

Problems with 4G/5G Wireless Infrastructure: Improving Tucson's Telecom Code



“Together the goals speak to a sustainable community that embraces prosperity, equity, and a healthy environment.”

--Page 2.18 of Plan Tucson



Arizonans for Safe Technology



February 5, 2021

Recommendations for Tucson

- Localities have duty to regulate WTFs (to protect “safety and property”) as mandated by the 1996 TCA
- Minimize power by limiting ERP to level providing 5-bar telecom service (-85 dBm = 0.002 $\mu\text{W}/\text{m}^2$)
- Regulate all three: Vertical-Horizontal-Power (VHP)
- WE-WANT-IT Every 6 Mos.: \$0 wireless antenna “need tests”
- Provide WIRED solutions for data transmission for required safety and security (e.g., city-owned fiber-optic network)

Action Links for Tucson City Council



Arizonans for Safe Technology

ourtownourchoice.org/wewantit
mystreetmychoice.com/
az4safetech.org

Local Regulation of WTF Operations was Never Preempted










- Local control over WTF operations is explicitly established by
 - The 1996 Telecom Act (“1996 Act”)
 - U.S. Supreme Court
 - U.S. House and Senate Conference Report
- Local control over WTF operations has *never been preempted!*
- The stated purpose of 1996 T Com Act is "to promote the safety of life and property"
 - **Council has duty to provide public safety. Full stop.**

Did you know the Internet of Things (IoT)...



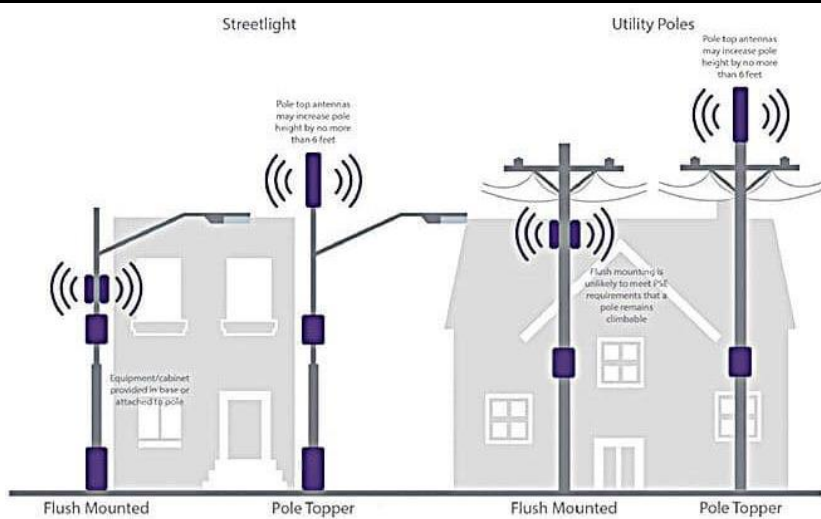
...requires pulse-modulated microwave radiation?

.... by means of Effective Radiated Power (ERP)

 2008 4G	 2020? 5G
  Texting Internet access  Video	  Texting Internet access   Ultra HD & 3-D video Smart home
4G Frequencies	5G Frequencies
LTE 4G Upto 2.5 Ghz	IoT 5G Upto 95 Ghz



What do 5G small cells (sWTFs) look like?



Examples of 5G Small Cell Installations



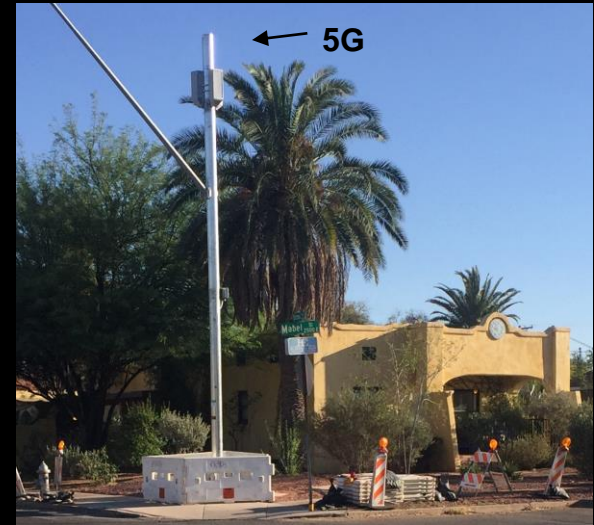
<https://www.5gcrisis.com/identify?fbclid=IwAR1C8mXLFYHHpwb6cZ0hmc24W1fflzP5xj0YkjhXlavgJE-VdxSIKEjVIA>



Tucson Blvd/Speedway

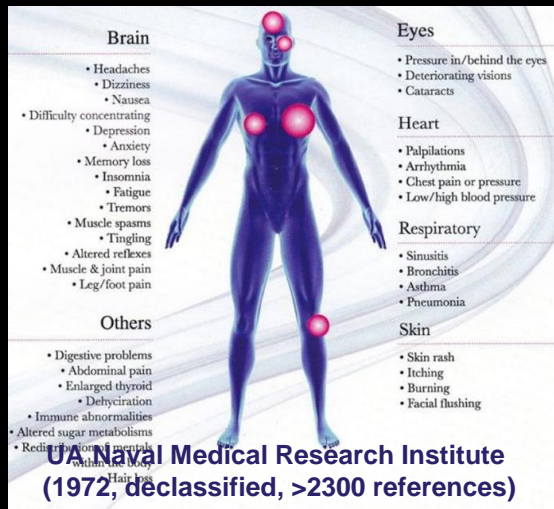


Tucson Blvd/Waverly



Tucson Blvd and Mabel

Problems with Densely Placed 4G/5G Infrastructure



Public Safety



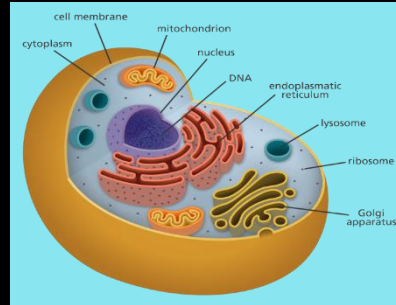
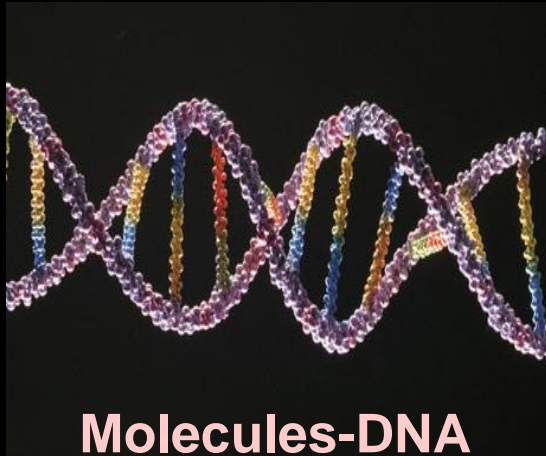
Privacy



Property Value

- Public safety problem (physically harmful RF/MW radiation)
- Removes privacy & security, intercepts data, steals identities
- Reduces property values by >20%

RF/MW Radiation Affects Living Bodies at All Scales



- **>20,000 peer-reviewed & govt. studies (searchable database)**
- **Living bodies most sensitive to microwave amplitude and pulsing**
- **Ongoing exposure produces cumulative effects**

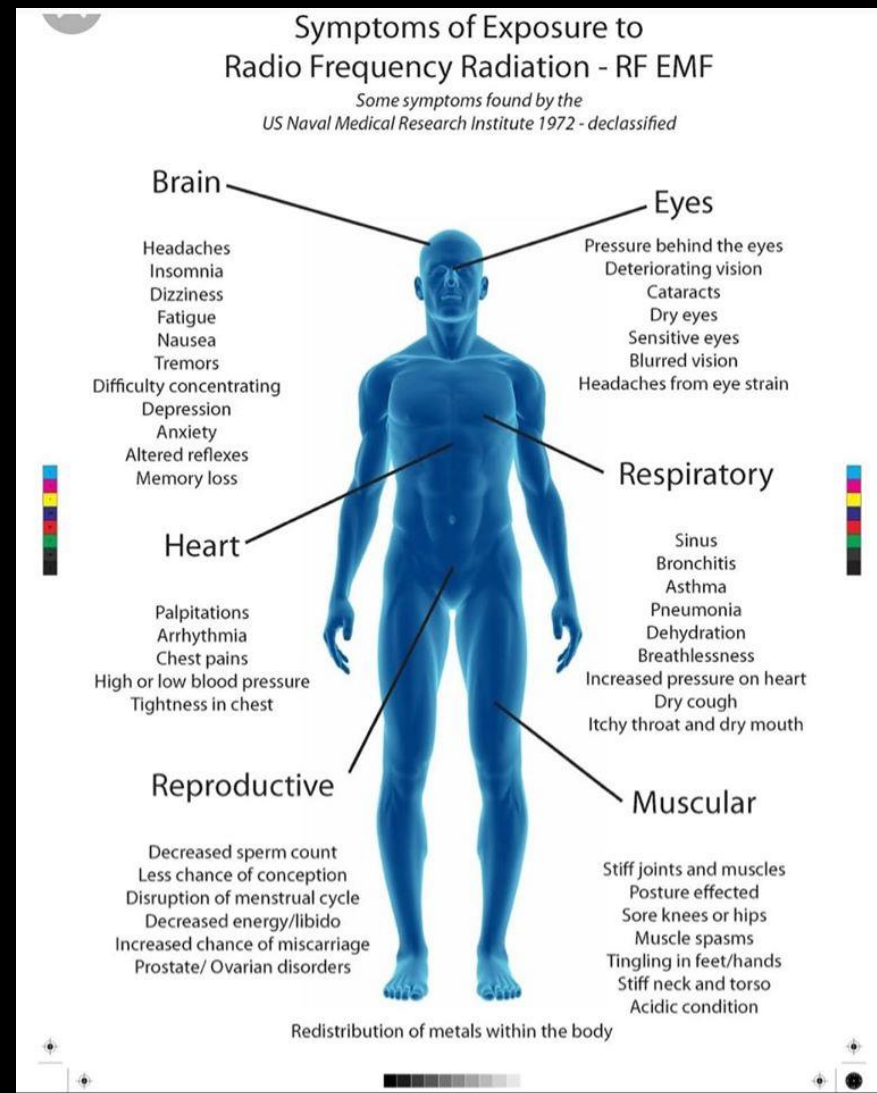
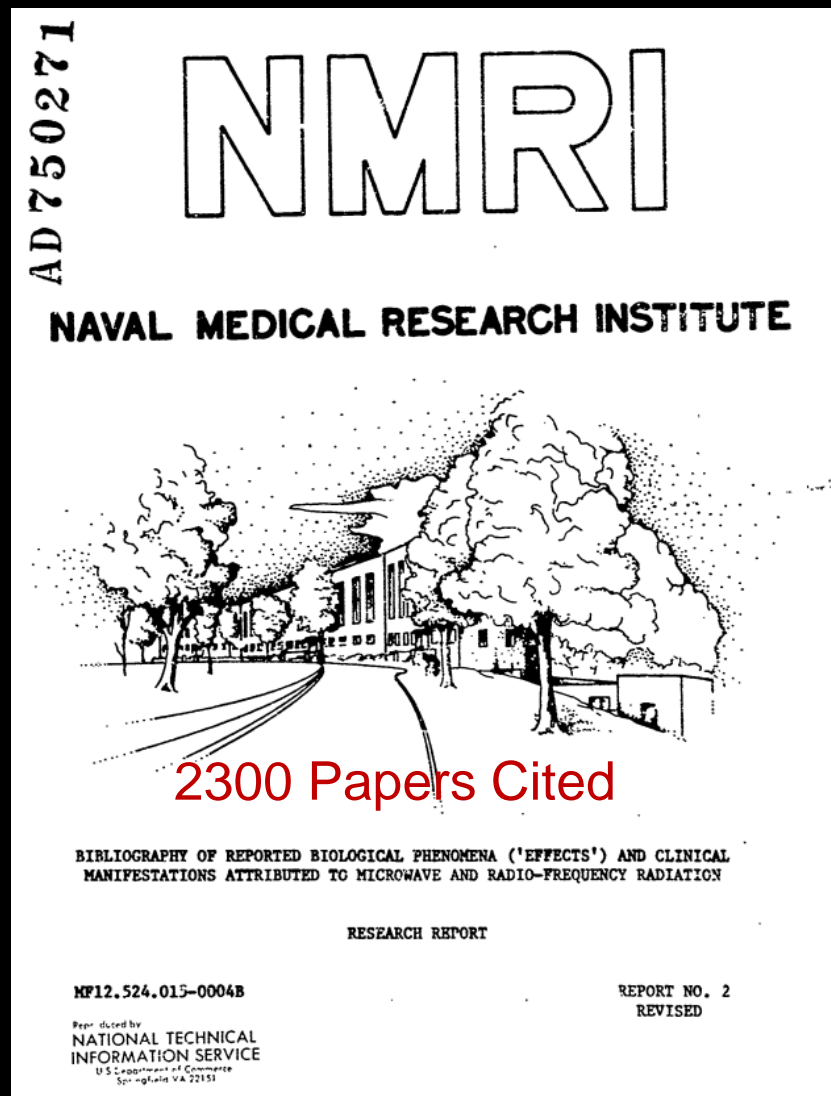
RF/MW Radiation Harms People, Animals, Plants, and Insects, including Pollinators



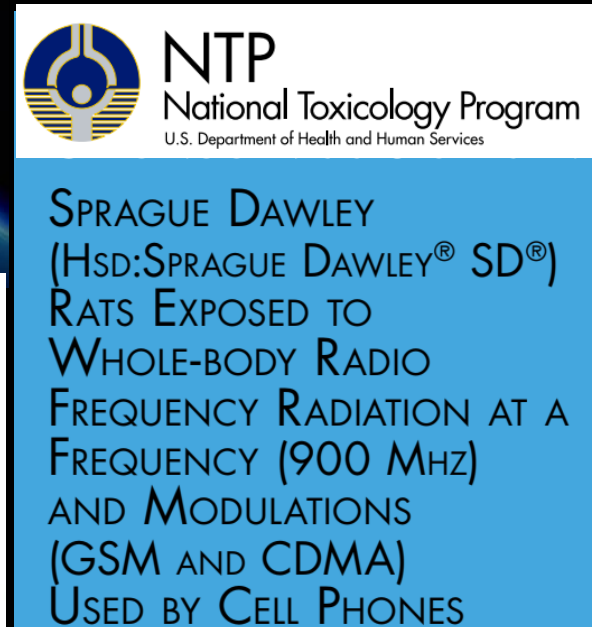
- Selection of 123 peer-reviewed publications
- 2016 UNESCO and IUCN 15-year study (Report)

2300+ Review Paper by U.S. Navy in 1972

Reports Harm from RF/MW radiation



Largest Study Ever (National Toxicology Program-NIH) Concluded RF/MW Radiation is Harmful



- >10 yr, \$30 million study in mice & rats (gold standard)
- Nine types of cancer (brain, heart, prostate)
- Cardiac myopathy (enlarged heart)
- Genotoxicity (DNA damage)

Effects of RF/MW Radiation Exposure on the Immune System

Research on the Effects of Wireless Radiation Exposure on the Immune System

Joel M. Moskowitz, Ph.D., School of Public Health, University of California, Berkeley

[Electromagnetic Radiation Safety](#), March 18, 2020

This compilation of research on the effects on the immune system from exposure to radio frequency radiation consists of excerpts from a research review published in 2013 by Dr. Stanislaw Szmigielski in a peer-reviewed journal and a list of references to studies published since 2000.

Reaction of the immune system to low-level RF/MW exposures

Szmigielski S. Reaction of the immune system to low-level RF/MW exposures. Science of the Total Environment. 2013 Jun 1; 454-455:393-400. doi: 10.1016/j.scitotenv.2013.03.034.

- Cites dozens of peer-reviewed papers demonstrating *weak* RF/MW radiation *is an immune suppressor*
- *Public safety* especially during a pandemic
- Motivation to pass a *moratorium* on new wireless infrastructure

Symptoms vs. Cell Tower Distance

Rapid aging syndrome (RAS)
Electro-Hyper-Sensitivity (EHS)

1. Fatigue
2. Sleep disturbance
3. Headaches
4. Feeling of discomfort
5. Difficulty concentrating
6. Depression
7. Memory loss
8. Visual disruptions
9. Irritability
10. Hearing disruptions
11. Skin problems
12. Cardiovascular
13. Dizziness
14. Loss of appetite
15. Movement difficulties
16. Nausea

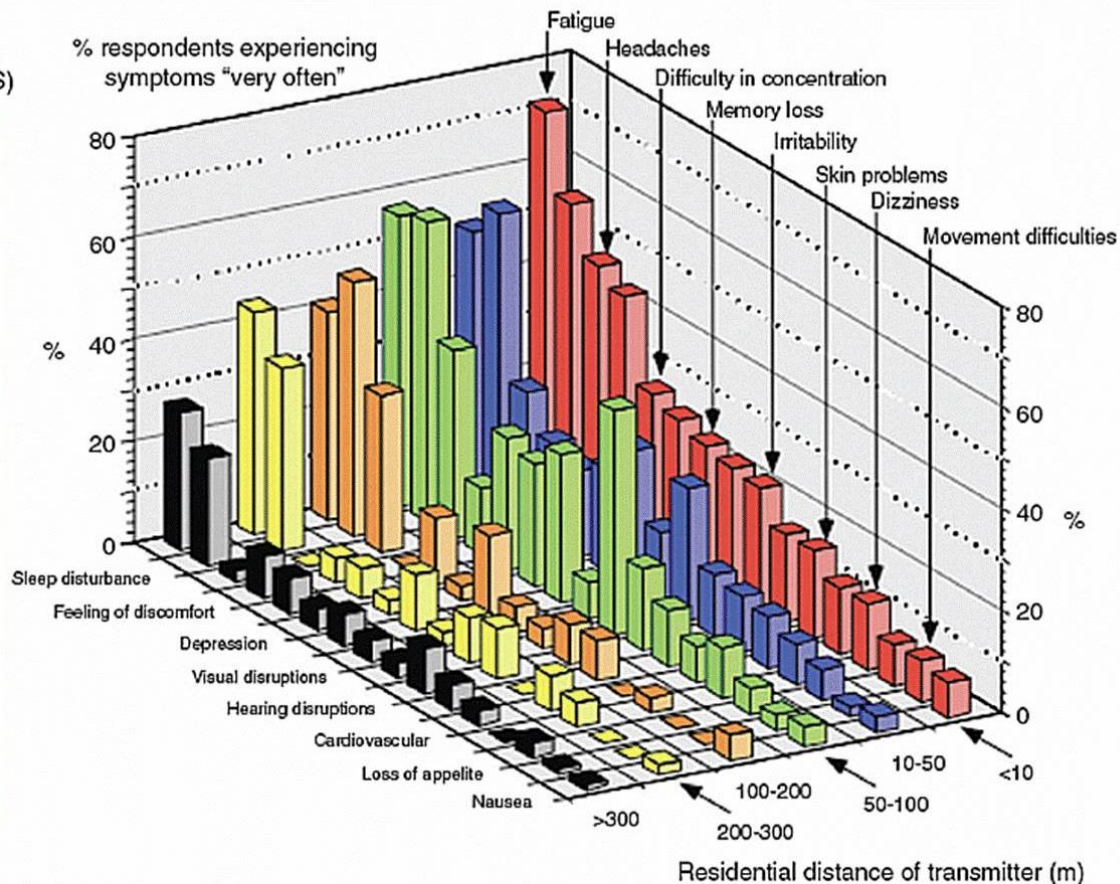
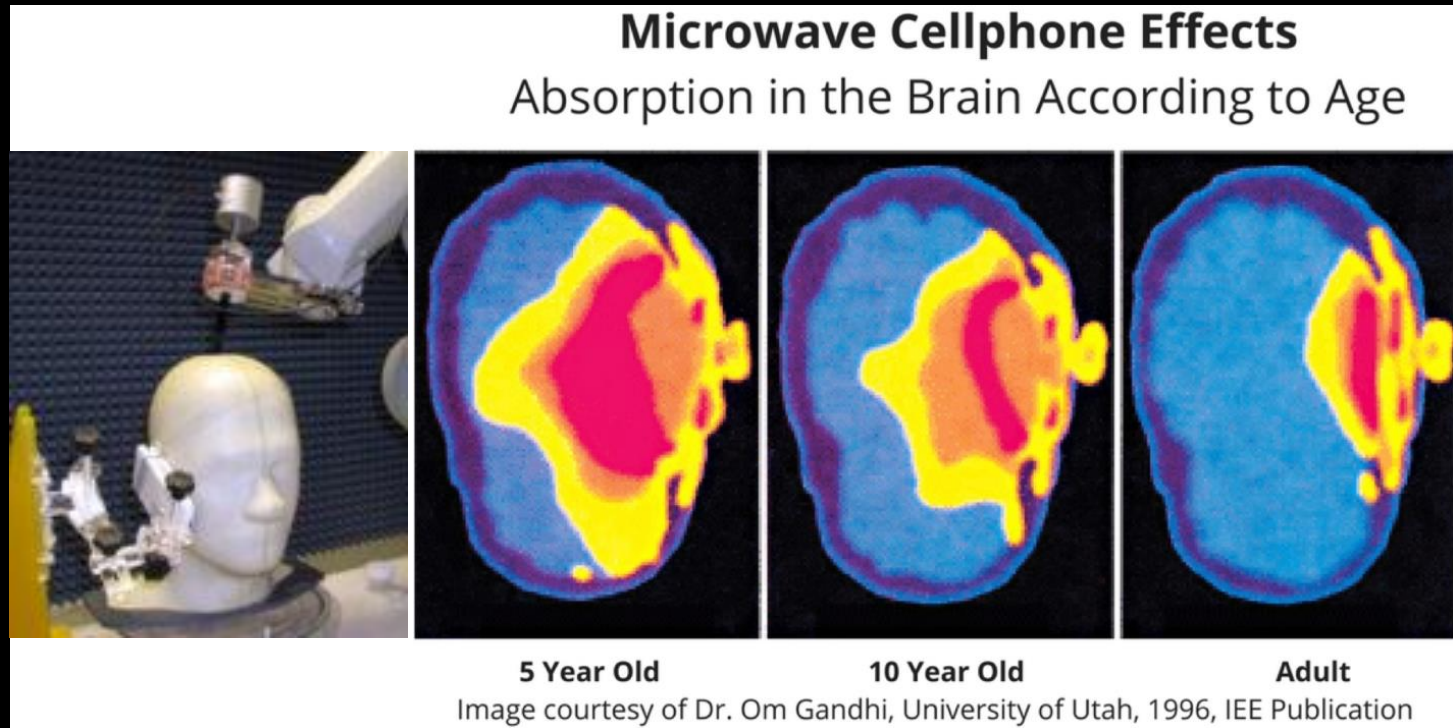


Figure 2. Symptoms experienced by people living near cellular phone base stations. Based on work by Santini et al. 2002, reproduced from Havas 2013.

Santini 2002 Havas 2013 Dode 2011

➤ Is Tucson insured for damage or injury caused by 4G/5G radiation?

Children Most Vulnerable to RF/MW Radiation



- **Thinner skull and bone than adults**
- **↑ absorption in brain (3X)**
- **↑ absorption in bone marrow (10X)**

Privacy is Gone in Front Yards and Homes

- Microwaves see through walls and clothes to track every move
- 24/7 surveillance, security flaws hack govt. and company data
- IMP4GT Attacks steal your identity to commit crimes
- 4G/5G RF/MW radiation produces noise (audible and inaudible), destroying resident's quiet enjoyment of streets



noisy streets



microwave hearing (Frey 1961, 1972)



mm-wave imaging

➤ **Council Has Duty to Protect Privacy**

Nearby sWTFs dramatically reduce Property Value



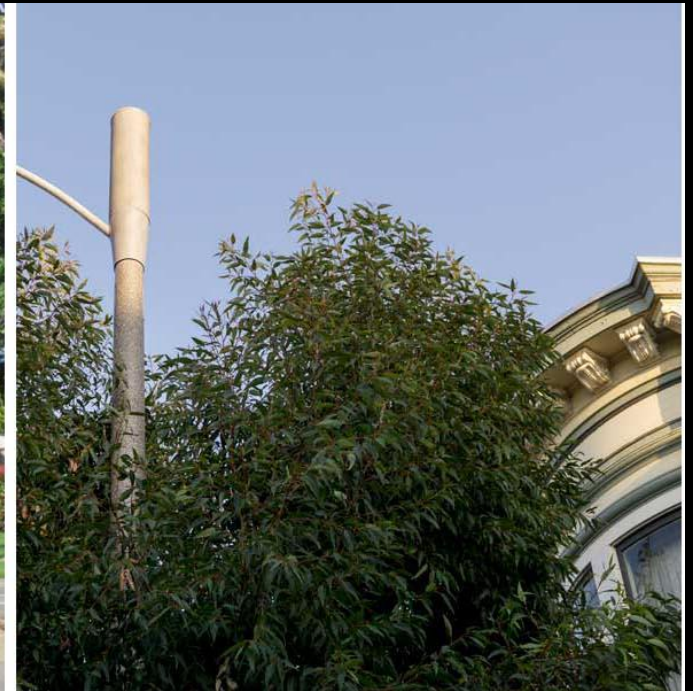
Dodge and Blackledge



mystreetmychoice.com

- 20% price decrease for properties near WTFs (Realtor Magazine)
 - 94% of homeowners are “less interested and would pay less” for a property located near a cell tower or antenna (NISLAPP survey)
 - HUD refers to cell towers as “Hazard and Nuisance”
- **Council Has Responsibility to Preserve Property Value**

"Small" Cells actually transmit a lot of power!



<https://ourtownourchoice.org/wewantit/>

- Close proximity of small cells causes a major (but solvable!) problem

"Small" Cell WTFs Transmit Too Much Power (Solvable!)

Cities may
regulate
V-H-P

Macro WTF



5G "Small" WTF



<https://scientists4wiredtech.com/readinglaw/>

Vertical Distance off Ground:

200 ft.

35 ft.

Horizontal Distance Away:

2500 ft.

60 ft.

Power in 2nd Story Bedroom:

0.002

50,000

Too Much
Power!

5 Bars on Cell Phone
(-85 dBm)

25 million times more
powerful! (>-15 dBm)

Path Forward: Exploit Existing Laws!

Federal Mandate to U.S. Cities in 1996 Telecom Act

47 U.S. Code § 332 – Mobile services

(a) **Factors which Commission must consider** in taking actions to manage the spectrum to be made available for use by the private mobile services, the Commission shall consider, consistent with section 151 of this title, whether such actions will—

(1) promote the safety of life and property;

47 U.S. Code § 324 – Requirement to use of minimum power

In all circumstances, except in case of radio communications or signals relating to vessels in distress, **all radio** stations, including those owned and operated by the United States, **shall use the minimum amount of power necessary** to carry out the communication desired.

(June 19, 1934, ch. 652, title III, § 324, 48 Stat. 1091.)

Health Consequences of Microwave Power

Relative to Five Bars on Cell Phone (“Excellent” Signal)

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

→ City council must assume their authority to *regulate* operations of all WTFs by limiting Effective Radiating Power (ERP) to ensure five bars and conducting periodic “needs testing” (\$0) throughout the city to ensure compliance.

More info here: <https://ourtownourchoice.org/wewantit/>

Use Existing Laws to Untie City's Hands! Problem Solved!

- **What State/Wireless Industry Tells Cities:** [HB.2365](#). An authority may not . . . institute a moratorium for the collocation of a ["so-called"] small wireless facility (sWTF).

State



[FCC Order 18-111](#): ¶ 157. "in the case of a natural disaster or other **comparable emergency*** an express or de facto **moratoria that violates section 253(a)** **may nonetheless be "necessary"** to "protect the **public safety** and welfare". . . emergency moratoria are **legally permissible** under 47 USC § 253."

***COVID-19 is such an emergency!**

Federal



- **What the Federal Govt. Tells Cities:** [47 U.S. Code § 324](#) – "In all circumstances . . . **all [licensed] radio . . . shall use the minimum amount of power necessary** to carry out the communication desired."

Federal



NEPA Review now Required on All Permit Applications

- **Dec 2019/Oct 2020: FCC NEPA Attorney Erica Rosenberg:** Since Aug 9, 2019, every Wireless Telecommunications Facility (WTF) of any size and any “G” must undergo **NEPA review** ([link](#))

➤ Permit applications missing NEPA reviews are incomplete and unlawfully permitted (*ultra vires*)



➤ Case law protects cities from being sued by telecom industry!

Recommendations for City

- Localities have duty to regulate WTFs (to protect “safety and property”) as mandated by the 1996 TCA
- Minimize power by limiting ERP to a level (0.1 W) providing 5-bar telecom service (-85 dBm = 0.002 $\mu\text{W}/\text{m}^2$)
- Regulate all three: Vertical-Horizontal-Power (VHP)
- WE-WANT-IT Every 6 Mos.: \$0 wireless antenna “need tests”
- Provide WIRED solutions for data transmission for required safety and security (e.g., city-owned fiber-optic network)
- [State] Repeal HB 2365 and return full authority to cities!

Action Links for Tucson City Council



Arizonans for Safe Technology

ourtownourchoice.org/wewantit
mystreetmychoice.com/
scientists4wiredtech.com/readinglaw
az4safetech.org

Urgent Request for City of Tucson

- We request the City of Tucson **conduct an open study session to receive public input** and consider improving existing telecom code that protects **public safety**, ensures **privacy**, and preserves **property values**.
- The City also has the option to **immediately pass a moratoria** based on federal laws (USC 47 § 253 & FCC 18-111), which would effectively pause the placement, construction, and modification of new cell phone towers **during this national emergency**.

Action Links for Tucson City Council



Arizonans for Safe Technology

ourtownourchoice.org/wewantit
mystreetmychoice.com/
scientists4wiredtech.com/readinglaw
az4safetech.org