

Taming the 4G/5G Grid of So-called “Small?” Wireless Telecommunications Facilities (sWTFs)

Amend HB.5818 Introduced on Aug 13 by Rep. Deanne Mazzochi

Bill includes:

- NEPA Review requirement
- Ineffective RF-EMR monitoring

Bill needs amendments:

- **WE-WANT-IT** Amendment
- **VHP** Amendment
- Restore local control



Three Legislative Asks

1. To allow **SB.1451** to **self-repeal**
2. To **never** allow another bill like **SB.1451** in Illinois
... so **HB.5818** needs significant amendments **or** quick death
3. **Solution: SB.1452: WE-WANT-IT** Bill is the **answer**:
a simple, semi-annual **Wireless Antenna Need Test**
to collect reliable objective, Wireless carrier-specific,
signal strength data (dBm) for **local planning decisions**

Far Better to **NOT** Have a State Telecom Bill

- 27 intelligent states **DID NOT PASS** an ALEC-written State Streamline Small Cell Deployment Bill. **Intelligent:** AK, AL, AR, CA, GA, ID, KY, LA, MA, MD, ME, MS, MT, ND, NE, NH, NJ, NV, NY, OR, PA, SC, SD, WA, WI, WV, WY
- 23 dumb states inexplicably, **stole local control** from their municipalities over the placement, construction and modification of Wireless Telecommunications Facilities (WTFs) in the public rights-of-way and passed an ALEC-written State Streamline Small Cell Deployment bill. **Dumb:** AZ, CO, CT, DE, FL, HI, IA, IL, IN, KS, MI, MN, MO, NC, NM, OH, OK, RI, TN, TX, UT, VA, VT

Slides For Today's Meeting . . .

- **A. *Support WE-WANT-IT: Written Evidence – Wireless Antenna Need Test – In Telecommunications (every six months, paid for by the Wireless Cos., Objective Data that solves the Digital Divide)***
- **B. History of FCC Maximum Permissible Exposure (MPE) guidelines for pulsed, data-modulated, Radio-frequency Electromagnetic Microwave Radiation (RF-EMR) exposures. No scientific basis for this industrial guideline . . . Compliance does not and cannot insure public safety.**
- **C. Solution: *Sufficient local regulation of Vertical • Horizontal • Power* for so-called “small” Wireless Telecommunications Facilities (sWTFs) near homes, schools, parks and care facilities (i.e. **operations** of WTFs).**

Call Data from Glen Ellyn, IL

Proves No Significant Gap in Telecommunications Coverage

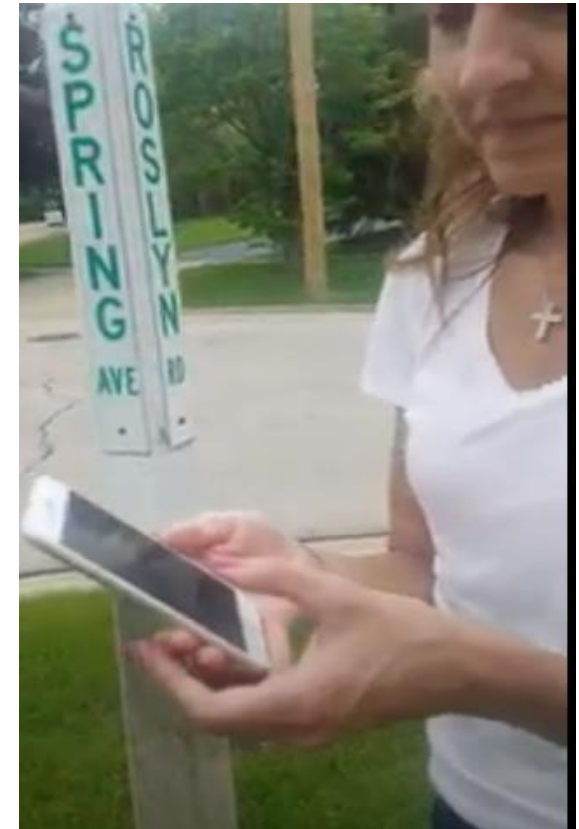
Park & Hill



Hill & Bryant



Spring & Roslyn



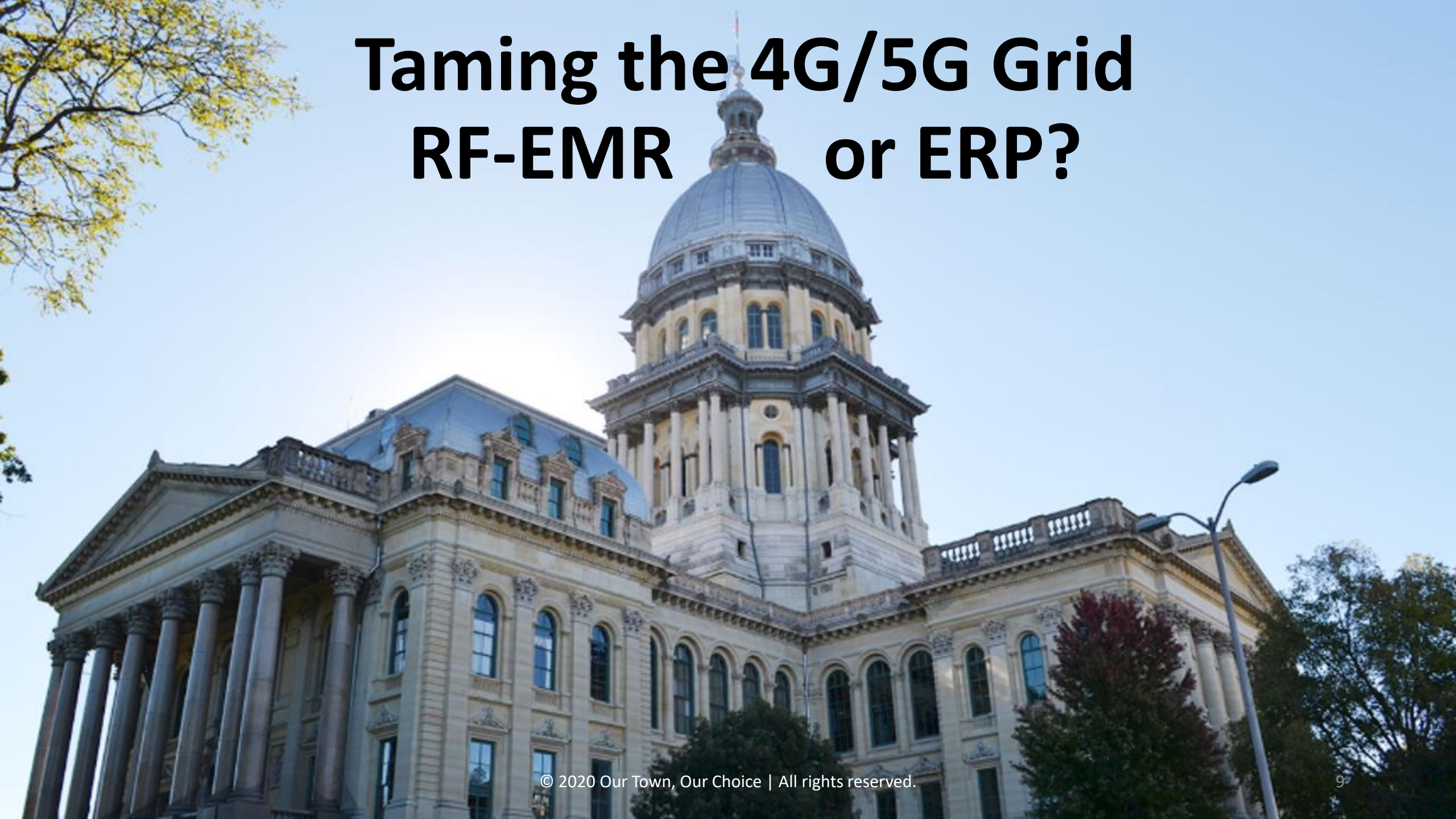
Better: Wireless Antenna Need Test

- **No Cost** ***WE-WANT-IT Amendment or Bill:***
a **Written Evidence — Wireless Antenna Need Test In Telecommunications**
Bill for a Wireless Signal Strength Test conducted every six months by an
independent **RF Engineer** at **no cost to the Municipality**
(*This would also solve the Digital Divide . . .*)
- **Street-by-street** Signal Strength (dBm) data placed **in the public record**
- Provides **objective data** to establish if there is a **significant gap** in
telecommunications service and forces the applicant to use the **least**
intrusive means to close any **proven gap**.

Key Points to Remember

- **Dec 2019: FCC NEPA Attorney Erica Rosenberg:** Since Aug 9, 2019, every Wireless Telecommunications Facility (WTF) must undergo **NEPA review**
- **Excessive Effective Radiated Power (ERP)** is essentially **excessive noise** that is often way beyond what is needed for telecommunications service, i.e. the ability to make an outdoor wireless phone call
- This **NOISE** (inaudible, yet extremely chaotic electromagnetic power through the air) ruins residents' quiet enjoyment of streets
- **VHP | Vertical - Horizontal – Power**, the three amigos of Wireless antennas; if your town does not sufficiently **regulate all three**, then it has achieved nothing

Taming the 4G/5G Grid RF-EMR or ERP?



How Much Power is Actually Needed for Telecommunications Service?

- **0.1 Watt ERP** from the sWTF antenna is all that is needed for . . .
“5 bars” on a cell phone ([-85 dBm](#)) at ½-mile radius for Telecom Service
- **55,000 Watts ERP** is **500,000+ times higher** than 0.1 Watt.
This is 10-50 feet from homes, which ruins [Quiet Enjoyment of Streets](#).
- Cities can regulate all three, **Vertical • Horizontal • Power ([V•H•P](#))**
to properly balance the needs of residents and Wireless Cos.
- ***BIG DATA*** via fiber to the premises (FTTP), *small data* through the air

Wireless Companies Are Manufacturing . . . Electromagnetic **power** through-the-air

- **Antennas = Factories** . . . heavy-polluting industrial equipment installed throughout residential neighborhoods
- **Inputs** . . . factories mush together a stream of data from fiber optic cables with a boatload of electricity **to spray** . . .
- **Output** . . . electromagnetic power through the air, which goes by many names (**ERP, RF-EMR, dBm, V/m, $\mu\text{W}/\text{m}^2$, electrosmog, neurotoxin, deadly pollution** and more . . .)
- **25 million times** more RF-EMR than is needed for **5-bars** on a cell phone – this is placing **toxic dumps** next to our houses.

Problems With So-Called “small” Wireless Telecommunications Facilities (sWTFs)

sWTFs are falsely branded. They are 25 million times more powerful than Macro Cell Towers, once you consider the metric that matters — the intensities of the [toxic pollutant](#) (RF/MW radiation) that reaches second- and third-story bedrooms:

What Really Matters: Excessive **Effective Radiated Power (ERP)**
That Results in RF Microwave Radiation Intensities in 2nd-Story+ Bedrooms

Cell Tower	Vertical Distance Off Ground	Horizontal Distance Away	Power in bedroom (2nd-story+)
small cell	35 feet	60 feet	50,000 avg. radiation units
Macro cell	200 feet	2,500 feet	0.002 avg. radiation units

Conclusion: 50,000 $\mu\text{W}/\text{m}^2$ from a so-called “small” cell is **25 million times more powerful** than 0.002 $\mu\text{W}/\text{m}^2$ (-85 dBm) from a Macro cell —
Note: -85 dBm is a signal strength which provides **5 Bars** of telecommunications service on a cell phone (source: [link to The Truth About 4G/5G in Sacramento](#))



Sacramento, CA: 60 feet from home → children immediately sickened (© [Windheim EMF Solutions](#)) | **San Francisco, CA:** 10 feet from home → brain tumor diagnosed in three months | **Santa Rosa, CA:** 20 feet from home → home sold at 23% discount (\$150,000+ loss in property value)

To prevent fires hazards, should be **NO Wireless Antennas** above ~ 12,000-Volt High-Voltage Lines . . .

<https://youtu.be/xDLKLnVdIWE?t=74> | <https://youtu.be/38Z8eYdVY48>



Repeating **Dumb** Mistakes Across Illinois

- Above high-voltage lines
- **Fire hazard!**
- **Category-5 Arc Flash Explosions**
- Glen Ellyn, IL
- Roosevelt Rd. & Baker Hill Dr.



We agree with CA: there should be **NO Wireless Antennas above ~ 12,000-Volt High-Voltage Lines . . .**

<https://www.dir.ca.gov/Title8/2946.html>

Cal/OSHA §2946. *Preventing Accidents Due to Proximity to Overhead Lines.*

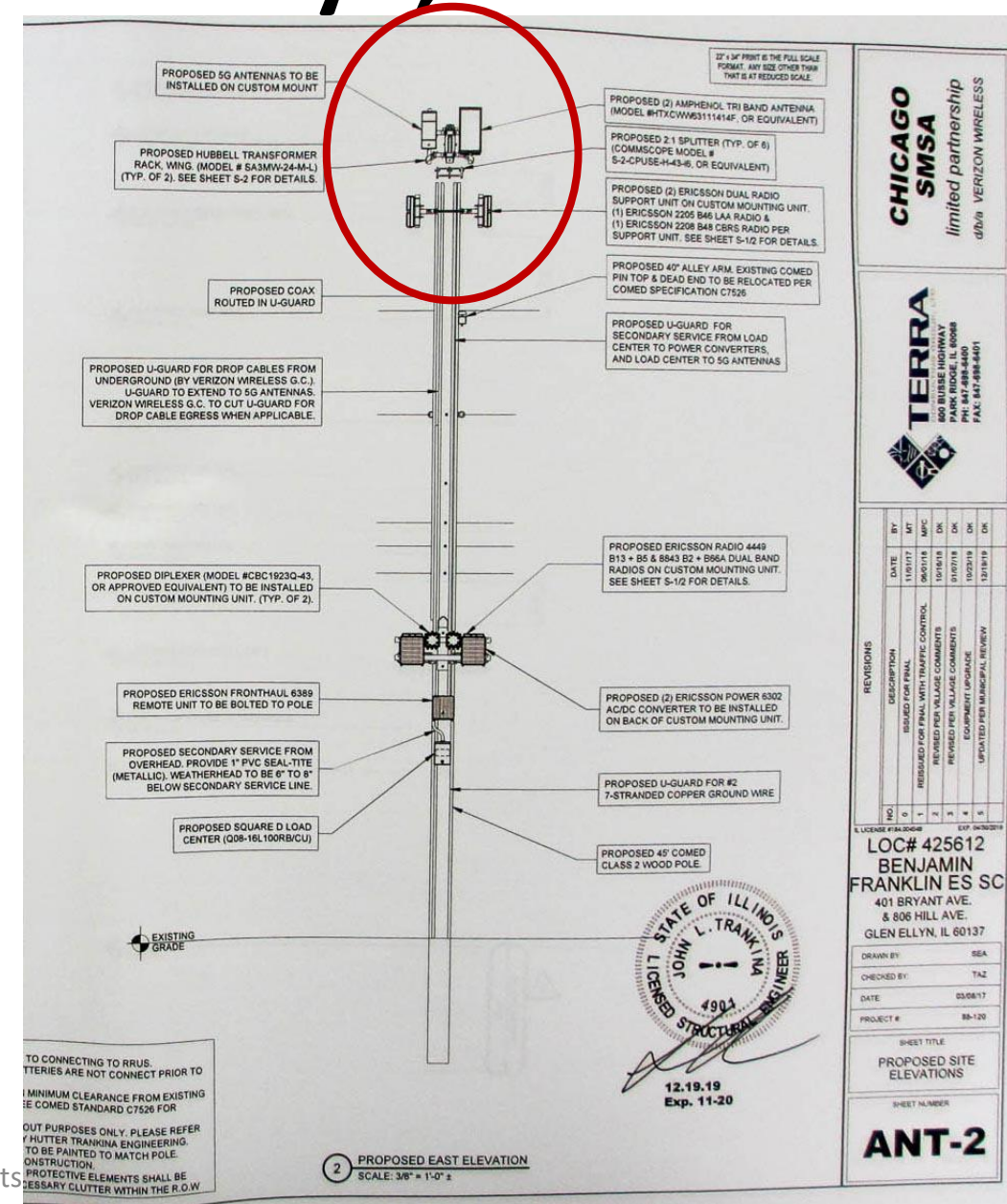
“(b) Clearances or Safeguards Required. *Except where overhead electrical distribution and transmission lines have been de-energized and visibly grounded, the following provisions shall be met:*

(1) Over Lines. *The operation, erection, or handling of tools, machinery, apparatus, supplies, or materials, or any part thereof, over energized overhead high-voltage lines **shall be prohibited.***”

What is the plan for Glen Ellyn, IL?



*Based on
June 17
inspection of
actual plans for
utility poles in
Glen Ellyn, IL*



Folks, This is a Macro Tower:

Eight (8) 4G + 5G Antennas & Eight (8) Radios (amplifiers)

Added Antennas														
700 LTE	850 CDM A	850 LTE	1900 CDM A	1900 LTE	2100 LTE	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	QTY
YES		YES		YES	YES	AMPHENOL	HTXCWW63111414F000	37.5	38.5	0(D1),180(D2),	false	false	PHYSICAL	2
						ERICSSON	KRE_101_2251	33.8	34.1	180(D2),0(D1)	false	false	PHYSICAL	2
						ERICSSON	KRE_105_259	33.8	34.1	180(D2),0(D1)	false	false	PHYSICAL	2
						ERICSSON	VZ-AIR6701_TB	37.5	38.4	180(0002),0(0001)	false	false	PHYSICAL	2

Added Non Antennas														
Equipment Type	700 LTE	850 CDMA	850 LTE	1900 CDMA	1900 LTE	2100 LTE	Location	Make	Model	Cable Length	Cable Size	Inst. Type	Quantity	
RRU							Tower	Ericsson	2205			PHYSICAL	2	
RRU							Tower	Ericsson	2208			PHYSICAL	2	
RRU	YES		YES				Tower	Ericsson	4449			PHYSICAL	1	
RRU					YES	YES	Tower	Ericsson	8843			PHYSICAL	1	
RRU							Tower	Ericsson	AIR 6701			PHYSICAL	2	
Splitter							Tower	Commscope	(S-2-CPUSE-H-43-i6			PHYSICAL	6	
Diplexer							Tower	Commscope	CBC1923Q-43			PHYSICAL	1	

Two(2) Amphenol 4G Antennas

[Link to Amphenol HTXCWW63111414Fxy0 Antenna Specs](#)

6-Port Panel Antenna
(1x) 696-960 | (2x) 1710-2170 MHz

Maximum Effective Radiated Power (ERP) Output

65° 23.2 in FIXED TILT



Frequencies	Max. Power × Gain	ERP	x 2
696-806	500 W × 10.5 =	5,250 Watts	10,500 Watts
806-960	500 W × 11.0 =	5,500 Watts	11,000 Watts
1710-1880	300 W × 13.5 =	4,050 Watts	8,100 Watts
1850-1990	300 W × 14.0 =	4,200 Watts	8,400 Watts
1850-1990	300 W × 14.0 =	4,200 Watts	8,400 Watts
1900-2170	300 W × 14.0 =	4,200 Watts	8,400 Watts
Total ERP	N/A	27,400 Watts	54,800 Watts

Consider Newton Park in Glen Ellyn



Home Across from Newton Park in Glen Ellyn
meters **100,000 $\mu\text{W}/\text{m}^2$** . This is Overkill.



Lombard / Wheaton Antennas

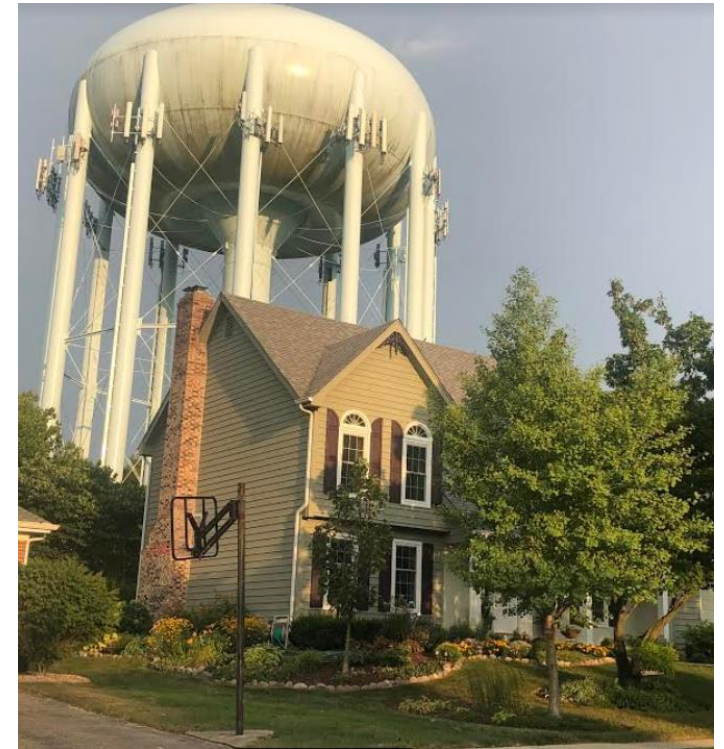
Sunset Knoll Park



Danada Square



Golden Pond



Here is what is happening in Lombard, IL

The Village of Lombard has **approved/installed twelve (12)** so-called “small” Wireless Telecommunications Facilities (sWTFs) in Lombard.

The project addresses for the installations are listed at right:

1. 2098 S. Finley Road
2. 2050 S. Finley Road
3. 2030 S. Meyers Road
4. 1801 S. Finley Road
5. 1200 S. Finley Road
6. 1005 S Main Street
7. 855 E. 22nd Street
8. 203 Yorktown Shopping Ctr.
9. 103 E. Madison
10. 55 W. 22nd Street
11. 1 E. 17th Street
12. 2780 S. Highland Avenue

Illinois Residents are Sitting Ducks . . .



**Working hard to
save our lives &
neighborhoods
until . . .**

**IL SB.1451
self-repeals**

VHP Recipes



Cities Can Adopt Workable V·H·P Recipes

1996 Telecommunications Act (TCA) Conference Report:

*“[T]he conferees **do not intend** that if a State or local government grants a permit in a commercial district, it must also grant a permit for a competitor’s **50-foot tower in a residential district.**” ([link](#))*

1996 H. R. Conf. Report No. 104-458

*“The conferees also **intend** that the phrase “unreasonably discriminate among providers of functionally equivalent services” will provide localities with the flexibility to treat facilities that create different visual, aesthetic, or safety concerns differently to the extent permitted under **generally applicable zoning requirements** even if those facilities provide functionally equivalent services. For example, the conferees **do not intend** that if a State or local government grants a permit in a commercial district, it must also grant a permit for a competitor’s **50-foot tower in a residential district.**”*

1996 H. R. Conf. Report [No. 104-458](#)

*“If a request for placement of a personal wireless service facility involves a zoning variance or a public hearing or comment process, the **time period for rendering a decision** will be the usual period under such circumstances. It is **not the intent** of this provision **to give preferential treatment to the personal wireless service industry** in the processing of requests, or to subject their requests to any but the **generally applicable time frames** for zoning decision.”*

Disastrous V•H•P Recipe for sWTFs

- **Vertical:** antenna is 25-50 feet from ground
- **Horizontal:** antenna is 10-50 feet from homes/schools
- **Power:** Thousands of Watts of Effective Radiated Power
- **Result:** 50,000 RF radiation units in one's bedroom ([link](#))
- **Compare:** 50,000 to 0.002: it is 25,000,000 times more!

Workable V•H•P Recipe for sWTFs

- **Vertical:** antenna is 25-50 feet from ground
- **Horizontal:** antenna is 50+ feet from homes/schools
- **Power:** 0.1 Watt of Effective Radiated Power
- **Result:** 0.002 RF radiation units in your bedroom **still provides 3-bars on a cell phone** ([link](#)), but 5-bars outside

The Beauty of 0.1 Watt sWTF ERP Limit

- **Much smaller antenna & power supply**
(think size of Wi-Fi Router) <https://scientists4wiredtech.com/vhp>
- **Signal goes** — down the street ½ a mile
- **Provides 5 Bars** on a cell phone
- **Everyone** (over 3,000 people at same time) can make a call
- . . . and is **compliant** with FCC RF-EMR Exposure guidelines
- **What's not to like?**

All you need to know . . .

- **Pulsed, data-modulated, Radio-frequency Electromagnetic Microwave Radiation (RF-EMR)** . . . Volts per meter (V/m), or a power flux density in millionths of Watt per square meter ($\mu\text{W}/\text{m}^2$)
- **Effective Radiated Power (ERP)**: total power in Watts radiated by an antenna to transmit the same $\mu\text{W}/\text{m}^2$ as the that from a source antenna to a distant receiver located in the antenna's strongest beam (main lobe) i.e. **the sum of each port's maximum input power multiplied by the antenna gain for that frequency.**
- **Signal Strength: dBm** (decibel-milliwatts) is an abbreviation for the power ratio in decibels (dB) of the measured power referenced to one milliWatt ($1 \text{ mW} = 1/1,000$ of a Watt). ([link](#))

Pulse-Modulated Microwave Radiation in the US:

How Many Overlapping Waves Are Too Many?

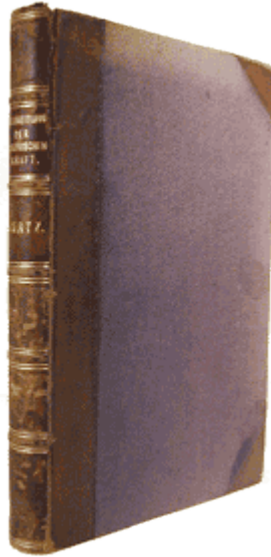
“MHz” = Megahertz “dm” = decimeter “cm” = centimeter “mm” = millimeter

Note: This first 5G wavelength is the height of a baby up to 1 month old.

- **5G:** 600 MHz = dm microwaves of 5 dm \approx 20”
- 4G: 700 MHz = dm microwaves of \sim 4.3 dm \approx 17”
- 3G/4G: 800 MHz = cm microwaves of 37.5 cm \approx 15”
- 3G/4G: 900 MHz = cm microwaves of \sim 33.3 cm \approx 13”
- 3G/4G: 1800 MHz = cm microwaves of \sim 16.7 cm \approx 6.6”
- 3G/4G: 2100 MHz = cm microwaves of \sim 14.3 cm \approx 5.6”
- Wi-Fi: 2450 MHz = cm microwaves of \sim 12 cm \approx 5”
- **5G:** 3100 MHz to 3550 MHz = \sim 9.7 to \sim 8.5 cm \approx 3.8 to 3.3”
- **5G:** 3550 MHz to 3700 MHz = \sim 8.5 to \sim 8.1 cm \approx 3.3 to 3.2”
- **5G:** 3700 MHz to 4200 MHz = \sim 8.1 to \sim 7 cm \approx 3.2 to 2.8”
- **5G:** 4200 to 4900 MHz = \sim 7 to \sim 6 cm \approx 2.8 to 2.4”
- Wi-Fi: 5800 MHz = \sim 5 cm microwaves of \sim 2”
- **5G:** 24,250 to 24,450 MHz = cm microwaves of \sim 12mm \approx **0.5”**
- **5G:** 25,050 to 25,250 MHz = cm microwaves of \sim 12mm \approx **0.5”**
- **5G:** 25,250 to 27,500 MHz = cm microwaves of \sim 11mm \approx **0.4”**
- **5G:** 27,500 to 29,500 MHz = **mm** microwaves of \sim 10mm \approx **0.4”**
- **5G:** 31,800 to 33,400 MHz = **mm** microwaves of \sim 9mm \approx **0.4”**
- **5G:** 37,000 to 40,000 MHz = **mm** microwaves of \sim 8mm \approx **0.3”**
- **5G:** 42,000 to 42,500 MHz = **mm** microwaves of \sim 7mm \approx **0.3”**
- **5G:** 64,000 to 71,000 MHz = **mm** microwaves of \sim 5mm \approx **0.2”**
- **5G:** 71,000 to 76,000 MHz = **mm** microwaves of \sim 4mm \approx **0.2”**
- **5G:** 81,000 to 86,000 MHz = **mm** microwaves of \sim 3.6mm \approx **0.1”**

No Scientific Basis for FCC-adopted RF-EMR **Exposure** Guidelines

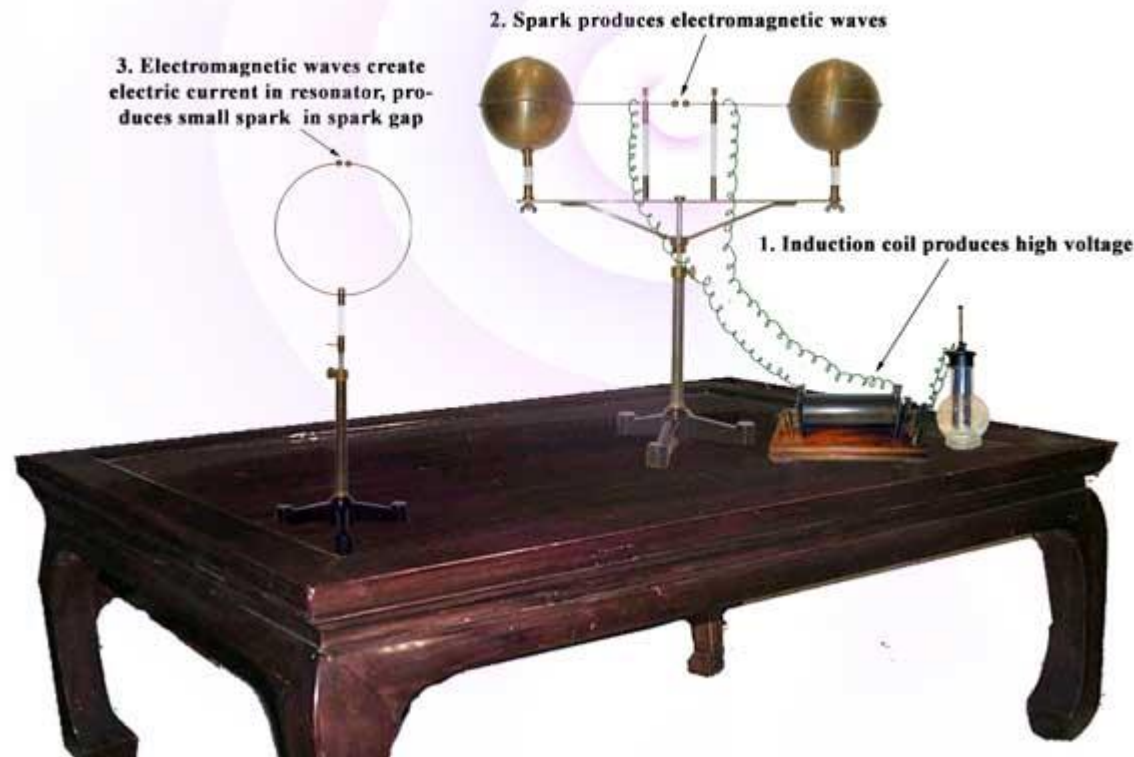
History of Radiation: Premature Deaths



[Link to Heinrich Hertz \(1857-1894\)](#)

Died at 36 from exposures to **Microwave Radiation** from studies in his lab from 1886 to 1894 (**8 years**)

He died of granulomatosis with polyangiitis (**microwave radiation sickness**) believed to have been contracted from his long-term exposure to **non-ionizing radiation**.



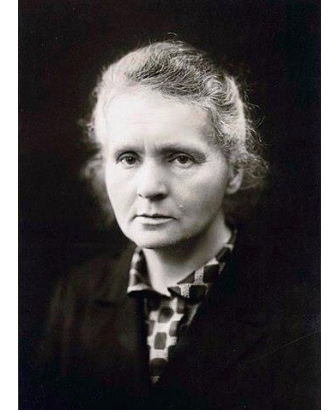
Hertz: "It's of no use whatsoever . . . this is just an experiment that proves Maestro Maxwell was right—we just have these mysterious electromagnetic waves that we cannot see with the naked eye. But they are there."

Asked about the applications of his discoveries, Hertz replied, "Nothing, I guess."

Hertz's proof of the existence of airborne electromagnetic waves led to an explosion of experimentation with this new form of electromagnetic radiation, which was called "Hertzian waves" until around 1910 when the term "radio waves" became current.

The SI unit hertz (Hz) was established in 1930 for **frequency**, an expression of the number of times that a **repeated event occurs per second**.

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[Link to Marie Curie \(1867-1934\)](#)

Died at 66 from exposures to **Nuclear Radiation** from studies in her lab from 1897 to 1934 (**37 years**).

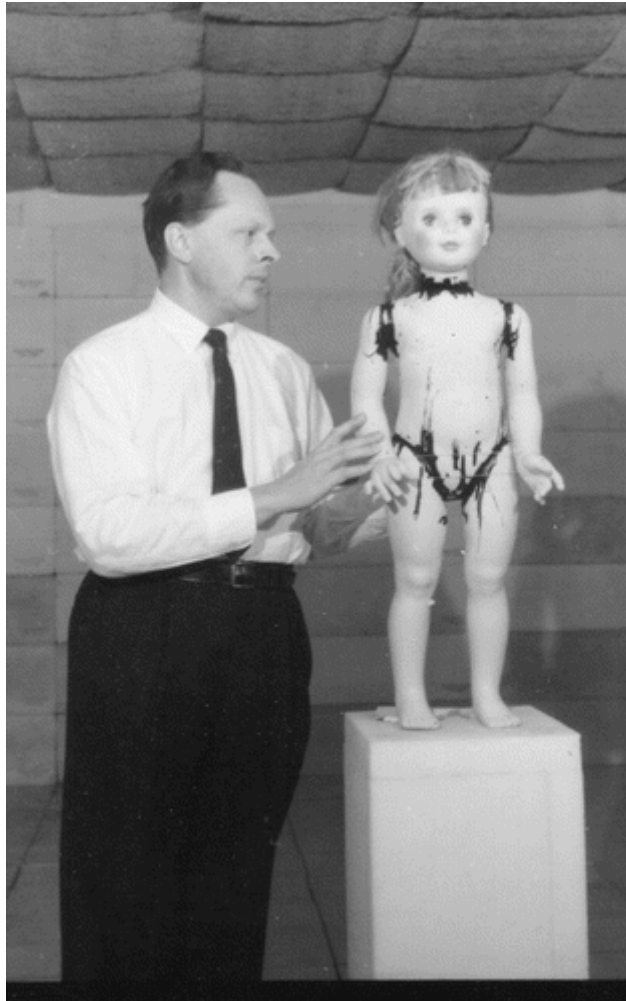
She died of **aplastic anemia** believed to have been contracted from her long-term exposure to **ionizing radiation**.

Hermann P. Schwann, 1915-2005

He proposed the Schwan RF-EMR exposure “guesstimate” in 1953



Schwan was a [Nazi engineer](#), who was recruited to work for the US Navy via **Operation Paperclip** in 1947; the Navy continued to fund his research at Penn through the 1980's.



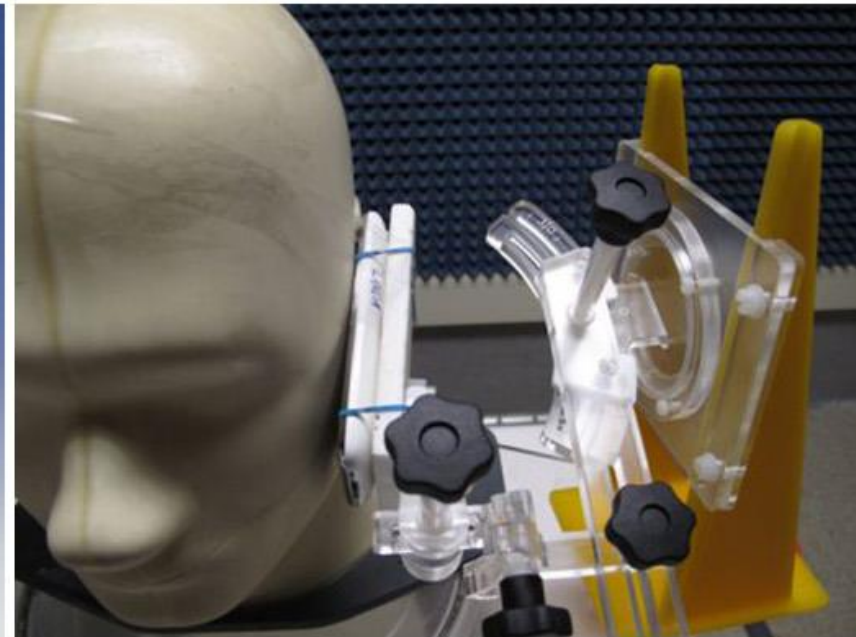
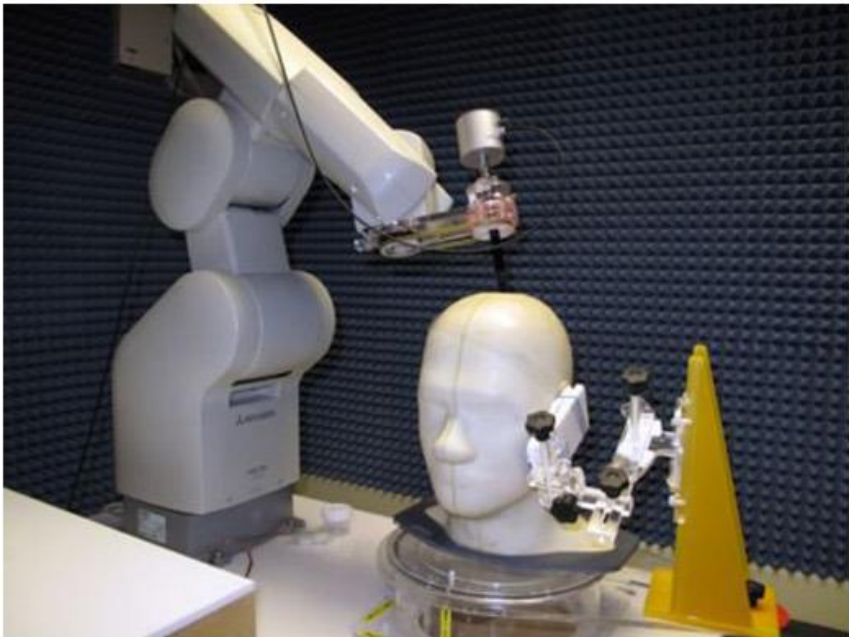
1963: Schwann with model of human body used for RF-EMR dosimetric studies. The model is filled with **tissue-equivalent liquids** and exposed to RF energy in a microwave anechoic chamber that Schwann had constructed in his laboratory.



Schwan retired from Penn in 1983, but published another 60 papers from 1983 to 2005.

Specific Absorption **Rate** (“SAR”)

[Andrew Marino](#), PhD, JD: “I was there when SAR was invented. Richard Phillips, Don Justesen, Saul Michaelson, **Herman Schwann**, these were men who created SAR . . . they were interested in developing microwave ovens and in understanding how to cook meat . . . **SAR works for dead muscle. It has just no applicability in my opinion for live brain.** SAR can produce a lot of data. The **calculations of SAR can produce beautiful pictures** but the pictures are **arbitrary** and the measurements are **meaningless.**”



FCC RF-EMR Exposure Guidelines

(Based on Average, **NOT** Peak RF-EMR exposures, which are 100x to 1,000 x higher)

Table 1—Limits for RF-EMR Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density ($\mu\text{W}/\text{m}^2$)	Averaging time (minutes)
Limits for General Population Exposure				
0.3-1.34	614	1.63	1,000,000,000	<30
1.34-30	$824/f$	$2.19/f$	$(180/f^2) \times 10,000,000^*$	<30
30-300	27.5	0.073	2,000,000	<30
300-1,500			$(f/1500) \times 10,000,000^*$	<30
1,500-100,000			10,000,000	<30

f = frequency in MHz * = Plane-wave equivalent power density; <30 minutes was added in June 1, 2020 amendment

Municipalities **Own** Public Safety



Legislative Purposes Matter

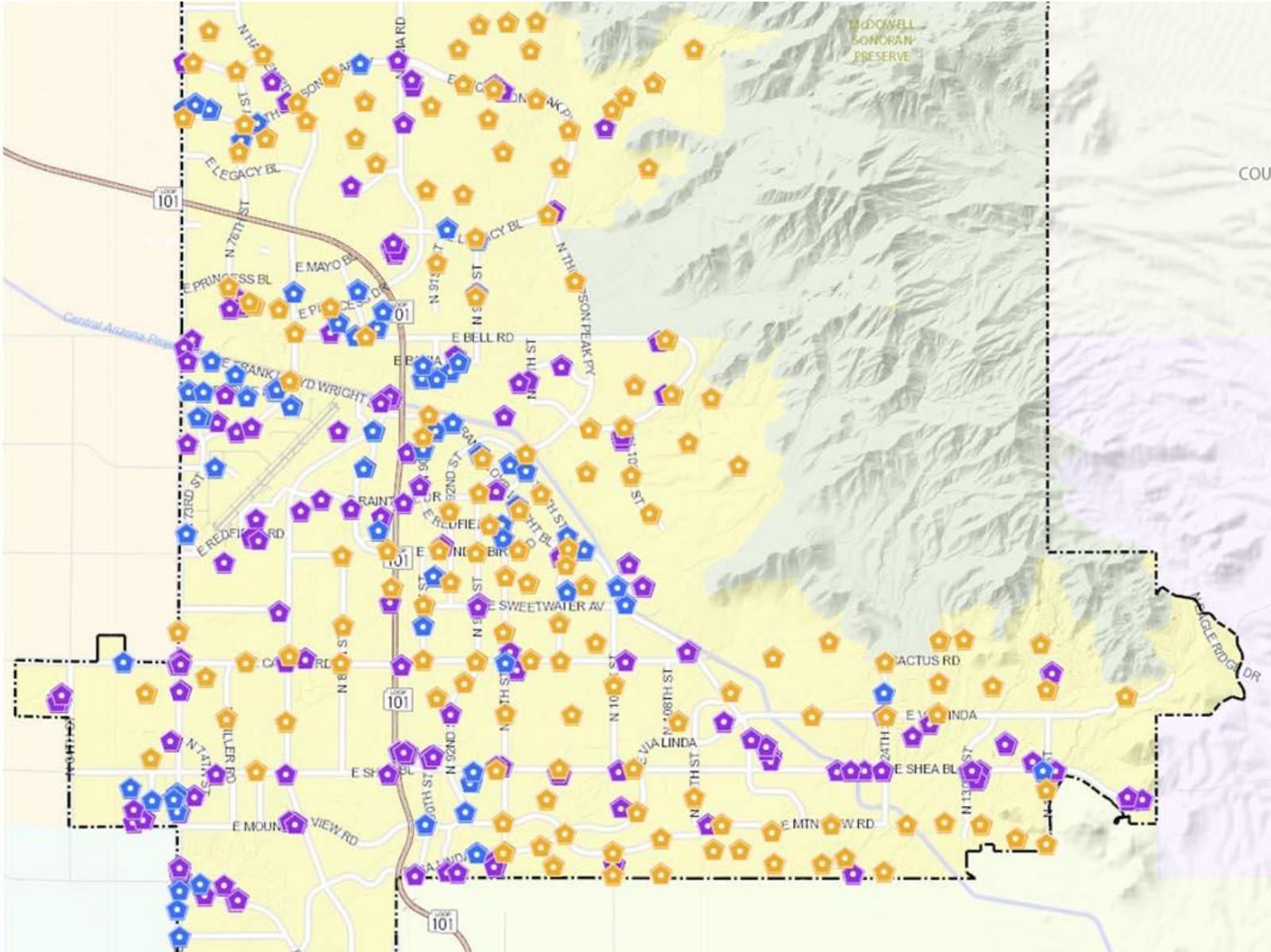
**1934 Communications Act
(Purpose of FCC)**

“promoting safety
of life and
property”

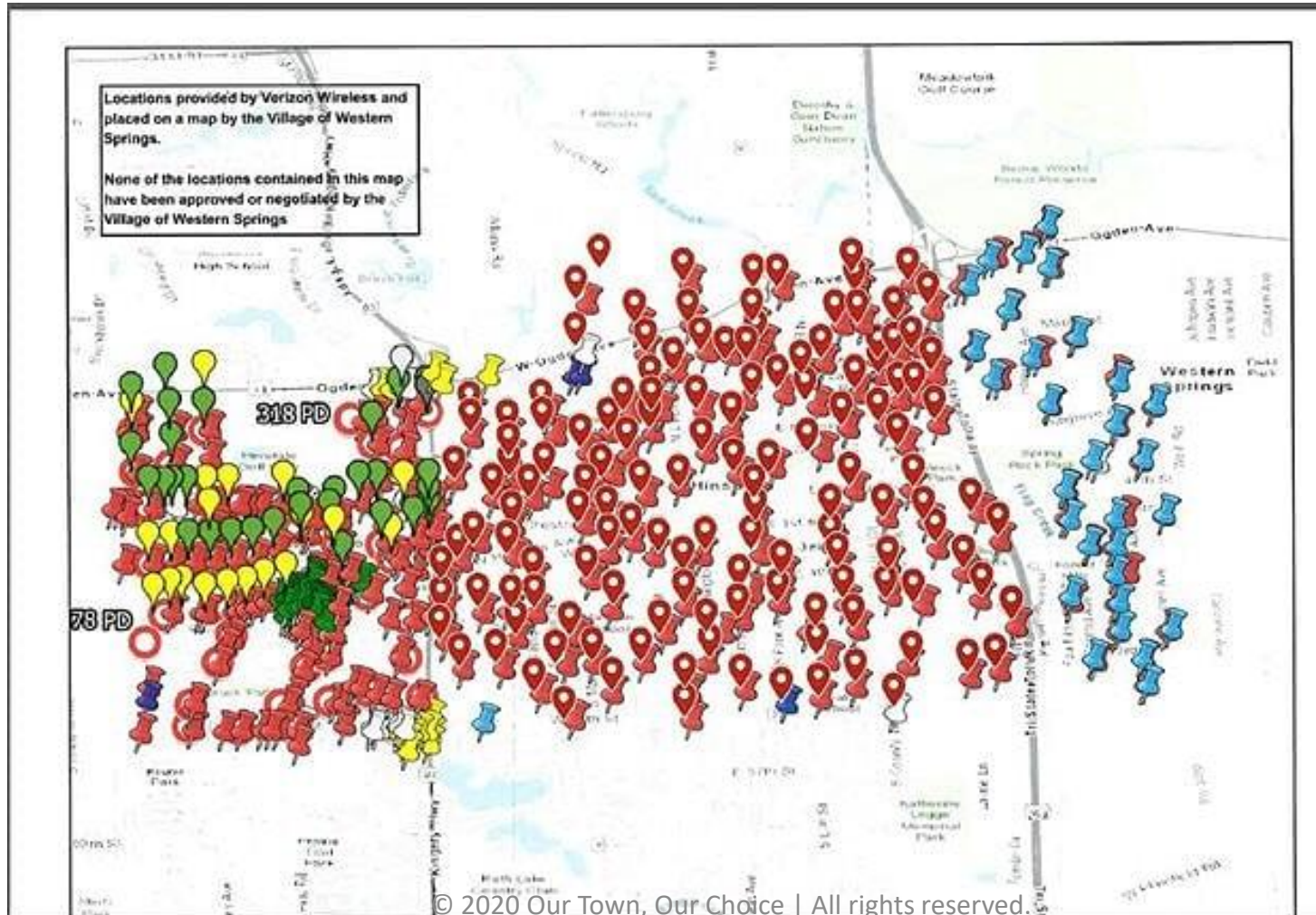
**1996 Telecommunications Act
(1996-TCA)**

“to promote the
safety of life and
property”

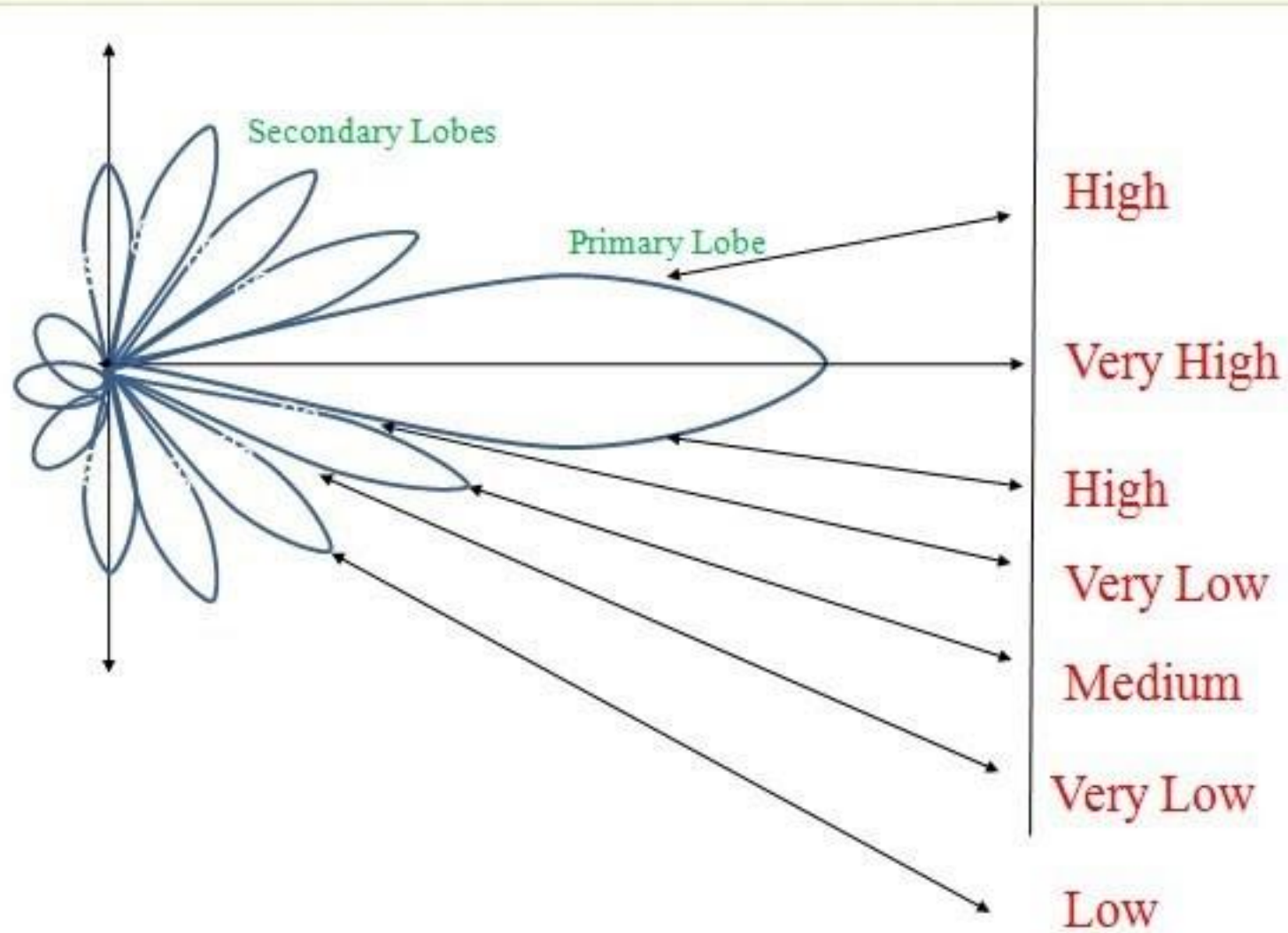
Scottsdale, AZ



Plan for Western Springs, Hinsdale, Clarendon Hills



Radiation Pattern of a Cell Tower Antenna



2017-2020: Strong Resistance to Dense 4G/5G WTFs in CA

Sacramento, CA: **40 feet** from home | San Francisco, CA: **10 feet** from home | Santa Rosa, CA: **20 feet** from home



After one month, children in [Sacramento](#) **sickened**; and family spent \$10,000+ to shield home; after three months, woman in [San Francisco](#) was diagnosed with **brain tumor** (removed Mar 2, 2020); after two months, woman in [Santa Rosa](#) **moved and sold her home** at 23% below market comps.

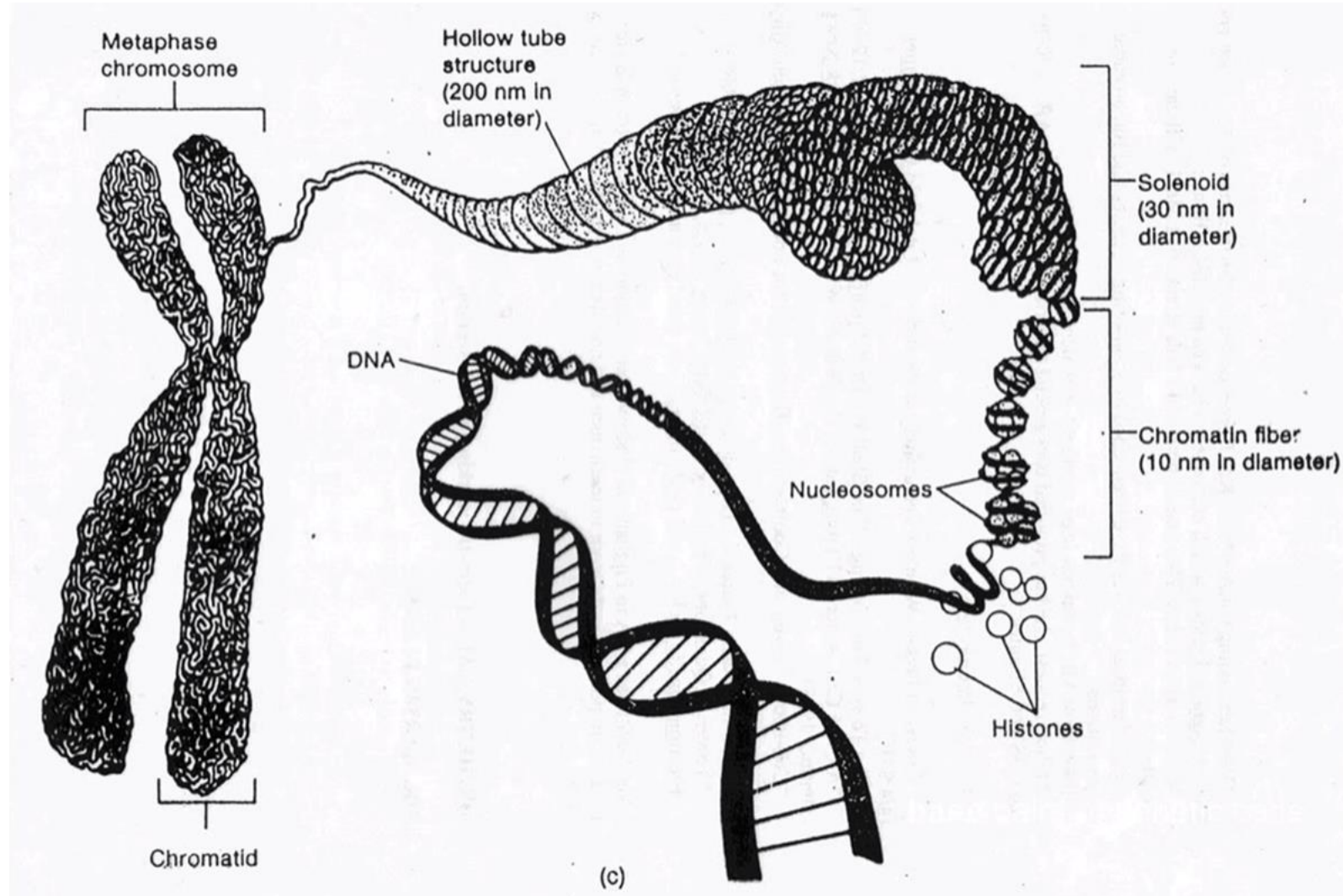
Negative Health Consequences From RF-EMR Exposures

- **Direct** Neurological, Cardiovascular, Reproductive and Blood Harms
- **Leading Scientists:** pushing IARC to re-classify RF-EMR exposures from Group 2b (possible) to **Group 1 (definite) Human Carcinogen**
- RF-EMR exposures **Suppresses melatonin** and immune systems
- **Involuntary** 24/7/365 RF-EMR exposures is the problem

Negative Health Consequences From RF-EMR Exposures ([link](#))

Power Output Scale	Consequences on Human Health (based on thousands of published studies)	$\mu\text{W}/\text{m}^2$
0.0005x	EEG altered in humans; alters brain waves	0.000001
1	FIVE BARS ON CELL PHONE	0.002
15,000x	Sleep disorders, weakness, fatigue, pain	30
50,000x	Human sensation	100
500,000x	Decreased cell growth, humans	1,000
600,000x	Childhood leukemia	1,200
1,250,000x	Impaired motor function, reaction time, memory, attention	2,500
3,750,000x	Altered white blood cells, humans	7,500
5,000,000x	Headache, dizziness, fatigue, weakness, insomnia, humans	10,000
15,000,000x	Microwave hearing	30,000
25,000,000x	Leukemia, skin, melanoma, bladder cancer	50,000
50,000,000x	Impaired memory, visual reaction time, humans	100,000
5,000,000,000x	FCC Maximum Permissible RF-EMR Exposure Guidelines, General Pop.	10,000,000

DNA Strand Breaks Established ([link](#))



The Truth . . .

- **Lots of disruption happens on the way to heating:** cell membranes leak, proteins vibrate/distort and more — leading to all kinds of protein-making and DNA/RNA transcription errors.
- Tens of thousands of peer-reviewed scientific studies (not funded by the Wireless industry) **established science** concludes biological effects at levels at **millions of times lower** than the FCC RF-EMR exposure Guideline
- In short, **compliance** with FCC RF-EMR exposure Guideline **does not and cannot ensure public safety**

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The Best Broadband Plan?



**Fiber Optic to the Premises
(FTTP) for **BIG DATA**
(Title I Information Services)
with **ONLY ENOUGH**
Wireless for **small data**,
wireless phone calls
(Title II Telecom Services)**



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FIN

FCC RF-EMR Exposure Guidelines Emperor has no Clothes

