to real-time bids from Google's ad exchange, AdX, and advertiser demand from Google's advertiser ad network, Google Ads, PFOF ¶¶ 85, 199, or choose another publisher ad server and lose access to critical advertiser bids and demand, PFOF ¶ 98. Under these conditions, the "market reality" is that Google's publisher ad server is the "only real choice" for open web publishers. *Google*, 2024 WL 3647498, at *97; *see also Lorain Journal,* 342 U.S. at 153 (advertisers acquiesced to anticompetitive condition because they "could not afford to discontinue their newspaper advertising in order to use the radio [advertising]").

88. Once Google succeeded in forcing publishers to choose DFP—the only practical choice available to publishers—Google exercises its monopoly power in the publisher ad server market "as a lever" to "extend[] market control" and "create a monopoly in another market": here, the markets for ad exchanges and advertiser ad networks. *Berkey Photo*, 603 F.2d at 274–75; *see also Duke Energy*, 2024 WL 3642432, at *11 (a monopolist violates Section 2 when it uses its monopoly power "to gain a competitive advantage") (citation omitted); *United States v. Griffith*, 334 U.S. 100, 107 (1948) (condemning the use of monopoly power in "one town" to "acquire privileges in a [different] city" as "a trade weapon"). Publishers are subject to Google's

auction manipulations, *see* PFOF §§ III.B.2.d (Sell-Side Dynamic Revenue Share); III.B.3.b (Project Poirot), forced to grant Google a "First Look" or a "Last Look" in auctions, *see* PFOF §§ III.B.2.a (First Look); III.B.2.c (Last Look), or be subject to the abrupt deprecation of desired auction control features, *see* PFOF § III.B.3.d (Unified Pricing Rules). *See, e.g., In re Tether & Bitfinex*, 576 F. Supp. 3d at 96–97 (using dominant position in one market to manipulate a closely related market can be "direct evidence of anticompetitive effects through price control").

89. Finally, Google's conduct has foreclosed competition and deprived rivals of the "scale[] needed to effectively compete." *Google*, 2024 WL 3647498, at *109. This has kept rivals usage "below the critical level necessary" to threaten Google's monopolies. *Microsoft*, 253 F.3d at 71; *Dentsply*, 399 F.3d at 191 (same); *accord McWane*, 783 F.3d at 838 (evidence that program deprived rivals "of distribution sufficient to achieve efficient scale, thereby raising costs and slowing or preventing effective entry" showed harm to competition) (citation omitted). Specifically, Google's conduct forecloses and inhibits rivals from competing for customers (publishers and advertisers) and impressions. This deprives rivals of "essential raw material for building, improving, and sustaining" their products and keeps rivals "at a persistent competitive disadvantage." *Google*, 2024 WL 3647498, at *109.

90. Google's efforts to deny rivals scale creates a "negative feedback loop" that "further [harms] competition" and amplifies other anticompetitive effects. *Viamedia*, 951 F.3d at 476. When a monopolist's exclusionary conduct denies rivals of scale and "prevent[s] one or more new or potential competitors from gaining a foothold in the market," its conduct is "not only injurious to the potential competitor but *also to competition in general*." *LePage's*, 324 F.3d at 159 (emphasis added). Here, Google's conduct denies rivals scale on two levels: its conduct that forces publishers to choose Google's publisher ad server, DFP, deprives rivals in that market

of customers, PFOF § III.B.1.b, while Google's conduct that forces transactions through its ad exchange (AdX) instead of rival platforms, PFOF §§ III.B.2.a, c, d; III.B.3.b, d, deprives rivals in that market of impressions, transactions, and data, PFOF § III.C.3. This leaves Google's rivals less able to compete for publisher and advertiser customers (reducing choice), less able to bring new and different products and features to market (reducing innovation), and less able to identify better matches between publishers and advertisers (reducing quality). PFOF ¶¶ 201, 211.

91. When viewed as a whole, the anticompetitive effects of Google's exclusionary campaign become clear: With DoubleClick, Google acquired control over publishers, power on both sides of the ad tech stack, and the means to exclude competition and manipulate auctions in Google's favor. Next, Google imposed restrictions and forged a substantially exclusive relationship between its advertiser ad network (Google Ads), ad exchange (AdX), and publisher ad server (DFP). As a result, Google Ads advertisers *could not compete* for many publisher impressions sold via rival ad exchanges, and publishers using rival ad exchanges or publisher ad servers could not receive or compare competing bids from many advertisers. *See, e.g.,* PFOF ¶ 88, 95. Google then used its power to grant itself competitive advantages in auctions, through First Look, Last Look, and Sell-Side Dynamic Revenue Share, and it eliminated a competitor—AdMeld—and an emerging technology that threatened its power. Finally, when the industry resorted to a measure of self-help through header bidding, Google again used "its market position as a lever," *Berkey Photo*, 603 F.2d at 75, to reduce bids into rival ad exchanges (through Project Poirot) and restrict the prices that publishers offered rival ad exchanges (through Unified Pricing Rules).

92. Google has thus executed a "a scheme of willful acquisition or maintenance of monopoly power" and used its monopoly power to foreclose competition, gain a competitive

advantage, and destroy competitors. *Eastman Kodak*, 504 U.S. at 483; *accord Duke Energy*, 2024 WL 3642432, at *11–12; *see also Grinnell*, 384 U.S. at 576 (affirming a judgment against a monopolist whose exclusionary campaign included anticompetitive restrictive agreements, pricing practices, and acquisitions).

3. Google Lacks Valid Procompetitive And Nonpretextual Justifications For Its Conduct

93. Under *Microsoft*, once a plaintiff demonstrates the challenged conduct has an anticompetitive effect, then the burden shifts to the defendant to establish a "procompetitive justification." *Microsoft*, 253 F.3d at 59. To carry its burden, Google must "specif[y] and substantiat[e]" "a nonpretextual claim that its conduct is indeed a form of competition on the merits," *id.* at 59, 66, given that "any evidence of procompetitive justifications [are] likely to be under the defendant's control," *Viamedia,* 951 F.3d at 464.

94. Here, Google's attempt to justify its conduct fails for four reasons: (1) its justifications are not procompetitive; (2) its exclusionary conduct is not necessary to realize the alleged procompetitive benefits; (3) its justifications are pretextual; and (4) its justifications improperly rely on purported benefits outside the relevant markets in which Google's anticompetitive conduct is felt. *See* PFOF § III.D.

a) Google's Justifications Are Not Procompetitive

95. Just as a court's assessment of anticompetitive effect must focus on a particular restraint's effect on competition, a court's assessment of procompetitive justifications is "confined to a consideration of impact on competitive conditions." *Nat'l Soc'y of Prof'l Eng'rs v. United States*, 435 U.S. 679, 690 (1978). To that end, a defendant may not justify its conduct by suggesting that an "an unrestrained market . . . will lead [consumers] to make unwise and even dangerous choices." *Ind. Fed'n of Dentists*, 476 U.S. at 463. The Sherman Act supports

neither "a defense based on the assumption that competition itself is unreasonable," nor does it permit an inquiry as to "whether competition is good or bad." *Nat'l Soc'y of Prof'l Eng'rs*, 435 U.S. at 695–96. It is anticompetitive for a firm "to pre-empt the working of the market by deciding for itself that its customers do not need that which they demand." *Ind. Fed'n of Dentists*, 476 U.S. at 462.

96. To the extent Google justifies its conduct on the basis that restrictions in the publisher ad server, ad exchange, and ad networks markets are beneficial because free competition might evolve in ways Google disapproves of, this is not a cognizable procompetitive benefit at all. And to the extent Google justifies its conduct on the basis that its restrictions benefit the open internet, and by extension, Google's search engine, that too is not a cognizable procompetitive benefit in the relevant markets.

b) The Purported Benefits Do Not Flow From The Specific Restraints At Issue

97. A monopolist's purported procompetitive benefits must justify the "specific means here in question." *Microsoft*, 253 F.3d at 71; *see also id.* at 66–67 (focusing on Microsoft's justifications for specific "challenged actions" and "aspect[s] of its product design" rather than "general claims regarding the benefits of integrating" its products); *Google*, 2024 WL 3647498, at *120 ("Assuming Google has established the value of a default placement to competition and consumers, it has not shown that *exclusive* defaults across nearly all key search access points have such utility."). Thus, where Google contends that its conduct has certain benefits, it must show that the challenged conduct "is a substantial cause of" a particular benefit. *Google*, 2024 WL 3647498, at *122 (citing *United States v. Apple, Inc.*, 791 F.3d 290, 334 (2d Cir. 2015) and *McWane*, 783 F.3d at 841).

98. Here, even to the extent that Google argues its offerings benefit consumers in some manner, it still would not be able to show that these benefits justify the specific challenged restraints. For example, Google's meager exceptions to its overarching restraints in the publisher ad server, ad exchange, and advertiser ad networks markets, *see* PFOF ¶¶ 103–08 (discussing AdX Direct) and ¶¶ 90–93 (discussing AwBid), undercut any argument that these restraints were necessary to achieve any benefits, *see* PFOF §§ III.D.1, III.D.2. Likewise, even if real-time bidding features like Enhanced Dynamic Allocation may have benefited certain publishers, Google will not establish that its associated imposition of an anticompetitive "First Look" and "Last Look" at DFP publishers' inventory was necessary to achieve this procompetitive benefit. *See* PFOF § III.D.3.

c) Google's Justifications Are Pretextual

99. Google must also show that its procompetitive justifications are not pretextual, *Microsoft*, 253 F.3d at 59, and are instead "genuine," *Image Tech. Serv., Inc. v. Eastman Kodak Co.*, 903 F.2d 612, 618, 620 (9th Cir. 1990), *aff'd sub nom*. *Kodak*, 504 U.S. at 451. To assess whether proffered justifications are pretextual, courts frequently look to a defendant's contemporaneous business documents. *See, e.g.*, *Actavis*, 787 F.3d at 658 (concluding that "[a]ll of Defendants' procompetitive justifications for withdrawing IR are pretextual" "[b]ased largely on Defendants' own documents"); *McWane*, 783 F.3d at 841–42 (Defendant's "damning internal documents seem to be powerful evidence that its procompetitive justifications are 'merely pretextual'").

100. In Section 2 cases, courts have held that the existence of less-restrictive alternatives to a monopolist's conduct can serve as additional "circumstantial evidence" of a proffered procompetitive justification being pretextual. *See, e.g.*, *Impax Lab'ys, Inc. v. FTC*, 994 F.3d 484, 497–98 (5th Cir. 2021) (explaining that "existence of less restrictive alternatives may

allow courts . . . to 'smoke out' anticompetitive effects or pretextual justifications for the restraint"); *accord McWane*, 783 F.3d at 841–42 (monopolist's procompetitive justification was "merely pretextual" where monopolist "could instead compete" in a different, less restrictive way).

101. Here, Google's purported justifications ring hollow. The "market realities" and the manner in which other firms (without monopoly power) operate in the relevant markets suggest that Google's restraints are not a "normal competitive tool," *Google*, 2024 WL 3647498, at *121 (citation omitted), and that Google's purported justifications are pretextual, PFOF ¶¶ 217–19. And a wealth of contemporaneous documents demonstrate Google's anticompetitive intent and that its justifications are pretextual. *See, e.g.,* PFOF ¶¶ 87, 128, 161, 186, 224–25.

d) Google's Justifications Rely On Out-Of-Market Effects

102. Section 2 of the Sherman Act prohibits monopolizing "*any part* of the trade or commerce among the several States, or with foreign nations." 15 U.S.C. § 2 (emphasis added). To the extent Google argues that anticompetitive effects in one market can be justified by procompetitive justifications in another market, that argument is inconsistent with the plain text of Section 2. Instead, once the Court has identified a relevant market, "domination or control of it makes out a monopoly of a 'part' of trade or commerce within the meaning of § 2 of the Sherman Act." *Grinnell*, 384 U.S. at 572.

103. Likewise, the Supreme Court has cautioned that courts are ill-equipped "to weigh, in any meaningful sense, destruction of competition in one sector of the economy against promotion of competition in another sector." *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 609–10 (1972). Instead, any decision "to sacrifice competition in one portion of the economy for greater competition in another . . . is a decision that must be made by Congress and not by private forces or by the courts." *Id*. at 611; *see also Smith v. Pro Football,* 593 F.2d 1173, 1186

(D.C. Cir. 1978) ("procompetitive" effects in one market could not negate "anticompetitive" effects of restraints in another market). This is because courts cannot easily "net [] out" anticompetitive effects in one market and procompetitive effects in another market or "determin[e] whether competition in the collateral market is more important than competition in the defined market." *In re NCAA Grant-in-Aid Cap Antitrust Litig.*, 958 F.3d 1239, 1269–70 (9th Cir. 2020) (Smith, J., concurring), *aff'd sub nom. NCAA v. Alston*, 594 U.S. 69 (2021).

104. Here, to the extent Google attempts to justify restraints on one group of customers through benefits to another (*see, e.g.,* PFOF ¶¶ 224, 228 (UPR); 229 (Poirot)), this demonstrates an overarching competitive problem with Google's conduct: Google, simultaneously acting on behalf of advertisers and publishers while also adjudicating auctions, decides whether "to sacrifice competition in one portion of the economy for greater competition in another," *Topco*, 405 U.S. at 611.

4. The Anticompetitive Harm From Google's Conduct Outweighs Any Procompetitive Benefits

105. If a defendant carries its burden of showing a sufficient "procompetitive justification," the burden shifts to the plaintiff either "to rebut that claim" or "demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit." *Microsoft*, 253 F.3d at 59.

106. Given the infirmities in each of Google's proffered justifications, the Court need not reach the balancing stage. *See Actavis*, 787 F.3d at 658 ("Because we have determined that Defendants' procompetitive justifications are pretextual, we need not weigh them against the anticompetitive harms."). Nevertheless, if the Court finds that Google's conduct has both anticompetitive and procompetitive effects in each of the relevant markets, the Court must weigh the harms and benefits in each of the relevant markets. As explained above, the Court cannot

weigh benefits in one relevant market against anticompetitive effects in another. The evidence at trial will establish that the anticompetitive effects of Google's conduct in each of the relevant markets outweigh any cognizable, in-market benefits proffered by Google—to the extent they are found to exist at all—in each of those relevant markets.

III. In The Alternative, The Evidence Will Demonstrate Google Has Attempted To Monopolize The Ad Exchange Market

107. Google disputes that a necessary element for a monopolization claim (monopoly power) is satisfied in one of the relevant markets at issue (the ad exchange market) based on the market share of Google's product (AdX) within that market. The evidence will demonstrate that, regardless of Google's argument, Google has monopoly power within the ad exchange market. *See supra* PCOL Section II.B.

108. Assuming *arguendo* that the market share of AdX in the ad exchange market precludes a monopolization offense, the evidence establishes that Google has violated Section 2 by attempting to monopolize the ad exchange market. *See* 15 U.S.C. § 2 (prohibiting the "attempt to monopolize . . . any part of the trade or commerce among the several States").

109. The offense of attempted monopolization has three elements: "(1) that the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power." *Spectrum Sports v. McQuillan*, 506 U.S. 447, 456 (1993); *see also E. I. du Pont de Nemours & Co. v. Kolon Indus.*, 637 F.3d 435, 441 (2011) (same).

110. The first element—predatory or anticompetitive conduct—is functionally the same for an attempted monopolization violation as the second element (satisfied by exclusionary conduct) of a monopolization violation. *See Kolon*, 637 F.3d at 453 (holding that satisfying conduct element for a monopolization violation necessarily satisfied conduct element for an

attempted monopolization violation). That element, including Google's exclusionary conduct with regard to the ad exchange market, is satisfied as discussed above in PCOL Section II.C.

111. The second element is specific intent, which "may be inferred from the defendant's anti-competitive practices," *M & M Med. Supplies & Serv., Inc. v. Pleasant Valley Hosp., Inc*., 981 F.2d 160, 166 (4th Cir. 1992) (en banc); *Kolon*, 637 F.3d at 453 (same), or proven "through direct evidence," *Abcor Corp. v. AM Int'l, Inc*., 916 F.2d 924, 927 (4th Cir. 1990). Google's exclusionary conduct in the ad exchange market, from which the specific intent to monopolize may be inferred, and direct evidence of specific intent are discussed above in PCOL Section II.C.

112. The third element is a dangerous probability of achieving monopoly power. As with a monopolization claim, market share is "relevant" to the inquiry of economic power in the market, but "the market share necessary to show an attempt to monopolize is difficult to quantify" and that level is "reduce[d]" where there is "[c]ompelling evidence of an intent to monopolize or of anticompetitive conduct." *M & M Med.*, 981 F.2d at 168. As a "general" guideline, a market share above 50% is sufficient to show a dangerous probability "when the other elements for attempted monopolization are also satisfied." *Id*. A market share between 30% and 50% suffices "when conduct is very likely to achieve monopoly or when conduct is invidious." *Id*. And evidence sufficient to demonstrate actual monopoly power suffices to demonstrate the dangerous probability element. *Kolon*, 637 F.3d at 453. In sum, "[t]he determination whether a dangerous probability of success exists is a particularly fact-intensive inquiry." *United States v. Microsoft Corp.*, 253 F.3d 34, 80 (D.C. Cir. 2001). Google's market share in the ad exchange market is sufficient to demonstrate a dangerous probability of success. *See supra* PCOL Section II.B.2.c.

IV. Google's Restrictions On AdX and DFP Constitute Anticompetitive Tying Under Sections 1 And 2

113. Although the anticompetitive nature of Google's conduct is best understood when considered as a whole, Google's restrictions on AdX—which prevent AdX from submitting real-time bids to publisher ad servers other than DFP—also constitute standalone tying claims under Sections 1 and 2 of the Sherman Act. *See* PFOF § III.B.1.b.2.

114. Tying occurs when a seller with "appreciable economic power" in one market sells a product in that market (the tying market) on the condition that a buyer either purchase a different (tied) product in a different market, or agrees not to purchase the tied product from another seller. *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 461–62 (1992); *It's My Party, Inc. v. Live Nation, Inc.*, 811 F.3d 676, 681 (4th Cir. 2016). The same conduct can support both a Section 1 tying claim and a Section 2 monopoly maintenance claim. *See United States v. Microsoft Corp.*, 253 F.3d 34, 84 (D.C. Cir. 2001) (considering same tying allegations under both § 1 and § 2); *Md. & Va. Milk Producers Ass'n v. United States,* 362 U.S. 458, 463 (1960) ("[Section 1 & 2 of the Sherman Act] closely overlap, and the same kind of predatory practices may show violations of all.").

A. Google's Restrictions Help Maintain And Expand Its Monopoly Power In The Publisher Ad Server Market In Violation Of Section 2

115. Google's technological and policy restrictions linking AdX (the tying product) and DFP (the tied product) constitute tying in violation of Section 2 of the Sherman Act because they helped Google "maintain and expand" monopoly power in the market for publisher ad servers. *In re Google Digit. Adver. Antitrust Litig.*, 627 F. Supp. 3d 346, 402 (S.D.N.Y. 2022); *see also* PFOF ¶¶ 95–102.

116. While courts analyze tying claims similarly under Section 1 and Section 2, *id.,* "when the defendant is a dominant firm and meets a much stricter power requirement, . . . the

special screening function of the tying factors is largely unnecessary, and the more general standards of § 2 of the Sherman Act become relevant." *Viamedia, Inc. v. Comcast Corp.*, 951 F.3d 429, 433 (7th Cir. 2020) (cleaned up). Tying thus violates Section 2 when a tie "contributes significantly to the maintenance or creation of monopoly power . . . even though it is unilaterally imposed." *Id.* at 469.

117. Here too, a Google's conduct must be judged "as a whole." *See id.; LePage's Inc. v. 3M*, 324 F.3d 141, 162 (3d Cir. 2003) ("The effect of 3M's conduct in strengthening its monopoly position by destroying competition . . . is most apparent when 3M's various activities are considered as a whole" because "3M's bundling of its products via its rebate programs reinforced the exclusionary effect of [other] programs.").

B. Google's Restrictions On AdX Compel Publishers To Use DFP And Constitute Tying In Violation Of Section 1

118. To analyze a potential anticompetitive restraint under Section 1 of the Sherman Act, courts apply a burden-shifting framework. *NCAA v. Alston*, 594 U.S. 69, 96–97 (2021). First, a plaintiff must show that the restraint has a substantial anticompetitive effect. *Id.* at 96. If a plaintiff does so, the burden shifts to the defendant to show a procompetitive justification for the restraint. *Id.* If a defendant makes such as showing, the burden shifts back to the plaintiff to demonstrate that the procompetitive benefits could reasonably be realized through a less restrictive alternative. *Id*. at 97. And where a restraint has both procompetitive and anticompetitive effects, and there is no less restrictive alternative, the court must "balance the restriction's anticompetitive harms against its procompetitive benefits." *Epic Games*, *Inc. v. Apple, Inc.*, 67 F.4th 946, 994 (9th Cir. 2023).

1. Google Tying AdX To DFP Has A Substantial Anticompetitive Effect

119. To establish a Section 1 tying claim under step one of the burden-shifting framework here, a plaintiff must show: "(1) the defendant linked two separate and distinct product markets; (2) the defendant conditioned the sale of one product on the purchasing of a different, 'tied' product; (3) the seller possessed sufficient market power to 'appreciably restrain market competition' through the tying arrangement; and (4) the tying arrangement affected a 'not insubstantial' amount of commerce." *It's My Party, Inc. v. Live Nation, Inc.*, 88 F. Supp. 3d 475, 490 (D. Md. 2015) (citing *Kodak*, 504 U.S. at 461-62); *see also Microsoft*, 253 F.3d at 85.

120. Under Section 1, "[t]ying suppresses competition in two ways: First, the buyer is prevented from seeking alternative sources of supply for the tied product; second, competing suppliers of the tied product are foreclosed from that part of the market which is subject to the tying arrangement." *It's My Party, Inc. v. Live Nation, Inc.*, 811 F.3d 676, 684 (4th Cir. 2016) (internal quotation marks omitted). And though courts describe the elements of Section 1 tying claims in different ways, "the essential characteristic of an invalid tying arrangement lies in the seller's exploitation of its control over the tying product to force the buyer into the purchase of a tied product that the buyer either did not want at all, or might have preferred to purchase elsewhere on different terms." *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 12 (1984); *see also N. Pac. Ry. Co. v. United States*, 356 U.S. 1, 11 (1958) ("[T]he vice of tying arrangements lies in the use of economic power in one market to restrict competition on the merits in another.").

121. Importantly, "[t]here need not be an explicit condition that the buyer of the tying product buy the tied product" when a defendant's policy makes purchasing the tying and tied products together "the only viable economic option." *Nobel Scientific Indus., Inc. v. Beckman Instruments, Inc.*, 670 F. Supp. 1313, 1324 (D. Md. 1986); *see also Advanced Computer Servs. of*

Mich., Inc. v. MAI Sys. Corp., 845 F. Supp. 356, 368 (E.D. Va. 1994) ("[I]n the absence of an explicit agreement requiring the purchase as a condition of the sale, courts will accept proof suggesting any kind of coercion by the seller or unwillingness to take the second product by the buyer.") (citation and internal quotation marks omitted); *accord BookLocker.com, Inc. v. Amazon.com, Inc.*, 650 F. Supp. 2d 89, 101 n.9 (D. Me. 2009).

122. Here, Google's conduct satisfies each element of a Section 1 tying claim.

123. First, Google uses its economic power in the ad exchange market (via AdX) to compel publishers to use its publisher ad server (DFP). *See* PFOF §§ III.F.3; III.B.1.b.2.

124. Second, Google conditions publishers' effective access to its ad exchange (AdX) on publishers using DFP. In other words, publishers must use DFP to effectively access demand from Google's advertiser ad network, Google Ads, which is channeled through AdX. *See, e.g.,* PFOF ¶ 82, 95. Google thus presents publishers with a Hobson's choice: use DFP to ensure effective access to AdX and Google Ads demand, or use another publisher ad server and give up full access to these critical sources of demand. Google's restrictions thus make DFP the only viable economic option to access AdX and "coerce[] the abdication of buyers' independent judgment as to the 'tied' product's merits [i.e., DFP's] and insulate[] it from the competitive stresses of the open market." *Jefferson Par. Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 13 (1984).

125. Third, Google has at least market power—which the Supreme Court has also described as "appreciable economic power" sufficient to "to force a purchaser to do something that he would not do in a competitive market"—in each relevant market. *Kodak,* 504 U.S. at 461–62, 464 (1992); *see also Fortner Enters., Inc. v. U.S. Steel Corp.*, 394 U.S. 495, 499 (1969) (describing "sufficient economic power" in the tying product as the power to "appreciably restrain free competition in the market for the tied product"). *See supra* PCOL Section II.B.

126. Fourth, Google's conduct affects a substantial amount of commerce. *See, e.g.,* PFOF ¶ 27.

2. Google Tying AdX To DFP Does Not Have Any Cognizable Procompetitive Rationale

127. For the same reasons discussed in PFOF §§ III.D.1–2, and above in PCOL Section II.C.3, Google's justifications for its tying conduct do not suffice: they are not procompetitive; they are pretextual; and they do not result in cognizable in-market benefits.

3. Any Benefits Arising From Google's Conduct Are Attainable Through Less-Restrictive Alternatives

128. Even if the Court credits Defendants' evidence of procompetitive benefits, Google's conduct is nevertheless unreasonable under the Section 1 rule-of-reason standard if a less-restrictive alternative exists. *See Ohio v. Am. Express Co.*, 585 U.S. 529, 542 (2018) ("If the defendant makes this showing [of procompetitive benefits], then the burden shifts back to the plaintiff to demonstrate that the procompetitive efficiencies could be reasonably achieved through less anticompetitive means."). "[I]t is unreasonable to justify a restraint based on a purported benefit to competition if that same benefit could be achieved with less damage to competition." *Impax Labs, Inc. v. FTC*, 994 F.3d 484, 497 (5th Cir. 2021).

129. A less-restrictive alternative satisfies Plaintiffs' burden in a Section 1 claim if it is "substantially less restrictive" while achieving "the same procompetitive benefits." *Alston*, 594 U.S. at 100. Less-restrictive alternatives need only achieve proven benefits—meaning that proffered benefits not accepted by the Court play no role. *See id.* (plaintiffs need only show less restrictive means existed to achieve benefits "proven at the second step"); *Google*, 2024 WL 3647498, at *125 n.15 ("[T]he principle only applies to 'proven competitive benefits.'") (citation omitted); *see also In re NCAA Athletic Grant-in-Aid Cap Antitrust Litig.*, 375 F. Supp. 3d 1058,

1103 n.43 (N.D. Cal. 2019) ("Because Defendants have not shown that the challenged rules can be justified on the ground that they promote integration, the Court does not consider whether any proffered less restrictive alternatives would promote integration."). Accordingly, to the extent Google failed to meet its burden to show cognizable, in-market benefits arising from its conduct, those benefits can be disregarded in determining whether a less-restrictive alternative exists.

130. Because Google's proffered justifications for tying AdX to DFP are attainable through less-restrictive alternatives, its conduct is unreasonable under the rule of reason for purposes of Plaintiffs' Section 1 tying claim. *See, e.g.,* PFOF § III.D.2.

4. Any Procompetitive Benefits Of Tying AdX To DFP Are Outweighed By The Anticompetitive Effects

131. Even if the Court were to credit Google's proffered justifications for tying AdX to DFP, any such benefits are outweighed by the substantial anticompetitive effects of Google's tying conduct for the same reasons discussed in PCOL Section II.C.4, *supra*.

V. Google's Efforts To Force Assessment Of Its Conduct Into Inapplicable Categories Should Be Rejected

132. Google argues that the inquiry into exclusionary conduct is primarily an exercise in taxonomy. It asserts that labels such as "product design" and "refusal to deal" should be applied and that, once done, its extensive exclusionary conduct becomes "immune from antitrust scrutiny." Dkt. 1130, Memorandum in Support of Motion for Summary Judgment (MSJ) at 19, 21.

133. This is not the law. In addition to the failure of the specific arguments that Google's conduct must be labeled in a particular manner, *see infra* PCOL Sections V.A and V.B, this proposed form of analysis goes awry overarchingly. The relevant question here is not how challenged conduct should be categorized, but whether that conduct is "exclusionary"— that is,

whether it "harm[s] the competitive process." *United States v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001). Categorizing conduct is not an end unto itself, but rather "the purpose of identifying these categories of conduct is to help determine the presence or absence of harmful effects." *Viamedia, Inc. v. Comcast Corp*., 951 F.3d 429, 453 (7th Cir. 2020) (quotation marks omitted). Courts should thus focus on the exclusionary nature of the challenged conduct and "not on court-made subcategories." *Duke Energy*, 2024 WL 3642432, at *11.

134. "[A]nticompetitive conduct comes in many different forms that cannot always be categorized," and "when a court is faced with allegations of a complex or atypical exclusionary campaign, the individual components of which do not fit neatly within pre-established categories, its application of such specific conduct tests would prove too rigid." *Id*. Courts should thus assess the "the scheme or conduct . . . as alleged [and] not in manufactured subcategories." *Id.* at 12.

135. Here, Google has conducted an "exclusionary campaign" that was "complex" and "atypical." *Id.* Google's exclusionary campaign lasted more than a decade, continues today, and has included acquisitions of competitors and potential competitors, restrictions on its customers that inhibit their ability to use rivals' offerings, and manipulation of complex auction processes to bolster its position at the expense of rivals. *See supra* PCOL Section II.C. As described above, the acts comprising this exclusionary course of conduct work together synergistically, and it would be inappropriate to silo these varied acts into an ill-fitting product-design or refusal-to-deal-with-rivals category. *See id*.

A. A Monopolist's Conduct Is Not Immune From Antitrust Scrutiny Because The Monopolist Characterizes The Conduct As A Product Design Choice

136. Google argues that some of the challenged conduct should be treated as representing a product design change and is thus "immune from antitrust scrutiny." MSJ at 21.

This argument fails. *First*, exclusionary conduct is not a product design change simply because the monopolist asserts it is so. *Second*, even if some aspects of Google's conduct are characterized as product design, that conduct is not immunized from antitrust scrutiny: instead, courts evaluate the conduct under a rule-of-reason-based standard.

1. The Exclusionary Conduct At Issue Is Not A Product Design

137. As a general matter, a defendant is not permitted to "relabel a restraint as a product feature and declare it immune from" antitrust scrutiny. *See NCAA v. Alston*, 594 U.S. 69, 101 (2021) (discussing Section 1 of the Sherman Act) (internal quotation omitted).

138. Specifically relevant, the Southern District of New York rejected Google's argument that its challenged conduct in the same relevant markets at issue here "should be understood as a product design," and instead held that the allegations characterized the challenged conduct as an "anticompetitive strategy" that "had the effect of controlling prices and excluding competition." *In re Google Digit. Adver. Antitrust Litig.*, 627 F. Supp. 3d 346, 385 (S.D.N.Y. 2022) (quotation marks omitted).

139. A challenge to exclusionary contract terms under which a product is offered are not treated as a challenge to a product design. *See Microsoft*, 253 F.3d at 60, 64–65 (separately "evaluating the restrictions in Microsoft's agreements licensing Windows to OEMs" and evaluating the product design elements that embedded "technological[]" restraints).

140. Even where the conduct relates to a product offering, a plaintiff can demonstrate exclusionary conduct based on "associated conduct," such as "exclusive dealing [and] tying agreements," "the overall effect of which is to coerce customers. . . rather than to compete on the merits." *In re Keurig Green Mt. Single-Serve Coffee Antitrust Litig.*, 383 F. Supp. 3d 187, 230 (S.D.N.Y. 2018). This is true even where a new product design involved in the challenged

conduct represents a purported improvement, as any such improvement is "not significant" if the monopolist's "other conduct" has the "overall effect . . . [of] coerc[ing] consumers rather than persuad[ing] them on the merits" and "imped[ing] competition." *New York ex rel. Schneiderman v. Actavis PLC*, 787 F.3d 638, 653–54 & n.25, 26 (2d Cir. 2015) (citations omitted); *see also Allied Orthopedic Appliances Inc. v. Tyco Health Care Group LP*, 592 F.3d 991, 999–1002 (9th Cir. 2010) (holding that even where a product design is an improvement, the defendant's overall conduct can still be anticompetitive where "other conduct constitutes an anticompetitive abuse or leverage of monopoly power, or a predatory or exclusionary means of attempting to monopolize the relevant market") (quotation marks omitted).

141. Google's many years of exclusionary conduct—including acquisitions, customer restrictions, and auction manipulations—to monopolize each relevant market are not properly categorized as a product design choice. *See supra* PCOL Section II.C. These varied acts certainly do not "fit neatly" within a product design category, and thus any suggestion that the court must apply a "specific conduct test[]" should be rejected. *See Duke Energy* 2024 WL 3642432, at *11.

2. Courts Have Found Product Designs, As Well As Associated Conduct, To Be Exclusionary

142. Even if some aspect of the challenged conduct were assessed as a challenge to a product design, that would not provide immunity as "[j]udicial deference to product innovation [] does not mean that a monopolist's product design decisions are per se lawful." *Microsoft*, 253 F.3d at 65 (holding product designs constituted exclusionary conduct). While courts may offer some "deference" to a monopolist's product design in certain contexts, careful scrutiny is especially appropriate "in the context of networked markets, where the redesign creates a strategic incompatibility such that providers of complementary products are 'locked out' or foreclosed from interoperating with the dominant firm's platform." Jonathan Jacobson, et al.,

Predatory Innovation: An Analysis of Allied Orthopedic v. Tyco *in the Context of Section 2 Jurisprudence*, 23 Loy. Consumer L. Rev. 1, 8 (2010); *see also Actavis*, 787 F.3d at 658 n.34 (citing Jacobson, 23 Loy. Consumer L. Rev. at 8, for this proposition).

143. Courts apply a rule-of-reason-based standard to determine if a product design is exclusionary. *Microsoft*, 253 F.3d at 65–67; *see also Actavis*, 787 F.3d at 652-59. This analysis is fundamentally the same as the analysis applied to other forms of potentially exclusionary conduct. *Microsoft*, 253 F.3d at 65 (noting that the product design analysis proceeded in the same way as potential exclusionary conduct imposed through contractual restraints); *see also Actavis*, 787 F.3d at 652 (applying framework based on rule-of-reason standard "generally applied to antitrust claims").

144. When assessing whether a product design is exclusionary, courts evaluate the "specific," "suspect" aspects of the design that are challenged as anticompetitive, not the product as a whole. *Microsoft*, 253 F.3d at 64-65. For example, in *Microsoft*, the focus was not on the overarching product at issue (Windows 98), but rather three potentially anticompetitive "technical" features, specifically: "[1] excluding IE [Microsoft's Internet Explorer browser] from the 'Add/Remove Programs' utility; [2] designing Windows so as in certain circumstances to override the user's choice of a default browser other than IE; and [3] commingling code related to browsing and other code in the same files, so that any attempt to delete the files containing IE would, at the same time, cripple the operating system." *Id.*

145. At step one, a design feature is prima facie anticompetitive when "through something other than competition on the merits,"—in other words, "not by making [defendant's] own [product] more attractive to consumers"—it "has the effect of significantly reducing usage of rivals' products and hence protecting [defendant's] own. . . monopoly," by "discouraging,"

"deterring," and "preventing" users from using alternatives. *Microsoft*, 253 F.3d at 65–66. A prima facie case based on associated conduct can be established where the defendant, in conjunction with offering a new product design, did not "persuade" consumers about the merits of the new version, and rather "forced" them to use it, for example, through withdrawing the only alternative. *Actavis*, 787 F.3d at 654–55. Anticompetitive conduct can thus be demonstrated with reference to the product design change itself, *see Microsoft,* 253 F.3d at 65, or by conduct associated with the rollout of a new design, *see Actavis*, 787 F.3d at 654–55.

146. At step two, the defendant has the burden of offering "specifi[c]" and "substantiate[d]" procompetitive benefits, and "general claims regarding the benefits" of a product design that eliminates customer choice do not suffice. *Microsoft*, 253 F.3d at 66-67. The relevant question is not whether the defendant can justify the overarching product design, but rather whether it can justify the specific challenged features. *Id.* (assessing the procompetitive justifications of each of the three challenged features). Courts also reject "pretextual" procompetitive justifications. *Actavis*, 757 F.3d at 658; *see also Allied Orthopedic*, 592 F.3d 1002 (concluding that the purported product improvements were not pretextual as part of the procompetitive justification analysis).

147. This inquiry may end after the second step with the conduct deemed exclusionary if the defendant is unable to muster a non-pretextual, procompetitive justification. *Microsoft*, 253 F.3d at 67; *see also Actavis*, 757 F.3d at 658. If the defendant does offer a valid, procompetitive justification, then the plaintiff may still prevail by "show[ing] that whatever procompetitive

benefits exist are outweighed by the anticompetitive harms." *Actavis*, 757 F.3d at 658; *see also Microsoft* 253 F.3d at 59, 67.[13]

148. Here, the facts established at trial will show that the challenged course of exclusionary conduct, whether or not some aspect is characterized as a product design, is exclusionary in each relevant market. *See supra* PCOL Section II.C.

B. Google Is Restraining Customers And Harming The Competitive Process, Not Simply Refusing To Deal With Its Rivals

149. Google argues that aspects of the challenged conduct should be categorized as a unilateral refusal to deal with rivals and is "immune from antitrust scrutiny" as a result. MSJ at 21. This argument fails twice over. *First*, Google's complex course of exclusionary conduct does not constitute a refusal to deal with rivals. *Second*, even conduct that is properly assessed as a refusal to deal with rivals is not immunized.

1. Google's Complex And Varied Exclusionary Campaign Does Not Fall Within The Narrow Refusal-To-Deal-With-Rivals Category

150. The unilateral refusal-to-deal-with-rivals category is a narrow one that has no application here, as this case is not about forcing Google to help its competitors, but rather is about Google subverting the competitive process and forcing customers to accept inferior offerings. *See supra* PCOL Section II.C.

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[13] Courts in the Ninth Circuit have declined to engage in a balancing step for challenges solely based on a product design, holding that if the defendant shows a valid product improvement at step two, then it necessarily prevails. *See Allied Orthopedic*, 592 F.3d at 1000. This position does not accord with the leading case on the subject, *Microsoft*, 253 F.3d at 59, 65–67, and should not be adopted here. Nevertheless, even under that line of precedent, a product design that represents an improvement may be exclusionary when the monopolist, through "associated" conduct, "abuses or leverages its monopoly power in some other way when introducing the product." *Allied Orthopedic*, 592 F.3d at 1000. Such associated conduct includes, for example, a "discontinuation of [the monopolist's] old technology [which] may violate Section 2 if it effectively forces consumers to adopt its new technology." *Id.* at 1002.

151. The refusal-to-deal-with-rivals category is "narrow," applying to "only a discrete category of section 2 cases." *Novell, Inc. v. Microsoft Corp*., 731 F.3d 1064, 1076 (10th Cir. 2013) (Gorsuch, J.). The two situations that properly fall within this narrow category are: (i) where a monopolist outright refuses to provide a rival a requested product or service, *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-09 (2004); and (ii) where a rival challenges an ongoing deal with a monopolist on commercially disadvantageous terms (which can be seen as a refusal to deal on better terms), *see Pac. Bell Tel. Co. v. linkLine Communs., Inc.*, 555 U.S. 438, 442, 451 (2009).

152. Most fundamentally, the refusal-to-deal-*with-rivals* category has been limited to a monopolist's dealings with its "rivals." *Chase Mfg. v. Johns Manville Corp*., 84 F.4th 1157, 1173 (10th Cir. 2023); *see also Trinko*, 540 U.S. at 408, 409, 410, 411; *linkLine*, 555 U.S. at 448–49. The Tenth Circuit recently assessed whether a monopolist acted anticompetitively by threatening to cut off *customers* if they redirected some of their purchases to a lower-cost rival. *Chase Mfg.*, 84 F.4th at 1162. The district court categorized that as a refusal to deal under *Trinko*. *Id.* at 1173. The court of appeals reversed, holding that it was error to "extend[] a refusal-to-deal-with-rivals analysis" to anticompetitive restraints the monopolist places on customers, and reaffirming that "a refusal-to-deal framework applies to narrow situations often remedied by monopolists sharing their technology with rivals." *Id.*

153. The Supreme Court has rejected invitations to expand the refusal-to-deal-with-rivals category further, including rejecting its application to conditional dealings with customers. In *Kodak*, the Court rejected the defendant monopolist's argument that its policy of selling parts to customers only on the condition that they not purchase service from competitor independent service providers should be analyzed only as a refusal to deal. *See Eastman Kodak Co. v. Image*

Tech. Servs., 504 U.S. 451, 463 n.8 (1992). The Supreme Court held that "[a]ssuming, *arguendo*, that [defendant's] refusal to sell parts to any company providing service [i.e., rivals] can be characterized as a unilateral refusal to deal, its alleged sale of parts to third parties [i.e., customers] on condition that they buy service from [defendant] is not." *Id.* Along these same lines, in *Lorain Journal Co. v. United States*, a monopolist newspaper violated Section 2 by conditioning sales of advertising space to customers on those customers agreeing not to place ads with the newspaper's rival (a new radio station). 342 U.S. 143, 152–53 (1951).

154. Similarly, then-Judge Gorsuch, on behalf of a unanimous Tenth Circuit panel, stressed the "contrast" between (on the one hand) conduct that should be categorized as a refusal-to-deal-with-rivals and (on the other) conduct where a monopolist "limit[ed] the abilities of third parties to deal with rivals (exclusive dealing), [or] require[d] third parties to purchase a bundle of goods rather than just the ones they really want (tying)." *Novell*, 731 F.3d at 1072. When a monopolist makes such "assays into the marketplace" to restrict competition, its dealings with third parties do not fall into the category of a refusal to deal with rivals. *Id.*; *see also Viamedia,* 951 F.3d 429 at 453 (7th Cir. 2020) (distinguishing "a simple refusal to deal" from other forms of anticompetitive conduct, including "conditional refusals to deal").

155. Even the precedents that Google argues counsel for an expansive reading of the refusal-to-deal-with-rivals doctrine, *see* Dkt. 1131, Reply in Support of Motion for Summary Judgment (MSJ Reply) at 10, acknowledge the category is limited as described above, *see supra* PCOL ¶¶ 151–54. For instance, in *New York v. Meta Platforms, Inc.*, the court assessed *certain* challenged conduct as a refusal to deal with rivals under *Trinko*, 540 U.S. at 408, but did not suggest the category was all-encompassing. 66 F.4th 288, 305 (D.C. Cir. 2023). Rather, it analyzed other challenged conduct—including restrictions on non-competitor third parties—as

potentially anticompetitive exclusive dealing under *Lorain Journal*, 342 U.S. 143 (1951). *Meta Platforms, Inc.* 66 F.4th at 304 ("[T]he district court correctly analyzed the policy under cases discussing 'exclusive dealing.'"). Importantly, that decision affirmed the district court's reasoning in *New York v. Facebook, Inc*., which held restrictive conditions on customers, such as tying and exclusive dealing, are "categorically different from unilateral conduct that involves only the monopolist's competitors, such as its refusal to deal with them." 549 F. Supp. 3d 6, 32 (D.D.C. 2022). The other cited decisions similarly acknowledge the limits on the refusal-to-deal-with-rivals category. *See Aerotec Int'l, Inc. v. Honeywell Int'l, Inc*., 836 F.3d 1171, 1179, 1184 (9th Cir. 2016) (applying *Trinko* because the claims were based on the monopolist's "dealing with [the] competitor" that brought the claim and there were no conditions placed on non-competitor third parties); *Novell*, 731 F.3d at 1072-74 (discussing "contrast" between other categories of anticompetitive conduct and refusal-to-deal claims, *see supra* PCOL ¶ 154); *FTC v. Qualcomm Inc*., 969 F.3d 974, 993, 1002–03 (9th Cir. 2020) (assessing whether the defendant-monopolist had a duty to "license its [products] to its direct competitors" as a refusal to deal with a rival while assessing other challenged conduct under alternative frameworks). Circuit precedent is consistent. *See It's My Party, Inc. v. Live Nation, Inc*., 811 F.3d 676, 684 (4th Cir. 2016) (assessing conditional dealings between monopolist and customers as a potential tying claim).

156. The Fourth Circuit has made clear that it represents error to apply "specific tests for various kinds of [potentially exclusionary] conduct, such as refusals to deal" to "a complex or atypical exclusionary campaign, the individual components of which do not fit neatly within pre-established categories." *Duke Energy*, 2024 WL 3642432, at *11. Even where particular conduct "somewhat resembles" a refusal to deal with a rival, *id*. at 17, that "conduct in isolation" does not

need satisfy any particular test to be part of an exclusionary course of conduct, *id*. at 20; *see also id*. ("[W]e need not determine, as a matter of law, whether, if those facts are believed, such conduct in isolation amounted to a § 2 violation under a refusal-to-deal theory of liability. Rather, we recognize [plaintiff's] claim that this conduct was but a part of a larger scheme.").

157. The exclusionary conduct at issue here is extensive and varied. *See supra* PCOL Section II.C. While Google insists that the challenged conduct should be categorized as a refusal to deal with its rivals in the ad tech stack, the lengthy course of acquisitions, restrictions on customers, and manipulation of auction procedures do not "fit neatly within [that] pre-established categor[y]." *Duke*, 2024 WL 3642432, at *11. The components of this course of exclusionary conduct synergistically restricted competition in the relevant markets, *see supra* PCOL Section II.C, and so it would be inappropriate to isolate aspects of Google's conduct to apply "specific conduct tests [that] would prove too rigid," *Duke Energy*, 2024 WL 3642432, at *11. And to the extent some aspect of the challenged conduct plausibly "resembles" a refusal to deal, *id.* at 17, it is only via restrictions on Google's customers—the advertisers and publishers who use Google's products to try to buy and sell advertising inventory—with whom it is already dealing. Such restrictions on customers have been excluded from the "narrow" refusal-to-deal-with-rivals category. *See supra* PCOL ¶¶ 151–54.

2. Conduct Properly Assessed As A Unilateral Refusal To Deal With Rivals Is Unlawful When Predatory

158. Google has invited error by suggesting that it would be "immun[ized] from antitrust scrutiny" if its conduct is categorized as a refusal to deal with its rivals. MSJ at 19. The law is unambiguous that "[u]nder certain circumstances, a refusal to cooperate with rivals can constitute anticompetitive conduct and violate § 2." *Trinko*, 540 U.S. at 408–09 (citing *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 611 (1985)); *see also linkLine*, 555

U.S. at 448. Thus, even assuming *arguendo* that some or all of the challenged conduct should be categorized as a refusal to deal with rivals, this would not end the inquiry as to whether it is exclusionary.

159. In *Trinko*, the Supreme Court noted that "*as a general matter*, the Sherman Act 'does not restrict the long recognized right of a trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.'" 540 U.S. at 408 (emphasis added, brackets omitted) (quoting *United States v. Colgate & Co*., 250 U.S. 300, 307 (1919)). That "right" is qualified, and depends on the "absence of any purpose to create or maintain a monopoly." *Colgate*, 250 U.S. at 307; *see also Lorain Journal*, 342 U.S. at 155 (emphasizing this qualification); *Viamedia*, 951 F.3d at 454; *Covad Communs. Co. v. Bell Atl. Corp*., 398 F.3d 666, 675 (D.C. Cir. 2005). Thus, while there is generally no antitrust duty to deal with a rival, this principle "does not permit action taken for the purpose of creating or maintaining monopoly power." *FTC v. Vyera Pharms*., LLC, 479 F. Supp. 3d 31, 49 (S.D.N.Y. 2020).

160. A unilateral refusal to deal with a rival constitutes exclusionary conduct where the refusal is (1) "predatory"—i.e., one characterized by "attempting to exclude rivals on some basis other than efficiency," *Aspen Skiing*, 472 U.S. at 605 (internal quotation marks omitted); *see also Trinko*, 540 U.S. at 407–09 (concluding the complaint lacked allegations against the defendant suggesting the requisite "anticompetitive malice" or predatory "motivation of its refusal")—and (2) has an anticompetitive effect.

161. There is no rigid checklist for determining if the monopolist's refusal is predatory. A plaintiff can establish a predatory purpose with a variety of direct or circumstantial evidence, including, for example: termination of the monopolist's prior course of dealing; probative

statements by the monopolist's executives or agents; evidence that the refusal was used threateningly; evidence supporting an inference that the refusal was not motivated by efficiency; or that the monopolist was willing to sacrifice short-run benefits to achieve an anticompetitive end. *Aspen Skiing*, 472 U.S. at 608 & n.39, 610–11. While this was demonstrated by termination of a prior course of dealing in *Aspen Skiing*, that specific factor is not necessary. *See Duke Energy*, 2024 WL 3642432, at *18 (noting that *Otter Tail Power Co. v. United States*, 410 U.S. 360 (1973), held that a refusal to deal with a rival was exclusionary even though the monopolist "had no prior course of dealing" with its rival); *see also Viamedia*, 951 F.3d at 462–63 ("[T]he *Aspen Skiing* factors are helpful but not dispositive.").

162. This inquiry is highly factual and depends on "the particular structure and circumstances of the industry at issue." *Trinko*, 540 U.S. at 411. This includes considering whether there is "a regulatory structure designed to deter and remedy anticompetitive harm," or by contrast whether "there is nothing built into the regulatory scheme which performs the antitrust function." *Id.* (alternations omitted). In the latter instance, a refusal to deal with a rival is more likely to be exclusionary. *Id.*

163. To the extent that the Court deems it appropriate to consider any of the challenged conduct to be a refusal to deal with rivals, the facts established at trial will show that the conduct was exclusionary under these standards because Google had a predatory purpose, and the challenged conduct had an anticompetitive effect. *See supra* PCOL Section II.C. The facts established at trial will also demonstrate that the course of conduct, when viewed as a whole, is exclusionary. *See id.*; *see also supra* PCOL ¶ 156.

VI. The Court Has Jurisdiction, And Venue Is Proper

164. This Court has subject-matter jurisdiction under Section 4 of the Sherman Act, 15 U.S.C. § 4, and 28 U.S.C. §§ 1331, 1337(a), and 1345. The United States has standing under

Section 4 of the Sherman Act, 15 U.S.C. § 4, and the States have standing under Section 16 of the Clayton Act, 15 U.S.C. § 26, as parens patriae on behalf of and to protect their general economies and the health and welfare of their residents. This Court has personal jurisdiction over Google; venue is proper in this district under Section 12 of the Clayton Act, 15 U.S.C. § 22, and under 28 U.S.C. § 1391, because Google transacts business and is found in this District. PFOF § I.C.

Dated: August 19, 2024

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