IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, *et al.*, Plaintiffs, v. GOOGLE LLC, Defendant.	Case No. 1:20-cv-03010-APM HON. AMIT P. MEHTA [redacted]
STATE OF COLORADO, *et al.*, Plaintiffs, v. GOOGLE LLC, Defendant.	Case No. 1:20-cv-03715-APM HON. AMIT P. MEHTA [redacted]

PLAINTIFFS' REMEDIES RESPONSIVE PROPOSED FINDINGS OF FACT

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ABBREVIATIONS

AFS	AdSense for Search
GenAI	Generative Artificial Intelligence
GCC	Google Common Corpus
LLM	Large-Language Model
LPP	Long Power Press
PFOF	Proposed Findings Of Fact
TC	Technical Committee

CITATIONS TO WITNESS TESTIMONY

Remedies Trial Transcript:

Rem. Tr. [PP:LL]–[PP:LL] ([witness last name] ([affiliation]))

Remedies Designated Testimony:

Des. Rem. Tr. [PP:LL]–[PP:LL] ([deponent last name] ([affiliation]) Dep.)

Liability Trial Transcript:

Liab. Tr. [PP:LL]–[PP:LL] ([witness last name] ([affiliation]))

Liability Designated Testimony:

Des. Liab. Tr. [PP:LL]–[PP:LL] ([deponent last name] ([affiliation]) Dep.)

Remedy Trial Witness	Live/Designated	Appearance in Citations
Adkins, Heather (Google)	Live	**(H. Adkins (Google))**
Adkins, Jesse (Google)	Live	**(J. Adkins (Google))**
Allan, James (Defendant's Expert)	Live	**(Allan (Def. Expert))**
Beard, Charles (Microsoft)	Designated	**(Beard (Microsoft) Dep.)**
Boulben, Frank (Verizon)	Designated	**(Boulben (Verizon) Dep.)**
Chipty, Tasneem (Plaintiffs' Expert)	Live	**(Chipty (Pls. Expert))**
Collins, Eli (Google)	Live	**(Collins (Google))**
Cromwell, Robert	Designated	**(Cromwell (Microsoft))**
Cue, Eddy (Apple)	Live	**(Cue (Apple))**
Culnane, Chris (Defendant's Expert)	Live	**(Culnane (Def. Expert))**
Durrett, Gregory (Plaintiffs' Expert)	Live	**(Durrett (Pls. Expert))**
Epstein, Adam (adMarketplace)	Live	**(Epstein (adMarketplace))**
Evans, David (Plaintiffs' Expert)	Live	**(Evans (Pls. Expert))**
Ezell, Jeffrey (AT&T)	Designated	**(Ezell (AT&T) Dep.)**
Fitzgerald, Peter (Google)	Live	**(Fitzgerald (Google))**
Fox, Nicholas (Google)	Designated	**(Fox (Google) Dep.)**

Remedy Trial Witness	Live/Designated	Appearance in Citations
Giard, Jeffrey (T-Mobile)	Designated	**(Giard (T-Mobile) Dep.)**
Google 30(b)(6): Adkins, Jesse (30(b)(6)) Collins, Eli (30(b)(6))	Designated	 **(Google-JA 30(b)(6) Dep.)** **(Google-EC 30(b)(6) Dep.)**
Hitt, Lorin (Defendant's Expert)	Live	**(Hitt (Def. Expert))**
Hsiao, Sissie (Google)	Live	**(Hsiao (Google))**
Israel, Mark (Defendant's Expert)	Live	**(Israel (Def. Expert)**
Jerath, Kinshuk (Plaintiffs' Expert)	Live	**(Jerath (Pls. Expert))**
Kim, Jay (Samsung)	Designated	**(Kim (Samsung) Dep.)**
LaFlamme, Francois (Motorola)	Designated	**(LaFlamme (Motorola) Dep.)**
Locala, David (Plaintiffs' Expert)	Live	**(Locala (Pls. Expert))**
Luca, Michael (State Plaintiffs' Expert)	Live	**(Luca (State Pls. Expert))**
Mickens, James (Plaintiffs' Expert)	Live	**(Mickens (Pls. Expert))**
Microsoft 30(b)(6): Schechter, Michael (30(b)(6)) Cromwell, Robert (30(b)(6)) Smutny, David (30(b)(6)) Utter, Brian (30(b)(6))	Designated	 **(Microsoft-MS 30(b)(6) Dep.)** **(Microsoft-RC 30(b)(6) Dep.)** **(Microsoft-DS 30(b)(6) Dep.)** **(Microsoft-BU 30(b)(6) Dep.)**
Muhlheim, Eric (Mozilla)	Live	**(Muhlheim (Mozilla))**
Muralidharan, Omkar (Google)	Live	**(Muralidharan (Google))**
Murphy, Kevin (Defendant's Expert)	Live	**(Murphy (Def. Expert))**
Nieh, Jason (Defendant's Expert)	Live	**(Nieh (Def. Expert))**
OpenAI 30(b)(6) Turley, Nick 30(b)(6)	Designated	 **(OpenAI-NT 30(b)(6) Dep.)**
Pancholi, Neal (Google)	Designated	**(Pancholi (Google) Dep.)**
Parakh, Phiroze (Google)	Designated	**(Parakh (Google) Dep.)**
Pichai, Sundar (Google)	Live	**(Pichai (Google))**
Provost, Brian (Yahoo)	Live	**(Provost (Yahoo))**
Rangel, Antonio (Plaintiffs' Expert)	Live	**(Rangel (Pls. Expert))**
Reid, Elizabeth (Google)	Live	**(Reid (Google))**
Samat, Sameer (Google)	Live	**(Samat (Google))**
Schechter, Michael (Microsoft)	Live	**(Schechter (Microsoft))**

Remedy Trial Witness	Live/Designated	Appearance in Citations
Shevelenko, Dmitry (Perplexity)	Live	**(Shevelenko (Perplexity))**
Standal, Jan (Opera)	Designated	**(Standal (Opera) Dep.)**
Tabriz, Parisa (Google)	Live	**(Tabriz (Google))**
Turley, Nick (OpenAI)	Live	**(Turley (OpenAI))**
Vallez, Paul (Skai)	Live	**(Vallez (Skai))**
Weinberg, Gabriel (DuckDuckGo)	Live	**(Weinberg (DuckDuckGo))**
Zenner, Marc (Defendant's Expert)	Live	**(Zenner (Def. Expert))**

1000. Nothing in Google's Proposed Findings of Fact obviates the need to remedy its anticompetitive conduct as Plaintiffs propose.

1001. Google incorrectly suggests that Plaintiffs were required to but did not provide evidence of the "but for" world that would have existed absent Google's anticompetitive conduct. *E.g.*, Def. PFOF ¶¶ 14–17; Pls. Br. §§ II.B–C; Pls. Resp. Br. § II.E; *infra* ¶ 1019.

1002. To be useful to the Court, Plaintiffs' responsive findings track Google's structure. Given space constraints, Plaintiffs focus on the facts most relevant to the case.[1]

I. PLAINTIFFS' REMEDIES ARE WELL SUPPORTED BY CAUSATION

1003. (Def. PFOF ¶ 2): It is undisputed that Google enjoys greater freedom from competitive threats than it did before its unlawful conduct began, which is significantly due to the additional years' worth of data and scale advantages it acquired over rivals in the market. Mem. Op. at 202.

1004. (Def. PFOF ¶ 4): Plaintiffs' expert during the liability phase measured foreclosure as a range, not a specific number. Liab. Tr. 5753:10–5754:5 (Whinston (Pls. Expert)). The high end of this range was 50%, the "coverage" of the agreements, "the share of U.S. queries that are . . . covered by Google's exclusive defaults." *Id.* 5755:5–16. The low end of this range was 33%, "the share of U.S. queries that Google's exclusive defaults make unavailable even to a much stronger rival." *Id.* 5755:5–16.

1005. (Def. PFOF ¶ 5): The Court found that Google's conduct contributed significantly

[1] The paragraph numbers for Plaintiffs' responses begin at 1000 to avoid overlap with Plaintiffs' original Proposed Findings of Fact (PFOF). Plaintiffs have identified in parentheses at the beginning of each response to a Defendant PFOF that are the subject of each response. As some of Defendant's PFOFs are the subject of multiple responsive PFOFs, Plaintiffs are providing a crosswalk showing which responses cover a given Defendant's Proposed Findings of Fact. *See* Attach. A. The lack of a responsive PFOF to any specific paragraph in Defendant's PFOF is not and should not be viewed as agreement or concession with that paragraph.

to the maintenance of Google's monopolies by disadvantaging rivals and discouraging entry, among other things. *See, e.g.*, Mem. Op. at 202, 216, 234, 237, 265.

1006. (Def. PFOF ¶¶ 6, 429): Dr. Chipty argued that antitrust remedies have multiple goals. Remedies should also "deter future anticompetitive conduct by ensuring that a dominant firm doesn't continue to benefit from its past conduct." Rem. Tr. 2132:21–2133:8 (Chipty (Pls. Expert)). Prof. Murphy recognizes that "economics talks also about the deterrence." Rem. Tr. 4208:8–4210:5 (Murphy (Def. Expert)).

1007. (Def. PFOF ¶ 10): Professor Murphy's "corrective" remedies may not restore competition, and if they do it is unclear how long it will take. In this case, they will not be sufficient because Google's conduct has made it so that rivals cannot quickly or easily overcome Google's unlawfully obtained competitive advantage. Rem. Tr. 4605:1–9; 4606:5–15 (Chipty (Pls. Expert)); Rem. Tr. 4204:21–4206:4 (Murphy (Def. Expert)) ("[I]t's possible that past conduct changed the competitive landscape to such an extent that removing the anticompetitive form of conduct won't restore competition in sufficient -- a timely manner.").

1008. (Def. PFOF ¶ 11): A but-for world cannot be precisely specified here, so counterfactual market outcomes, such as shifts in shares, are not likely to be observable. Rem. Tr. 4214:20–4216:20 (Murphy (Def. Expert)) ("[I]n a case like this you're not going to be able to precisely specify a but-for world."). Plaintiffs' remedies in this case are designed to work together to make consumers better off, and to do so in a timely manner. Rem. Tr. 2169:4–9 (Chipty (Pls. Expert)).

1009. (Def. PFOF ¶¶ 6, 12, 429): Antitrust remedies are not a tool to engineer specific outcomes. Rather, antitrust remedies "focus on the competitive process and not the ultimate outcomes of that process." Rem. Tr. 2134:15–23 (Chipty (Pls. Expert)). "[T]he point of the

competitive process is to let outcomes play out." *Id.* 2212:7–12.

1010. (Def. PFOF ¶ 13): Market participants, including Perplexity, OpenAI, and DuckDuckGo, testified that Google's conduct limited their distribution and therefore maintained Google's monopoly power. Rem. Tr. 472:3–15 (Turley (OpenAI)) (stating that Google's AI Overviews are much more numerous than ChatGPT searches because of distribution); PXR0182 at -762 (As of December 2024, AI Overviews handled [redacted] searches than ChatGPT and almost thirty times more searches than Perplexity); Pls. PFOF ¶¶ 184, 241.

1011. (Def. PFOF ¶¶ 16–18, 20): It is unclear how much of the market would have been covered by Google's counterfactual non-exclusive distribution. Non-exclusive distribution would have given rivals more opportunities to compete in general search, which may have led to a substantial change in competitive dynamics. Rem. Tr. 2220:3–20 (Chipty (Pls. Expert)).

1012. (Def. PFOF ¶¶ 16–18, 20): Google's conduct contributed significantly to the maintenance of its monopolies. Google would not have paid billions of dollars annually for exclusive distribution if rivals had no chance to challenge its monopoly. Mem. Op. at 201. Given the duration of the conduct and technological advances over the period, it is reasonable to conclude that one or more rivals would have chipped away at Google's monopoly had Google not engaged in anticompetitive conduct. Pls. PFOF ¶¶ 231–32.

1013. (Def. PFOF ¶ 21): Historically, Google had significant default search distribution on Windows. For example, in January 2009, Google had "81 total distribution partners worldwide," with two partnerships alone "effectively reach[ing] close to 100% of Internet users worldwide." UPX0118* at -493; *accord* UPX0327* at -355–56 (listing Sony, Toshiba, Acer, and Fujitsu as search partners in 2010); DX0007* at -446 ("Distribution deals accounted for 17.5% of [worldwide] traffic to Google in Q2 2007."); UPX5193* at -327 (§ 3.2(b)) (Sony RSA

(2008)); Liab. Tr. 7722:15–7723:2 (Pichai (Google)). Without paying a third party, Google also distributed Google Search by setting Google as the default on user-downloaded Chrome. Liab. Tr. 7646:5–7 (Pichai (Google)) (noting that Google launched Chrome in 2008). Even on mobile, early distribution agreements made Google the exclusive default search on mobile phones. *E.g.*, UPX5533 at -124–25 (§ 5) (Sprint RSA (2008)); JX0003* at -160 (§ 6) (Motorola RSA (2005)).

1014. (Def. PFOF ¶¶ 22–24, 30): Google enjoys quality and monetization advantages over its rivals, including its scale and its rivals' diminished incentives to invest, both of which are affected by the conduct. The effects of both sources are significant, even if they cannot be measured precisely. Mem. Op. at 34–35; *id.* § V.A.2–3.

1015. (Def. PFOF ¶ 25): Without sufficient scale, general search engines cannot determine which of their tail queries have commercial intent. Users dislike it when a search engine shows an ad on a non-commercial long-tail query. Rem. Tr. 845:23–847:12 (Weinberg (DuckDuckGo)) ("[I]f people are trying to navigate and you put in a bunch of ads, that's exactly the type of query that people get very angry about."); *id.* 848:3–21 ("[I]t's for these long-tail queries where we are generally showing ads when we shouldn't be.").

1016. (Def. PFOF ¶¶ 26–28): Distributors enter agreements with Google for search defaults because Google's offers pay distributors the most. Google's payments are the share of its monetization it is willing to offer distributors. Mem. Op. at 112–14, 226–27, 250–51.

1017. (Def. PFOF ¶ 29): Payment was a primary consideration for Apple. Despite having similar quality as Google on desktop, Bing's search quality and monetization are [redacted] on mobile, where Google's conduct forecloses a larger share of queries. Mem. Op. at 46, 111–13; *id.* at 232 ("[W]ith Google guaranteed default placement on all mobile devices, Microsoft has never achieved the mobile distribution that it needs to improve on that

platform."); Liab. Tr. 5831:15–5834:16 (Whinston (Pls. Expert)) (Bing's monetization for queries is [redacted] than Google on desktop but [redacted] on mobile. (discussing UPXD104 at 58)).

1018. (Def. PFOF ¶ 30): Google cites evidence regarding only one rival.

1019. (Def. PFOF ¶¶ 31, 64): Distributors have wanted to preload or make it easier to access Google's general search rivals, but Google's agreements prevented them from doing so, thereby significantly contributing to maintaining Google's monopoly. Mem. Op. at 109–11 (FOF ¶¶ 313, 317, 319–20), 118 (FOF ¶ 347), 121–22 (FOF ¶ 359), 123 (FOF ¶ 365), 125–27 (FOF ¶¶ 369–74); Pls. PFOF ¶¶ 358–61, 365, 420–22, 566.

1020. (Def. PFOF ¶ 32): Choice screens are not a valid proxy for the but-for world. Rem. Tr. 4223:13–4225:2 (Murphy (Def. Expert)) ("I'm not at all saying choice [screens] are what the world would look like. In fact, choice screens wouldn't be what the world would look like."). Prof. Murphy testified that choice screens fail the "market test," i.e., they have not arisen organically in the marketplace. *Id.* 4270:1–4271:16. Further, universal choice screens cannot be a "conservative proxy" for the but-for world, as they aggressively assume rivals would not have won a single default—even a minor or niche default. Rem. Tr. 2208:4–17 (Chipty (Pls. Expert)) (If Google had paid for non-exclusive distribution, "rivals would have had a chance to chip away at Google's monopoly."). Even in this world, Yahoo won a default during the course of Google's conduct. Des. Liab. Tr. 62:9–18 (Baker (Mozilla) Dep.). Thus, it is far from "conservative" to assume no additional rival defaults in a world absent Google's anticompetitive conduct.

1021. (Def. PFOF ¶ 33): Because, as Prof. Murphy agrees, there is no market similar to the search market, the "benchmark" approach is not a useful analytical approach in this case. Rem. Tr. 4356:8–4357:5 (Murphy (Def. Expert)). ("I'm not sure [what] other market looks a lot like the search market . . . I haven't seen anybody come up with one."). Dr. Chipty elaborated on

when a "benchmark" approach would make sense and explained why it is not useful here. Rem. Tr. 4637:5–4638:11 (Chipty (Pls. Expert)) (summarizing by saying that "for reasons all of the experts have said in this case, it's hard to figure out specifically what would have happened").

1022. (Def. PFOF ¶ 34): If Google were permitted to pay distributors for a choice screen under Plaintiffs' remedy, it is likely Google would do so, and it is likely that distributors would take the deal from Google instead of default deal with a rival because Google would be able to pay more initially. However, it would not create a real contest between Google and rivals for the default because users today do not have experience with other search products—they are habituated to Google. Rem. Tr. 2187:4–2188:21 (Chipty (Pls. Expert)).

1023. (Def. PFOF ¶¶ 34–36): Because of Google's anticompetitive conduct, users do not have experience with other search engines. For that reason, choice screens alone do not create a true contest between Google and rivals, but they may be effective if coupled with other remedies. In the Allcott study, of Google users who agree to try Bing for two weeks, 33% choose to stay with Bing at the end of the experiment. Pls. PFOF ¶ 911. Moreover, the implementation of the EU choice screen reduced its efficacy. Pls. PFOF ¶¶ 902, 907.

1024. (Def. PFOF ¶¶ 37–38): By foreclosing rivals from distribution, Google used its increased scale to improve its quality. The Court found that Google's "brand recognition is due in no small part to its product quality" and that Google's anticompetitive conduct gave "Google access to scale that its rivals cannot match. Google has used that scale to improve its search product and ad monetization." Mem. Op. at 160, 226. Over time that strengthened its brand because users did not experience other search products. Rem. Tr. 2135:10–23 (Chipty (Pls. Expert)). Moreover, the effect of a default on Google's brand accumulates over time, making a choice screen less effective the longer rivals are excluded. Rem. Tr. 542:21–543:22 (Rangel (Pls.

Expert)) (the effect of a choice screen depends on "how long there were defaults"). Therefore, choice screens by themselves will not be effective in overcoming the effects of Google's unlawful conduct, and remedies need to improve both rivals' quality and brand familiarity. *Id.* 547:4–15; Rem. Tr. 2188:2–21, 2189:8–2190:17 (Chipty (Pls. Expert)).

1025. (Def. PFOF ¶¶ 39–40): Dr. Chipty did not identify particular rivals that may have been successful absent Google's anticompetitive conduct because "the point of the competitive process is to let outcomes play out." Rem. Tr. 2212:7–12 (Chipty (Pls. Expert)). Dr. Chipty's expectation is that "[r]ivals would have slowly amassed scale that would have let them innovate in ways that would have then further contributed to their success," resulting in "a more competitive environment." *Id.* 2310:19–2311:13.

1026. (Def. PFOF ¶ 49): The private browsing default feature in Safari was introduced in September 2023. There would be no reason for a distributor to invest in an alternative product if they were prevented from using it how they wanted. In the absence of the restrictive contracts, they may have come to market with that feature sooner, but it's not possible to know whether that would have happened. Rem. Tr. 2222:9–2223:20 (Chipty (Pls. Expert)).

1027. (Def. PFOF ¶ 52): Because Google's exclusive distribution agreements prevented rivals from competing, there was no opportunity for rivals to accumulate niche defaults or scale; consequently, one would not expect to find real-world evidence of rivals' scale increases snowballing. Rem. Tr. 2220:24–2221:23, 2310:19–2311:13 (Chipty (Pls. Expert)).

1028. (Def. PFOF ¶ 56): Bing's quality, as measured by precision scores, increased after Microsoft began syndicating search results to Yahoo. Liab. Tr. 10550:9–10551:15 (Whinston (Pls. Expert)) (discussing UPXD106 at 36). Microsoft's CEO testified that the Yahoo syndication deal was the "big break-through [Microsoft] needed," and that its effect was to make

Microsoft "competitive in desktop search." Liab. Tr. 3520:13–3522:9 (Nadella (Microsoft)).

1029. (Def. PFOF ¶ 57): An important limitation of the Allcott study was that it only focused on desktop search. Rem. Tr. 4627:4–17 (Chipty (Pls. Expert)) (referring to page six of the Allcott study and explaining that the Allcott study only sampled desktop users.). The Court has found that, on desktop, Microsoft search quality was "nearly on par with Google." Mem. Op. at 229. That is not the case for mobile. Google has a dominant position on mobile, with almost 95% of search queries in 2020. *Id.* at 1. This has deprived Microsoft and other rivals of the scale needed to improve their quality. *Id.* at 232.

1030. (Def. PFOF ¶¶ 59–60, 65): The Court cited testimony that venture capital firms consider investment in general search to be "the biggest no fly zone," given the barriers to entry and the cost. Mem. Op. at 23 (FOF ¶ 56). This reluctance to invest in general search discourages potential entrants, who must gain traction quickly to avoid shutting down. *Id.* at 23 (FOF ¶ 56), 237–38. Apple was separately discouraged from further investing in and entering search by large ISA payments. *Id.* at 241–42.

1031. (Def. PFOF ¶ 62): Google misconstrues this Court's analysis by omitting a key phrase: "[T]he defendant's innocence or blameworthiness . . . has absolutely nothing to do with whether a condition constitutes a barrier to entry *evincing monopoly power*." Mem. Op. at 154, 160 (internal quotation marks omitted) (emphasis added). The Court's analysis simply confirms that barriers to entry are barriers for purposes of proving monopoly power whether those barriers are natural, artificial, or a mix of both. That holding does not conflict with the fact that Google's conduct has indeed raised and fortified barriers to entry. Mem. Op. at 157–61, 190, 226, 233; Rem. Tr. 2135:5–23 (Chipty (Pls. Expert)).

1032. (Def. PFOF ¶ 64): More than scale affects barriers to entry and the competitive

position of rivals. For example, "[t]he distribution agreements have . . . reduced [rivals'] incentive to invest and innovate in search," Mem. Op. at 236, meaning rivals have been less likely to incur the high capital costs of entering general search, *see* Rem. Tr. 2194:3–2195:3 (Chipty (Pls. Expert)) ("[P]laintiffs' remedies give rivals a much more important, significant path to market, and so will increase their incentives to incur the high capital costs of entry and expansion."); Mem. Op. at 242 (finding that Google's contracts "unquestionably" "contribut[ed] to keeping Apple on the sidelines of search"). The contracts' same innovation harm increased the quality disparity between Google and rivals, thereby raising the brand barrier to entry. Mem. Op. at 47 (FOF ¶ 130). Google has also "validated" its brand by being the only default on Safari. *Id.* at 47 (FOF ¶ 130) (quoting Liab. Tr. 7780:23–24 (Pichai)), 101 (FOF ¶ 290).

1033. (Def. PFOF ¶ 67): The Court recognized that Google's distribution agreements "substantially contributed" to the anticompetitive market conditions that prevented rivals' access to scale by "constrain[ing] the query volumes of its rivals, thereby inoculating Google against any genuine competitive threat." Mem. Op. at 233–34.

1034. (Def. PFOF ¶ 68): Neeva's experience illustrates the challenges that competitors without access to efficient distribution channels faced in gaining a foothold in the general search market. Mem. Op. at 237 ("The foreclosure of efficient channels of distribution has contributed to the lack of new investment. Neeva is a case in point."). The Court stated that the "[t]he lack of access to efficient channels of distribution diminished Neeva's ability to grow its user base and significantly contributed to its demise." *Id.* at 163. Even with DuckDuckGo's position as an "alternative default search option," i.e., Apple users could choose to change the default to DuckDuckGo, it has been unable to amass significant share, consistent with the relative inefficiency of these alternative distribution channels. *Id.* at 114 (FOF ¶ 331); *id.* at 162 ("DDG,

though in operations since 2008, has barely reached a 2% market share.").

1035. (Def. PFOF ¶ 69): In responding to a question from the Court about Google's existing competitive advantage, Prof. Murphy testified that Google's monetization advantage would probably persist into the "medium-to-longer" run, allowing Google to continue to outbid rivals for that period. Rem. Tr. 4325:23–4328:17 (Murphy (Def. Expert)).

1036. (Def. PFOF ¶ 72): The Court found that Google's exclusive agreements have the effect of "deny[ing] rivals access to user queries, or scale, needed to effectively compete." Because of this denial, "new entrants cannot hope to achieve a scale that would allow them to compete with Google." Mem. Op. at 226.

1037. (Def. PFOF ¶¶ 15, 73–74): The Court found the Apple ISA revenue share payments "unquestionably" anticompetitive because they discourage Apple from entering. Mem. Op. at 241–42. While "Apple has the financial, technological, and human resources to develop or acquire a competing GSE," it has not done so to date. *Id.* at 241.

1038. (Def. PFOF ¶ 76): The Court found Google's unlawful distribution agreements significantly reduced rivals' incentives to invest in the general search market. Mem. Op. at 237 ("The foreclosure of efficient channels of distribution has contributed significantly to the lack of new investment"). Dr. Chipty agreed that Google's conduct blunted rivals' investment incentives. Rem. Tr. 2135:10–23 (Chipty (Pls. Expert)) ("[L]eft with no path to market, rivals had diminished incentives to incur the high capital costs for entry and expansion.").

1039. (Def. PFOF ¶¶ 77–79): Based on the Court's finding that Google's "exclusive agreements have deprived rivals of scale," Dr. Chipty considered how the resulting difference in scale would have affected entry barriers faced by potential entrants, including the brand barrier. Mem. Op. at 226; Rem. Tr. 4602:18– 4603:15 (Chipty (Pls. Expert)) (concluding "Brand is

derivative of distribution and scale," and Google's conduct, which impaired rivals' ability to obtain distribution and scale, made it harder for them to overcome the brand barrier).

II. PLAINTIFFS' CONTRACTUAL REMEDIES ARE JUSTIFIED TO ADDRESS GOOGLE'S CONDUCT

1040. (Def. PFOF ¶ 82): Plaintiffs' contractual remedies are necessary to stop Google's unlawful conduct and prevent its likely recurrence in the future. Plaintiffs' remedies provide Android partners with the choice to select services and the ability to differentiate, which cannot be achieved while Google controls the Android ecosystem. Pls. PFOF ¶¶ 358–59. Google warns of harm to Android in the competition with Apple, but Google has continuously, and still to this day, provided Apple with Search experiences and capabilities that diminish potential differentiation between Android and Apple devices. *Id.* ¶¶ 380–81, 389–93. Independent browsers are already suffering today from their reliance on Google; for example, Mozilla is losing market share and has an underperforming ads business. *Id.* ¶¶ 367–68; Rem. Tr. 3169:20–3171:3 (Muhlheim (Mozilla)) (discussing PXR0254 at -601). Other browsers, such as Opera, have generated many times more revenue through browser ads revenue than search partnerships revenue. Rem. Tr. 3173:11–3175:3 (Muhlheim (Mozilla)) (discussing PXR0254 at -628); Des. Rem. Tr. 20:8–21:3 (Standal (Opera) Dep.) (estimating that advertising accounts for 60% of its total revenue with the remaining 40% coming from search partnerships).

1041. (Def. PFOF ¶¶ 86–89, 99–102, 106, 134): Plaintiffs' distribution remedies work in tandem with syndication and data-sharing measures to fill quality and monetization gaps, while giving rivals a chance to build their own products that will eventually stand on their own feet. Pls. PFOF ¶¶ 250–53, 592, 598–99, 641, 645–46, 714, 740–41 (Syndication and data-sharing proposals allow competitors to improve.). Plaintiffs' syndication and data-sharing remedies help not only existing rivals improve their own products, but incentivize new entrants

as well, creating the opportunity for multiple bidders and an improvement to search competition. *Id.* ¶¶ 250–53, 347, 361.

1042. (Def. PFOF ¶¶ 90–91): Under Yahoo's syndication agreement with Microsoft, Yahoo is prohibited from new "[redacted] Implementations" partnerships, which use Microsoft's Algo Search results. RDX0511 at -967, -969–70. Yahoo is permitted by the agreement to enter into new distribution agreements that use Yahoo's own search results. Rem. Tr. 1275:18–1276:4, 1276:13–16 (Provost (Yahoo)); RDX0511 at -967, -969–70.

1043. (Def. PFOF ¶ 93): Partners, particularly in GenAI, have sought distribution with Samsung. Des. Rem. Tr. 37:2–12 (OpenAI-NT 30(b)(6) Dep.) (OpenAI is in preliminary conversations for distribution on Samsung devices); Rem. Tr. [redacted] ([redacted]) ([redacted] has not been able to reach a deal with Samsung (discussing [redacted])). But Samsung's economic arrangements with Google have made it difficult to get sought-after distribution on Samsung devices. Pls. PFOF ¶¶ 331–32.

1044. (Def. PFOF ¶¶ 96, 126, 128, 130, 139–41, 148): Google may continue to support the Android ecosystem by making payments to Android partners for advertising, promotions, and any other services unrelated to Search. *See* Pls. RPFJ § IV.A (only limiting Google's payments to third parties related to Google Search). For example, Google may continue to make payments like those made to Verizon in the MFA or MSI. Pls. PFOF ¶ 443. Google has strong incentives support Android OEMs that distribute flagship, non-search apps that generate substantial revenue for the company, including Play Store, YouTube, Google Maps, Gmail, and Google Drive. Liab. Tr. 7716:12–18, 7717:2–12 (Pichai (Google)) (Google generates revenue through distribution of non-search apps, including Gmail and Google Drive); UPX6059 at -034 (showing that YouTube ads revenue was more than $[redacted] billion in 2021). A 2020 estimate projected Google would earn

upwards of $[redacted] billion from Play Store sales on Samsung phones over a four-year deal. UPX2111 at -120; UPX0317* at -155 (showing $[redacted] billion in Play Store revenue in 2019).

1045. (Def. PFOF ¶ 108): Google's cites for its competition harm claims are misleading. The cited Dr. Chipty testimony says nothing as to how Google's competitive alternatives fail to address any alleged harm to competition. Rem. Tr. 2158:3–20 (Chipty (Pls. Expert)).

1046. (Def. PFOF ¶ 110): At no point has Dr. Chipty or Plaintiffs offered that promotion and user payments work as well as preinstallation and defaults, only that Google, a monopolist, may still compete via these methods in a remedial world. Pls. PFOF ¶¶ 436–39.

1047. (Def. PFOF ¶¶ 112–13): Prof. Murphy, without evidence of real-world examples, claimed that offering to pay users would somehow introduce "fraud problems." Rem. Tr. 4244:21–4246:1 (Murphy (Def. Expert)). Nevertheless, Prof. Murphy acknowledged during cross-examination that several competitors in the market today offer rewards for search usage. *Id.* 4360:3–4362:19. In fact, Microsoft has sought to expand Bing Rewards [redacted] RDX0319* at -256.

1048. (Def. PFOF ¶ 114): Google still has an incentive to innovate in response to Plaintiffs' proposed remedies, as Google would be incentivized to stay ahead of rivals' improving products and to retain and attract Search users. Pls. PFOF ¶¶ 442, 858, 935.

1049. (Def. PFOF ¶¶ 117–19, 121, 164): Plaintiffs' proposed remedies incentivize Apple to build its own search engine and to enter the market, an opportunity that Apple's Eddy Cue acknowledges would be a boon to Apple. Pls. PFOF ¶¶ 395–97 (Cutting off payments to Apple would alter Apple's incentives.); Pls. PFOF ¶ 398 (Owning a search engine of Google's quality would be a financial boon to Apple.). Even if Apple did not enter, Plaintiffs' proposed remedies incentivize Apple to partner with another GSE, whose quality and ability to monetize

will improve under the syndication and data-sharing remedies. *Id.* ¶¶ 401–03 (Apple would be incentivized to change the default, which Apple is open to.); *supra* ¶ 1041 (Plaintiffs' remedies allow competitors to improve.).

1050. (Def. PFOF ¶ 120): While Apple may have the ability to pursue deals with partners, third parties are severely limited in negotiating power because of Google's presence and outsized payments. Pls. PFOF ¶¶ 332–33 (OpenAI had to take a [redacted] with Apple for fear of losing out on Android and Apple distribution.).

1051. (Def. PFOF ¶¶ 124–25): While Google touts the importance of revenue share payments to "facilitate promotion of Android" competition, Google has kept low, and in some cases reduced, revenue share payments to some Android partners. Pls. PFOF ¶¶ 363–64 (Motorola's revenue share payments have remained lower compared to other partners despite raising the issue with Google.); *id.* ¶ 366 (Google reduced payments to Verizon under the RSA.).

1052. (Def. PFOF ¶¶ 131–33): Google's claim that Android partners and users expect Google services on Android is contrary to testimony from Android partners, in which Android partners sought flexibility and differentiation. Pls. PFOF ¶¶ 358, 360.

1053. (Def. PFOF ¶¶ 150–53, 155–61, 1067–68): Google only provides distribution partners "additional flexibility" at the eleventh hour after being found liable by this Court, but the "additional flexibility" does nothing to address the original harm or how those contracts restricted GenAI distribution. Pls. PFOF ¶¶ 372, 426, 432, 434 (Google's remedies maintain the status quo.); *id.* ¶ 329 (Google only lifted some restrictions after securing GenAI distribution.). Google's "additional flexibility" merely maintains the status quo. *Id.* ¶¶ 372, 426, 432, 434.

1054. (Def. PFOF ¶¶ 154, 1064): Google's agreement with Samsung, the Gemini Commercial Agreement, rewards Samsung for defaulting access points and driving usage to the

Gemini App. Pls. PFOF ¶¶ 306, 308, 312; PXR0571 at -384–85 (Attachment A) (setting out Gemini App usage requirements in the form of query counts). Samsung receives up to $[redacted] million a month ([redacted] the Gemini App's $[redacted] million monthly subscription revenue as of October 2024) in fixed payments if Samsung devices meet the usage requirements, incentivizing Samsung to promote usage of the Gemini App over competitors. Pls. PFOF ¶¶ 311–12 (Fixed monthly payments can go down if devices do not meet certain Gemini App usage levels.); *id.* ¶ 173 (Gemini App revenue as of October 2024). This demonstrates that Google's unlawful conduct is likely to recur, in the same or similar forms, if not enjoined.

1055. (Def. PFOF ¶ 168): Aside from any reasons related to quality, Mozilla has a financial incentive to set Google as the default, as Google's payments to Mozilla represent 85% of Mozilla's revenue. Rem. Tr. 3133:21–3134:2 (Muhlheim (Mozilla)).

1056. (Def. PFOF ¶¶ 169–70, 175): Google warns of a decrease in independent browser market share under Plaintiffs' remedies, but rivals, such as Mozilla, have already been losing market share in the current ecosystem. Rem. Tr. 3169:20–3170:10 (Muhlheim (Mozilla)) (discussing PXR0254 at -601). Instead, under Plaintiffs' remedies, rival search engines have a chance to improve quality and the ability to monetize, and rival browsers may even be incentivized to enter the search engine market themselves. *Supra* ¶ 1041; Pls. PFOF ¶ 357 (Mozilla may be incentivized to enter the market.).

1057. (Def. PFOF ¶¶ 177–84): Independent browser studies that estimate a degradation in quality or loss of revenue assume current-world conditions, such as switching to current-world Bing, without consideration of Plaintiffs syndication and data-sharing proposals that would improve quality and payment competition. Des. Rem. Tr. 32:11–24 (Standal (Opera) Dep.) (discussing RDX0360 at -298 and users switching back to Google from Bing at the time of the

study in January 2025); Rem. Tr. 3181:24–3182:5 (Muhlheim (Mozilla)) (Neither Project Redwood nor Project Waldo considered competing search engines to Bing or contemplated a remedy that led to more competition.); *supra* ¶ 1041.

1058. (Def. PFOF ¶¶ 185, 200, 203–04): Google's proposed remedies still allow Google to maintain some of its exclusive agreements, for example, with Safari. Rem. Tr. 2181:11–2182:15 (Chipty (Pls. Expert)) (discussing PXRD012 at 45). Google's one-year limits for browser deals also do not solve the concern of exclusive agreements, as the remedy only spans three years, and Google is likely to win those defaults each year. *Id.* 2183:10–2184:6 (discussing PXRD012 at 45 and explaining that Google will win the first year, and subsequent years, because of its quality and monetization advantage).

1059. (Def. PFOF ¶ 186): Although GenAI rivals may offer differentiation from Search going forward, Google has already reached agreements with Android OEMs to distribute Google's Gemini App. Pls. PFOF ¶¶ 294–95. Google has also leveraged its position to impede the advancement of potential GenAI threats to Search. *Id.* ¶¶ 295, 329.

1060. (Def. PFOF ¶¶ 187–96): A ban on indefinite-duration exclusive distribution arrangements, as Google proposes—or even a ban on all exclusive distribution arrangements—would be insufficient to restore competition. Given Google's competitive advantage, which was cemented by its anticompetitive conduct, rivals would not be able to compete with Google on a level playing field as to either quality or payments for distribution. Google's proposed remedies do nothing to rectify the harm caused to the GSE and search text ads ecosystem and only ensure the status quo—and the likely maintenance of Google's monopoly through the same and/or similar anticompetitive conduct. Pls. PFOF ¶¶ 235, 372, 426, 432, 434, 938.

1061. (Def. PFOF ¶¶ 197–98): Mr. Cue of Apple testified that Apple is open and willing

to partner with other search providers for the default on Safari. Pls. PFOF ¶ 403. Today, however, Apple has no choice other than Google and Google's remedies do nothing to change the status quo. *Id.* ¶¶ 407, 411–12.

1062. (Def. PFOF ¶¶ 201–02): Google's conduct exacerbated the barriers to entry and made it harder for rivals to overcome those barriers and gain distribution. Rem. Tr. 4602:18–4603:15 (Chipty (Pls. Expert)). Dr. Chipty opined that this conduct created a "significant difference" between the actual world and the but-for world because competition was harmed. *Id.* 4630:8–15.

III. PLAINTIFFS' REMEDIES REGARDING DIVESTITURE AND PROHIBITION ON SELF-PREFERENCING COULD LOWER BARRIERS TO DISTRIBUTION

1063. (Def. PFOF ¶ 208): Chrome was used as part of Google's scheme to unlawfully maintain its monopolies and "compound[ed] the effect of [Google's] default search agreements." Mem. Op. at 228, 210 (Chrome's mandated preinstallation on Android phones was key to why the MADAs are exclusive); *id.* at 128 (Samsung RSA Chrome hotseat requirement). And Google is likely to continue using Chrome to exclude rivals in search absent divestiture.

1064. (Def. PFOF ¶ 209): Every major browser engine is open source. Rem. Tr. 1474:13–1475:5, 1582:25–1583:2 (Mickens (Pls. Expert)) (Apple's WebKit, on which Safari is built, and Mozilla's Gecko, on which Firefox is built, are open source); Rem. Tr. 3132:19–3133:20 (Muhlheim (Mozilla)).

1065. (Def. PFOF ¶ 212): Chrome's "north star" is DAUs (i.e., daily active users), not the betterment of the internet. PXR0283* at -676; PXR0215 at -253.

1066. (Def. PFOF ¶¶ 213, 218): Google's internal documents describe Chrome investment as directly connected to Search revenue generated through Chrome. PXR0218* at -542–43 (Google's Chrome investment thesis is based on fact that it "generat[es] substantial

indirect revenue"); PXR0218* at -546; PXR0215 at -257.

1067. (Def. PFOF ¶ 216): Chrome's indirect revenue is heavily driven by usage in the United States. PXR0215 at -259 (United States accounts for [redacted]% of Chrome's $[redacted] billion indirect search revenue in 2023).

1068. (Def. PFOF ¶¶ 219–20, 226–27): Despite indirect Search revenue growing by $[redacted] billion from 2020 to 2024, Google's Chrome investment increased by only $[redacted] billion, with [redacted]% of growth driven by marketing spend. PXR0215 at -252, -257; Rem. Tr. 1636:3–10 (Tabriz (Google)); PXR0206 at -551. Similarly, as of 2024, Google's overall headcount growth was 96% for the past five years, while Chrome's headcount grew by merely 24%. PXR0206 at -497, -556.

1069. (Def. PFOF ¶ 221): Google's investments in Chrome pale in comparison to the financial benefit Chrome derives through search. *Infra* ¶ 1093; *supra* ¶ 1068. Moreover, a divestiture buyer would not be starting from scratch but would, for example, be able to benefit from APIs to continue providing functionality. Pls. PFOF ¶ 499.

1070. (Def. PFOF ¶ 222): As of 2024, Google allocated about half of the Chrome team to the browser application and half to Chromium. PXR0206 at -556.

1071. (Def. PFOF ¶¶ 229, 237, 256–61, 278–83, 289–92): A Chrome divestiture would not degrade Chrome. Pls. PFOF ¶¶ 484, 501–09. Ultimately, Chrome's post-divestiture feature set "would be the buyer's choice to make." Rem. Tr. 1466:16–1467:6 (Mickens (Pls. Expert)). Google would have every incentive to maintain any shared cloud services that, like Google Translate, still support Google products. *See e.g.*, Rem. Tr. 2166:12–2167:18 (Chipty (Pls. Expert)) (generally discussing investment incentives caused by competition). If the divestiture buyer chooses to substitute Google's APIs with calls to third-party solutions, this exercise would not be "fundamentally different than the work that people already do when they update

software." Rem. Tr. 1465:4–14 (Mickens (Pls. Expert)). Many of Chrome's cloud services are standard browser features that third-party browsers build as a matter of course. Pls. PFOF ¶ 507. Other Chromium-derived browsers are proof that substituting Chrome's cloud services is feasible. Rem. Tr. 1467:7–1468:21 (Mickens (Pls. Expert)) (referencing PXRD010 at 43). The divestiture buyer's choice to disable a Chrome feature does not necessarily degrade Chrome—for example, a divestiture buyer may disable an API due to privacy concerns. Rem. Tr. 1466:1–15 (Mickens (Pls. Expert)).

1072. (Def. PFOF ¶ 245): Google is following a similar exclusionary playbook with Gemini in Chrome, preferencing its own GenAI products over those of rivals. PXR0203 at -074 (internal Google email describing plans for "Chrome [to] integrate[] deeply with Gemini (as primary Agent and one we'll prioritize)"); Rem. Tr. 1645:1–20, 1647:1–10 (Tabriz (Google)); PXR0220 at -282 (explaining rival GenAI agents are limited to integration into Chrome as extensions). Divestiture is necessary to prevent Google from using Chrome to maintain its monopoly in the future by preferencing Gemini and Google Search in such ways.

1073. (Def. PFOF ¶¶ 247–51, 337–38): Divested business lines typically rely on the divesting company for administrative functions; Chrome and Chromium are not unusual in this respect. Pls. PFOF ¶ 516. Consequently, personnel allocation commonly arises (and is resolved) in divestiture transactions. *Id.* ¶ 520. Chrome and Chromium are directly managed by a distinct team within Google that could transfer with the Chrome product. *Id.* ¶¶ 517–18; Rem. Tr. 2027:7–2028:25 (Locala (Pls. Expert)) (describing exemplars and methods for easing personnel allocation). Similarly, "virtually every divestiture" includes transition services agreements that ease the migration of administrative services. Rem. Tr. 2029:1–2030:4 (Locala (Pls. Expert)). Chrome's shared technical infrastructure accounts for only [redacted]% of its operating

expenses. Pls. PFOF ¶ 519. Similar divestitures of technology products and highly integrated companies have been successful. Rem. Tr. 2017:10–19 (Locala (Pls. Expert)) (highlighting almost 600 divestitures of billion-dollar companies in the past decade).

1074. (Def. PFOF ¶¶ 252, 254, 262): Chrome's buyer could replicate Google's technical infrastructure with their own solutions or those available on the open market. Rem. Tr. 2527:3–8 (Nieh (Def. Expert)). Smaller companies could leverage worldwide hardware infrastructures offered by public cloud providers. *Id.* 2646:3–2647:19. Hyperscalers and public cloud providers also operate their own software technical infrastructure. Pls. PFOF ¶ 498.

1075. (Def. PFOF ¶¶ 253, 303): Google is not the only U.S. company capable of supporting the open-source Chromium project. Rem. Tr. 1472:2–1473:15 (Mickens (Pls. Expert)) (showing that many technology companies support Kubernetes, a comparable commercial, critical open-source project). Indeed, Google recently formed the Supporters of Chromium-Based Browsers initiative, and multiple leading technology companies have already pledged their support as members. Rem. Tr. 1694:14–1695:4 (Tabriz (Google)). There is no evidence suggesting that divesting Chrome will degrade Chromium. Pls. PFOF ¶ 523.

1076. (Def. PFOF ¶¶ 263, 266–71, 296): Google is not especially capable of providing cybersecurity for Chrome. *Infra* ¶¶ 1082–85; Pls. PFOF ¶¶ 535–36 (recognizing past Google security vulnerabilities).

1077. (Def. PFOF ¶¶ 272–77, 284–85, 288): A Chrome divestiture would not be overly burdensome. In opining that a divestiture would take a minimum of five years, Google's expert listed tasks the divestiture buyer would need to complete, Def. PFOF ¶ 273, but admitted that he did not calculate any estimate of how long each task would take, Rem. Tr. 2627:18–2629:15 (Nieh (Def. Expert)). He further recognized that some of those tasks could be done in parallel.

Id. 2627:14–17. Numerous close precedents to a Chrome and Chromium divestiture suggest the divestiture is feasible in a reasonable time frame, including the experience of other Chromium-based browsers that rebuilt cloud-based services away from Google and the open-sourcing of Netscape Navigator. Rem. Tr. 1472:2–1474:10, 1544:22–1546:5, 1576:2–13 (Mickens (Pls. Expert)). Google's reliance on Opera's migration is deeply misplaced; Opera did not take an existing browser and migrate cloud services, it fully rebuilt its browser on a new browser engine (which it accomplished in only four-to-five years). Rem. Tr. 2643:23–2645:22 (Nieh (Def. Expert)) (referring to Opera's example as support for assertion that Chrome divestiture would take five years). Moreover, specific tasks that may be required during a divestiture, such as a prospective migration of Chrome users' data, could be done securely, and in myriad ways. Pls. PFOF ¶¶ 525, 527 (describing multiple industry-standard methods of migrating data).

1078. (Def. PFOF ¶¶ 286–87): Divesting Chrome would harm neither Chrome nor its users. Pls. PFOF ¶¶ 484–509, 528–29. The share shift from divesting Chrome is certainly material because it would significantly increase the share of the market held by Google's rivals by at least 65%. Rem. Tr. 2155:22–2156:6 (Chipty (Pls. Expert)).

1079. (Def. PFOF ¶ 293): A buyer of Chrome will have its own incentives to invest in Chrome and Chromium. Rem. Tr. 2291:19–24 (Chipty (Pls. Expert)).

1080. (Def. PFOF ¶ 294): Parties to divestiture transactions typically address employee continuity through retention programs, ensuring the seller can deliver key personnel at closing and the buyer can protect its investment by maintaining a stable workforce. Such retention plans can be used to protect against the loss of key Chrome personnel following the issuance of a court order. Rem. Tr. 2020:16–2021:8, 2027:7–2028:8 (Locala (Pls. Expert)) (explaining how "retention packages . . . make it more lucrative" for personnel to transfer with the divested asset

and thus "employees are usually willing to go").

1081. (Def. PFOF ¶ 295): No evidence suggests that the Chrome divestiture would harm the product or consumers. Rather, it would be a critical step towards restoring the competition that Google unlawfully squelched. *Supra* ¶ 1078; Pls. PFOF § VI.A.

1082. (Def. PFOF ¶ 297): Google and Microsoft received similar cybersecurity benchmark rankings in 2024, with Google's score within three points of Microsoft. PXR0306 at -352 (Google board deck listing cybersecurity benchmark rankings for Apple, with a score of 89, Google, with a score of 86, and Microsoft, with a score of 83); Rem. Tr. 2384:12–25, 2386:25–2387:11 (H. Adkins (Google)).

1083. (Def. PFOF ¶ 299): Google relies on information shared by industry peers to analyze the cybersecurity threat landscape. Rem. Tr. 2381:17–2382:8 (H. Adkins (Google)). The U.S. Government has unique capabilities that Google does not as it relates to assessing national security issues. *Id.* 2357:1–2358:19 (U.S. Government's unique cybersecurity-related capabilities include access to classified information and subpoena power).

1084. (Def. PFOF ¶ 300): Google is not alone capable of defending Chrome from cyberattacks. Rem. Tr. 2484:9–16, 2481:7–2482:14 (Pichai (Google)) (explaining Google built a "multi-process security architecture" with "many, many layers of protection" in Chrome). Of note, the "secure by design" pledge, repeatedly referenced in Google's proposed findings of fact, *see, e.g.*, Def. PFOF ¶¶ 266, 268, 298, has been signed by more than 300 other companies. Rem. Tr. 2382:9–19 (H. Adkins (Google)).

1085. (Def. PFOF ¶¶ 298, 301–02): Google uses multiple outside vendors for its cybersecurity needs, including for Chrome. The new owner of Chrome could continue to rely on these plus other cybersecurity vendors post-divesture. Rem. Tr. 2367:11–2368:2 (H. Adkins

(Google)) (Google relies on 30–40 external cybersecurity vendors); *id.* 2370:14–19 (Google uses close to 19,000 third-party, open-source software packages); Rem. Tr. 1429:4–1430:9, 1448:2–16 (Mickens (Pls. Expert)) (opining that the Chrome divestiture is feasible and clarifying that security is part of technical feasibility). Despite claiming that divesting Chrome would likely degrade cybersecurity for users and the U.S. Government, Google executives have acknowledged that it is "nearly impossible" for Google to know the cybersecurity systems of another company. Rem. Tr. 2359:5–2360:21 (H. Adkins (Google)); Rem. Tr. 2481:7–2482:22, 2483:24–2484:8 (Pichai (Google)). Notably, Plaintiffs represent the Unites States in this case and the Court must defer to the United States' views on national security over those of private actors.

1086. (Def. PFOF ¶ 305): Google highlights the fact that Chromium is used by other Google products, but nothing would stop Google from continuing to use Chromium under the Plaintiffs' RPFJ's allowances. Pls. PFOF ¶ 523.

1087. (Def. PFOF ¶¶ 308–14): Google has technologies built on Chromium, like Webview, as well as other businesses with an interest in the success of the web such that Google will have an incentive to maintain Chromium post-divestiture. Rem. Tr. 1476:8–1477:11 (Mickens (Pls. Expert)). The Chrome engineers who are responsible for most of the code contributions to the Chromium project today could continue to provide support if transferred to the buyer as part of the divestiture. Rem. Tr. 1687:22–1688:13 (Tabriz (Google)) ("[M]ost of the talent . . . actually contributing to Chromium is in the Chrome team."). Moreover, Chromium will receive developer attention from others outside of Google post-divestiture given the many technology companies with a deep interest in ensuring web browsers are fast and safe. Rem. Tr. 1470:4–24, 1471:1–14, 1477:12–18 (Mickens (Pls. Expert)) (Chromium-based browser developers also have an interest in keeping Chromium source code viable); Rem. Tr. 1694:14–

1695:4 (Tabriz (Google)) (confirming Supporters of Chromium-Based Browsers initiative members who have pledged their support).

1088. (Def. PFOF ¶ 316): The final divestiture order would allow for transition services to address and resolve any technical dependencies between ChromeOS and a divested Chrome post-divestiture. Rem. Tr. 2029:1–2030:4 (Locala (Pls. Expert)); Pls. PFOF ¶¶ 520–21.

1089. (Def. PFOF ¶¶ 316, 319–22): Google is presently replacing ChromeOS with Project Aluminium, which Google plans to launch in 2026. Pls. PFOF ¶ 528. Google designed the existing version of ChromeOS such that is "not very modular" and "difficult to work with." Rem. Tr. 1595:11–1596:3 (Mickens (Pls. Expert)). Recognizing that design flaw, Google decided to rebuild ChromeOS atop Android. *Id.* 1595:11–1596:6. As Google concludes its replacement of ChromeOS, it could continue to support existing ChromeOS devices through a transition services agreement with the Chrome divestiture buyer. Rem. Tr. 2029:1–2030:4 (Locala (Pls. Expert)); Pls. RPFJ § V.A ("Google must promptly and fully divest Chrome . . . subject to terms that the Court and Plaintiffs approve."); Pls. RPFJ Exec. Summary, ECF No. 1184, at 12 n.4 (describing Plaintiffs' proposal for a further order implementing divestiture).

1090. (Def. PFOF ¶ 324): The way that Chrome and Chrome Enterprise rely on Google is no different than the other API-based connections that a divestiture buyer could readily keep, substitute, or replace. Rem. Tr. 1577:2–1578:9 (Mickens (Pls. Expert)); Pls. PFOF ¶¶ 499, 502.

1091. (Def. PFOF ¶ 326): The Chrome Web Store relies on an API-based connection to Google's services to protect Chrome users. RDX0070* at .005 (identifying a Remote Procedure Call API connection between the Chrome Web Store and Google's backend services); Pls. PFOF ¶¶ 489, 503. A divestiture buyer could maintain this API like any other. Pls. PFOF ¶¶ 499–502.

1092. (Def. PFOF ¶ 327): Google has failed to demonstrate that divesting Chrome

would necessarily harm or degrade ChromeOS, Chrome Enterprise, or the Chrome Web Store. *Supra* ¶¶ 1089–91.

1093. (Def. PFOF ¶ 329): Far more than "some indirect revenue" flows through Chrome to Google. Pls. PFOF ¶ 474 ($[redacted] billion in search advertising revenue is attributable to Chrome). And Google recognizes that Chrome is a "key distribution channel" for both search and AI technologies. *Id.* ¶ 449. Chrome generates incremental revenue for Google because of incremental search usage. PXR0206 at -504 (Chrome delivered $[redacted] billion of incremental search revenue in 2023, more than [redacted] times as much as any other category listed).

1094. (Def. PFOF ¶ 330): Any company who owns Chrome will have a tremendous incentive to invest in and improve Chrome both for its direct revenue benefits and to drive incremental revenue to the company's other services. Rem. Tr. 4394:2–23 (Murphy (Def. Expert)); PXR0206 at -507 (describing benefits Chrome brings to adjacent web services, none of which is specific or unique to Google's products and services); Pls. PFOF ¶¶ 465, 470, 473, 483.

1095. (Def. PFOF ¶ 331): Google's monetization is presently that of an unlawful monopolist exercising its monopoly power to earn monopoly profits; matching that level of earnings would perpetuate the ongoing harm to consumers and advertisers. Mem. Op. at 4, 259–63. A divested, independent Chrome will be financially viable. Rem. Tr. 1994:25–1995:9 (Locala (Pls. Expert)); Pls. PFOF ¶¶ 465, 470–72, 478.

1096. (Def. PFOF ¶¶ 332–33): A divested Chrome would have ample avenues for revenue generation available to it, including search distribution, display advertising, and GenAI services. Rem. Tr. 2002:7–2005:24 (Locala (Pls. Expert)).

1097. (Def. PFOF ¶ 334): Chrome's technical costs are low as compared to its other types of expenses (e.g., marketing), and there is no reason to believe that the divestiture would

change that. Rem. Tr. 2011:14–2012:9 (Locala (Pls. Expert)) (discussing financial information sourced from PXR0162 at -864 and PXR0206 at -551); Pls. PFOF ¶¶ 507, 509, 516.

1098. (Def. PFOF ¶ 336): While some user attrition may occur after divesting Chrome, this would likely not threaten the financial viability of an independent Chrome. Rem. Tr. 2070:16–2071:2 (Locala (Pls. Expert)); Pls. PFOF ¶¶ 465–66.

1099. (Def. PFOF ¶ 342): The details of divestitures are often determined during the decree compliance process. Am. Final J. Order, *Steves and Sons, Inc. v. Jeld-Wen, Inc.*, No. 3:16-cv-545-REP (E.D. Va. Mar. 13, 2019), *amended by* ECF No. 2282; Modif. of Final J., *United States v. Am. Tel. & Tel. Co.*, No. 82-0192 (D.D.C. Aug. 24, 1982). Plaintiffs' RPFJ definition of Chrome is sufficient to generate buyer interest and preliminary bids. Pls. PFOF ¶ 514.

1100. (Def. PFOF ¶¶ 335, 337–40, 345): There is no reason to believe divesting Chrome would be any more difficult or time-consuming than other M&A transactions with significant technology. Rem. Tr. 2030:16–2032:24, 2038:15–2039:1 (Locala (Pls. Expert)); Pls. PFOF ¶¶ 509–10, 520–22. Dr. Zenner's opinions that a court-mandated divestiture of Chrome renders it "value destructive" relate solely to the value impact on Google. Rem. Tr. 2694:23–2695:15, 2696:13–19, 2696:24–2697:21 (Zenner (Def. Expert)). A buyer would be well positioned to ensure Chrome gets continued attention and development as a part of their assessment. Rem. Tr. 2014:17–2016:16, 2021:9–2022:10 (Locala (Pls. Expert)); Pls. PFOF ¶ 483.

1101. (Def. PFOF ¶¶ 391, 398–99): The revenue that flows through Android smartphones—including Search revenue—incentivizes Google to continue to invest in Android. Rem. Tr. 4387:15–4388:4 (Prof. Murphy (Def. Expert)) (acknowledging, as identified in PXR0162 at -875, the 2023 revenue channeled through Android smartphones provides an incentive to invest in Android); PXR0162 at -875 (listing $[redacted] billion in 2023 Android indirect

revenue, with search constituting $[redacted] billion). Google is further incentivized to invest in Android to compete with Apple's iOS. Mem. Op. at 254–55.

IV. DATA DISCLOSURE AND SYNDICATION REMEDIES ARE NECESSARY TO OPEN COMPETITION IN SEARCH AND SEARCH TEXT ADS

A. Google's IP Arguments Are Exaggerated And Do Not Warrant Rejecting The Data Disclosure And Syndication Remedies

1102. (Def. PFOF ¶¶ 404, 515–16, 591, 610–11, 613–14, 620): Google's own information retrieval expert contradicted Mr. Pichai's statements. When asked if rivals could use the disclosed materials to replicate Google's "end-to-end" search stack, Prof. Allan testified that he did not think it possible, and any attempt would "be a long slog." Rem. Tr. 2951:22–2952:8 (Allan (Def. Expert)). During redirect, when asked to clarify which parts of the end-to-end search stack would be made available to Qualified Competitors, Prof. Allan only testified that query understanding information and ranking signals would be disclosed. *Id.* 2954:5–2955:10. With respect to query understanding, his opinion is that rivals will be able to accumulate a "a thesaurus of query words," not that Google's underlying technology will be disclosed. *Id.* 2784:12–2786:14, 2817:13–2819:5, 2843:5–17; Pls. PFOF ¶¶ 591, 624. Prof. Allan's opinion regarding the disclosure of Google's ranking signals was based on an incorrect assumption regarding what Plaintiffs have requested be disclosed in Plaintiffs' RPFJ. *Infra* ¶ 1155.

1103. (Def. PFOF ¶ 405): Google greatly exaggerates its loss of intellectual property. Essentially, Google argues that the disclosed data can be used as "training data for an LLM to reproduce essentially our IP." Rem. Tr. 3519:19–3520:16 (Reid (Google)). This statement was repeatedly discredited by Google's own fact witnesses and information retrieval expert. *Supra* ¶ 1102; Pls. PFOF ¶¶ 841–42, 844–49.

1104. (Def. PFOF ¶¶ 406–07, 409, 436–37, 441, 443, 445–47, 450–51, 453, 456–57): The syndication, index, and data remedies contain built-in measures to protect against free riding

and preserve Google's and rivals' incentives to invest. *See* Pls. Br. at 49 (collecting relevant supporting citations to Pls. RPFJ and Pls. PFOF). There are also many market incentives that will push Google and rivals to innovate, even if some free riding exists. *Id.* at 50 (collecting relevant supporting citations to Pls. PFOF).

1105. (Def. PFOF ¶¶ 408, 426): Google's broad assertion that Plaintiffs' data-sharing remedies "implicate" Google's technologies is misleading; remedies "implicat[ing]" Google's technologies is not the same as enabling the disclosure and replication of Google's intellectual property, the latter of which is not supported by the record. *Supra* ¶¶ 1102–03. The citation to Mr. Muralidharan's testimony is also misleading; Plaintiffs' RPFJ only concerns raw Ads Data serving as inputs into the components of Google's Auction and Prediction stack. *Infra* ¶ 1169.

1106. (Def. PFOF ¶ 410): Google's assertions that Plaintiffs offered no evidence to rebut the claim that Google would suffer "widespread loss of [its] intellectual property" are flatly untrue. Plaintiffs have offered an extensive record—including testimony from Google's executives and outside experts, and Google-produced documents—which contradicts Google's claim that it will suffer a widespread loss of its intellectual property. *Supra* ¶¶ 1102–03.

1107. (Def. PFOF ¶¶ 412, 414, 431): "Google's penchant for innovation is consistent with the behavior of a monopolist." Mem. Op. at 247. Moreover, Google's search innovations are fueled by its scale advantage. Liab. Tr. 2257:11–15 (Giannandrea (Apple)) ("[T]he more queries a search engine sees, the more opportunities . . . the engineers have to look for patterns and improve the algorithm."); Des. Liab. Tr. 153:4–24 (Google-PN 30(b)(6) Dep.) (Google looks for patterns in its search log to "figur[e] out how [Google] can improve [its] algorithms."); Liab. Tr. 1791:16–1796:15 (Lehman (Google)) (Better results lead to more informed user interactions, which leads to better training data, which leads to better models, which again leads to better

results, and thus creates a "virtuous cycle" of improvement. (discussing UPX1115 at -529)).

1108. (Def. PFOF ¶¶ 413, 425): Spell Checking, Synonyms, Autocomplete, and Google's whole-page ranking system all benefit from user data. Liab. Tr. 8088:21–24 (Gomes (Google)); Liab. Tr. 2272:10–2273:10 (Giannandrea (Apple)) (Google became better at spell checking by understanding what mistakes users made when typing queries); Liab. Tr. 227:13–228:11 (Varian (Google)). Images and Knowledge Panels (derived from the Knowledge Graph) similarly benefit from user data. UPX0228 at -502 ("[A] click might tell us that an image was better than a web result. Or a long look might mean a KP [Knowledge Panel] was interesting. We log these actions, and then scoring teams extract both narrow and general patterns."). RankBrain is "[t]rained on billions of pairwise click preferences of titles and documents." UPX0003* at -762. Google trains RankEmbedBERT "on [redacted] queries, randomly sampled from [redacted] of [user search logs]." UPX0868* at -610. Maps and Local benefit from Google's user-generated content at scale. Pls. PFOF ¶¶ 588, 590. Whole-page ranking benefits from Google's user-data at scale. *Id.* ¶¶ 623, 625.

1109. (Def. PFOF ¶ 420): Many of Google's ranking systems benefit from Google's user data at scale. Mem. Op. at 34–39; Liab. Tr. 1789:4–16 (Lehman (Google)) ("Not one system but a great many within ranking are built on [user data] logs. This isn't just traditional systems . . . but also the most cutting-edge machine learning systems." (quoting UPX0219 at -426)); Pls. PFOF ¶ 623.

1110. (Def. PFOF ¶¶ 427–28): Improvements in Google's ad algorithms are fueled by Google's scale. Pls. PFOF ¶¶ 712–13.

1111. (Def. PFOF ¶¶ 429–30, 432–33): Plaintiffs' data-sharing remedies will help accelerate rivals' competitiveness by removing the scale barriers. Pls. PFOF ¶¶ 592, 645, 647–

48. But Plaintiffs' remedies alone will not put rivals on equal footing as competitors. *First*, the index data sharing remedy does not give rivals access to Google's actual index. *Id.* ¶¶ 594–96, 597. Notably, because Plaintiffs' index-sharing proposal does not require Google to share its crawled content, rivals will still need to find a way to overcome the robot.txt scale barrier. Liab. Tr. 2656:19–2658:24, 2766:1–21 (Parakhin (Microsoft)). *Second*, Plaintiffs request for Knowledge Graph, Glue, and RankEmbed data does not require Google to disclose any of those systems' underlying technology. Pls. PFOF ¶¶ 589–90 (KG), 624 (Glue); Rem. Tr. 195:25–197:19 (Durrett (Pls. Expert)) (the BERT technology that underlies RankEmbed is already widely understood); Rem. Tr. 3375:9–12 (Collins (Google)) ("BERT technology is available to other companies."). *Third*, Google's assertion that competitors could use an LLM to disclose Google's "core search" technology is misleading. *Supra* ¶¶ 1102–03; Rem. Tr. 2935:9–17 (Allan (Def. Expert)) (explaining that the resulting system would as best mimic Google the way a "parrot mimics a human"). *Fourth*, search syndication does not require Google to syndicate most of its search features, and rivals cannot syndicate all their queries from Google—and the amount must decrease over time. Pls. RPFJ at 18–21. *Fifth*, the ads data-sharing remedies seek inputs into algorithms used to measure the quality of Google's search ads, not all ads information. *Id.* at 23–26; Rem. Tr. 2847:11–14 (Allan (Def. Expert)); *cf. id.* 2848:13–2849:8 (not offering any opinions on search ads).

1112. (Def. PFOF ¶ 435): Today Google doesn't compete by paying users because with monopoly power; it doesn't need to. Other search engines that do not have monopoly power (e.g., Bing, Brave, Ecosia) do compete by paying (or offering something of value to users), as Prof. Murphy recognizes. Pls. PFOF ¶¶ 440–41.

1113. (Def. PFOF ¶¶ 438–40): Google's ability to experiment and determine what users

want benefits from its user data at scale. Liab. Tr. 5793:24–5795:3 (Whinston (Pls. Expert)) ("[W]hen you don't have a lot of scale, you can't do a lot of these experiments. And moreover, the experiments that you do will tend to have smaller samples. So it's either going to be less precise … or it's going to have to go a lot longer. That's just a basic property of statistics: The bigger the sample, the more precise the results."); Liab. Tr. 2646:7–22 (Parakhin (Microsoft)) ("If I have enough . . . traffic, I can quicker understand [if] changes are good or not or run more experiments at the same time."); *supra* ¶ 1107.

1114. (Def. PFOF ¶¶ 442, 444): Search VP Elizabeth Reid's statement was made-for-litigation and not supported by any analysis. Rem. Tr. 3663:10–20 (Reid (Google)) ("[I]t's not a calculated thing."). Tellingly, Ms. Reid did not discuss her "estimate" with anyone at Google and only shared it with Google's lawyers. *Id.* 3663:21–3664:1 ("I don't believe I talked about it to anybody outside of counsel."). Of course, Ms. Reid's "estimate" was not disclosed to Plaintiffs during discovery.

1115. (Def. PFOF ¶ 448): Google's contracts reduced rivals' incentives to invest. Liab. Tr. 2643:9–23 (Parakhin (Microsoft)) (explaining without the "ability to effectively distribute, it's almost meaningless to invest in [search]."); Liab. Tr. 2344:3–20 (Giannandrea (Apple)) ("[I]f you were going to make a multibillion dollar investment [in a search engine], you would need to have some business justification for it."); Liab. Tr. Tr. 5840:20–5841:3 (Whinston (Pls. Expert)) (explaining that if firms lack incentives to invest to improve their quality, they will not improve and they will be weaker, less effective competitors).

1116. (Def. PFOF ¶ 454): There are only two syndicators of general search text ads of significance, Pls. PFOF ¶ 790, and Google's conduct has prevented other potential syndicators from entering the market, Rem. Tr. 1797:8–1798:7, 1798:14–1799:16 (Epstein (adMarketplace)).

Google's own "customer satisfaction signal" for its ad syndication product shows widespread advertiser dissatisfaction with the quality of its AdSense for Search product. Pls. PFOF ¶ 795.

1117. (Def. PFOF ¶ 455): Google would be able to choose a nondiscriminatory market-based price for its ad syndication service. Its choice determines whether rival syndication services are competitive. Pls. Br. § I.C.4. adMarketplace, which provides ad syndication, testified that the measures would improve its ability to compete in ad syndication. The syndication remedies would similarly help other Qualified Competitors. Pls. PFOF ¶¶ 3, 800–04, 809. Google has monopoly power in the market for general search text ads, the product being syndicated. Mem. Op. at 191.

1118. (Def. PFOF ¶ 458): Plaintiffs' RPFJ does not require Google to share its search index. Pls. RPFJ at 15. Rather, Plaintiffs have requested that Google share descriptive information about the documents in Google's search index. Pls. PFOF ¶ 594. This information is meant to serve as a guide or heatmap so that rivals can triage which sites to prioritize in building their own search index in order to accelerate competition. *Id.* ¶ 596.

1119. (Def. PFOF ¶ 464): Google's Knowledge Graph benefits from Google's scale that incentivizes users and business to generate content for Google. Pls. PFOF ¶¶ 588–90. As Google's internal documents acknowledge, user data is not limited to click and query data and can encompass user generated content. PXR0173* at -451 ("User Data may include information . . . *created* by Users[.]" (emphasis added)).

1120. (Def. PFOF ¶¶ 466–72, 485): Contrary to Google's characterization, Mr. Turley testified that OpenAI is "not on track currently" to use its own "index technology" for even 80% of queries by the end of year. Rem. Tr. 397:8–398:12 (Turley (OpenAI)) (responding to Court's question). Even with access to Plaintiffs' remedies, OpenAI would need at least five years to

determine if it could build an "index technology" that can "stand on its own feet." *Id.* 426:1–25 (responding to the Court's questions); Pls. PFOF ¶¶ 850, 945, 955. This is because OpenAI lacks the scale required to know what makes a good web source versus a bad one—especially for tail queries. Rem. Tr. 399:21–401:11 (Turley (OpenAI)) (explaining that the proposed data sharing remedies would help ameliorate OpenAI's cold start problem); *id.* 394:17–397:7 (describing the difficulty of getting index coverage for long-tail queries due to its scale); PXR0176 at -122–23 ("The challenge is that Search covers a broad range of user needs," and "users don't yet use ChatGPT for the full range of Search needs."); PXR0182 at -768 (highlighting sixteen "major quality gaps" in OpenAI's search product); Pls. PFOF ¶¶ 580, 582, 645–67, 955. Contrary to Google's characterizations, Mr. Turley also testified that OpenAI would use the index data shared under Plaintiffs' remedies—including signals derived from user-side data—not only to facilitate investment in core AI innovations but also to "accelerate the development of its own index." Rem. Tr. 399:21–402:5, 409:11–410:22 (Turley (OpenAI)); PXR0176 at -127 ("'Search' ultimately is critical for OpenAI's mission" by providing "accurate, real-time information" and "direct[ing users] to the best web resources."); Pls. PFOF ¶¶ 592, 598–99, 626–27, 645–47.

1121. (Def. PFOF ¶ 473): The improvements that Mr. Provost testified to, Rem. Tr. 1246:24–1248:24 (Provost (Yahoo)), relate to the concept of query understanding, which Mr. Provost testified is something that is critical and that Yahoo strives to improve, Rem. Tr. 1245:20–1246:19 (Provost (Yahoo)); PXR0058* at -848, -869 (discussing improving query understanding and the use of search data to improve Yahoo).

1122. (Def. PFOF ¶¶ 475–81): Google misstates the history and development of Perplexity, which, in Google's view, may be either a search engine, a search service, or a "chatbot." *See* Def. PFOF ¶¶ 194, 997. In the first instance, Google mischaracterizes the current

state and timeline of Perplexity's product; Mr. Shevelenko testified that Perplexity's query understanding model is "an ongoing continued development investment" and that Perplexity's index is increasing in coverage but that he "doesn't think [Perplexity is] there yet" on achieving complete coverage. Rem. Tr. 795:14–796:13 (Shevelenko (Perplexity)). Second, Google mischaracterizes Mr. Shevelenko's testimony as to the costs of building Perplexity's product; Mr. Shevelenko carefully explained the cost of any discrete piece of Perplexity's technology would be in the single-digit millions, but that "engineers…come for equity compensation" which is in the "single-digit billions of dollars." *Id.* 794:22–795:9. Finally, Google mischaracterizes Perplexity's use of ranking signals, as Perplexity does not build its own, rather, Perplexity gathers its ranking signals from public aggregators that provide ranked results across "many other search engines," including Google's own search engine, to improve Perplexity's overall algorithm. *Id.* 699:8–701:3.

1123. (Def. PFOF ¶ 484): Google misinterprets Mr. Turley's use of the term "index technology." In response to a "clarifying question," Mr. Turley explained that, during his testimony, he used the term "index technology" to describe an "entire system" that ranks and retrieves results. Rem. Tr. 460:6–461:1 (Turley (OpenAI)).

1124. (Def. PFOF ¶ 485): Contrary to Google's characterization, Mr. Turley testified that access to a search syndication license would serve as a short-term stopgap that OpenAI could use to "immediately improve the quality of the product" while affording it the time it needs to build an "index technology" capable of competing with Google across all user queries. Rem. Tr. 424:18–425:24 (Turley (OpenAI)); Pls. PFOF ¶¶ 739–40.

1125. (Def. PFOF ¶ 486): DuckDuckGo has fully built out some indices. For others, such as web, it has "made a really conscious decision not to try to build [them] out as big . . . .

[A] lot of other start-ups that came before us that have gone out of business who … tried to just go after and build a scale index and never could get enough scale and users to make it worth the investment." Rem. Tr. 836:21–837:20 (Weinberg (DuckDuckGo)).

1126. (Def. PFOF ¶¶ 487–89, 802–10, 817–19, 831–40, 865, 877): The syndication agreements Google describes are commercial offerings, not services provided pursuant to a remedial order entered against an adjudicated monopolist who illegally maintained its monopoly in two separate markets for over a decade. Pls. PFOF ¶ 754. For example, the Plaintiffs' remedy would force and permit rivals to differentiate. Pls. RPFJ at 18–21. Rivals have an incentive to differentiate their product and should be allowed to. Pls. PFOF ¶¶ 859, 930; Rem. Tr. 830:6–18 (Weinberg (DuckDuckGo)) ("[I]t is very important to distinguish your search engine in how you rank and where you are placing things, how the results appear.").

1127. (Def. PFOF ¶ 490): Jesse Adkins, Google's head of syndication, provided additional support for the proposition that a search syndication can provide a bridge until a new search engine can be fully independent. *See* Pls. PFOF ¶¶ 741–43.

1128. (Def. PFOF ¶ 492): Mr. Weinberg described how DuckDuckGo will use the data sharing remedies to tailor the syndication it receives from Microsoft by reducing the number of ads DDG displays in response to navigational queries. Rem. Tr. 851:17–852:7 (Weinberg (DuckDuckGo)).

1129. (Def. PFOF ¶ 493): Microsoft does not have the same need for syndication as a new entrant. Liab. Tr. 3093:4–5 (Tinter (Microsoft)) (Bing launched in 2009).

1130. (Def. PFOF ¶ 495): adMarketplace currently offers a search text ad product called AMP Results and plans to invest and compete in the general search text ads market. Rem. Tr. 1813:14–1814:9 (Epstein (adMarketplace)) (describing how adMarketplace could offer

advertising to a new GSE); *id.* 1865:16–1866:8 (describing adMarketplace's intention to enter general search text ads market). Google's conduct has prevented adMarketplace from syndicating to GSEs. *Id.* 1797:8–1798:7, 1798:14–1799:16.

1131. (Def. PFOF ¶ 496): Google conflates two separate products. "Amp Results" is a traditional text ad, "exactly like what you'd expect from a Google Search result experience," where a user enters a query in a search box and is directed to a SERP containing AMP Results ads. Rem. Tr. 1786:24–1787:21 (Epstein (adMarketplace)). Google's PFOF ¶ 496 describes a different product—"Amp Suggests"—which places text ads below a search box based on a partial query. *Id.* 1787:22–1788:10 (discussing PXRD015 at 4 (illustrating AMP Results) and at 5 (illustrating AMP Suggests)). While both AMP Results and AMP Suggests ads could assist a rival GSE seeking to monetize through advertising, they are different products.

1132. (Def. PFOF ¶ 497): Mr. Epstein testified repeatedly and unequivocally that the RFPJ's Ads Data sharing requirements would improve adMarketplace's relevance targeting. Pls. PFOF ¶¶ 713–14 (citing Rem. Tr. 1803:23–1804:13, 1814:20–1815:11 (Epstein (adMarketplace)); Pls. RFPJ § VI.E.

1133. (Def. PFOF ¶ 498): adMarketplace would use the ad syndication remedy to temporarily backfill its own ads inventory while developing direct relationships with advertisers through price competition, ultimately eliminating the need to backfill. Rem. Tr. 1807:20–1809:1 (Epstein (adMarketplace)) ("We'd also be charging, you know, less money to the advertiser so the advertisers who were buying through Google could then see that they're getting a substantial portion of volume through us and come to our system directly. Now you've gotten rid of the backfill problem."); Pls. PFOF ¶ 801 (describing syndication as a "temporary transitionary period."). Notably, Jesse Adkins—Google's head of syndication—agrees that backfilling ads or

organic results is a method by which a new search engine could support itself while building its own scale and capabilities. Pls. PFOF ¶¶ 744–45.

1134. (Def. PFOF ¶¶ 499–500): adMarketplace sits between advertisers and publishers, competing both by charging advertisers lower CPCs and by paying publishers higher revenue shares. Rem. Tr. 1780:8–22, 1782:13–1783:19 (Epstein (adMarketplace)) (describing PXRD015 at 2). Google's characterization of this strategy as "illogical" ignores that adMarketplace proposes doing both by compressing the high margins Google has maintained through its "[u]nconstrained price increases." Mem. Op. at 9, 23–24, 260; Rem. Tr. 1807:20–1809:1 (Epstein (adMarketplace)) ("monopoly margin will get compressed" through competition); Rem. Tr. 1816:11–1817:14 (Epstein (adMarketplace)) (adMarketplace will "bid a little bit higher to the publisher" while "really easily undercut[ting]" Google's CPC pricing); Rem. Tr. 1803:7–22 (Epstein (adMarketplace)) (adMarketplace and others would "love the opportunity to go after the 50- to $70 billion in margin" that Google makes annually). As Mr. Epstein testified, "that's what competition looks like." Rem. Tr. 1816:11–1817:14 (Epstein (adMarketplace)) (In competitive markets, syndicators would "have to both raise their pricing to the publisher to win the click and lower their pricing to the advertiser to sell the click.").

1135. (Def. PFOF ¶¶ 411, 434, 501–06, 509): Dr. Chipty testified that, "depending on data implementation, it's possible that these remedies give rise to" free riding. Rem. Tr. 2165:10–16 (Chipty (Pls. Expert)). She described how free riding is a matter of degree and how the free-rider problem might manifest in the context of this matter. *Id.* 2165:23–2167:18. She concluded that there were "strong reasons to believe that rivals and Google would innovate more," and these factors would have to be weighed by the Court if the Court determined that Plaintiffs' remedies had any free-riding effect. *Id.* 2166:12–2167:18. Prof. Murphy similarly

testified that the effects of a remedy on innovation depend on their implementation, noting that "between sharing things from the past and sharing things from the future . . . things from the past would tend [to] have less of that negative impact," because "innovation is about the future, not so much about the past. So I would really focus on that." Rem. Tr. 4246:9–4248:11 (Murphy (Def. Expert)).

1136. (Def. PFOF ¶ 510): The relationship between access to user-side and search engine quality was fully litigated during liability. *See* generally, Mem. Op. at 34–39, 161, 226–27, 230–36. Syndication will give licensees immediate access to high-quality search results (at least for syndicated queries). Rem. Tr. 2144:12–2146:16, 2164:2–2165:9 (Chipty (Pls. Expert)) (explaining that syndication will help rivals immediately and assist them with "clos[ing] the gap more quickly"). Stronger rivals will improve the competitive process, thereby benefitting consumers. Rem. Tr. 2163:8–2164:13, 2168:10–17 (Chipty (Pls. Expert)) (describing how data sharing and syndication will help restore competition by giving rivals access to data they need to improve their search services and how increased competition benefits consumers).

B. Plaintiffs' Index Data Sharing Remedy Removes Scale Barriers To Foster Competition Without Undue Burden Or Risk Of Reverse Engineering

1137. (Def. PFOF ¶¶ 515–16, 591, 610–11, 613–14, 620): Google's characterization of Prof. Allan's testimony is misleading. *Supra* ¶ 1102.

1138. (Def. PFOF ¶¶ 519–20, 530, 533, 594–96): Google's scale gives it an advantage in building its web index. Pls. PFOF ¶¶ 580–82. Scale benefits Google's ability to understand what to crawl, when to crawl, how often to crawl, and where to store that crawled information in an index. *Id.* ¶ 580.

1139. (Def. PFOF ¶¶ 522, 524, 549–51, 553, 555, 558–59, 563, 573, 575–80): Google's scale gives it an advantage in building vertical indexes. For example, Google's vertical indexes

like the Geo Index benefit from Google's access to user-generated content at scale. Pls. PFOF ¶¶ 587–90. User-generated content is "really fundamental to [Google] having an accurate model of the world," such that these vertical indexes "live[] or die[] based on the quality of the [user-generated] data." Liab. Tr. 8237:9–24 (Reid (Google)).

1140. (Def. PFOF ¶¶ 522, 524, 549–51, 553, 555, 558–59, 563, 573, 575–80): Without Google's scale to incentivize users, businesses, and web publishers to share their data—particularly tail and local data—rivals cannot compile the data necessary to build a Knowledge Graph or vertical indexes as performant as Google's. Liab. Tr. 8237:25–8239:14 (Reid (Google)) (describing the rapid growth of Google's corpus for user-generated content and how the scale of Google's corpus helps improve freshness for its Geo and Local products); PXR0025* at -481 ("[Google has] differentiation in local/maps."); Pls. PFOF ¶¶ 587–91, 617.

1141. (Def. PFOF ¶¶ 527–28, 530, 533–34, 536, 542, 545–46, 594–96, 607): Google's scale allows it to build and deploy signals to efficiently crawl and index the open web. Rem. Tr. 3436:8–3438:25 (Reid (Google)) (Google crawls trillions of websites then uses quality signals to select a "very small subset . . . to actually index."). The three static signals Plaintiffs have proposed be shared with Qualified Competitors—popularity, spam, and quality—are scale-dependent. Popularity measures what webpages users frequent and is based on the number of Chrome visits a website receives. Pls. PFOF ¶ 595. Both spam and quality are a scale-dependent measure of webpage quality. Liab. Tr. 10274:4–10257:13 (Oard (Pls. Expert)) ("Google would like to get those spam pages out of there. So Google uses user-side data . . . to train systems to decide whether to keep those pages . . . in the index or not."); Rem. Tr. 2875:7–24 (Allan (Def. Expert)) ("[P]arts of the quality signal are derived from the webpage itself," including for webpages with robots.txt protocols that let Google but not other rivals crawl given Google's

scale.); PXR0171* at -097–98; PXR0356 at -744.

1142. (Def. PFOF ¶¶ 535, 556): Plaintiffs' RPFJ does not require Google to make available to Qualified Competitors any content or data that Google licenses from third parties—including content from data feeds—to the extent that doing so would be prohibited under the license. Pls. RPFJ § VI.A; RDX0708 at .003.

1143. (Def. PFOF ¶ 537): Today, a Qualified Competitor could not follow the same steps that Google takes to build a search index; for example, due to Google's scale, publishers provide Google's web crawler with valuable content not available to other web crawlers. Pls. PFOF ¶¶ 581–82, 586.

1144. (Def. PFOF ¶¶ 538, 540, 547, 607, 619): Plaintiffs' RPFJ does not require Google to share its entire web crawl index, crawling technology (including its specialized methods for crawling video and images), or its entire set of proprietary webpage annotations; Google is only required to share a specific set of information about its web crawl index—such as DocIDs, whether a web document is a duplicate, and static signals for popularity, quality, and spam—and can continue to compete using its full set of proprietary annotations, full search index, and its other Search technologies. Pls. RPFJ § VI.A; Pls. PFOF ¶¶ 591, 594–97, 624.

1145. (Def. PFOF ¶¶ 573–80, 582–83, 590, 616–19): As Prof. Allan clearly explained, Plaintiffs' RPFJ calls for Google to provide the databases necessary to construct their own Knowledge Graph, "not the underlying technology." Rem. Tr. 2886:15–24 (Allan (Def. Expert)).

1146. (Def. PFOF ¶ 587): Google uses click-and-query data to determine when and where to place the content of Google's Knowledge Graph on its SERP—and whether facts from the Knowledge Graph are relevant to any given user query. Rem. Tr. 3485:17–3486:17 (Reid (Google)); Rem. Tr. 2782:5–2783:25 (Allan (Def. Expert)) (Google's process for creating a

SERP involves interpreting a user query and using ranking signals to place relevant information and search features like the Knowledge Graph on the SERP.); Pls. PFOF ¶ 625.

1147. (Def. PFOF ¶¶ 600–01, 604): Contrary to Google's assertions, Google's Former VP of Search explained that Google engineers look to user queries to come up with ideas on how to make algorithmic improvements. Des. Liab. Tr. 153:4–24 (Google-PN 30(b)(6) Dep.) (agreeing that Google "looks at queries for inspiration on what it might improve on"); Pls. PFOF ¶¶ 620–25. "To develop . . . signals, engineers look at data . . . . For the majority of signals, Google takes the relevant data (e.g., webpage content and structure, user clicks, and label data from human raters) and then performs a regression." PXR0356 at -742 (Prof. Allan's back-up notes with recent discussion with Google Engineer HJ Kim); Pls. PFOF ¶¶ 629–40, 660.

1148. (Def. PFOF ¶¶ 600–01, 611): Google's freshness signals derive from scale-dependent user data like click-and-query data and are processed using underlying Google Search technologies that Qualified Competitors could not reverse engineer with the data made available under Plaintiffs' RPFJ. Liab. Tr. 10335:17–10337:11 (Oard (Pls. Expert)) (describing Google's Instant Glue system, which uses click-and-query data to determine which recent or fresh results are relevant to a user query); Pls. PFOF ¶¶ 579–80, 582, 597, 617.

1149. (Def. PFOF ¶¶ 618, 664): Prof. Allan did not opine that the data disclosed would be sufficient to disclose Glue or the Knowledge Graphs' underlying technology. Pls. PFOF ¶¶ 591 (KG), 624 (Glue). Further, Google's snapshot theory ignores the criticality of fresh data to search quality. Mem. Op. at 35 ("'Freshness,' or the recency, of information is an important factor in search quality."). The importance of fresh data to Google's search quality is evidenced by Google's practice of injecting fresh data into its systems. *See* e.g., Liab. Tr. 7828:11–7831:11 (Fox (Def. Expert)) (discussing DXD-26 at .004) (Glue/Navboost is [redacted];

RankEmbed is [redacted]); Rem. Tr. 3436:8–3438:25 (Reid (Google)) (Google crawls trillions of websites per day); *see also* Mem. Op. at 230 ("Google deploys user data to, among other things, . . . improve the 'freshness' of results[.]"). Google even deploys "instant" systems that use up-to-the-minute data to improve search quality. Liab. Tr. 10336:18–10337:11 (Oard (Pls. Expert)) ("Instant Glue is only looking at the last 24 hours of logs . . . because of that, the processing can be faster . . . that allows [Google] to get updates available . . . on the order of 10 minutes.").

1150. (Def. PFOF ¶¶ 621–23): The signals that are attached to DocJoins contain "aggregated user behavior." PXR0185 at -116–17. Aggregation is one of many possible privacy-enhancing techniques that could be used to safeguard user privacy. *See infra* ¶ 1283.

C. Plaintiffs' User Data Sharing Remedy Removes Scale Barriers To Foster Competition Without Undue Burden Or Risk Of Reverse Engineering And Can Be Implemented With Privacy Safeguards

1151. (Def. PFOF ¶¶ 636, 642, 645): Plaintiffs have not proposed that the following information Google retains in the Glue model be shared with rivals: the ranking signals, information retrieval scores, the query interpretation that triggers Knowledge Panels; and the salient terms for a given user query. Pls. RPFJ § VI.C. Plaintiffs have only asked that Google share user-side data Google uses to build Glue. *Id.* § VI.C. This would include the type of information about how users interact with all search results, Def. PFOF ¶ 633, and data Google gathers from the user like location and device type, Pls. PFOF ¶ 626.

1152. (Def. PFOF ¶¶ 338, 642, 655–58): Plaintiffs have not proposed that the following information Google uses to train RankEmbed be shared with rivals: IS scores (derived from human raters), query-based salient terms, or document salient terms. Pls. RPFJ § VI.C. Plaintiffs have only asked that Google share user-side data Google uses to build RankEmbed. *Id.* § VI.C.

1153. (Def. PFOF ¶¶ 639, 654): RankEmbed is just one of many components in

Google's search stack. Pls. PFOF ¶ 846.

1154. (Def. PFOF ¶¶ 641, 643–51, 653, 659–60, 799–801, 854, 874–75, 878–80): Google's arguments that a fine-tuned or pre-trained LLM can be used to "reverse engineer" Google Search are misleading and unsupported by the record. *Supra* ¶ 1102. Prof. Allan was clear that by "reverse engineer," he meant that rivals would be able to create an LLM that attempts to mimic Google. Rem. Tr. 2934:11–13 (Allan (Def. Expert)). Prof. Allan, however, never opined that such a system would match Google's search quality. *Id.* 2947:6–19 ("I do not believe I ever offered that opinion[.]"); *id.* 2946:2–7 ("I am offering no opinion on how fast things could be."). He was only willing to opine that this system could be used to improve a rival's search engine. *Id.* 2948:23–2950:1 (confirming example that a competitor could improve its product by 25%). Prof. Allan's opinion could not go any further because—as explained by Google's top executives—even an LLM trained on *all* of Google's search logs and ranking data would not be comparable to Google Search. Pls. PFOF ¶¶ 841–42. Google also fails to account for the reality that Qualified Competitors will lose some utility attendant to any data-disclosure remedy when any necessary privacy-enhancing techniques are applied. *See Id.* ¶¶ 656–710. Qualified Competitors would receive data and other information that would be useless without the extensive engineering work required to identify how to use the data to improve a search product and to implement the complex systems to do so. Then, Qualified Competitors will need to develop and train algorithms to use these signals. Qualified Competitors will also need to develop the technical structures to take advantage of these algorithms. Rem. Tr. 2786:15–2787:24, 2935:9–2938:11, 2938:13–2939:21 (Allan (Def. Expert)).

1155. (Def. PFOF ¶¶ 666–68): Plaintiffs' RPFJ does not require Google to share the ranking signals Google stores in Glue or RankEmbed; therefore, Prof. Allan's opinions rely on

unsupported assumptions. *Supra* ¶¶ 1151–52.

1156. (Def. PFOF ¶¶ 669, 871–73): Prof. Durrett explained that a competitor could not use an LLM to "reverse engineer" FastSearch or elements of the FastSearch system outside of the "publicly available" BERT model. Rem. Tr. 195:24–197:19 (Durrett (Pls. Expert)) (discussing PXR0048 at -186 that shows over a dozen systems and sub-systems within FastSearch).

1157. (Def. PFOF ¶ 670): Defendant cites to no "substantial privacy problem[]." To the extent Defendant has concerns regarding Plaintiffs' data-sharing remedies, user-side and ads data shared with Qualified Competitors can be safely shared in a way that assures privacy. Pls. PFOF ¶¶ 656, 661–65. Additionally, Plaintiffs ask that the Court take Judicial Notice under FRE 201 of Google's settlement with the State of Texas, paying $1.375 billion to settle allegations that Google unlawfully tracked and collected users' private data.[2]

1158. (Def. PFOF ¶¶ 670, 698, 700, 706–07, 709, 1224–25, 1245, 1247–49): The TC is best positioned to assess various privacy-enhancing techniques when performing the necessary privacy-utility tradeoff. Pls. PFOF ¶¶ 666, 668, 678, 957; *infra* ¶ 1283.

1159. (Def. PFOF ¶¶ 675–80, 738–40, 742, 747): Principled mechanisms or privacy-enhancing techniques can be used to sufficiently protect privacy from attacks (i.e. reconstruction or linking to learn sensitive information from seemingly innocuous data releases). Rem. Tr. 1137:16–1138:18 (Evans (Pls. Expert)); *id.* 1143:8–1144:8 (responding to the Court and explaining how, for example, a privacy-enhancing mechanism like adding noise can prevent a

[2] Press Release, Off. of the Texas Att'y Gen., Attorney General Ken Paxton Secures Historic $1.375 Billion Settlement with Google Related to Texans' Data Privacy Rights (May 9, 2025), *available at* https://oag.state.tx.us/news/releases/attorney-general-ken-paxton-secures-historic-1375-billion-settlement-google-related-texans-data.

reconstruction attack); Pls. PFOF ¶¶ 663–65.

1160. (Def. PFOF ¶¶ 675–80, 685–86, 695, 698, 702–03, 738–40, 742, 747): For most data use cases, combining privacy-enhancing techniques will achieve the best solution. Pls. PFOF ¶¶ 665, 669, 679, 681; Rem. Tr. 3798:18–3800:24 (Culnane (Def. Expert)) (explaining how privacy-enhancing techniques can be used to reduce the level of identifiability).

1161. (Def. PFOF ¶¶ 685, 696): K-anonymity is only one of many privacy definitions that exist and using differential privacy and other privacy-enhancing techniques alongside k-anonymity could ensure no sensitive information is revealed even if you add certain fields or increase the granularity of certain fields. *Supra* ¶ 1160.

1162. (Def. PFOF ¶¶ 687–90, 692–93, 698): Google's approach to k-anonymity under the DMA resulted in removing 99% of all queries from its data release. Pls. PFOF ¶¶ 694–96. Defendant's method for releasing DMA data resulted in greater exclusion of data unnecessarily. Rem. Tr. 1159:4–1161:9 (Evans (Pls. Expert)); Rem. Tr. 3792:24–3793:15 (Culnane (Def. Expert)); Rem. Tr. 1158:17–1159:12 (Evans (Pls. Expert) (Google did not apply its spell correction or grouping by query intent techniques when releasing data); Rem. Tr. 3790:12–19; 3791:8–13 (Culnane (Def. Expert)) (other than applying a generalization technique narrowly, Dr. Culnane only applied Defendant's requested thresholds to the DMA data and did not look at any other privacy-enhancing techniques).

1163. (Def. PFOF ¶¶ 691, 695, 697): No serious privacy expert would use the method described in the 2009 Microsoft publication today. Rem. Tr. 1220:3–1221:5 (Evans (Pls. Expert)) (noting that better notions of privacy exist today than existed in 2009); *id.* 1151:4–1153:20 (explaining that the k-anonymity threshold of 137.4 used is a "very strange value" because the definition of k-anonymity is a count of records and .4 is not a record); *id.* 1151:4–

1153:20 (explaining that the pure epsilon differential privacy variation used is one of hundreds of variations and was not used to satisfy a privacy definition but used instead to understand the impact of the designed mechanism in an academic sense).

1164. (Def. PFOF ¶ 705): The objective in performing the utility-privacy tradeoff is to maximize utility while maintaining an acceptable level of privacy. Pls. PFOF ¶ 667.

1165. (Def. PFOF ¶¶ 627–29, 717–18, 720, 723–24): Neither Qualified Competitors' access to Google's data, nor the exchange itself, materially increases cybersecurity risks. Google's cybersecurity is comparable to industry peers that may become Qualified Competitors. Pls. PFOF ¶ 537; *see also id.* ¶¶ 535–36, 703–04 (Google underinvests in cybersecurity and has violated its own privacy promises). Many of the security innovations that Google trumpets are now industry standard or publicly available. *Id.* ¶ 530. Moreover, Google is poorly positioned to assess the cybersecurity of third parties, particularly relative to Plaintiffs' proposed TC. *Id.* ¶¶ 531–33 (Google cannot assess third-party software systems and does not speak for the United States on issues of national security). Finally, Google itself acknowledges that data exchanges can be secured using encryption and cryptographic authentication. *Id.* ¶¶ 527, 538.

1166. (Def. PFOF ¶ 719): Under Plaintiffs' proposed remedies, privacy-enhancing techniques would be applied to the data. Pls. PFOF ¶ 656; Pls. RPFJ § VI. These techniques significantly reduce the value of the exchanged data to malicious actors. Pls. PFOF ¶¶ 662–65, 670–81 (describing techniques that ensure individuals cannot be re-identified); Rem. Tr. 1165:9–1166:6 (Evans (Pls. Expert)) (responding to the Court's question and explaining that today's privacy-enhancing techniques prevent bad actors from re-identifying individuals in a dataset).

1167. (Def. PFOF ¶ 722): Ms. Adkins later acknowledged that she was "unaware" that, under Plaintiffs' remedies, Plaintiffs would assess national security implications before

providing Google's data to third parties. Rem. Tr. 2358:20–2359:4 (H. Adkins (Google)); Pls. RPFJ §§ III.U (defining Qualified Competitor to exclude companies that "pose a risk to the national security of the United States").

1168. (Def. PFOF ¶¶ 724, 730): Google's statement that it has "earned the trust of users" is contradicted by its actions. *See supra* ¶ 1157.

D. Google Misrepresents Plaintiffs' Ads Data Sharing Remedy

1169. (Def. PFOF ¶¶ 732–36, 748–54): Google overstates the Ads Data that would be disclosed under Plaintiffs' RPFJ Sections VI.E and VI.F, which seek only raw Ads Data serving as inputs into the components of Google's Auction and Prediction stack. Pls. PFOF ¶ 711; Liab. Tr. 4144:3–6 (Juda (Google)) (prediction stack is "the collection of our systems that try and predict [search ad] quality"). The ads data sharing remedies do not require disclosure of any ad model outputs, interim or otherwise, including results, and Google's claim to the contrary rests on its material misrepresentation of Plaintiffs' discovery responses. *Infra* ¶ 1181. Plaintiffs have identified to Google the models at issue, which include models predicting the quality of an ad (i.e. predicted click-through and conversion rates, predictions of whether the ad and click are "good," and similar metrics). *See* RDX0708 at .005. These metrics do not depend on an advertisers' bid, but rather serve as a counterpoint to the user's bid. UPX0010 at -056. Nor do they implicate autobidding: autobidding "algorithms set bids at query time, before the auction is run. Once the bids have been set, ads using automated bidding are treated like ads using manual bidding, and enter the auction in the same way." UPX0010 at -057.

1170. (Def. PFOF ¶¶ 738–40): Google rests its description of FLOGs on Dr. Culnane, who never mentioned FLOGs; Omkar Muralidharan, who is not a privacy expert nor on any of Google's privacy councils and speculates based on "privacy incidents in the world," Rem. Tr. 4412:20–4413:12, 4454:5–11 (Muralidharan (Google)); and two exhibits not used with either

witness, only one of which mentions FLOGS. RDX0011* (mentioning FLOGs); RDX0036* (not mentioning FLOGs). *See also* Pls. PFOF ¶¶ 729–32 (describing FLOGs); *supra* ¶¶ 1159–60 (describing privacy mechanisms).

1171. (Def. PFOF ¶ 739): The cited document does not state the information in FLOGs could allow the singling out of a user without additional data. *Supra* ¶¶ 1159–60 (describing privacy mechanisms).

1172. (Def. PFOF ¶¶ 744–46): Google concedes conversion data is widely shared. Rem. Tr. 4407:21–4408:22 (Muralidharan (Google)) ("[M]any of the websites that people typically visit, they're firing conversion information back to Google and Facebook and other companies.").

1173. (Def. PFOF ¶ 747): Google rests its claims on an overly broad description of Ads Data. *Supra* ¶ 1169. The cited testimony from Dr. Culnane does not describe Ads Data. The cited testimony from Mr. Muralidharan describes not just the FLOGs database, but also the Kansas database, which contains PII that would be removed from any shared data. Pls. RPFJ § VI(E); *supra* ¶¶ 1159–60 (describing privacy mechanisms).

1174. (Def. PFOF ¶ 748): Google presents no facts as to how such sham corporation would qualify as a Qualified Competitor.

1175. (Def. PFOF ¶¶ 752, 755, 757): Plaintiffs' data sharing remedies do not seek bids, budgets, or autobidding algorithms. *See supra* ¶ 1169.

1176. (Def. PFOF ¶ 756): Amazon does not operate a general search engine and therefore does not sell general search text ads, Mem. Op. at 50–51. Google presents nothing suggesting Amazon will enter either market after refraining from doing so for years.

1177. (Def. PFOF ¶¶ 758–59): Google does not cite its "Advertiser Program Terms,"

which govern advertisers' "participation in Google's advertising programs and services" and which lack the provisions purportedly described in Def. PFOF ¶¶ 758–59. RDX0131* at .001. It instead cites two inapposite exhibits: (1) its terms of service for Google Analytics, RDX0130*, which is a "product [Google] offer[s] to help website owners understand traffic to their website," Rem. Tr. 4435:14–4437:5 (Muralidharan (Google)), and (2) a policy governing third-party developers of ad management tools' treatment of advertiser information the third parties acquire from Google, RDX0132* at .001, .005. Similarly, Mr. Muralidharan was not sure if advertisers even needed to sign any agreement to use Google, let alone any details. Rem. Tr. 4420:19–4421:12 (Muralidharan (Google)).

1178. (Def. PFOF ¶ 760): Prof. Allan offered no opinions on Search Ads, Rem. Tr. 2847:11–14, 2848:13–2849:8 (Allan (Def. Expert). Google relies entirely upon the opinions of a fact witness (Dr. Muralidharan) presented with an incorrect and overbroad description of the ads data disclosures. *Supra* ¶ 1169; *infra* ¶ 1181.

1179. (Def. PFOF ¶ 761): Pls. RFPJ § VI.E does not require Google to disclose "whether an ad is shown on each user query, which ad is shown, and all the information contained in the ad." RFPJ § VI.E does not require disclosure of final or interim outputs. Pls. PFOF ¶ 719; *infra* ¶ 1181 (describing interim model outputs). Organic results and served ads are plainly outputs.

1180. (Def. PFOF ¶¶ 762–64): Google's reverse engineering and distillation claims rest on its incorrect assertion that RFPJ § VI.E requires disclosure of interim and final outputs (i.e., served ads and organic results).

1181. (Def. PFOF ¶¶ 766–70): Plaintiffs' RPFJ does not require disclosure of interim outputs. Pls. PFOF ¶ 719. To claim otherwise, Google misleadingly cites an interim interrogatory

response without disclosing that Plaintiffs later supplemented the interrogatory to refute any suggestion that Plaintiffs' RPFJ required disclosure of any outputs, interim or otherwise. *Compare* Def. PFOF ¶ 768 (citing RDX0706 (Plaintiffs' 3/19/2025 interrogatory response) *with* RDX0708 at .006 (3/25/2025 supplementation stating "[f]or interim models trained on output from other models, the Ads Data would include the constituent raw data underpinning the processed signals but would not include the processed signals themselves"). Google made the same misrepresentation in the demonstrative used to elicit the testimony it cites. Def. PFOF ¶¶ 768–69 (citing Rem. Tr. 4424:23–25:20 (Muralidharan (Google)) (discussing RDXD34.013).

1182. (Def. PFOF ¶¶ 771–76): Plaintiffs' data sharing remedies do not seek bid information nor inputs into Google's autobidding algorithms, which run prior to the auction algorithms. *Supra* ¶ 1169.

1183. (Def. PFOF ¶ 777): Google's claims regarding the effect of ads data sharing on innovation rest on its false claim that the RFPJ's ads data sharing remedies require disclosure of all data used in Google's ad models, including intermediate inputs and Google's internal metrics. *Supra* ¶¶ 1169, 1181.

1184. (Def. PFOF ¶¶ 778–82): Dr. Israel's theory that GSEs compete only for queries, not advertisers, contradicts the Court's finding of a general search text advertising market in which Google harmed competition. Mem. Op. at 185–89; Rem. Tr. 4616:10–4617:5 (Chipty (Pls. Expert)). Similarly, his claim that ad quality has little impact on competition for user queries is also wrong. Pls. PFOF ¶ 721; Rem. Tr. 4614:10–4615:16 (Chipty (Pls. Expert)) (describing PXR0246 at 156 ("Queries will increase if ad quality increases and vice versa")). At liability, Google's then-head of ads testified to the contrary: "[W]e've run experiments in the past for commercial queries where we've taken the ads off the page, and it actually results in fewer

overall clicks, and *we believe that it's an actually worse user experience to not have ads on the page*." Liab. Tr. 1328:14–1329:2 (Dischler (Google)) (emphasis added); *id.* 1293:23–1294:3 (ad quality important because "we want users to come back to Google and search for lots of commercial topics, lots of topics generally"). Finally, both Google and Dr. Israel ignore the importance of high-quality ads to rival GSEs competing for ad sales. *See* Rem. Tr. 4613:17–4614:9 (Chipty (Pls. Expert)) (Dr. Israel "ignores the importance of high quality ads and their impact on converting ads into clicks and product sales, because high quality ads will actually help rival general search firms compete to sell advertising.").

E. Plaintiffs' Syndication Remedy Fosters Short Term Competitiveness Without Undue Burden Or Risk Of Reverse Engineering

1185. (Def. PFOF ¶¶ 791, 855–59): Plaintiffs have not requested that Google provide a "sematic understanding" of a query, or "a set of ranking signals associated with Google's efforts to interpret user queries." RDX0708 at .004. During discovery, Plaintiffs explained that Qualified Competitors should be given information sufficient to understand how Google "modified, augmented, refined, rewrote, or changed the user query or prompt in the back-end[.]" *Id*.

1186. (Def. PFOF ¶¶ 811–14, 817): Google provides extensive search features to Yahoo Japan pursuant to the syndication agreement between the two, Pls. PFOF ¶ 775, and has an ongoing obligation to provide Yahoo Japan with most newly introduced features. *Infra* ¶ 1212.

1187. (Def. PFOF ¶ 815): Google grossly understates the scope of services it provides Yahoo Japan. In addition to the organic results and two features mentioned, Google includes a wide variety of other features in its syndication agreement with Yahoo Japan. *See* Rem. Tr. 3096:20–3097:2, 3098:4–18 (J. Adkins (Google)) (discussing PXR0598 at -752–55 (listing 20+ search features that would be "readily available on launch" and 15+ that Google intended to

provide in the future)).

1188. (Def. PFOF ¶¶ 816–17): Google's current syndication agreements restrict scraping, crawling, indexing, or storing results to prevent partners from improving the quality of their own search services. *Infra* ¶ 1215 (citing Pls. PFOF ¶¶ 796–97).

1189. (Def. PFOF ¶ 818): Google permits Yahoo Japan to submit "thousands or tens of thousands of queries per day," Pls. PFOF ¶ 752, to assist Yahoo Japan in "its own evaluation of the results on their branded property," Rem. Tr. 3108:24–3109:10 (J. Adkins (Google)); *see also* PXR0598 at -723, § 2.7(c) (Yahoo Japan contract permitting synthetic queries "[i]n order to assist Yahoo Japan in its own search quality initiatives."). Synthetic queries will assist Qualified Competitors to improve their quality through experimentation. *See* Pls. PFOF ¶¶ 749–54.

1190. (Def. PFOF ¶ 819): Google also permits Yahoo Japan to "store user queries and associated clicks on Search Result pages to assist in its search quality evaluations." Rem. Tr. 3110:1–13 (J. Adkins (Google)) (discussing PXR0598 at -723, § 2.7(c)). It limits Yahoo Japan's use of stored user information because the provision is "not for purposes to build their own search engine or do other things." *Id.* 3110:1–9.

1191. (Def. PFOF ¶¶ 820–24): After Yahoo Japan received the Google index information for over eight years, Yahoo Japan did not need the information anymore and the agreement was amended to provide only a subset of the index information to Yahoo Japan. Rem. Tr. 3091:5–9 (J. Adkins (Google)).

1192. (Def. PFOF ¶¶ 824–30): Google omits that the Yahoo Japan agreement imposes an ongoing obligation for Google to provide it new search features shortly after those features are rolled out on Google's Japan sites. *Infra* ¶ 1212. While the agreement does contain a handful of exceptions, Google did not and has not identified a feature it has withheld from Yahoo Japan

based on those exceptions.

1193. (Def. PFOF ¶¶ 841–46): Google's existing Search infrastructure compiles the user-facing SERP—including Search features—in a GWS server in its back-end infrastructure. Rem. Tr. 1527:25–1528:24 (Mickens (Pls. Expert)) ("At this point, the GWS server is going to construct what we as humans would think of as the SERP, the search engine results page, or SERP . . . . So that SERP is going to contain the thing that we, as users, associate with the Google search result. You know, the ten blue links, the ads, knowledge graph stuff, things like this."). Google then sends that SERP to a separate Google server called the GFE, which distributes SERPs to users' devices. *Id.* 1527:25–1528:24 ("That result gets sent back to the GFE, the GFE then takes that SERP and then forwards that back to the user device."). To comply with Plaintiffs' proposed syndication remedies, Google could permit Qualified Competitors to send requests to the GWS server, effectively substituting that GFE server for a Qualified Competitor's server. *Id.* 1541:8–1543:14. Google uses a similar process to syndicate search results to Yahoo Japan. PXR0318* at -083 (diagramming Yahoo Japan's use of a proxy server to send queries to GWS and receive search and ads results); Rem. Tr. 2995:17–25 (J. Adkins (Google)) (Google syndicates knowledge panel information to Yahoo Japan.).

1194. (Def. PFOF ¶¶ 848–54). Google's statements are misleading. Neither Prof. Allan nor Ms. Reid testified that the technology that underlies Tangram—which is not an LLM based system—would be disclosed; rather, Prof. Allan and Ms. Reid hypothesized rivals could collect SERP data to train an LLM to "mimic" Google's search results. Rem. Tr. 2934:18–2935:17 (Allan (Google)); Rem. Tr. 3520:8–16 (Reid (Google)). Neither Prof. Allan nor Ms. Reid assert that LLM trained on a search task will be as performant as Google. Rem. Tr. 2947:6–19 (Allan (Google Expert)) ("I do not believe I ever offered that opinion."); Rem. Tr. 3601:19–23 (Reid

(Google)) ("I do not think LLMs by themselves will replace all of Search functionality.").

1195. (Def. PFOF ¶¶ 860, 862–65): Google has allowed third parties to syndicate search features. Pls. RFOF ¶ 1187. Google's Local, Maps, Video, Images, and Knowledge Panel search features benefit from Google's scale. *Id.* ¶ 1108; Liab. Tr. 2311:8–13 (Giannandrea (Apple)).

F. Plaintiffs' Ad Syndication Remedy Addresses The Cold Start Problem

1196. (Def. PFOF ¶ 882): Google's serving methodology prevents AdSense for Search (AFS) syndicators from knowing what advertisers appear on its page (and vice versa), limiting the syndicator's ability to compete on price. Pls. PFOF ¶¶ 792–93.

1197. (Def. PFOF ¶ 884): Google provides its advertisers with limited opt-out rights for its Search Partner Network. Pls. PFOF ¶ 795.

1198. (Def. PFOF ¶ 885): The [redacted] contract Google presented at trial requires that Google ads receive preferential placement over equivalent ads requested from other sources. Pls. PFOF ¶ 798. Other of Google's syndication contracts contain similar restrictions. RDX0401 at -223–24, § 4; RDX0405* at -971–72, § 5.

1199. (Def. PFOF ¶¶ 886–87): Section VIII.E of Plaintiffs' RPFJ permits Google to take reasonable steps to protect its brand, reputation, and security.

1200. (Def. PFOF ¶¶ 888–95): Google admits that, prior to 2024, it permitted the fraudulent "trick to click" practice it describes. Rem. Tr. 2973:10–2974:15, 2974:20–24 (J. Adkins (Google)) (describing RDX0066 at .007). At trial, it described only a mitigating launch implemented in late 2024 and early 2025. RDX0066 (discussed at Rem. Tr. 2973:1–2974:15 (J. Adkins (Google)).

1201. (Def. PFOF ¶¶ 899–903): First, Google's "arbitrage" example substantively relies on a demonstrative purportedly excerpting multiple webpages Google never authenticated or sought to admit into evidence and should be disregarded for that reason alone. Def. PFOF

¶¶ 899–903 (describing RDXD-19 at .003–.005). Second, Google's syndication products (which include AFS and a separate product called AdSense for Domains, or AFD) permit similar low-quality traffic flows. *See, e.g.* PXR0232* at -760, -764.

1202. (Def. PFOF ¶ 904): Widespread dissatisfaction and the steadily climbing advertiser opt-out rate for AdSense for Search suggest Google's efforts to prevent "misuse of their syndicated ads" have failed. *See* Pls. PFOF ¶ 795.

1203. (Def. PFOF ¶ 905): Qualified Competitors "evaluating which ad network is offering a higher bid for an ad in response to a query" is the essence of price competition. adMarketplace, a potential Qualified Competitor, described how it and other rivals could use the syndication remedies to increase payments to publishers while also decreasing advertiser CPCs. *Supra* ¶ 1134.

1204. (Def. PFOF ¶¶ 906–10): The syndication remedies require disclosure only of data related to users of or ads displayed by the syndicator, *not* data related to Google users or ads placed on Google properties. Thus, the recipient of any Ads Data, including conversion data, would be the web site where a user entered the query or its vendor. For example, Google's contract with Yahoo Japan provides that Yahoo Japan owns all information and data generated by End Users, including PII. PXR0598 at -733.

1205. (Def. PFOF ¶¶ 907–09): Pls. RPFJ provides advertisers with robust options to opt in or out of appearing on Qualified Competitors' sites, including controls broader than those Google offers for AFS. Pls. PFOF ¶¶ 794–95. If an advertiser opts not to appear on any or all Qualified Competitor sites, the Qualified Competitor will receive no information about that advertiser. Pls. PFOF ¶¶ 794–95; *supra* ¶ 1204.

1206. (Def. PFOF ¶ 909): Google claims to extensively use conversion information in

its real-time autobidding tools, Def. PFOF ¶¶ 752, 772, 776, belying its claims of difficulty. Regardless, Plaintiffs' RPFJ Section VIII.E only requires disclosure of "conversion data where available."

1207. (Def. PFOF ¶ 910): Dr. Culnane did not testify about privacy issues related to ad syndication. *See also supra* ¶ 1204.

1208. (Def. PFOF ¶ 912): The length, duration, and scope of the misconduct and its effects warrants a lengthy syndication term. *See* Pls. PFOF ¶¶ 944–56.

1209. (Def. PFOF ¶ 913): The ads syndication pricing disincentivizes long-term reliance on syndication Google ads. Pls. PFOF ¶ 808. The nondiscriminatory pricing requirement serves this goal while also ensuring Google receives compensation without pricing syndication services to Qualified Competitors at an artificially high rate.

1210. (Def. PFOF ¶ 915): Google's claim that withholding additional end user data will prevent it from operating the ads syndication service is incorrect: for some existing syndication partners, Google limits the end user information it gathers. *See* Pls. PFOF ¶ 778.

1211. (Def. PFOF ¶ 916): Google's contract with Yahoo Japan strictly bars Google from "us[ing] [Yahoo Japan] information for its own ad business" while preserving Google's ability to service and maintain its products. PXR0059* at -536; Pls. PFOF ¶ 812.

1212. (Def. PFOF ¶¶ 917–18): Google's agreement with Yahoo Japan required Google to, at the outset, provide Yahoo Japan with search services "at least equivalent to any version of such released or beta search service provided by Google for use on any Japanese Site by Google's or its Japanese Partners' end users in terms of (i) Google's Search Features available as of the Effective Date, (ii) Search Results, (iii) documents indexed in the Japanese language, and (iv) performance to the edge of Google's system (i.e., to the point that Search Results leave the

systems and networks controlled by Google)," with limited exceptions. PXR0598 at -727. It further required Google to make commercially reasonable efforts to provide any beta version of features introduced in Japan to Yahoo Japan within a month of introduction. PXR0598 at -127.

1213. (Def. PFOF ¶¶ 920–24): Google withholds information about ads appearing on syndicators' pages to prevent competition for advertisers from syndicators. Pls. PFOF ¶ 793. Plaintiffs' RPFJ requires visibility to increase competition. Pls. PFOF ¶¶ 791–93; *supra* ¶ 1134.

1214. (Def. PFOF ¶ 925): The RFPJ does not seek disclosure of interim proprietary signals, but rather information directly relevant to the ad appearing on the syndicator's page, i.e. "the identity of the advertiser and CPC paid, and conversion data where available." Pls. RPFJ § VIII.E.

1215. (Def. PFOF ¶¶ 926–29): Google's current syndication agreements contain restrictions on scraping, crawling, indexing, or storing results, to prevent partners from improving the quality of their own search services, and Plaintiffs' RPFJ removes this restriction to address the scale barriers identified in the Court's liability opinion. Pls. PFOF ¶¶ 796–97.

1216. (Def. PFOF ¶¶ 930–32): Synthetic queries will assist Qualified Competitors seeking to improve their quality. Pls. PFOF ¶¶ 749–54. The RPFJ does not require, and Plaintiffs do not expect, that ads returned in response to synthetic queries would trigger any payment obligation if clicked.

V. CHOICE SCREENS WORK WITH OTHER REMEDIES TO RESTORE COMPETITION

1217. (Def. PFOF ¶ 934): The longest possible period for which Google would make such payments on the choice screens is one year, and the money is for defaults on shipped devices, where Google has already received the benefit. Pls. RPFJ § IX.A.

1218. (Def. PFOF ¶¶ 938–39): Plaintiffs' RPFJ provides that for non-browser search

access points, Google must provide either a default search or a search access point choice screen, but not both. Pls. RPFJ §§ IX.A, IX.B.

1219. (Def. PFOF ¶ 944): Google cites a single browser witness to support its assertion that "browsers universally prefer default search engines to choice screens." Yet Mozilla itself published a study about the effectiveness of choice screens on browsers. Pls. PFOF ¶ 918. DuckDuckGo's executive testified that users are "more receptive" to a choice screen if they have prior information about it. *Id.* ¶ 893; Rem. Tr. 879:13–16 (Weinberg (DuckDuckGo)). Prof. Rangel's cited testimony merely notes that browsers have default search engines, without any mention of preferences. Rem. Tr. 565:13–16 (Rangel (Pls. Expert)). Google itself uses choice screens and has advocated for choice screens for a default search provider in web browsers in the past, noting "[w]e propose instead that users be prompted to select the default search provider, because it eliminates any company's own self-interests and places control in the hands of the end user, where it belongs." *Id.* 539:25–542:16 (discussing PXRD004 at 10–11 (citing UPX0172)).

1220. (Def. PFOF ¶ 947): Choice screens will help, but they will not be sufficient if introduced by themselves. Pls. PFOF ¶ 907.

1221. (Def. PFOF ¶ 948): Choice screens need to include information so the users can evaluate their choices. Rem. Tr. 864:1–866:3, 878:19–879:16 (Weinberg (DuckDuckGo)); Rem. Tr. 549:21–550:20 (Rangel (Pls. Expert)) (discussing PXRD004 at 20) ("Consumers should have easily useful accessible information about the different options . . . .").

1222. (Def. PFOF ¶ 949): Prior to deployment, the choice screen architecture should be reviewed by someone with behavioral expertise to identify problems with the choice architecture that are likely to generate biases and decrease effectiveness. Rem. Tr. 547:16–548:7 (Rangel

(Pls. Expert)); *see infra* ¶ 1284.

1223. (Def. PFOF ¶ 953): The use of choice screens is unlikely to harm consumers or consumer welfare. Rem. Tr. 534:20–535:10; 555:22–558:4 (Rangel (Pls. Expert)); Pls. PFOF ¶ 906. Choice screens will immediately make a small percentage of Google's user base contestable, and while that percentage may be marginal to Google, it is meaningful to Google's smaller rivals. Rem. Tr. 553:15–554:16 (Rangel (Pls. Expert)). As the other remedies help rival search engines to improve, choice screens' impact will increase, and they will be more effective. *Id.* 546:22–547:15.

1224. (Def. PFOF ¶ 963): Google's claim that a TC would delay its launch of new, innovative search access points is disingenuous—as the Court found, Google accelerated its launch of AI technology Bard one day before Microsoft introduced Bing Chat, Mem. Op. at 41, 247, which Google likely delayed, even absent a TC, due to a perceived lack of both competition and incentive to innovate.

VI. WITHOUT PLAINTIFFS' PROPOSED REMEDIES, GOOGLE WILL LEVERAGE ITS SEARCH ADVANTAGE TO STIFLE INNOVATION AND COMPETITION IN GENERATIVE AI

1225. (Def. PFOF ¶ 967): Even without the ability to pay for defaults, Google can compete for GenAI users through direct-to-consumer promotions, product innovations, advertising like app store ads, and more. Pls. PFOF ¶¶ 436–43.

1226. (Def. PFOF ¶ 969): Section VI.A of Plaintiffs' RPFJ does not require sharing the entire web index, but rather information about the index—similar to what Google shared with Yahoo Japan—as well as certain static signals. Pls. PFOF ¶¶ 593–97; *supra* ¶ 1144.

1227. (Def. PFOF ¶¶ 967, 976, 1008–12): GenAI products like the Gemini App remain an important method for accessing search today—and will only increase in importance as new GenAI search access points emerge. PXR0113 at -846 ("The introduction of AI is creating new

search access points, allowing other providers to reach users rapidly; Google should meet users where they are or risk ceding a new ecosystem."); Pls. PFOF ¶¶ 63, 92–96, 256–57, 259–62. GenAI products also remain a ready avenue for circumvention in this case; if GenAI products were carved out from the Court's definition of a search access point, Google would have incentives to use or adapt its GenAI products to maintain its monopolies. Rem. Tr. 2172:6–18 (Chipty (Pls. Expert)); Pls. PFOF ¶¶ 264, 272–78.

1228. (Def. PFOF ¶¶ 983–84): Contrary to Google's assertions, the Google Common Corpus (GCC) used to train its Gemini foundation models contains Google's search data, including "Search metadata and signals powering the internals of Google Search" which are "derived from aggregated user behavior." PXR0185 at -117. Google DeepMind has studied the value of using these signals in model pretraining, Rem. Tr. 3355:20–3360:17 (Collins (Google)), and received approval to filter data and train models using these signals. Rem. Tr. 186:20–188:2 (Durrett (Pls. Expert)) (discussing PXR0016*).

1229. (Def. PFOF ¶¶ 983–84): Companies face significant barriers to replicating the breadth of webpages contained in Google's index or GCC. Google internally acknowledges that its "ability to build such a large corpus is to some extent enabled by the willingness of content publishers to have their content crawled by Googlebot for the purpose of appearing in search results and other Search products." PXR0185 at -116–17 (in assessing the value of its GCC dataset, Google compares its [redacted] billion documents to the best dataset publicly available to GenAI rivals, the 3-billion document Common Crawl corpus); Rem. Tr. 225:23–226:3 (Durrett (Pls. Expert)); Rem. Tr. 836:21–837:23, 842:4–13 (Weinberg (DuckDuckGo)).

1230. (Def. PFOF ¶¶ 983–84): Google's own GCC proposal strongly suggests it isn't possible for other companies to train their GenAI models on the same data included in the GCC.

PXR0185 at -116–17 (describing data in Google's corpus versus what is "generally available" and stating that "the external Common Crawl corpus is much smaller"). The DocJoins corpus in the GCC "includes not only the document content but also the myriad of Search metadata and signals powering the internals of Google Search[;] [s]ome of these signals are clearly very sensitive, being derived from aggregated user behavior." PXR0185 at -117. "Search is clearly not willing to share signals derived from aggregated Search user data with any other product." *Id.* at -125. Allowing the use of the data externally with users and customers directly seeing parts of the data set "will require further review and approval." *Id.* at -125.

1231. (Def. PFOF ¶ 985): Contrary to Google's assertion, Google uses user-side data to pre-train and fine-tune Gemini models for use both within and outside Google Search. Rem. Tr. 3360:7–17 (Collins (Google)) (discussing PXR0095 at .004); PXR0095 at .002, .004 (describing ability to pre-train Search Gemini models on user sessions data, data filtered out by the Google-Extended opt-out, anonymized Navboost queries, and YouTube videos); Pls. PFOF ¶¶ 71, 79, 119–22, 132, 836.

1232. (Def. PFOF ¶¶ 994–96, 1061, 1087): Google has spent years arguing that Microsoft has failed to close the quality gap but now suggests that Microsoft is poised to be "a viable option." Def. Br. at 57 (arguing Apple chose Google over Bing due to Bing's poor product quality "in 2009, 2013, 2015 to 2016, 2018, and 2020"). Google has taken a similar approach for Microsoft's GenAI application, Copilot, characterizing Microsoft as failing to compete on GenAI quality while simultaneously taking steps to stop Microsoft from distributing Copilot on mobile devices. Pls. PFOF ¶¶ 329–31, 345, 359, 423–24.

1233. (Def. PFOF ¶¶ 994–96, 1061, 1087): Bing's share of mobile queries is about 1%. Rem. Tr. 1015:15–19 (Schechter (Microsoft)). The lack of distribution and scale on mobile lead

to lower quality for Bing's mobile search. *Id.* 1015:20–1016:10. Bing especially struggles to get fresh data, local data, and tail query data. *Id.* 1016:11–19. Despite Bing's use of GenAI to improve its search engine, it has not been able to make up for the scale gap, and GenAI is unable to make up for the lack of fresh, local, and tail data. *Id.* 1033:6–1034:1.

1234. (Def. PFOF ¶ 1008): GenAI has already increased the use of Google Search. Rem. Tr. 3615:12–3616:2 (Reid (Google)) (AI has led to a measurable increased number of queries at Google Search.); *id.* 3616:6–3617:4 (Google Search U.S. queries have increased 1.5% to 2% since introducing AI Overviews.). The Gemini App is no different: Google CEO Sundar Pichai testified that the Gemini App will both "expand overall Search use" and "expand [Google's] ability to serve users' information needs." Rem. Tr. 2492:22–2493:10 (Pichai (Google)).

1235. (Def. PFOF ¶ 1017): As Prof. Durrett stated, "one of the major limitations [of AI]" is the fact that these models "hallucinate or produce untrustworthy information." Rem. Tr. 200:11–201:10 (Durrett (Pls. Expert)). Prof. Durrett considers "the fraction of prompts that the Gemini [A]pp uses the Google Search API for results grounding . . . to be a substantial fraction of the prompts," which illustrates that grounding is a "key and important property of the Gemini [A]pp." *Id.* 200:11–201:10. In Prof. Durrett's opinion, circumventing hallucinations on that fraction of prompts is a "significant improvement." *Id.* 200:11–201:10.

1236. (Def. PFOF ¶¶ 1019–20, 1023–24): Competitors of Google's Gemini App are at a disadvantage without access to an index of Google's quality. Pls. PFOF ¶¶ 189, 192, 200 (The Gemini App has access to more Search features and components than competitors that use Google's grounding services.); *id.* ¶¶ 201, 833 (Google itself recognizes the importance of providing Google's GenAI products with access to Search features and components.); *id.* ¶¶ 94, 627, 646, 740, 817, 825–26, 834 (Plaintiffs' syndication and data-sharing remedies would

improve rivals' GenAI products.).

1237. (Def. PFOF ¶¶ 1021–22): Google once again misstates the search capabilities of GenAI rivals. Google repeats its mischaracterization of Perplexity's product and what it has taken to build its answer engine. *Supra* ¶ 1122. As to OpenAI, Mr. Turley stressed the difficulty of building a search technology, which he referred to as an index, that satisfies all user needs, and how OpenAI would need five years even with Plaintiffs' remedies to determine if it can answer all user queries. Pls. PFOF ¶¶ 739, 850, 857, 945, 955.

1238. (Def. PFOF ¶¶ 1035–69): Google has leveraged its dominant position in the monopolized markets to stifle nascent and emerging GenAI competition and is likely to continue doing so absent an appropriate remedy, thereby helping to maintain its monopoly in the monopolized markets. Pls. PFOF ¶¶ 294–342.

1239. (Def. PFOF ¶ 1053): Google suggesting that OpenAI broke off negotiations with Samsung because [redacted] is misleading. Neither party was [redacted]. Samsung itself was [redacted]. Des. Rem. Tr. 61:7–16 (Kim (Samsung) Dep.) (Samsung was [redacted]). By reaching out to OpenAI with [redacted] Samsung did not approach OpenAI with enough time to integrate OpenAI's technology before Samsung had to lockdown its software prior to launch. *Id.* 61:17–62:16; *id.* 63:11–64:19 ("It's a very complicated process to integrate AI services on devices…").

1240. (Def. PFOF ¶ 1062): Google misstates the nature of GenAI rival distribution with Android OEMs today. Contrary to Google's assertion, Samsung only has a commercial agreement to distribute the Gemini App today. [redacted]

[redacted]; *id.* ¶ 305 (Gemini-Samsung deal). Similarly, today, Motorola only has a commercial agreement to distribute and provide premium placement of the Gemini App. *Id.* ¶ 317 (Gemini-Motorola deal); *id.* ¶ [redacted] ([redacted]-Motorola deal is forthcoming). While [redacted] has a deal to come preloaded on forthcoming Motorola devices, [redacted] is not the default assistant and does not appear on the default home screen like the Gemini App. *Id.* ¶ [redacted].

1241. (Def. PFOF ¶¶ 1079–81): Google's citations to OpenAI's revenue projections ignore the caveats offered by Mr. Turley and the document that Google cites. Rem. Tr. 496:16–497:7 (Turley (OpenAI)) ("[W]e would heavily caveat such information."); RDX0352 at -868 ("Our 5 year financial case is built on the facts we know today and the best assumptions we can make, while recognizing we are just at the beginning . . . [f]or good financial stewardship we will []continue to build multiple scenarios as we plan our operating and capital spending"). Today, OpenAI estimated $[redacted] in revenue and a profit margin of [redacted]%. RDX0352 at -867. Perplexity estimated its 2024 revenue at $[redacted]. RDX0363A at .002, .004. Google, on the other hand, brought in over $198 billion of revenue in 2024. Pls. PFOF ¶ 203.

1242. (Def. PFOF ¶ 1086): Google ignores the additional context Mr. Turley provided in the same document. *See* RDX0355 at .019–.028. He explained that "Section 225" details "How to win out of product." Rem. Tr. 524:8–526:2 (Turley (OpenAI)) (explaining RDX0355 at .019). That section "talks about all the things that are not pixels and technology that we need to win . . . distribution and the criticality of that . . . [and also] the policy efforts required for ChatGPT to win." *Id.* 524:8–526:2 (explaining RDX0355 at .019). "[OpenAI is] up against powerful incumbents who will leverage their distribution to advantage their own products." *Id.* 526:3–22 (quoting RDX0355 at .021–.022). Among other things, OpenAI will "win by

advocating for user choice." *Id.* 524:8–22 (quoting RDX0355 at .022). "Real choice [that] drives competition and benefits everyone. . . . Users should be able to pick their AI assistant. . . . Apple, Google, Microsoft, Meta shouldn't push their own AIs without giving you fair alternatives. . . . The same goes for search engines." *Id.* 524:8–526:2 (quoting RDX0355 at .022). Mr. Turley explained that, because of these incumbent competitors, "the cards are stacked against [OpenAI]," and he has "deep worry that [OpenAI] might get shut out or that it might be more difficult for [OpenAI] to compete in the future." *Id.* 526:3–22 (explaining RDX0355 at .021).

1243. (Def. PFOF ¶¶ 1095, 1098–1100): Google mischaracterizes Prof. Mickens's opinions about AICore. Prof. Mickens explicitly agreed that an OEM could load another system service that provided access to TPU/NPU accelerators. Rem. Tr. 1558:2–9 (Mickens (Pls. Expert)). However, system services like AICore are typically provided by the operating system provider, which in Android's case is Google. *Id.* 1555:11–1556:4 (discussing PXRD010 at 67). Prof. Mickens recognized that "most OEMs *would not want to*" add a second system service alongside AICore and would prefer "to simply ship with a system service that allowed for plug-and-play use of models." *Id.* 1558:2–9 (emphasis added). Mr. Samat did not disagree—he testified merely to the technical capacity of loading a second system service and not to the business realities on which Prof. Mickens opined. Rem. Tr. 3961:13–3966:11 (Samat (Google)) (responding solely to Google's characterization of Prof. Mickens's opinion).

1244. (Def. PFOF ¶ 1101): By denying competitors' AI models access to AICore (and by extension hardware accelerators), Google can disadvantage rivals. GenAI products perform better on accelerated hardware. Rem. Tr. 1556:5–1557:1 (Mickens (Pls. Expert)) (citing Google documentation that "running models on AI accelerators via AICore is faster than running those models outside of AICore on phone CPUs and GPUs"); Rem. Tr. 3962:18–3963:4 (Samat

(Google)) (TPUs can answer queries "in a very low power and quick way," versus the CPU.). Android phones can only access these accelerators through AICore, and Google controls which AI models can run inside AICore. Pls. PFOF ¶¶ 567, 569.

1245. (Def. PFOF ¶ 1102): To support Google's assertion that "Google makes available to developers the APIs needed to develop an assistive application," Google cites testimony from Mr. Samat that makes no reference to assistive applications and merely gives examples of Google Play Services APIs and that developers have access to the "vast majority" of those APIs. Rem. Tr. 3877:15–3880:14 (Samat (Google)).

1246. (Def. PFOF ¶¶ 1103, 1106, 1109): Google cites OEMs' ability to establish defaults on their own devices but completely ignores the contractual restrictions and carrot-on-a-stick incentives that Google's agreements impose on Android OEMs. Pls. PFOF ¶¶ 294–95, 329. These include Motorola restrictions to preload and place on the homescreen Google's Gemini App and Samsung's massive commercial incentives to preload and set access points to the Gemini App, all at the expense of other GenAI assistant applications. *Id.* ¶¶ 305, 318, 329; *see also supra* ¶ 1054. Samsung is also incentivized by its agreement with Google to set Gemini as a Hotword and the long power press shortcut out-of-box. Pls. PFOF ¶¶ 306, 308.

1247. (Def. PFOF ¶¶ 1104, 1111): Google tries to discredit Mr. Shevelenko's testimony on the friction associated with changing the Android default assistant by citing Google's own employee and an advocacy demonstrative specifically prepared for purposes of this trial. Rem. Tr. 3875:14–16 (Samat (Google) (discussing RDXD-030)). Mr. Shevelenko, on the other hand, described his own attempt to switch the default assistant on Android. Rem. Tr. 709:18–710:8 (Shevelenko (Perplexity)). Perplexity's attempts to make it easier for users to switch the default further proves that third party assistants must do what Google, whose Gemini App is the initial

default, does not. *Id.* 805:13–806:2 (Perplexity had to set up a way to switch the default because going through the settings was too onerous. (discussing RDXD06)); *id.* 709:18–25.

1248. (Def. PFOF ¶ 1119): Plaintiffs have never taken the position that Gemini should be prohibited from interoperating with Google's products, only that, under Plaintiffs' remedies, Google may not leverage control of Gemini to preference Google products at the expense of third-party products. *See* Pls. RPFJ § V.B.

VII. PLAINTIFFS' SECTION VIII(A)-(D) SEARCH TEXT ADS REMEDIES TARGET THE EFFECTS OF GOOGLE'S CONDUCT

1249. (Def. PFOF ¶¶ 1131–33): Plaintiffs' Section VIII remedies address the effects of Google's conduct. The Court determined that "Google's text ads product has degraded" with respect to SQRs and keyword matching. Mem. Op. at 263. The Court further concluded Google "profitably raised prices [for search text ads] substantially above the competitive level," including by influencing auction outcomes and prices. *Id.* at 190–91. Plaintiffs' remedies target these effects and will help advertisers make better informed decisions, including about where to take their ad spend. Rem. Tr. 4555:9–22 (Jerath (Pls. Expert)).

1250. (Def. PFOF ¶¶ 1134–35): Google's PFOF rejects the Court's relevant market finding. Mem. Op. at 185–89. The existence of a general search text advertising market literally means rivals compete with each other in that market, not in a separate market.

1251. (Def. PFOF ¶ 1136): Even if Google does consider the listed factors, it still has a history of harming advertisers and degrading its search text ads product. Mem. Op. at 83–98 (discussing auctions, SQRs, and keyword matching); *id.* at 258–64 (concluding that Google charged supracompetitive prices for, and degraded the quality of, its search text ad products).

1252. (Def. PFOF ¶ 1137): Other sellers of search text ads "follow[] Google's lead" to reduce friction and enable advertisers more easily to copy their Google ad campaigns in other

platforms. Rem. Tr. 4547:19–4548:14 (Jerath (Pls. Expert)).

1253. (Def. PFOF ¶¶ 1139–41): Google misunderstands the friction that Plaintiffs' RPFJ Section VIII targets. Due to data and reporting limitations, advertisers face friction in making informed decisions on optimizing ad spend, including whether to shift spend between platforms based on performance. Pls. PFOF ¶¶ 873–76. For example, Mr. Vallez explained that with more data Skai could "make more informed recommendations, and some of those could lead to budget shifting." Rem. Tr. 1385:2–11 (Vallez (Skai)).

1254. (Def. PFOF ¶¶ 1143–44): Google's aggregated reporting impedes advertisers' ability to assess and optimize their ad spend. Mem. Op. at 93–96, 263–64 (discussing SQRs and concluding that Google has "diminished advertisers' ability to tailor their ad strategy"); Pls. PFOF ¶¶ 862–63. Google's reliance on providing quality scores ignores that that metric is not actionable. Liab. Tr. 5485:2–5487:13, 5488:2–5489:10 (Jerath (Pls. Expert)) (discussing UPXD103 at 42); Liab. Tr. 4013:10–22, 4014:2–7 (Juda (Google)); Des. Liab. Tr. 154:24–155:10 (James (Amazon) Dep.) (Quality Score is only "a loose interpretation of how Google deems the quality of the ad to be.").

1255. (Def. PFOF ¶¶ 1145–46): User-side data can be shared while preserving privacy. Pls. PFOF ¶¶ 656–710.

1256. (Def. PFOF ¶ 1147): Google cites to no evidence that it has ever used SQRs to compete on privacy. The Court previously found that Google's purported privacy rationale for reducing the data provided in its SQRs "was suspect." Mem. Op. at 94.

1257. (Def. PFOF ¶ 1148): Plaintiffs' "any other metric necessary" requirement would not impose undue cost on Google, particularly given general industry agreement on key metrics and the need to future-proof the Section VIII.A remedy due to Google's conduct. Pls. PFOF

¶¶ 865–67; Rem. Tr. 4537:8–24 (Jerath (Pls. Expert)) (rebutting Dr. Israel's claim of cost).

1258. (Def. PFOF ¶ 1149): None of the cited testimony discusses Google's incentive to innovate. Moreover, the only metric referenced in the cited testimony is "LTV" (long-term value), which Google uses to identify auction winners—and which Google has a history of using to manipulate auction outcomes, thereby underscoring the need for transparency and reporting. Mem. Op. at 83–85, 88–89.

1259. (Def. PFOF ¶¶ 1150–52): The data Google currently makes available is aggregated, which is insufficient for advertisers to conduct their own advanced independent analysis of their ad spend. Pls. PFOF ¶¶ 871–76. Moreover, sharing ads data while protecting privacy is feasible by using practices already in place in the industry. *Id.* ¶ 877.

1260. (Def. PFOF ¶ 1155): The search text ads market has not been competitive due to Google's conduct. Section VIII.B remedies the effect of that conduct. Pls. PFOF ¶¶ 878–84.

1261. (Def. PFOF ¶¶ 1156–57): Google's claims regarding "difficult[ies] for advertisers" and "computational difficulties" ignore how offering true exact match could streamline keyword usage. Rem. Tr. 4548:18–4549:9 (Jerath (Pls. Expert)) (Today, advertisers must select their keyword then use many more negative keywords to approximate the effect of true exact match.). Google's assertions that Section VIII.B would harm advertisers and lack utility considering autobidding further underestimate not only advertisers' desire for control, but also the outside tools available to advertisers and their capabilities for evaluating their ad spend. Pls. PFOF ¶¶ 880–84, 890; Rem. Tr. 4457:6–18 (Muralidharan (Google)) ("I think for every advertiser there's a sweet spot of control versus automation.") (discussing PDX0234 at -137). Finally, Google's assertion regarding "same user intent" ignores Mr. Muraliharan's testimony explaining that advertisers may have unique value propositions for minor fluctuations in spelling

for a particular keyword. Rem. Tr. 4441:1–21 (Muraliharan (Google)).

1262. (Def. PFOF ¶ 1158): Other sellers of search text ads "follow[] Google's lead" to reduce friction and enable advertisers more easily to copy their Google ad campaigns in other platforms. Rem. Tr. 4547:19–48:14 (Jerath (Pls. Expert)).

1263. (Def. PFOF ¶ 1160): Google's claims contradict the testimony of its own witnesses and underestimate the outside tools available to advertisers and their capabilities for evaluating their ad spend. Pls. PFOF ¶¶ 890–91.

1264. (Def. PFOF ¶¶ 1161–62): The record belies Google's concern over disclosing auction changes due to purported "trade secret" issues. The Court made detailed findings on how Google has used various auction launches to influence auction outcomes and prices. Mem. Op. at 82–93, 259–63; Pls. PFOF ¶¶ 885–86. The Court specifically found that "Google had concerns about the impact of transparency on their efforts to increase prices," further concluding: "Many advertisers do not even realize that Google is responsible for the changes in price. Thus, *through barely perceptible and rarely announced tweaks to its ad auctions*, Google has increased text ads prices without fear of losing advertisers." Mem. Op. at 91, 260 (emphasis added). Section VIII.D addresses those effects, and any additional time and effort to comply is outweighed by the need to remedy such effects. Moreover, Google does not dispute that it already creates these types of reports, further undermining Google's claim of burden. Pls. PFOF ¶¶ 885–86; Des. Liab. Tr. 159:4–20 (Jain (Google) Dep.) (discussing launch documents); Des. Liab. Tr. 15:12–13, 15:15–24, 16:2–14, 16:20–17:6 (Miller (Google) Dep.) (Google's ad launch process uses live Google traffic to assess a launch's impact on Google's revenue and user metrics).

1265. (Def. PFOF ¶ 1163): Contrary to Google's assertion, advertisers consider auction rules when determining their bids and when conducting experiments with their ad spend—and

when auction rules change, advertisers respond. Pls. PFOF ¶¶ 887–89. This is consistent with the cited testimony from Mr. Vallez. Google's reliance on testimony by Dr. Israel and Mr. Muraliharan, however, is misplaced, as neither has a basis for saying advertisers would do otherwise. Rem. Tr. 3283:18–3284:9, 3310:20–3311:5 (Israel (Def. Expert)) (confirming lack of relevant expertise and experience); Rem. Tr. 4446:20–4447:23 (Muraliharan (Google)) (speaking only to a general "process" without regard to how advertisers determine bid amounts).

VIII. PLAINTIFFS' NOTICE OF ACQUISITIONS REMEDY IS JUSTIFIED BY GOOGLE'S ADVANTAGE IN GENAI DUE TO SEARCH AND DOES NOT THREATEN GENAI INNOVATION

1266. (Def. PFOF ¶ 1166): Google executives testified to the integration of GenAI into Google Search and Google's ads products, and how that integration has improved Google's products. Pls. PFOF ¶¶ 87, 111, 116, 127, 135 (Ms. Reid, Mr. Fox, and Mr. Pichai all testified to the use of GenAI and GenAI's improvements to Search.); *id.* ¶¶ 127, 717 (Mr. Pichai and Mr. Muralidharan both testified to the use of GenAI in Search ads.); Rem. Tr. 4460:9–11 (Muralidharan (Google)) (acknowledging that Google uses LLMs in its Search ad stack). Google executives have also testified to Google's plans to further integrate GenAI into Google Search. Pls. PFOF ¶ 151. Plaintiffs' expert, Prof. Durrett, also testified that Google can utilize its advantages in Search to create an advantage in building high-quality GenAI models and GenAI Search products. Pls. PFOF ¶ 828.

1267. (Def. PFOF ¶ 1170): Google's own expert, Prof. Hitt, testified to the broad availability of cloud resources that already exists within the GenAI market, aside from any capabilities Google offers. Pls. PFOF ¶ 445; Rem. Tr. 4020:23–4023:6 (Hitt (Def. Expert)) ("[I]n cloud computing space, there's a number of participants here.").

1268. (Def. PFOF ¶ 1171): Google's own expert, Prof. Hitt, testified that the GenAI market is well capitalized, beyond any investments that Google may offer. Pls. PFOF ¶ 444;

Rem. Tr. 4048:17–4049:20 (Hitt (Def. Expert)).

1269. (Def. PFOF ¶ 1173): Plaintiffs' remedies do not impose a complete ban on Google investments in GenAI and Google may still make investments in the GenAI industry. Rem. Tr. 4179:5–13 (Hitt (Def. Expert)); *see* Pls. RPFJ §§ IV.H, IV.I. Plaintiffs' proposed remedies impose additional but similar obligations on Google as the Hart-Scott-Rodino Act. Rem. Tr. 4178:23–4179:4 (Hitt (Def. Expert)).

IX. THE PUBLISHER REMEDIES WILL ENABLE RIVALS' ACCESS TO NECESSARY DATA AND EMPOWER PUBLISHERS

1270. (Def. PFOF ¶¶ 1175–77): Google can pay "a lot more money" to publishers than its competitors, effectively pressing competitors out of many publisher agreements. Rem. Tr. 461:19–462:16 (Turley (OpenAI)). Publishers do not want multiple search engine bots crawling a webpage, but often permit Google to crawl a webpage because it depends on Google traffic. *Id.* 461:19–462:16; Rem. Tr. 225:23–227:15 (Durrett (Pls. Expert)). Professor Hitt did not consider Google's incentives to foreclose competitors to valuable inputs from publishers in the future. Rem. Tr. 4169:16–4171:6 (Hitt (Def. Expert)).

1271. (Def. PFOF ¶ 1179): Witnesses and exhibits show the harm to competition caused by Google's publisher agreements. *See* Pls. PFOF ¶¶ 581, 611–13. Google's MFN provisions have precluded OpenAI from getting better terms than Google, effectively pressing it out of many agreements. Rem. Tr. 461:19–462:16 (Turley (OpenAI)).

1272. (Def. PFOF ¶¶ 1190–93): Google's publisher opt-out options are inadequate and coercive. *See* Pls. PFOF ¶¶ 601–11.

1273. (Def. PFOF ¶ 1194): The opt-out remedy does not seek retroactive detraining of constructed models, but rather a prospective opt-out option, which Google agrees is feasible. Rem. Tr. 3538:7–3540:10 (Reid (Google)) ("What you can say is, you know, if you're building a

model starting today, Please don't include my webpage. That's fine.").

1274. (Def. PFOF ¶¶ 1195–98): Google's arguments overstate the proposed scope of Plaintiffs' proposed publisher-opt out remedies, and internal Google documents acknowledge that introducing more granularity to the level to which publishers can opt out of having their content used for specific features is possible. PXR0026 at -274 (Publishers can enable their content to be used only in "traditional web + image results" versus things like AI overviews and Web answers.); Pls. PFOF ¶¶ 604, 610, 612.

X. COLORADO PLAINTIFFS' PUBLIC EDUCATION REMEDY LOWERS BARRIERS AND BOLSTERS OTHER REMEDIES

1275. (Def. PFOF ¶ 1213): The public education remedy would provide information to users about alternate search engines and their attributes and how to access and use them. The Court's liability decision and record evidence show that consumers are not generally aware of such information or how to find it. Mem. Op. at 26–27; Pls. PFOF ¶¶ 963–66.

1276. (Def. PFOF ¶ 1215): The Allcott study found participants' Bing usage "levels out relatively quickly" after the incentive period ended and not, as Google claims, that participants "continued to leave Bing for Google through the end of the two-month study." Rem. Tr. 1903:20–1904:8, 1977:2–17 (Luca (State Pls. Expert)).

1277. (Def. PFOF ¶ 1216): In one prong of the Allcott study, "35 percent of participants replied that they kept using Bing because they prefer it" and a significant number of participants learned that they preferred Bing over Google after trying it during the study. Rem. Tr. 1986:3–1987:3 (Luca (State Pls. Expert)).

1278. (Def. PFOF ¶¶ 1205–07, 1220–21): The public education remedy is not at odds with the positions of the United States Plaintiffs, nor would Plaintiffs' RPFJ require Google to fund both sides of the competition. The public education remedy would offer "short-term"

incentives allowing users to experience alternate search engines, thus aiding informed user choice and reducing habit, inertia, and brand recognition barriers. *See* Rem. Tr. 1892:8–1894:10 (Luca (State Pls. Expert)); Pls. PFOF ¶¶ 982–84. By contrast, no such barriers apply to Google, which has vastly superior brand recognition and is often used due to habit and inertia. Mem. Op. at 26–27; Pls. PFOF ¶¶ 963–68. Plaintiffs' RPFJ permits, but does not require, Google to pay consumers inventive payments. *See* Pl. RPFJ § IV.G.2.

1279. (Def. PFOF ¶ 1222): Providing more information to consumers provides significant benefit in helping consumers make better decisions that align with their preferences. Pls. PFOF ¶¶ 969–70. Prof. Murphy did not provide any evidence that the benefits of providing this information to consumers would outweigh any costs.

XI. THE PROPOSED TECHNICAL COMMITTEE WOULD APPROPRIATELY AID THE PLAINTIFFS ENFORCE THE FINAL JUDGMENT

1280. (Def. PFOF ¶¶ 1225–26): Although Plaintiffs enforce the Final Judgment, they do so under the auspices of the Court, which retains jurisdiction and makes final decisions regarding any compliance dispute between Plaintiffs and Google. RPFJ § XI.A–B.

1281. (Def. PFOF ¶¶ 341, 1223–26, 1231–46, 1255–58): As in *Microsoft*, the TC serves as a tool to "facilitate evaluation" of Google's "obligations and compliance" with the Court's mandate. Competitive Impact Statement (ECF 650), *United States v. Microsoft*, No. 98-1232 D.D.C. November 15, 2001). The scope of the TC's powers and responsibilities largely mirror those the Court approved in *Microsoft*. Modif. Final J., *Microsoft Corp*., 2006 U.S. Dist. LEXIS 76862, at § IV.B. Further, the Court will retain jurisdiction for any party to petition for "orders or directions…for the construction or carrying out of this Final Judgment" and the Court may act *sua sponte* to do the same. Pls. RPFJ § XI.A–B.

1282. (Def. PFOF ¶¶ 1223–30): Plaintiffs' RPFJ is designed to allow U.S. Plaintiffs,

Colorado Plaintiffs, and Google input into the composition of the TC, and then allow the three appointed members to select two additional members to ensure that the TC collectively has the necessary experience. Pls. RPFJ § X.A. The selection process is modeled after the process that the Court ordered in Microsoft. Modif. Final J., *Microsoft Corp*., 2006 U.S. Dist. LEXIS 76862, at § IV.B. Plaintiffs broadened the size of the TC in Plaintiffs' RPFJ to account for the broader expertise that may be required.

1283. (Def. PFOF ¶¶ 621–26, 675–80, 698, 700, 709, 711, 1247–49): Plaintiffs' expert Dr. David Evans opined that hundreds of privacy definitions exist, and many privacy-enhancing techniques can be used to satisfy those definitions to protect user privacy. Pls. PFOF ¶¶ 661–66; Rem. Tr. 1166:7–1169:25 (Evans (Pls. Expert)). He deferred to the TC on the exact combination of techniques, which can run experiments and balance privacy and utility based on the use cases. Pls. PFOF ¶¶ 668, 957; Rem. Tr. 1181:4–1182:11 (Evans (Pls. Expert)) (further noting the need to both understand use cases from competitors and have the ability to determine utility of data to meet those uses cases in order to perform the proper balancing); Fed. Trade Comm'n Amicus Br., ECF No. 1328, at 6 (recognizing that the TC's role "reduces the risk of the misapplication of this technology and violations of consumers' privacy by both Google and any Qualified Competitor, consistent with other privacy and data security matters before the Commission"); Pls. RPFJ § VI ("These remedies are intended to make this data available in a way that provides suitable security and privacy safeguards for the data that Google must share.").

1284. (Def. PFOF ¶ 1254): The TC may recommend changes to the Choice Screen to ensure that it comports with the principles provided for in Plaintiffs' RPFJ. RPFJ §§ IX.D, X.A.7.c.

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