

Initiative Petition for a Law Relative to Non-Ionizing Radiation Limits for Technology and Wireless Facilities

Be it enacted by the People, and by their authority:

SECTION 1. The General Laws are hereby amended by inserting after chapter 166A the following new chapter:

(a) This chapter shall be known as 'Wireless and Technology Corporations'

(b) Technology corporations, including internet services providers and product manufacturers, must universally limit non-ionizing radiation including power density or fields, interference, and signaling to the minimum required for operation of their products, including as used in appliances and personal devices.

Without preventing access to personal wireless services, non-ionizing radiation exposures must be limited to 'As Low as Reasonably Achievable' or 'ALARA' and 'As Safe as Reasonably Achievable' or 'ASARA' based on the guidance of current, independent science and software and technological capabilities, including but not limited to as follows:

- (1) require product and software design that reduces the density or 'amount' of non-ionizing radiation, and selection thereof regarding installation;
- (2) require all new mobile phones and other wireless devices – including but not limited to laptops, hearing aids, TVs, and tablets – come equipped with updated software that can:
- (3) stop radiating when positioned against the body;
- (4) include a soft key that easily allows all wireless transmissions to be halted;
- (5) except for cellphones and related devices primarily for mobile communications, set factory and default mode to wired connectivity;

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(6) except for cellphones and related devices primarily for mobile communications, require wireless functionality be an opt-in service;

(7) include a soft key for a mode that only receives and does not transmit;

(8) insure that digital connectors prevent leakage;

(8) protect power quality, including compliance with electrical code standard IEEE 519, that may be disrupted by wireless transmissions or use of inverters and transformers.

(c) Definitions:

'Frequency' is a parallel name for a wavelength of radiation. In one second, the number of times a wave crests is called the hertz and that number is also labeled as the frequency. Non-ionizing radiation is considered to range from 0 hertz to 300 gigahertz, which encompasses 300 billion different frequencies of different wavelengths.

'Non-ionizing radiation' means non-ionizing radiation that is emitted by technology. Non-ionizing radiation is a series of waves of energy that oscillate through space. Non-ionizing radiation generally cannot directly 'ionize' or alter an atom or molecule by removing an electron from its orbit. However, non-ionizing radiation can remove electrons or 'ionize' in some cases, such as indirectly from excessive cellular oxidation or directly with high power density as seen in a microwave oven. Sources of technological non-ionizing radiation include electricity and wireless transmissions such as for AM/FM radio signals or cellphone calls.

(d) The attorney general shall enforce good faith compliance of subsection (a) through adjudication of complaints alleging such violations in accordance with chapter 93. This remedy shall not be exclusive and shall be in addition to all other causes of action, remedies and penalties provided by law.

(e) Upon the effective date of this section, compliance with all software design provisions shall be in good faith and implemented as soon as possible, at a minimum within 2 years, with the exception of subsection (a) paragraph 7 provided good faith efforts are being made to bring this promptly to market, and the selection referred to in subsection (a) paragraph (1) implemented as soon as possible, at minimum within 1 year.

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SECTION 2. Section 8 of chapter 25C is hereby amended by striking out paragraph (a) and inserting in place the following paragraph:--

“(a) Notwithstanding chapter 159 or any other general or special law to the contrary, the department shall not assume regulatory control of placement, modification, or construction of wireless facilities. The department shall, however, conduct monitoring and data-collecting functions of non-ionizing radiation from wireless facilities, including of mobile radio telephone service or radio utilities, and provide support to municipalities in their review of wireless facility applications and infrastructure.

SECTION 3. Section 8 of chapter 25C shall be known as “Jurisdiction over wireless service; regulatory and enforcement authority.”

SECTION 4. Section 1 of chapter 25C is hereby amended by striking the words ‘without regard to any transmission media or technology’ and inserting in place the following words:-

“with respect to the transmission media and technology that best reduce non-ionizing radiation exposures”

SECTION 5. Chapter 25C is hereby amended by adding the following new section after section 9:-

(a) There shall be in the department and under the supervision and control of the commissioner a division of non-ionizing radiation monitoring, that shall enable accountability of non-ionizing radiation emissions through the collection and sharing of relevant data. The division shall keep the public informed on findings, maintaining public transparency through reporting except to protect the privacy of planned audits and ongoing investigations.

(1) The division shall create an easy-to-understand and searchable database and public state-wide map of relevant wireless facility and wireless radiation data including but not limited to:

- (i) wireless facility antenna locations;
- (ii) on-site peaks and maximum peak power exposures, reflected in volts per meter and DBM or watts, for wireless facilities and ambient radiation;
- (iii) incidents where federal exposure limits were exceeded for the general population;
- (iv) incidents where federal exposure limits were exceeded for the occupational populations;
- (v) incidents where any state exposure limits were exceeded;
- (vi) data on dropped calls and denial of service from routine Drive Tests;
- (vii) frequencies utilized by facilities;

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(viii) dates and times when transmissions start, are added, and stop;
(ix) legal contact information for all entities responsible for any wireless facility, including (A) site developer(s); (B) carrier(s); (C) antenna or permit owner(s); (D) property owner(s); and (F) partners, board members, and relevant parent companies;

(2) The division shall include engineers capable of assessing wireless facilities and related technology for non-ionizing radiation emissions as follows.

(i) Within each county in Massachusetts, there shall reside a minimum of one engineer from the department equipped and capable of professionally assessing wireless facilities, hereafter each called a county engineer, who shall have or promptly acquire the Building Biology Electromagnetic Radiation Specialist™ certification.

(A) County engineers shall assist local municipalities with the task of assessing non-ionizing radiation emissions from wireless facilities, including for annual audits and applications. County engineers shall support assessments of non-ionizing radiation emissions by conducting assessments; reviewing the work of independent consultants; and by providing information on available consultants including expertise, frequency range, and clientele.

(B) In conducting and supporting assessment, county engineers shall conduct a on-site assessment and insure as best possible that operators and any other relevant parties of the facility are not aware of when assessments take place. County engineers shall support auditing protocols that include but are not limited to on-site assessments of worst-case scenarios, peak power measurements, maximum peak power measurements, range, direction, and signal characteristics, using volts per meter alongside either DBM or watts.

(C) County engineers shall collect data on dropped calls and denial of service for the public, as well as conduct Drive Tests.

(D) County engineers may assist with identifying abandoned transmitting antennas for decommissioning and removal.

(ii) In addition to reviewing wireless facilities, the division shall assist with investigation of non-ionizing radiation from other technologies with the assistance of a technical or other appropriately qualified engineer or engineers with a background in electrical or radio-frequency engineering.

(iii) The division shall also assist with non-ionizing radiation measurements for epidemiological purposes.

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(iv) Any fees set or provided for auditing or for any other services by county engineers may not be provided to the division, department, or county engineer, but must enter the legislature's General Fund for appropriation.

(4) The division shall further provide information, including publications, on how the public and other agencies can best mitigate non-ionizing radiation exposures from technologies within the department's jurisdiction, including telecommunications and cable, including the names of all authors on publications;

(5) The commissioner shall require the reporting and the submission of such specified additional information for division's work. The commissioner shall annually prepare and submit to the governor and the general court, on or before the first Wednesday of November, a report of the division's activity, together with recommendations which the commissioner considers necessary or desirable.

(b) For the purposes of this section, the following words shall have the following meanings:

'DBM' means and stands for decibel milliwatts, and like watt measurements is an average measurement over time of the wireless signal strength of wireless networks. Signal strengths are recorded in negative numbers, and can range from approximately -30 dBm to -110 dBm. The closer the number is to 0, the stronger the cell signal.

'Drive Test' is actual drive test data within that provides for carrier frequencies the date and time for the test or test; the location, in longitude and latitude of each point at which signal strength was recorded; and each signal strength recorded, measured in DBM, for each frequency.

'Federal exposure limits' means the general population or uncontrolled exposure limits set forth within 47 CFR §1.1310(e)(1), Table 1 Section (ii), made applicable pursuant to 47 CFR §1.1310(e)(3) and also means the occupational or controlled exposures set forth within 47 CFR §1.1310(e)(1), Table 1 Section (i), made applicable pursuant to 47 CFR §1.1310(e)(2).

'Frequency' is a parallel name for a wavelength of radiation. In one second, the number of times a wave crests is called the hertz and that number is also labeled as the frequency. Non-ionizing radiation is considered to range from 0 hertz to 300 gigahertz, which encompasses 300 billion different frequencies of different wavelengths.

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'Personal wireless service' means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services for telecommunications, within the meaning of 47 U.S.C. §332(c)(7)(c)(i), and as defined therein.

'Radio-frequency' refers to non-ionizing radiation frequencies that range from below 3 kilohertz to about 300 gigahertz and which include the communications and radar signals.

'Site developer' or 'site developers' means individuals and/or entities engaged in the business of constructing wireless facilities and wireless facility infrastructure and leasing space and/or capacity upon, or use of, their facilities and/or infrastructure to wireless carriers. Unlike wireless carriers, site developers generally do not directly provide personal wireless services to end-use consumers.

'Volts per meter' is a unit of measurement that calculates the intensity of radiation. The measurement describes the potential volts between two points one meter apart, so that intensity of the radiation increases as the voltage number increases.

'Wireless carriers' or 'carrier' means companies that provide personal wireless services to end-use consumers.

'Wireless facility' means a facility or facilities used for the provision of personal wireless services, within the current meaning of 47 U.S.C. §332(c)(7)(c)(ii). It means a specific location at which a structure that is designed or intended to be used to house or accommodate antennas or other transmitting or receiving equipment is located. This includes, without limitation, towers of all types and all kinds of support structures, including but not limited to buildings, church steeples, silos, water towers, signs, utility poles, or any other structure that is used or is proposed to be used as a telecommunications structure for the placement, installation and/or attachment of antennas or the functional equivalent of such. It expressly includes all related facilities and equipment such as cabling, radios and other electronic equipment, equipment shelters and enclosures, cabinets, and other structures enabling the complex to provide wireless services.

'Wireless carriers' or 'carrier' means companies that provide personal wireless services to end-use consumers.

(c) Upon the effective date of this section, this program shall be established within one year.

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SECTION 6. The General Laws are hereby amended by inserting after chapter 159C the following new chapter:-

Without limiting the right of municipalities to craft additional ordinance requirements, the following state-wide regulations shall be required for the operation of wireless facilities:

(a) Annual testing of wireless facility non-ionizing radiation shall be mandated, paid for by the operator of the wireless facility, with municipalities allowed to conduct additional testing at their own expense unless the wireless facility has failed to meet any relevant non-ionizing radiation state requirements or exceeded federal exposure guidelines, in which case testing shall be at the expense of the operator. The annual testing must be provided with a certification under penalty of perjury that the proposed facility, both individually and cumulatively with all other emitters that contribute more than five percent to the cumulative emissions in the vicinity (if any), will comply with federal exposure limits and any state requirements. The testing must be on-site and provide peak power and maximum peak power measurements. The report must be prepared and certified by an engineer acceptable to the municipality, and the testing time must, where possible, be kept secret from the operator. The report must include the actual frequency bands and power density (in volts per meter, watts effective radiated power and in DBM) for all existing and proposed antennas at the site and exhibits that show the location and orientation of all transmitting antennas and the boundaries of areas with exposures in excess of the uncontrolled/general federal exposure limit and the boundaries of areas in excess of the controlled/occupational federal exposure limit. Each such boundary shall be clearly marked and identified for every transmitting antenna at the project site.

(b) Wireless facility permittees must have the funds in escrow or the insurance to cover potential claims of harm from non-ionizing radiation. In addition to conventional insurance, the permittee shall procure and maintain at its expense or cause its contractor or subcontractor to procure and maintain throughout the term of the permit environmental pollution liability insurance in an amount not less than \$2,000,000 per antenna that covers non-ionizing radiation pollution with respect to the wireless facility. The insurance must be obtained from an insurer licensed to do business in Massachusetts. The relevant policy shall name the municipality, its elected/appointed officials, commission members, officers, representatives, agents, volunteers, and employees as additional insureds. The permittee is to use its best efforts to notify the municipality of any modification to the policy or cancellation of the insurance policy within 30 days.

(c) The permittee shall provide original certificates and amendatory endorsements of copies of the applicable policy language providing insurance coverage required in subsection (b). All

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certificates and endorsements are to be received and approved by the municipality before any work commences, but failure to obtain documents prior to work shall not waive the licensee's obligation to provide them. The permittee shall furnish updated certificates and endorsements to the municipality annually. The municipality shall have the right to require updated certificates and endorsements or complete, certified copies of the required insurance policies at any time.

(d) The permittee shall provide to the division of non-ionizing radiation described in chapter 25C the documents necessary for monitoring and mapping of data and permit the county engineer(s) to conduct random audits at all times at the wireless facility.

(e) An applicant for a wireless facility must provide substantial evidence for any claim of a significant gap in coverage or capacity deficiency, including for any carrier, and provide substantial evidence that the proposed facility would remedy any such gap. The evidence must include:

(1) For claims of a capacity deficiency or gap in service rendering the carrier incapable of providing adequate coverage, the applicant shall provide dropped call records and denial of service records evidencing the number and percentage of calls within which the carrier's customers were unable to initiate, maintain and conclude the use of the carrier's personal wireless services without actual loss of service, or interruption of service.

(2) If, and to the extent that an applicant claims that a specific wireless carrier suffers from a significant gap in its personal wireless services, the applicant shall conduct or cause to be conducted a Drive Test within the specific geographic areas within which the applicant is claiming such gap or gaps exist, for each frequency at which the carrier provides personal wireless services. The applicant shall provide the local authorities with the actual drive test data recorded during such drive test, in a simple format which shall include, in table format:

- (i) the date and time for the test or test;
- (ii) the location, in longitude and latitude of each point at which signal strength was recorded;
- (iii) each signal strength recorded, measured in volts per meter and DBM, for each frequency.

Such data is to be provided in a separate table for each frequency at which the respective carrier provides personal wireless services to any of its end-use customers.

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(iv) the applicant shall also submit Drive Test Maps, depicting the actual signal strengths recorded during the actual drive test, for each frequency at which the carrier provides personal wireless services to its end-use customers.

(3) If an applicant claims that it needs a "minimum" signal strength (measured in volts per meter and DBM) to remedy its gap or gaps in service, then for each frequency, the applicant shall provide three (3) signal strength coverage maps reflecting actual signal strengths in three (3) bins in both V/m and DBM, the first being at the alleged minimum signal strength, and two (2) additional three (3) bin maps in both V/m and DBM depicting signal strengths immediately below the alleged minimum signal strength claimed to be required.

(f) On public higher education and public school campuses and in state parks and state forests, the installation of new wireless facilities shall be prohibited including, but not limited to, (1) site distributed antenna systems and small cell networks; (2) any structure; and (3) collocation of distributed antenna systems and small cell networks on existing wireless communications infrastructure.

(g) In state parks and state forests, the installation of new wireless facilities shall be prohibited including, but not limited to, (1) site distributed antenna systems and small cell networks; (2) any structure; and (3) collocation of distributed antenna systems and small cell networks on existing wireless communications infrastructure. An exception for wireless connectivity shall be made for minimal installations if required for basic emergency service, with selection of such services chosen to limit the potential risk of infrastructure expansion.

(h) Any applicant or permittee must provide information to the municipality and the county engineer on how to swiftly and safely turn off a facility's transmissions so that the county engineer or municipality can turn off a facility's transmissions in the event transmissions exceed allowable levels.

(i) Violations. An applicant or permittee shall be prohibited from submitting further applications for 6 years if proven to have acted in bad faith in providing data or evidence. If the permittee has acted in bad faith in providing data or evidence or has shown a consistent pattern of non-compliance, the permittee's facility shall be shut down, permit removed, and the facility may be removed at any time. Any facility that is non-compliant but claims innocence, must provide an explanation and evidence of innocence, and further must shut down at once if exposures exceed allowable levels and fix the facility before returning to normal operations.

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Any person or other legal entity who fails to comply with or who violates this section or who shall refuse a reasonable request to inspect any premises or who shall have aided or abetted the commission of any such violation shall each be guilty of a separate offense and, upon conviction thereof, shall be subject to a fine of not more than \$400 or imprisonment for a term of not more than 15 days, or both. Each day after notice that a violation continues shall be deemed a separate offense. In addition, a civil penalty of \$500 per day may be assessed for any such violation, which civil penalty shall be recovered by the municipality in a civil action in addition. Outstanding fines of 90 days shall define the facility as abandoned and subject to removal.

This remedy shall not be exclusive and shall be in addition to all other causes of action, remedies and penalties provided by law.

(j) For the purposes of this section, the following words shall have the following meanings:

'Applicant' means any individual, corporation, limited liability company, general partnership, limited partnership, estate, trust, joint-stock company, association of two or more persons having a joint common interest, or any other entity submitting an application for a facility permit, site plan

approval, variance, building permit, and/or any other related approval, for the installation, operation and/or maintaining of one or more personal wireless service facilities.

'Collocation' is to install, mount, or add new or additional equipment to be used for the provision of personal wireless services to a pre-existing structure, facility, or complex which is already built and being used to provide personal wireless service by a different provider of such services, wireless carrier or site developer.

'Distributed antenna system' or 'DAS' means a network of spatially separated antenna nodes connected to a common source via a transport medium that provides personal wireless services within a geographic area.

'DBM' means and stands for decibel milliwatts, which is a concrete measurement of the wireless signal strength of wireless networks. Signal strengths are recorded in negative numbers, and can range from approximately -30 dBm to -110 dBm. The closer the number is to 0, the stronger the cell signal.

'Facility' means a set of wireless transmitting and/or receiving equipment, including any associated electronics and electronics shelter or cabinet and generator.

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'Frequency' is a parallel name for a wavelength of radiation. In one second, the number of times a wave crests is called the hertz and that number is also labeled as the frequency. Non-ionizing radiation is considered to range from 0 hertz to 300 gigahertz, which encompasses 300 billion different frequencies of different wavelengths.

'Macrocell' means a cellular base station that typically sends and receives radio signals from large towers and antennas.

'Node' or 'DAS node' means a fixed antenna and related equipment installation that operates as part of a system of spatially separated antennas, all of which are connected through a medium through which they work collectively to provide personal wireless services, as opposed to other types of personal wireless facilities, such as macrocells, which operate independently.

'Personal wireless service' means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services for telecommunications, within the meaning of 47 U.S.C. §332(c)(7)(c)(i), and as defined therein.

'Small cell' means a fixed cellular base station that typically sends and receives radio signals and which are mounted upon poles or support structures at substantially lower elevations than macrocell facilities.

'Substantial evidence' means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. It means less than a preponderance but more than a scintilla of evidence.

'Wireless carriers' or 'carrier' means companies that provide personal wireless services to end-use consumers.

'Wireless facility' means a facility or facilities used for the provision of personal wireless services, within the current meaning of 47 U.S.C. §332(c)(7)(c)(ii). It means a specific location at which a structure that is designed or intended to be used to house or accommodate antennas or other transmitting or receiving equipment is located. This includes, without limitation, towers of all types and all kinds of support structures, including but not limited to buildings, church steeples, silos, water towers, signs, utility poles, or any other structure that is used or is proposed to be used as a telecommunications structure for the placement, installation and/or attachment of antennas or the functional equivalent of such. It expressly

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includes all related facilities and equipment such as cabling, radios and other electronic equipment, equipment shelters and enclosures, cabinets, and other structures enabling the complex to provide wireless services.

(k) Upon the effective date of this section, this section shall be immediately in force.

SECTION 7. Section 111B of Chapter 111 in Title XVI of the General Laws is amended by striking the title and replacing with the following title:-

Section 111B: Disease registry; epidemiology

SECTION 8. Section 111B of Chapter 111 in Title XVI of the General Laws is amended by inserting in place of the first paragraph the following:-

Section 111B. (a) The department shall establish a registry to record certain cases of disease that occur in residents of the commonwealth and information concerning these cases in order to conduct epidemiological surveys and to apply appropriate preventive and control measures. In conducting epidemiological investigations, in addition to evaluating potential causation from pollution in water, air, and soil, the department shall examine potential causation from non-ionizing radiation, including attention to antenna proximity, power line proximity, signal characteristics, power quality, power density, field strength, onset of new exposures, removal of exposures, and digital or electronic usage. The department may also examine other potential causes as it shall deem necessary and appropriate.

The department shall retain data and shall provide accurate data to the public in as soon as possible, providing data in a manner the general public can understand. In compiling data, the department shall include line graphs that show from the time that Massachusetts has data to the present on the disease the changes in incidence, age of onset, and mortality. Where data is not available from Massachusetts, the department shall make this clear and instead provide information using nation-wide data provided by the Centers for Disease Control and Prevention.

SECTION 9. Section 111B of Chapter 111 in Title XVI of the General Laws is amended by inserting in place of the first paragraph the following paragraph:-

The commissioner shall require the reporting of certain cases of disease and the submission of such specified additional information on reported cases or control populations as deemed necessary and appropriate for the recognition, prevention, or control of such diseases,

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including time of onset when newly arising. The diseases registered and investigated shall include but not be limited to the following:

- (i) malignant and benign brain-related tumors;
 - (ii) cancers;
 - (iii) primary infertility, including early miscarriage before 20 weeks of gestation and before a birth weight of 350 grams separate from later miscarriage;
 - (iv) gestational age at birth;
 - (v) birth defects and developmental disability;
 - (vi) neurologic disorders and dementia.
- (b)

SECTION 10. Because first responders utilize technology such as wireless equipment and wireless facilities extensively and reducing exposures may be especially complex, the Commonwealth shall establish a commission to examine how best to mitigate resulting non-ionizing radiation exposures, including the costs and benefits, while maintaining the efficacy of first responder services. The members of the commission shall elect a chairperson from among the members. The first meeting of the commission shall be called by the first-named senator and the first meeting of the commission shall be held within 45 days of the effective date of this section. Within fourteen months of the first meeting a report of findings, recommendations and drafts of proposed legislation or regulations shall be submitted. Eight members of the commission shall constitute a quorum. The commission shall include the following 14 members or their designees:

- (1) the senate and house chairmen of the Joint Committee on Telecommunication, Utilities and Energy;
- (2) one representative of the Massachusetts Broadband Institute;
- (3) one representative of the Massachusetts Coalition of Police;
- (4) one representative of the Massachusetts Chiefs of Police Association;
- (5) one representative of the State Police Association of Massachusetts;
- (6) one representative of the Professional Firefighters of Massachusetts;
- (7) one representative of the EMS Division of the Boston Police Patrolmen's Association
- (8) one representative of the Massachusetts Medical Society;

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- (9) two nominees of the Environmental Health Trust;
- (10) one representative of the Massachusetts Environmental Epidemiology Program;
- (11) one member who shall be appointed by the governor, who shall be a professor or lawyer with knowledge of telecommunications policy and history;
- (12) the commissioner of the department of telecommunications and cable.

(d) Definitions:

'Facility' means a set of wireless transmitting and/or receiving equipment, including any associated electronics and electronics shelter or cabinet and generator.

'Frequency' and 'wavelength' are measurements of the characteristics of a wave of radiation. In one second, the number of times a wave crests is measured in Hertz, and that number is called its frequency. Non-ionizing radiation is considered to range from 0 Hertz to 300 gigaHertz, which encompasses 300 billion different frequencies of different wavelengths.

'Non-ionizing radiation' is a series of waves of energy that oscillate through space. Non-ionizing radiation generally cannot directly 'ionize' or alter an atom or molecule by removing an electron from its orbit. However, non-ionizing radiation can remove electrons or 'ionize' in some cases, such as indirectly from excessive cellular oxidation or directly with high power density as seen in a microwave oven. Sources of non-ionizing radiation include electricity, wireless mobile communications, AM/FM radio signals, artificial light, and the sun. Non-ionizing radiation exposures can be reduced by improving power quality, reducing the power density, unplugging, electrical design, and software design.

'Power quality' refers to maintaining the electricity to be smoothly sinusoid at the rated voltage (e.g. 110 volts) and frequency (e.g. 60 hertz) such as through properly powering, grounding, and, where necessary, quality filtering. When power quality is poor, additional frequencies can ride on the electrical lines and power or frequencies can surge or sag. Poor power quality can be caused directly by cheap inverters, improper grounding, and injecting data transmissions onto power lines. The IEEE recognizes that power quality needs to be regulated to protect the normal operation and lifetime of electronic equipment, hence created the IEEE 519 standard.

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