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Platform-wise emission factors

**1. Google Display Ads:** ~0.5g/CO2e per impression

Source -- Scope 3 State of Sustainability Report 2023 as reported by <https://martech.org/bad-digital-ad-spending-can-harm-the-environment/#:~:text=Global%20emissions%20per%201000%20programmatic,washing%20a%20load%20of%20laundry>

~514.8 g CO2e per 1,000 impressions -- programmatic display benchmarks

**2. Google Search Ads:** ~0.2g/CO2e per impressions

Source -- Google Blog 2009

<https://googleblog.blogspot.com/2009/01/powering-google-search.html>

*“Google is fast — a typical search returns results in less than 0.2 seconds. Queries vary in degree of difficulty, but for the average query, the servers it touches each work on it for just a few thousandths of a second. Together with other work performed before your search even starts (such as building the search index) this amounts to 0.0003 kWh of energy per search, or 1 kJ. For comparison, the average adult needs about 8000 kJ a day of energy from food, so a Google search uses just about the same amount of energy that your body burns in ten seconds.In terms of greenhouse gases, one Google search is equivalent to about 0.2 grams of CO2.”*

**3. YouTube video ads:** ~0.6g CO2e per impression (per 30-second ad)

Source -- IEA <https://www.iea.org/commentaries/the-carbon-footprint-of-streaming-video-fact-checking-the-headlines>

The IEA estimates ~36g CO2e per hour of video streaming (≈0.6 g per minute). 30 seconds video ad thus takes around 0.3g CO2e. Adding overheads (delivery and auction), this takes the average to around 0.6g.

**4. Meta Ads (Facebook/Instagram):** ~0.5 g CO2e per impression

Source -- Meta ads are predominantly images or short videos delivered via Meta’s systems. There is no platform-specific study for Meta Ads. Thus, we can go with the programmatic advertising baseline from Scope 3.

**5. Microsoft Bing Ads (Search):** ~0.2 g CO2e per impression

Source -- Similar search architecture as Google, thus this can use Google’s search emission baseline.

**6. Pinterest Ads:** ~0.5 g CO2e per impression

Source -- no Pinterest-specific ad study is available. Thus, using a standard programmatic advertising baseline.

**7. Reddit Ads:** ~0.5g CO2e per impression

Source -- no Pinterest-specific ad study is available. Thus, using a standard programmatic advertising baseline.

**8. LinkedIn Ads:** ~0.5g CO2e per impression

Source -- no Pinterest-specific ad study is available. Thus, using a standard programmatic advertising baseline.

**9. TikTok Ads:** ~0.3 g CO2e per impression

Source -- TikTok ads are short videos (often 6–15 s). Using the IEA rate (0.6 g/min), a 15 s clip would be ~0.15 g from streaming alone. TikTok’s additional ad-delivery overhead likely roughly doubles the raw streaming footprint, giving ~0.3 g/impression.