

[Draft #3H: 11/07/24]

EMS Guidelines

for Disabled Access

Part II: Buildings (and Surroundings)

LIST OF TOPICS:

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-- Outcome desired: Tables, Meters
- 5 -- Methods Approved/recommended:
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Solutions proposed in draft materials
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Examples
- 6 Building Code changes needed: (are we going here? Or is this too ambitious for now?)
-- Public buildings, Residential
-- proposed voluntary standards (like LEED, WELL, PHIUS)
-- New Construction, Remodel, Remediation
Proposal: Ombudsman's office, Community Advisory Board to oversee, plus more

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Most of the contents falls into two major categories: Why, How.

WHY means why is this needed? (This covers generally the legal issues.)

Definition of EMS.

Symptoms.

Why this is a disability.

What actions need to be taken.

Who should be taking them.

Timeline.

Follow up needed.

Check for implementation, recheck when, enforcement.

(Odette has done a great job on the first draft. Mostly just need to consolidate, and eliminate repetition. Put into a logical order, (with bold subtitles underlined recommended).

I also have some other thoughts for editing wordage, but I can get to that later.)

HOW: implementation. (this is more my area of specialty: building codes and construction issues -- much less material is in the present draft material, needs to add much more)

How to proceed first:

List major issues. (I've done some of that in these notes, but more is needed.)

(This is List of Contents for below):

- Fundamental deepest Goal
- Proscriptive vs Prescriptive
 - Outcome desired: Tables, Meters
 - Methods Approved/recommended:
- Categories of problems, Potential additional problems,
- **Solutions** proposed in draft materials
- EMR survey
- Examples
- Building Code changes needed: (are we going here? Or is this too ambitious for now?)
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- (my Proposal: Ombudsman's office, Community Advisory Board to oversee, plus more)

How to structure overall:

- Prioritize,
- Purpose: how and by who will this be used?, How much detail?
- Language: for general public OR for construction professionals who are performing the work?

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Add **chemical toxicity guidelines**: (listed IAQ section of Access Board, but could use improvement, lots).

Fundamental deepest goal to be accomplished with this report, on this issue:

-- the human body's electrical system is delicately balanced for Optimal Health. It should not be interfered with by outside, human caused electromagnetic radiation. Therefore no one's body should experience changes in its electromagnetic fields and/or radio frequency fields.

-- (How measure this? Are there meters available to measure the human body's internal electrical fields, and show when they are being interfered with?)

-- [Alan Mahers definition: find this on his blog.]

Proscriptive vs Prescriptive: use both, not one or the other.

-- (always list these two different approaches, not just one. Make clear what are suggestions for possible ways, and which are required.)

Outcome desired: how measure? Where? When? How often?

-- Keep records. Resurvey regularly (Building Biology Institute certification grads)

Methods: ways to reach the desired outcome: approved/preferred, unless this conflict with the fundamental goal.

-- (Many are listed in the draft: consolidate them and reorganize under bold underlined headings).

ALARA (As Low As Reasonably Achievable):

Model: **California Title 24**. Three different approaches can be used, according to the preference of the user:

1. state **Goal** to be achieved: you choose the method.

2. Use an **approved Method**: confirm that the goal has been achieved.

3. **Computer model**: using approved computer program. Predict outcome, check if proposed methodology will achieve this outcome.

EMR survey by professionals, like Building Biology Institute

-- what do they do? [Ask Connie, shadow one? Ask Peter Sullivan? Alex Statler, other BBI]

Outcome desired:

Table of approved meter readings: rename categories:

-- "**Minimum standards**".

-- "**Best practices**" -- (especially for children, elderly, immune compromised, and those with special sensitivities.)

-- **Individual's special needs** are always prioritized, even if more stringent than standards listed above

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Meters available:

- List names of meters recommended.
- Explain how to use them.
- List safe limits.
- Explain how to get there.

Methods recommended to achieve desired outcomes:**Categories of problems:**

Cell phones.

Computers and other devices

Wi-Fi and Bluetooth, router / modems.

Grounding: [look for Alan Mahers description.]

Filter: "dirty electricity" incoming on the electrical lines from elsewhere

Shield from outside building: smart meters, cell phone antennas towers, solar energy panels, plus more

Wiring Errors from within the building: creating "dirty electricity".

Appliances..

Potential problems, not listed in the draft material:

Lighting

Smart appliances.

Security.

Fire alarms:

-- also it is necessary to be able to turn off Wi-Fi if there is fire, to keep fireman from being electrocuted.

Elevators

HVAC/heat pumps.

Air filters.

Building Maintenance machines, materials.

Outdoor lighting: Sports fields, security, (lighting to point downward, for dark sky issues).

Solutions proposed in draft material.

Turn off Cell phones when not in use:

-- May be able to use in Airplane mode, if WiFi and Bluetooth are also turned off

Turn off Wi-Fi when not in use.

Safer Zones: exclude Wi-Fi and cell phone use within these zones.

Hard wiring: shielded cable, fiber, something.—use in Safer Zones/ WiFi-free Zones

Flexible Zones: able to Switch OFF all wireless, when desired.

-- Good for fires and Energy Efficiency also.

Fix Wiring Errors from within the building, which are creating "dirty electricity".

Filter.

Ground.

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Shield.

Remove: perfume fragrances, air fresheners.

Examples: already implemented. (Find these throughout the various references.)

Building code: changes for all new construction

((are we going here in this document? For the long-term this is the most important -- even if we're not planning to achieve this now, this will point the way to the Future, to put into perspective all the things that we do want to get in this document.))

-- public buildings, schools, hospitals, libraries, hotels.

-- Residential: multifamily: low income housing, homeowners associations, condos. Single family homes.

Add to new voluntary standards, developed to meet Energy Efficiency goals: LEED, WELL, PHIUS, ++.

(Also Transportation: Electric vehicles, electric vehicle charging stations, public buses, BART cars.)

New construction, remodel, remediation (fix problems, update to new standards).

-- Accommodate individual special needs.

-- Accommodate populations with special needs.

-- Make all buildings and grounds safe for all. Meet higher standards when measured by meters.

List differences: costs new implement, time and problems to make changes, resulting from efforts to make changes.

My Proposal::

Ombudsman's office (My Proposal):

Survey by expert certified by building biology institute,

Annual report.

Community Advisory Board.

Office of trained experts to survey, recommend, implement, follow up, track on going performance. [Find my description in my notes.]

-- one of all of the above to serve the whole region, not within individual organizations.

List **overall benefits:** (when above recommendations are followed)

Safety and health.

Increased speed.

Better security.

Reduced energy usage: less greenhouse gas emissions, lower climate change problems.

[Data for each? from where? References.]

[Rough draft of this statement:]

Proposed guidelines to enable access for special needs and disabled, while also improving built environment for all users, in the present. Also will prevent future injuries, illness and disability access problems.

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by

Update building codes for improved safety and health, increased speed, better security, and reduced energy usage (to stop climate change).

Implementation of Guidelines: Steps

{This is meant to follow Items in my earlier Outline.}

Organize Guidelines into Steps for Implementation based on

- Disabled Access Priority,
- Financial costs,
- Time and difficulty to implement.

Steps to upgrade building's production of electromagnetic radiation to protect occupants and prevent injury.

- Allows access by all, including disabled and vulnerable, those with special medical needs.
- Who is responsible for implementation? [ADD]
- Who does the actual work, and where do their instructions come from about how specifically to build it?
- What kind of language will they best understand? What is good model for each step, language, precedent?

Reasons for this approach:

Funding requests will be easier to define, easier to understand by both administrators and funders.

Easier to understand and conceptualize complex technical issues, if they are bunched together, as they would be implemented to meet different needs.

- Less mysterious and intimidating for non--technically-minded people.

Easier to explain to people with no technical background and/or no construction/architecture/building background

- what changes are needed, what it will take to implement these changes.
- Costs, time and difficulty involved.
- Prioritization for disabled access, and benefit to most people.

Explain clearly to those who don't know the needs of electro-sensitivity, and may feel skeptical, because they never heard of it.

- Especially if they don't know how to meet these needs, and need it spelled out for them.

Explain clearly in terms they can understand to those who have to build/install:

- what needs to be done,
- how to do it,
- how to check it's been done properly and effectively.

EMS Guidelines for Disability Access:

Rating:

Highest Priority: to implement as quickly as possible.

Priority: most important for minimal disability access, and benefits the most people.

To be prioritized, if meter readings exceed the maximum levels of Building Biology Institute standards.

Best Practices: to be implemented to benefit the largest numbers of individuals and all users, whenever possible, especially during new construction or major remodeling. Even if not actually required by law, these are highly recommended

Remediation: for accommodation of:

Individual already disabled

Groups of disabled and/or vulnerable to become injured:

- children, fetuses in pregnant women
- elderly,
- immune compromised, medical devices implanted, cancer
- individuals already sensitized.

(Steps #1, 2, 3, 4 – defined below)

Remodeling: for accommodation of:

Groups of disabled and/or vulnerable to become injured:

General population: ” Best Practices”.

- Voluntary, not required -- but prefer to implement Best Practices
 - Required by building code for approval of remodeling plans.
 - Required by non-governmental organizations: HOA, company policy, local government policy for access to public buildings.
- (Step #5, including all Steps as needed)

Building codes for new construction and major remodeling -- for accommodation of:

Groups of disabled individuals, and especially sensitive like children, immune compromised, and already sensitized individuals.

General population: ” Best Practices”.

- Prevent injury, both now and future generations: (they want to have healthy children, and grandchildren).
- Prevent damage to environment, including pets, wild animals, birds, plants and trees.

(Step #5, including Step #2 and #4 – especially include priorities of Step #3)

Start with voluntary guidelines, like LEED and WELL or local Best Practices.

Later: adopt into the Building Code.

Step #1: Policy changes only, with minimal costs.

Turn off cell phone and WiFi/Bluetooth, when they are not being used

Financial Costs: Minimum.

Time and difficulty to implement: Minimum

Resolves the vast majority of problems, but may not resolve all the problems, if does not address other additional sources of issues.

-- Turn off Wi-Fi and Bluetooth in all appliances, computers, printers, TV, especially if they are not being used, and are not necessary.

-- only turn on Wi-Fi while you are using it to perform a needed function, as short a time as possible, and trying to keep distance from where you are sitting. Shield computer if possible.

-- Put mesh bags over router/modem to lower the radiation from them.

-- check frequently to see if the WiFi have been turned on remotely, automatically, or after Resets.

-- Signage to explain

.
Additional suggestions:-- Substitute non--Wi-Fi appliances and gadgets for functions that don't need it, like clocks, alarm clocks, radio, poster, refrigerator.

-- Buy appliances without "Internet of Things".

-- buy older model used cars with less EMR, and computer controls.

-- Use maps instead of GPS.

Step #2: Best Practices though-out all buildings

-- Hardwired

-- Filters, Wiring Errors corrected, EMR Survey

Financial Costs: Some

-- Wiring, this may be the most costly item, if necessary to replace, due to not being up to Code.

-- Shielding can also be quite costly, depending on exterior sources of radiation present.

-- (see Step #4.)

Time and difficulty to implement: Varies

EMR survey by expert professional is recommended, preferably by certified Building Biology Institute graduate.

Hardwire internet access, and cell phone:

Shielded cable: use [#??], even in residential uses, especially in living or sleeping spaces with heaviest use, and especially for areas with children or other especially vulnerable users.

-- Check to see that electromagnetic radiation is not coming from these cables into the living

space. Increase level of shielding, if it is.

Wiring errors: check all wiring for presence of dirty electricity problems:

-- fix all wiring errors that contribute to this problem in your building. Even small, seemingly insignificant errors can quickly add up to magnify the problems they cause, when many devices are on the same lines, if not corrected.

Ground as needed: 3 prong Outlets must be available and usable throughout your building.

Rewire all of your building, if this is not there.

-- Old buildings use ???knob and -- this wiring is not grounded and must be completely replaced. This can make a very big difference.

Filter: filter all electrical lines entering your building from the street to prevent dirty electricity entering your building from other buildings using the same electrical lines. This should be applied to the lines before they enter your building.

Smart meter: replace with analog meter, or Shield appropriately.

-- (Maybe can find smart meter with less energy exposure? Better design available?)

-- Apply filter between smart meter and the rest of the house.

Survey EMR: hire expert professional, (like building Biology Institute certificate holder), to perform complete survey for electromagnetic radiation within and outside the building.

-- Follow his recommendations for improvement.

-- Follow up by performing survey again, to see if additional changes are needed.

-- Resurvey periodically, maybe once a year or 2, to make sure improvements are continuing, and no new sources have appeared.

WLAN (Wired Local Access Network)

Solar panels -- if used with an inverter, which converts DC to AC:

-- Must have distance and/or shielding from Living and Sleeping Spaces:

-- use closets or storage areas to shield if close to living spaces, most especially if near bedrooms/sleeping areas, and children's play spaces. Also be aware of pets sleeping areas.

-- Battery: high priority [??] necessary to Shield and/or distance, if it is used to store electrical energy produced by the solar panels for later use.

-- Electric vehicle charger for a car in the garage: most necessary to Shield and/or distance from all living spaces, especially bedrooms and children's play areas. Be aware that walls without special treatment, will probably not protect without Shielding in the walls, or shielding around the charger.

-- Neighbors: Be aware of causing exposure outside your home as well: need shielding on the inverter to prevent traveling:

-- into neighbor's homes, yards

-- outdoor play spaces for children,

-- also into the street.

Step #3: Safer Zones and/or Flexible Zones in larger buildings:

Financial Costs: Some Financial expense, but especially in larger buildings there is usually less financial cost than it would take to redo the entire building

Time and difficulty to implement: (same)

Provide Safer Zones and/or Flexible Zones within a larger building

-- designed to meet standards of Step #2, even if the rest of the building does not..

The objective is to create **as low as reasonably achievable** (ALARA) levels of EMR and RFR within the zone, to provide safe web access for EMS disabled.

Wi-Fi / Wireless free zones are areas in a building

-- **NO Wi-Fi** or Bluetooth or other Wireless connectivity

-- Free of any RF radiation or Wireless frequency of any kind, including, but not limited to, that generated by mobile devices such as cell phones, tablets, Wi-Fi routers, or any smart meters on the premises.

-- Be able to terminate all Wireless transmitted signals originating from within the zone.

-- Filter on all wiring entering the area.

-- Shield Smartmeters to prevent radiating into the Safer Zone.

-- Be shielded from all Wireless signals penetrating into the zone:

-- from outside the building

-- also from other areas within the building, which are outside of the safe zone.

-- Fluorescent and /or LED lighting, should be able to be switched off if requested by a user or staff member

-- All of the electrical and magnetic fields need to be at safe levels, not exceeding the standards of the Building Biology Institute.

Safer Zones are Areas within a larger building, that meet the standards of:

-- **Step #2: Hardwired, Grounded, Filtered**

The building's wiring must be correct, up to code,

-- especially at the junction and breaker boxes in the building, and

-- needs to be regularly rechecked and certified.

-- Light switches and fixtures should be checked for unsafe levels of electric and magnetic fields, if they have been incorrectly wired or grounded.

Wiring errors in general are frequently present, which increase the electromagnetic fields to unsafe levels. If an outlet is incorrectly wired, especially if not properly grounded, the increased electric fields will travel through the air into the room, and also through the Wire to any device plugged into it.

Hardwire fiber:

-- All telecommunications access is only provided by equipment (modems or routers) connected only by copper wire, cable, or Fiber optics.

-- Connectors must be secure to ensure a leak free connection.

- All antennas on these devices need to be switched off
 - even if they are not being used, they can still be generating radiation, unless they are completely switched off.
- This needs to be regularly checked, to see if they have been turned on, or automatically reset from elsewhere.
- Transmitting signals can be terminated by a **hardwire shut off**, with permanent Wi-Fi free software deactivation that does not reset itself.
- Best practices: use only equipment permanently connected to fiber optics or cable.

Advantages benefits of hardwired/ ethernet connections:

- faster, more secure, better quality signals for transmission, as well as healthier overall.
- More reliable in emergency situations, such as wildfires, earthquakes, or terrorist / military attacks -- during which Wireless services may be shut off or destroyed.
- Cost savings in the long run, because wireless connections have frequent software updates, which means on-going expense. Utility bills may be higher for wireless, which uses more energy than Hardwired. [[check this out: how much saved by schools that did this?]]

Flexible zones it would be possible to meet this standard by creating zones within the building:

OFF switch that can turn off all Wi-Fi to that area, during the period when it's needed by a disabled user, and then could be restored after the user has gone.

- must be easily accessible and visible
- with robust software that
 - does not permit Wireless signals
 - prohibits these software settings from being automatically overwritten or reset.

Cell phone users would **turn off** their **Wi-Fi** and cellular connections

- **plug into the hardwired connections** that would be made available at various locations within the zone.

*****;

Step #4: Shield from sources of EMR from off school grounds

Financial Costs: can range from minimal to extreme, depending on exterior sources of radiation.

Time and difficulty to implement: (same)

-
- Neighbors. Nearby buildings that affect your interior and exterior spaces.
 - Smart meters
 - Antennas on Neighbors roofs.
 - Antennas on roofs of schools, churches, hospitals, government buildings.
 - Power lines close enough to your building to affect the interior -- how bad it is depends on:
 - How far it is from the local power station ?
 - How many lines intersect on the pole ?
 - How far it is from space that you use regularly.
 - EVs parked on the street outside your building. (like Tesla)
 - (Signage like "No Parking here for EV's"?)
 - EVs driving by your building, (like Waymo).
 - Cell antennas: [include a picture/photo list of different types, smallest to largest, for identification]
 - government Radar and others.
 - Satellites overhead: [Kate Singer blog]

[[[

Cell antennas: (10/14/24 Connie Anderson: asked city of Berkeley)

- Independent testing not influenced by Telecom industry.
- Unannounced, unpredictable visits.
- Continuously monitored, over time.
- Record maximums, not averages.
 - Investigate circumstances that cause sudden peaks, to fix problems.
- Ambient level, SAR: cell phones, smart meters <<< [[ask Connie???

Step #5: New Construction or Major Remodel: Building Code changes

Financial Costs:

Less financial costs if changes are made to the entire building's plans in the design stage and in the construction drawings.

This will also lead to longer term financial savings from less energy use throughout the life of the building.

Time and difficulty to implement:

No added difficulty or time is needed, if it is implemented during construction.

This represents Best Practices for all populations, including the vulnerable and disabled

-- best for future generations

-- prevent further injuries for all users

-- complete accessibility for disabled.

- Fiber optic connections should be installed in every classroom, gymnasium, office, cafeteria and other areas within the school. For new construction, this should be done in conjunction with the installation of electrical wiring. {STS CWH-PS}

Step #6: Exterior grounds around buildings:

Playgrounds, Sports fields, Tracks, Swimming pools:

-- need to be protected from EMR sources from surrounding neighborhood – concrete barriers may be needed.

-- Security systems: problems [how fix?? [Alan Maher, TSS] [ask Doug Wood]

-- Outdoor Lighting: select Florescent and LED lighting can be problems [how fix?? Check report on Lighting, Alan Maher, TSS]

Streets Public outdoor spaces,

Parks

Public Transportation: Buses and bus stops, BART and BART STATIONS, Ferries, Shuttles.

Government buildings (and all public access buildings)

Priority:

- Step #3: Safe or Flexible Zones (wireless free)
 {{and #4 if meter readings are over Maximum standards.}} ???
- Step #1 if possible.

Best Practices:

- Step #2 in existing buildings.
- Step #5 for New Construction and Major Remodels.

Those who are disabled by EMS need to be accommodated to allow them to participate fully in governmental services. If they are unable to access web content from their homes because they are unable to use computers, (or unable to access the network for any reason,) then they must come to government offices in order to do so.

Must be a **Wi-Fi free zone** to accommodate their needs:

- Safe entry
- safe passage,
- a safe waiting area
- safe Office
- safe Conference Room

Step #1: Policy -- turn off cell phones and all WiFi:

- All antennas on the computer or any devices in this space, must be **turned off**, even when device is not being used.
- This needs to be regularly checked, to see if they have been turned on, or automatically reset.
- Signs, Handbooks [[see Schools]]
- Fluorescent and /or LED lighting, should be able to be switched off if requested by a user or staff member.
- Human Agent: available to assist anyone, if they cannot use computers.
- landline telephone in order to call for services
- the use of paper communications through the mail, when necessary, as alternatives to email.

Step #3: Safer Zones (wireless free) or Flexible Zones (wireless can be turned off with a kill switch)

- **Step #2: Hardwired, Grounded, Filtered:** everywhere within the Safer Zones must meet this standard (as below):

Step #2: Hardwired

Internet access must be wired (with copper, cable, or fiber) in order to be used to communicate.

- All antennas on the computer or any devices in this space, must be **turned off**, even when device is not being used.

- Regularly check: to see if they have been turned on, or automatically reset.
- The building's wiring must be correct, up to code, especially at the junction and breaker boxes in the building, and needs to be regularly rechecked and certified.
- All of the electrical and magnetic fields need to be at safe levels,
 - not exceeding the standards of the Building Biology Institute.
- Light switches and fixtures should be checked for unsafe levels of electric and magnetic fields, if they have been incorrectly wired or grounded.

Wiring errors in general are frequently present, which increase the electromagnetic fields to unsafe levels. If an outlet is incorrectly wired, especially if not properly grounded, the increased electric fields will travel through the air into the room, and also through the Wire to any device plugged into it.

Flexible zones it would be possible to meet this standard by creating zones within the building:

OFF switch that can turn off all Wi-Fi to that area, during the period when it's needed by a disabled user, and then could be restored after the user has gone.

- must be easily accessible and visible
- with robust software that
 - does not permit Wireless signals
 - prohibits these software settings from being automatically overwritten or reset.

Cell phone users would **turn off** their **Wi-Fi** and cellular connections

- **plug into the hardwired connections** that would be made available at various locations within the zone.

Libraries:

Highest Priority:

-- **Step #1: Policy changes:** Cell phones and laptop wireless turned OFF

Priority:

-- **Step #2: Hardwired** with adaptors and Ethernet ports to

-- plug in cell phones, laptops, tablets, etc.

-- **Step #4** if meter readings are over Maximum standards ????

Low-Income Housing:

Highest Priority:

-- **Step #3: Safer/Flexible Zones** (wireless free)

-- Daycare areas, Classrooms, and children's Play areas, both inside and outside

-- 1-3 units of Housing, minimum, depending on total number of units:

-- must meet all standards of Step #2, especially in sleeping areas, and children's rooms

Best Practices:

-- Step #1 in Safe Zone areas, at least.

-- **Step #2: Hardwires, Filtered, Grounded** through-out all common areas and Housing Units.

Step #3: Safer/Flexible Zones (wireless free)

-- must meet all standards of **Step #2: Hardwires, Filtered, Grounded**

-- especially in sleeping areas, and children's rooms

-- **Smart Meters** especially must be shielded from penetrating the Safer Zones, and children's play areas, and the Housing units designated as Wi-Fi free.

-- Entry to building, Path of travel, Elevators.

-- Common areas, dining areas if communal, laundry.

-- Chapel: also Step #1: No Cell phones or other wireless devices.

-- Playgrounds and Exterior garden areas.

Step #4: Protect from Exterior sources of EMR (from off of the property)

-- Shield building as needed from exterior sources of radio frequency. ????

Hotels:

Priority:

- **Step #3: Safe or Flexible Zones** (wireless free)
 - in Entry, Front Desk, and Waiting room/area, and in Safe Zone Guest rooms/suites
- **Step #4. Shielded** from exterior sources of EMF
Guest rooms/suites for the use of EMS disabled visitors only:
 - (but only if NO wireless use within rooms, otherwise it magnifies the radiation, which is trapped inside).

Best Practices:

- **Step #2: Hardwired** -- in existing buildings.
- **Step #5: Hardwired** -- for New Construction and Major Remodels.
- **Step #1: Policy changes**: Cell phones and laptop wireless turned OFF
 - in Entry, Front Desk, and Waiting room/area, and in Safe Zone Guest rooms/suites.

Schools:

Highest Priority:

Step #1 as School Policy, through-out entire building.

Step #4 may also be needed to protect from exterior sources of radio frequency, like cell towers, and antennas.

No cell antennas on school property anywhere, especially on school building or roof.

-- None within ?? Distance from school.

NO Wi-Fi on school buses !!

-- (special Danger from metal sides enclosing and intensifying radiation within the bus.)

Signage to explain.

Handbooks for employees, staff, teachers and students, maintenance workers.

Training, classes.

Frequent re-checks every three to four months to verify ongoing safety.

-- Regularly monitor/resurvey and fix any new problems that have appeared.

Best Practices:

-- Step #2 (in existing building) or Step #5: (New Construction or Major Remodel),

-- Step #1 in School Policies.

Step #1: Policy changes only, with minimal costs.

No cell phone use during the school day by students anywhere inside the school.

-- No Wi-Fi or cell phone use on the school bus.

All students should turn off their cell phones and other personal devices during the school day.

-- At the entrance to the school building, they should be deposited in a receptacle that blocks any radio frequency radiation emissions.

-- Teachers, administrators, principal, and staff should turn off their cell phones and other devices when they are not using them. They also at the same time should turn off Wi-Fi and Bluetooth as well as any personal hotspots.

-- Instructions should be available in the handbook and signs posted on the wall and the teacher's lounge to explain how to do this.

-- [describe how to turn all the way off].

-- [find policy letter] [Legal letter] ?? [elsewhere? Appendix? Intro?]

Wi-Fi systems -- Reduce Availability:

limit exposure time by turning them off when they are not being used.

-- Create distance from students' and teacher's location in the room.

-- Reduce power levels from Router, and increase intervals in the Beacon Signal.

-- Switch OFF when not using, to limit exposure time, and save money on utility bills.

Increase Distance:

Every time the distance from source to a child is doubled, exposure is reduced by 4X, or 400%.

-- Locate the router or WAP in a distant corner of the classroom, away from student desks, such as the area above the main entry door, which is usually free from desks and student activities.

-- (In most cases this will have no observable effect on device performance).

Reduce power from the Router:

Most routers and wireless access points (WAP) are set at the factory for full power to ensure maximum performance and coverage, but this far exceeds the amount of power needed for a typical classroom situation. This can be corrected by a simple software adjustment.

-- Reduce to 25% or less if possible: connectivity to devices won't be affected in networks with a separate WAP in each classroom.

-- Many schools have found that performance actually increases in the wireless network due to greatly reduced interference between WAPs.

-- The end result is much lower RF exposure in the classroom.

Disable 2.4Ghz radio, to use only 5Ghz radio -- not both:

If you have a WAP in every classroom, disabling the 2.4GHz and keeping only the 5Ghz radio active will reduce the RF exposure in the classroom even further.

Lengthen time intervals at Beacon signals: The higher the value, the more time between signals, and the less exposure for occupants from routers or WAPs

?? provide connected devices with information such as SSID, timestamps, and various other parameters.

-- Default (set to 100 ms), can be changed to **1000ms** or longer.

-- Testing is the best way to determine the proper beacon signal for your school environment.

Switch OFF with Timer: Wi-Fi should be used only on demand, and only for a specific pedagogical curriculum where connectivity to the internet is required and hard-wiring is not available. **It should not be left on when not being used.**

-- A wall-mounted timer switch, which is wired to control a dedicated outlet providing power to the routers and Wireless Access Points (WAP) in the local network, is the simplest and most effective method of limiting the availability of Wi-Fi --controlled by the teacher.

Cost: Approx. \$175 - \$250 per classroom

(These are just a few of examples of wireless equipment that can be adjusted to reduce exposure. Contact your IT vendor for more information about making adjustments to your school's system.)

(Please note: Reducing the levels of RF radiation through these measures is an important temporary step in mitigating exposure, but should not be considered sufficient to alleviate the problem or extinguish potential liability. We strongly advocate for the replacement of all classroom wireless technology with **hardwired systems**.)

Step #2: Best Practices though-out all school buildings

-- **Hardwired: Fiber Optic WLAN**

-- **Filters, Wiring Errors corrected, EMR Survey**

Priority if possible: Step #2 is highly recommended throughout the entire school.

Advantages: [in Appendix ?? add TSS p1-2, TimSch p4,6]

- Financial (less costs over time, due to lower utility costs, and on need for frequent software updates).
- Legal: ADA compliant through all school. Child's brain more vulnerable to future health problems and injury. Future corrections: save cost of converting later, when problems are mandated. +++]

Hardwired:

Ethernet switches come in a variety of configurations and can also carry Power Over Internet (POE) to provide power to wireless devices. Check manufacturer's specifications for more information.

-- Virtually any computer, smart phone, tablet or other similar device can be easily connected to the internet using simple, low-cost adapters.

-- An Ethernet port, also known as an Ethernet jack or socket, is a crucial component in networking hardware, allowing Ethernet cables to plug into devices¹². There are different types of Ethernet switch ports based on network architecture³:

- Access Port: Used for connecting devices like laptops, desktops, and printers.
- Trunk Port: Used between switches and higher-level network devices.
- Hybrid Port: Can connect both user and network devices.

-- Regularly monitor/resurvey and fix any new problems that have appeared.

Wired local area network (WLAN) to reduce radio-frequency (RF) EMF

-- Install a wired local area network (LAN) for Internet access throughout the school.

-- Provide wired network connections for desktop computers, laptops, notebooks, and tablets.

-- All wireless transmitters shall be disabled on all Wi-Fi-enabled devices.

-- Provide wired input devices for computer workstations.

Wired Phones to reduce RF EMF in classroom

-- Install easily accessible hard-wired phones for teacher and student use and

-- Prohibit installation and use of standard DECT cordless phones and cordless phones operating at 2.4 GHz and 5.8 GHz

-- unless they have been laboratory tested to demonstrate that the cordless phone base station and handsets (whether placed in the charging station or not) do not emit RF EMF emissions in standby mode.

Dirty electricity: wiring errors -- No net current magnetic fields – Correct school wiring [[explain]]

The Project Team shall provide a letter stating the following:

1. Wiring in all school rooms is compliant with the currently adopted US National Electrical Code (NEC) in the local jurisdiction, and applicable state electrical code.

2. All school rooms are free of the following common wiring errors:

- Improperly wired subpanels (neutral-to-ground bond);
- Incorrect three-way switch wiring;
- Incorrect wiring of switched outlet circuits;

-- Neutrals from separate branch circuits that are connected anywhere beyond the panel of origin for the circuits;

-- Neutral-ground shorts (intentional or inadvertent) anywhere in the system.

3. The correctness of the wiring has been checked in each room:

-- the ELF magnetic field exposure measured levels (tRMS) comply with 1 mG (100 nT) in new construction and 2 mG (200 nT) in existing school modernizations; (see the Austrian Sustainability Building Council (2009) – Total Quality Building Assessment)

[add ?? from TSS p5 bot and 6 top]

Filters: [Alan Maher website ??]

EMR survey: [add from TSS, meters]

Measure radiation levels throughout the building.

-- Take a measurements in all classrooms: at foot levels, at student's head levels while sitting at desks, and while standing -- also adult's head levels while standing.

-- Take measurements in all classrooms, lunchroom, assembly rooms, gymnasiums, library, and hallways, especially at the entrance to the building.

-- Also take measurements in teachers lounge, and administration and staff offices.

Measure exposures before and after mitigation.

-- First measure with no cell phones, devices, Wi-Fi in use, and then repeat the same measurements when all of these things are on.

Step #3: not applicable in schools.

Step #4: Shield from sources of EMR from off school grounds

Cell phone towers, base stations or so-called “small cell” antennas:

-- School districts should prohibit the construction or installation anywhere on school buildings or school property.

-- Consult an expert, such as Building Biology Institute certified,

-- to survey for problems,

-- recommend mitigation steps,

-- oversee installation, and check for correct result.

-- Frequently re-check, in case new sources appear.

-- To reflect external RFR away from the school,

-- Use metal siding and roofing materials, or use cost effective foil vapor barriers.-- Check interior of all buildings after the metal shielding has been installed, because it will also increase exposures from wireless access points inside the school, as the RF signal is reflected by the metal.

[[??

Cell antennas: (10/14/24 Connie Anderson: asked city of Berkeley)

- Independent testing not influenced by Telecom industry.
- Unannounced, unpredictable visits.
- Continuously monitored, over time.
- Record maximums, not averages.
 - Investigate circumstances that cause sudden peaks, to fix problems.
- Ambient level, SAR: cell phones, smart meters <<< [[ask Connie???]]

Step #5: New Construction or Major Remodel

[[add info]]

- Fiber optic connections should be installed in every classroom, gymnasium, office, cafeteria and other areas within the school. For new construction, this should be done in conjunction with the installation of electrical wiring. {STS CWH-PS}

Step #6: Exterior school grounds:

Playgrounds, Sports fields, Tracks, Swimming pools:

- need to be protected from EMR sources from surrounding neighborhood – concrete barriers may be needed.
- Security systems: problems [how fix?? [Alan Maher, TSS] [ask Doug Wood]
- Outdoor Lighting: select Florescent and LED lighting can be problems [how fix?? Check report on Lighting, Alan Maher, TSS]

Best Practices:

Step #1 in School Policies.

Step #2 (in existing building) or

Step #5: (New Construction or Major Remodel), along with
[more detailed information available, be found in a different section]

[11/02/24 Draft → added to Draft #3E]

Ombudsman's office with Community Advisory Board:

Recommendation/proposal:

To facilitate implementation of all of these recommendations for disability access,

- establish an office of Ombudsman
- with a staff of trained experts to advise on how to implement.
- as well as a Community Advisory Board to oversee it.

Ombudsman's office:

trained experts and building consultants to advise, survey, recommend, implement, follow up, and track ongoing performance. [see page 5] √

[[Dictate 10/31/24 changes:

Page 5 and 21: on smaller jobs. Keep list of trained experts who can be hired for larger jobs. Building Biology Institute certified certification.

Or needed by individual or group with special needs.]]

I believe this idea of a single regional office, would be better than trying to have each individual organization develop this knowledge within it, or do its best to guess how to carry this out.

Regional (for example, the San Francisco Bay Area, Sacramento area, Los Angeles area, and San Diego areas -- this follows the organization of the Air Quality Management Districts in California).

- would be available to all facilities needing to meet these guidelines within a certain region.
- Most building managers know nothing about these issues, and often don't want to have anything to do with it, and so will either ignore the problems, or even make things worse.
- Even under the best circumstances, they would not know which are the best methods to use, and how to implement them.
- Most maintenance people, and most construction companies, also don't know this highly technical information.
- I believe that everyone involved would welcome a single location to find expert help and how to implement these guidelines, without having to try to figure it out on their own.
- This would also be a place where any resident or employee that needs accommodation would contact this office, and not be ignored, or fear repercussions from speaking up.

This office would be staffed with expert consultants who would know:

- how to conduct a survey
- how to hire a certified Building Biology Institute expert to carry it out

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- recommend changes needed,
 - consult on comparing the advantages and disadvantages of different ways of meeting these changes, and
 - advise on implementing them.
- This office would also be responsible for
- following up, to check the results of the final work, and
 - to track ongoing performance by producing an annual or semi-annual report.
- It's also important to be able to
- check all other ongoing maintenance projects, to make sure they don't cause new problems in this area in the process of fixing unrelated problems, as well as while updating and installing new equipment.
- Maintain up-to-date list of trained and experienced professionals with resumes, and examples of work, including costs and updates.
- training by or similar to Building Biology Institute certification.
 - Examples: successfully done. including costs and updates.
 - Signage, Handbooks, Classes for staff, general public, students in schools.
 - Update publication of Best Practices and successful examples through Community Advisory Boards, and annual Conference of these boards.
 - Give annual awards for best and most successful implementation for lowest EMR exposure rates at this conference.

Community Advisory Board:

This office should be overseen by an independent Community Advisory Board, with at least half of its members being people with these particular disabilities, as well as experts who know how to deal with them.

This Board could also serve as an umbrella organization to work together with other local disability access within the region, like the Center for Independent Living, as well as those within companies and organizations, like the Disabled Students Union at UC Berkeley. Community Advisory Boards for different regions would communicate with each other, to update on best practices.

[Page 20 could be connected with CIL, or County and/or State government.]

Funding will be needed to implement the Ombudsman's office and Community Advisory Board for office space, staff, office equipment, and utilities.

- Electromagnetic radiation surveys by certified trained experts, to identify and problems and recommend changes needed, and oversee implementation.
- The office spaces for these two groups should conform to all these recommendations for electromagnetic radiation safety.

I believe this funding would result in **financial savings** in the long run, by

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