

PUBLIC COMMENT — RF/EMF EXPOSURE AND HUMAN HEALTH (CONCISE SUBMISSION)

To: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health
Re: Request for Information on EMF Exposure and Human Health; Docket HHS-OASH-2026-0397

Date: October 21, 2026

Supporting material: Supporting research and citations are provided in the accompanying full research submission

Respondent: [Name / anonymous, to be completed by submitter]

Perspective (Question 2): Individual member of the public; recommendations based on identified peer-reviewed studies, government materials, published technical guidance, and explicitly identified observations. Not presented as original clinical research. Selected direct study links follow the recommendations; all numbered references and the 206-record evidence inventory are in the accompanying full technical submission.

Questions 3–4 and 10–11 — Measure functional impacts and create a clinical reporting pathway

1. Commission a representative national study of symptoms attributed to EMF and their social and economic impacts. A population-based, repeatable survey should distinguish (a) self-reported sensitivity, (b) symptom severity, (c) medically assessed functional impairment, (d) reported triggers, and (e) independently measured exposure. Include changes in employment and income, work hours, relocation, housing costs, attendance at concerts and public venues, travel, medication and healthcare use, school attendance, and expenditures by spouses, parents, and caregivers. Invite people with persistent or unexplained symptoms to participate whether or not they previously suspected RF/EMF as a possible factor. Accept descriptions of experiences that began years earlier without requiring old symptom diaries or contemporaneous exposure measurements. Where feasible, offer optional follow-up symptom tracking and independently measured exposure. Publish weighted prevalence and confidence intervals by impairment level and age.

Selected supporting sources: [California population survey](#); [2024 human symptom review](#).

Quantify the possible scale without treating survey responses as verified RF-caused illness. In a survey of 2,072 California adults, 3.2% reported being allergic or very sensitive near electrical devices; comparable self-report figures include 1.5% in Sweden and 3.5% in Austria. These instruments differed, included non-RF electricity sources, and did not establish causation or the prevalence of substantial functional impairment. [2–4]

Estimated U.S. total population, October 21, 2026: approximately **343.0 million people** (U.S. Census Bureau Population Clock; October 20 projection: 342,958,024). [31, 35]

3.0% of that estimated total population: approximately **10.3 million people** (arithmetic extrapolation only). Historical self-report surveys primarily sampled adults and therefore do not establish the prevalence among children. Using the Census Bureau's detailed July 2025 age

counts, the adult population was approximately **269.8 million**, and the analogous **3.0% adult-only scenario is approximately 8.1 million adults**. Neither figure is a measured national prevalence of disability, employment loss, or RF-caused illness. [2–4, 31, 35]

Study the economic and family consequences. The California authors also estimated that **0.5% of adults had changed jobs or remained unemployed** in connection with perceived EMF sensitivity. Purely extrapolated to the 2025 U.S. adult denominator, that would correspond to **approximately 1.35 million adults**, but it is an old California self-report finding, not a present-day national statistic. WHO acknowledges reports of cessation of work and major lifestyle changes without establishing EMF as the cause. By way of *scenario analysis only*, if the **8.1 million adults** in the adult-only 3.0% illustration each incurred an additional **\$250–\$1,000 per year** in relevant expenses, the arithmetic is **\$2.0–\$8.1 billion annually**. These are **hypothetical costs, not measured economic losses**. If an additional household member adjusted routines for half of these adults, approximately **12.2 million people** might experience some direct or indirect change, assuming no overlap or double-counting. The **10.3-million all-ages illustration is not used to estimate adult earnings or expenditures**, because age-specific sensitivity and functional-impairment rates have not been established. Such studies should measure reduced wages, lost hours, household modifications, medical expenses, social participation, changes in spending, and unpaid time contributed by spouses, parents and caregivers. [2, 6, 31–33, 35]

Funding disclosure: The California study was conducted under the California EMF Program, funded with money from electric utilities pursuant to a California Public Utilities Commission mandate. It should be classified as **utility-funded through a state-administered program**, not simply ‘independently funded’; that provenance neither validates nor invalidates its reported survey results. [2, 34]

2. Create a clinical documentation and surveillance protocol without presuming a diagnosis. A standard clinical intake template should capture symptoms and functional impairment, onset, alternative medical explanations, technologies and suspected waveform triggers, changes after reported exposure and reduction, and objectively measured exposure where available. Offer clinicians training and voluntary sentinel-site reporting. ICD-10-CM already includes an external-cause code for exposure to radiofrequency (W90.0XXA/D/S), but it is not a validated diagnostic code for electromagnetic hypersensitivity (EHS). Evaluate whether an additional standardized encounter descriptor or surveillance extension is needed for symptoms *attributed by the patient* to EMF, clearly distinguished from proven causation. [6–8]

Selected supporting sources: [CDC coding](#); [2024 symptom research](#).

3. Publish practical disability-accommodation guidance. Offer clear information about individualized requests, documentation of functional limitations, and practical options: wired Ethernet and non-wireless peripherals, alternatives to wireless security devices, seating or service arrangements, remote participation, alternate meeting spaces, low-transmission work areas, and reasonable scheduling adjustments. The U.S. Access Board already recommends case-by-case measures that can include switching off phones/computers or enabling remote participation. The ADA determination remains individualized and does not depend on federal acceptance of RF as the causal mechanism of a patient’s symptoms. [9–10]

Selected supporting sources: [U.S. Access Board](#).

Questions 5–9 and 13 — Rebuild public exposure reporting and give occupants meaningful control

4. Standardize measurement units and disclose what each measure means. Require consumer-facing RF power-density disclosures to show W/m^2 and, for low environmental readings, $\mu\text{W}/\text{m}^2$; display existing mW/cm^2 values in parallel when needed to preserve consistency with FCC filings. The conversion is exact: $1 \text{ mW}/\text{cm}^2 = 10 \text{ W}/\text{m}^2 = 10,000,000 \mu\text{W}/\text{m}^2$; $1 \mu\text{W}/\text{cm}^2 = 10,000 \mu\text{W}/\text{m}^2$. Explain the frequency, source, sensor position, measurement bandwidth, peak or mean statistic, averaging period, uncertainty, and background reading. Requiring square-meter units does not imply that a square meter of human tissue was measured or that multiplying by human skin area yields absorbed dose. Whole-body/local SAR (W/kg), absorbed power density where appropriate, and/or modeled body geometry require separate assessment. [11–12]

Selected supporting sources: [NIST RF metrology](#); [ICNIRP dosimetry](#).

5. Develop a publicly accessible exposure profile rather than a single pass/fail number. For homes, schools, workplaces and publicly accessible infrastructure, adopt a measurement protocol that retains frequency-resolved peak and time-averaged field levels, pulse and modulation characteristics, duty cycle, transmitter activity, antenna direction, relevant spatial gradients, and concurrent transmissions. Report separately RF (e.g., broadcasting, cellular, Wi-Fi, Bluetooth) and ELF/static electric and magnetic fields; unlike units must not be summed into a false universal “body load.” Establish a national inter-laboratory calibration and measurement-comparability program. [11–13]

Selected supporting sources: [ITU field measurements](#); [field exposure study](#).

6. Establish a historical exposure reference program. Develop a frequency-specific, geographically stratified historical atlas: (i) natural background, including static geomagnetic fields and lightning-generated Schumann resonances ($\sim 7.8 \text{ Hz}$); (ii) electrification-era 50/60 Hz fields; (iii) mass radio/TV broadcasting; (iv) cellular and residential wireless networks; and (v) present and future dense-device environments. This would be a comparison of exposure environments, not an assertion that Schumann resonance defines a safe RF threshold. Natural ELF, power-frequency fields, and RF require separate units, instruments and dose metrics. Published historical measurements are incomplete, so do not assign invented numerical tiers; use archival data, reconstructed engineering models and contemporary matched controls, each labeled by uncertainty. [14–15]

Selected supporting sources: [NOAA geomagnetic measurements](#).

7. Require consumer control over wireless transmission strength and range. Require manufacturers of wireless products used in homes and businesses—including Wi-Fi routers, security cameras, video doorbells, smart-home devices, and similar equipment—to provide consumers and professional installers with simple, accessible controls for adjusting wireless transmission strength. Users should be able to reduce wireless signal strength to the lowest level necessary for reliable operation rather than being limited to a fixed, potentially excessive setting. Manufacturers should also offer automatic power adjustment, scheduled wireless

operation, and the ability to turn off wireless transmissions when unnecessary, wherever technically feasible. These controls would be especially valuable in apartments, condominiums, and densely populated neighborhoods where numerous devices may transmit into surrounding residences. Provide wired alternatives when feasible, and test coverage, reliability, accessibility, safety and total system energy use; adjusting transmission strength does not guarantee an exact signal range. [16]

Selected supporting sources: [established wireless power-control engineering](#).

8. Compare additional voluntary residential-exposure guidelines without treating them as federal limits. Compare guidance from the U.S. Building Biology Institute and Germany's Institut für Baubiologie + Nachhaltigkeit (IBN), which publishes the SBM-2024 Building Biology Evaluation Guidelines. These classify single-source *peak* RF power density ($\mu\text{W}/\text{m}^2$) as <0.1 (no anomaly), 0.1–10 (slight), 10–1,000 (severe), and >1,000 (extreme). The labels are building-biology screening conventions, **not demonstrated human injury thresholds and not equivalents of legally binding FCC/ICNIRP limits**. Require explicit comparison of endpoint, measurement method, uncertainty and scientific validation before adopting any values. [17–18]

Selected supporting sources: [Building Biology IBN voluntary recommendations](#).

Questions 11–12 and 15 — Protect sensitive locations through verified engineering, not distance alone

9. Require antenna-beam and cumulative-exposure analysis before and after siting. For new or materially modified cellular installations near homes, schools, childcare facilities and healthcare settings, require disclosure to the public of antenna height, azimuth, mechanical/electrical downtilt, operating bands, maximum authorized power, beamforming envelope, and predicted/verified field levels at occupied elevations (including upper stories), with commercially sensitive details handled appropriately. Require independent measurements along likely main-beam directions, outdoors and at representative indoor locations, and publish clear results and complaint-response processes.

Selected supporting sources: [main-beam dosimetry](#); [residential exposure survey](#).

Peer-reviewed base-station measurement studies show that alignment with the antenna's **main lobe** and line of sight can matter more than horizontal distance alone; a French residential study found band-dependent maxima at approximately 280 m and 1,000 m, and other field studies assessed orientation toward occupied building floors. [20–22]

Questions 4, 10–12 and 16–18 — Study individuals and cumulative impacts without deliberately exposing people to plausible injury

10. Make observational epidemiology a central research track. Build longitudinal prospective cohorts with home, school, occupational and personal exposure measurement; tumor outcomes should be classified by histology (including glioblastoma separately), age and changes in diagnostic practice. Record co-exposures and plausible disease-promoting interactions. High-risk human dosing is neither required nor appropriate to study long-latency

health effects. Use animal studies and ethically controlled low-risk or noninterventional protocols to examine candidate mechanisms. NTP/Ramazzini findings and mouse tumor-promotion experiments justify follow-up [47–53]. Additional histology-specific epidemiology is needed to investigate long-latency outcomes. [24, 47–54]

Selected supporting sources: [NTP rat bioassay](#); [tumor promotion experiment](#).

11. Investigate reported individualized signal triggers through inclusive symptom-history research. Invite participants to describe symptoms and environmental changes without requiring them to have previously identified RF/EMF as a cause. Record participants' best recollections of when symptoms appeared, nearby technologies, and any signal characteristics known to them; historical diaries and prior measurements should not be required. Offer optional symptom tracking and independent exposure measurement during follow-up. Where ethically appropriate, pre-register within-person comparisons with verified sham controls, realistic traffic patterns, counterbalancing, blinded outcomes, and evaluation of other possible triggers. Whether a signal present near symptom onset becomes the most troublesome later trigger is a hypothesis to investigate, not an established biological mechanism. [6, 25]

Selected supporting sources: [sham-controlled symptom review](#).

12. Institute independence and disclosure rules for federal RF/EMF research. For each cited study and federally commissioned project, list direct, indirect and in-kind funding, equipment provision, advisory roles, institutional grants, and investigator conflicts. Separate confirmed independent, telecommunications-related, mixed, unreported and *not yet verified* categories; universities should not automatically be classified as independent, nor should industry funding automatically invalidate a study. Publicly preregister protocols and make positive and null findings accessible. Maintain different evidence tracks for human outcomes, animal findings, oxidative stress, mitochondrial pathways, methylation, VGCC/calcium proposals and other candidate mechanisms. The accompanying research inventories should not be described as independently audited systematic reviews. Include the original positive and null reports and request routine public release of full protocols, corrections and institutional support. [26, 29–30, 52–53, 66]

Selected supporting sources: [funding source systematic review](#); [2024 oxidative-stress review](#).

Questions 11, 12, 16 and 18 — Mitochondrial integrity and offspring health

13. Establish a research program on potential intergenerational effects, especially mitochondrial DNA. Investigate whether realistic RF exposure produces persistent mitochondrial DNA (mtDNA) sequence mutations in *maternal reproductive cells*, whether those variants survive repair and germ-cell selection and are passed to offspring, and whether inherited changes affect measurable outcomes such as mitochondrial respiration, growth or neurodevelopment. Distinguish an oxidative-damage marker or changed mtDNA copy number from a heritable mutation. Compare sham-controlled maternal preconception, pregnancy and multigenerational animal designs with ethically observational human cohorts where feasible; investigate paternal nuclear and sperm-related pathways separately. The mitochondrial bottleneck and maternal inheritance are well established, and neuronal RF experiments report mtDNA oxidative alterations, but **transmission of RF-induced mtDNA mutations from**

mother to child has not been demonstrated. Include null studies and reproducibility testing. [38–44, 64, 68]

Selected supporting sources: [neuronal mtDNA experiment](#); [maternal mtDNA bottleneck](#); [pregnancy animal review](#).

Purpose of these recommendations: improve the population's ability to understand, document and voluntarily reduce avoidable RF exposure while generating reliable evidence about health, functional impairment and costs. None of these proposals requires mislabeling unproved associations as established causes.