
Committee Report

REGULAR CALENDAR

March 7, 2019

HOUSE OF REPRESENTATIVES

REPORT OF COMMITTEE

**The Committee on Science, Technology and Energy to
which was referred HB 522,**

**AN ACT establishing a commission to study the
environmental and health effects of evolving 5G
technology. Having considered the same, report the
same with the recommendation that the bill OUGHT TO
PASS.**

Rep. Chris Balch

FOR THE COMMITTEE

COMMITTEE REPORT

Committee:	Science, Technology and Energy
Bill Number:	HB 522
Title:	establishing a commission to study the environmental and health effects of evolving 5G technology.
Date:	March 7, 2019
Consent Calendar:	REGULAR
Recommendation:	OUGHT TO PASS

STATEMENT OF INTENT

This bill establishes a commission to seek information on both environmental and potential health impacts that may be associated with developing 5G communications technology. During the hearing on the bill, testimony was presented by both the public and members of the scientific community regarding significant differences between current 4G and developing 5G technologies, including transmission tower signal strengths, distribution of towers, and net increases in public exposure to radio frequency emissions.

Vote 11-8.

Rep. Chris Balch
FOR THE COMMITTEE

Original: House Clerk
Cc: Committee Bill File

REGULAR CALENDAR

Science, Technology and Energy

HB 522, establishing a commission to study the environmental and health effects of evolving 5G technology. **OUGHT TO PASS.**

Rep. Chris Balch for Science, Technology and Energy. This bill establishes a commission to seek information on both environmental and potential health impacts that may be associated with developing 5G communications technology. During the hearing on the bill, testimony was presented by both the public and members of the scientific community regarding significant differences between current 4G and developing 5G technologies, including transmission tower signal strengths, distribution of towers, and net increases in public exposure to radio frequency emissions. Vote 11-8.

Original: House Clerk
Cc: Committee Bill File

Stapler, Carol

From: Chris Balch <chris1953balch@gmail.com>
Sent: Wednesday, February 27, 2019 9:25 AM
To: Smith, Paul; Stapler, Carol
Subject: Committee report

HB522 Relative to establishing a commission to study the environmental and health effects of evolving 5G technology. **OUGHT TO PASS**

Rep. Chris Balch for the Majority of the Science, Technology, and Energy Committee. This bill establishes a commission to seek information on both environmental and potential health impacts that may be associated with developing 5G communications technology. During the hearing of HB522 testimony was presented by both the public and members of the scientific community regarding significant differences between current 4G and developing 5G technology, including transmission tower signal strengths, distribution of towers, and net increases in public exposure to RF signal. **Vote: 11-8, 1 member absent.**

Do I need to fill out a former over lunchtime?

OK *RA Balch*

Voting Sheets

HOUSE COMMITTEE ON SCIENCE, TECHNOLOGY AND ENERGY

EXECUTIVE SESSION on HB 522

BILL TITLE: establishing a commission to study the environmental and health effects of evolving 5G technology.

DATE: February 26, 2019

LOB ROOM: 304

MOTIONS: OUGHT TO PASS

Moved by Rep. Balch

Seconded by Rep. McGhee

Vote: 11-8

C

ONSENT CALENDAR: NO

Statement of Intent: Refer to Committee Report

Respectfully submitted,

Rep Lee Oxenham, Clerk

HOUSE COMMITTEE ON SCIENCE, TECHNOLOGY AND ENERGY

EXECUTIVE SESSION on HB 522

BILL TITLE: establishing a commission to study the environmental and health effects of evolving 5G technology.

DATE: 2-26-19

LOB ROOM: 304

MOTION: (Please check one box)

[X] OTP [] ITL [] Retain (1st year) [] Adoption of Amendment # (if offered)
[] Interim Study (2nd year)
Moved by Rep. Balch Seconded by Rep. McGhee Vote: 11-8-1

MOTION: (Please check one box)

[] OTP [] OTP/A [] ITL [] Retain (1st year) [] Adoption of Amendment # (if offered)
[] Interim Study (2nd year)
Moved by Rep. Seconded by Rep. Vote:

MOTION: (Please check one box)

[] OTP [] OTP/A [] ITL [] Retain (1st year) [] Adoption of Amendment # (if offered)
[] Interim Study (2nd year)
Moved by Rep. Seconded by Rep. Vote:

MOTION: (Please check one box)

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[] Interim Study (2nd year)
Moved by Rep. Seconded by Rep. Vote:

CONSENT CALENDAR: YES NO

Minority Report? Yes No If yes, author, Rep: Motion

Respectfully submitted: Rep Lee Oxenham, Clerk

OFFICE OF THE HOUSE CLERK



1/14/2019 3:25:56 PM
 Roll Call Committee Registers
 Report

2019 SESSION

Science, Technology and Energy

Bill #: HB522 Motion: OTP AM #: _____ Exec Session Date: 2-26-19

<u>Members</u>	<u>YEAS</u>	<u>Nays</u>	<u>NV</u>
Backus, Robert A. Chairman	X		
Moffett, Howard M. Vice Chairman <i>Schlambeg</i>	X		
Cali-Pitts, Jacqueline A.	X		
Mann, John E.	X		
Oxenham, Lee Walker Clerk	X		
Somssich, Peter F. <i>Town</i>	X		
Vincent, Kenneth S. <i>Fouke</i>			X
Balch, Chris	X		
McGhee, Kat	X		
McWilliams, Rebecca J.	X		
Saunderson, George L.	X		
Wells, Kenneth D.	X		
Harrington, Michael D.		X	
Notter, Jeanine M.		X	
Aldrich, Glen C.		X	
Thomas, Douglas W.		X	
Merner, Troy E.		X	
Ober, Russell T.		X	
Webb, James C.		X	
Plett, Fred R.		X	
TOTAL VOTE:	11	8	1

Hearing Minutes

HOUSE COMMITTEE ON SCIENCE, TECHNOLOGY AND ENERGY

PUBLIC HEARING ON HB 522

BILL TITLE: establishing a commission to study the environmental and health effects of evolving 5G technology.

DATE: April 16, 2019

LOB ROOM: 304

Time Public Hearing Called to Order: 1:30 pm

Time Adjourned: 3:15 pm

Committee Members: Reps. Backus, Moffett, Oxenham, Cali-Pitts, Mann, Somssich, Vincent, Balch, McGhee, McWilliams, Saunderson, Wells, Harrington, Notter, Aldrich, D. Thomas, Merner, R. Ober, Webb and Plett

Bill Sponsors:

Rep. Abrami

Sen. Sherman

TESTIMONY

* Use asterisk if written testimony and/or amendments are submitted.
Public Hearing on HB 522

Rep. Pat Abrami, prime sponsor – The bill calls for the establishment of a study commission to investigate the possible health effects of 5 G technology. In an effort to safeguard the health of his constituents, Rep. Abrami launched his own research effort and consulted with the chair of electrical engineering at UNH regarding reports of deleterious impacts. In the process he discovered numerous peer reviewed studies which indicated that the technology could be far less benign than the industry has claimed.

The technology’s proponents assert that non-ionizing radiation is not harmful, but the sponsor argued that numerous reputable studies contradict that claim. We will soon be surrounded by the Internet of everything, from self-driving cars to smart houses, and the time to investigate the health impacts must be now. The sponsor asked STE to convene a commission, to call in recognized experts in the field to testify, and bring science to bear on the determination of the question as to whether there are health risks from 5 G radiation, the extent of those risks, and possible protective measures.

Q: Is there any point to our doing this? We can hold a study, but you can’t stop progress. Our cell phones already have it.

A: The science is evolving and we have to give a voice to that science. Industry is going ahead even though they have no studies that actually show that it’s safe.

Q: Have there been any studies at the federal level?

A: Yes. At least one that I know of concluded that they are seeing health impacts.

Frank Clegg, Oakville, Canada, C4ST, Environmental Health Trust -

Supports. Dr. Clegg’s career has focused on dealing with the impacts of technology, and he is the author of an important study on this topic. On the basis of that study,

he reached the conclusion that wireless technology, in its current implementation format, is not safe. By 2030 we will be surrounded by over 500 billion wireless objects. The industry is assuming the technology is safe. We don't want to wait until it is too late to find out later that it is harmful. One insurance agency in 2010 identified potential risks, and they concluded that they were not in the business of insuring risky things.

Sen. Tom Sherman, Physician and member of the Governor's Task Force on the Seacoast Cancer Cluster - Supports. The Senator stated that he had an interest in this bill, and that he had extensive discussions about his concerns with his peers. He is the chairman of the board of a non-profit working on cancer prevention, and in that capacity he has discussed his concerns with neuro-scientists and others. Looking into this question in detail could be a phenomenal undertaking, but it is one that is worth doing and overdue - especially now that we are moving into 5G. If the commission finds minimal or no health concerns, that too would be a valuable result. He argued that our first concern must be to protect public health.

Q: Do you think this is a productive thing to do?

A: It would be far better than the alternative of not looking at it at all. There is significant support for the validity of the question being asked. He has worked with many public health issues, including the PFAS cancer issues here in NH. What we didn't know has caused harm. Any commission that makes us smarter and less confused is valuable. It's a growing concern and we should have some clarity about how to move forward. All too often we accept new technology without asking any questions. We should be especially careful with a technology like this which will be so global and inescapable. We won't have a choice - we will all be exposed.

Q: Is there any alternative?

A: You could use fiber optic. It costs more, but it has lots of advantages, including being far less vulnerable to hacking. If you invest in fiber, it lasts. But it will always be slower.

Q: Is there a real safety issue here?

A: The industry doesn't claim that it's safe. What they say is "it meets FCC requirements." Look at the protocols on your cell phone. You are directed to keep the phone a minimum of 5-15mms away from your body. We need government to take a proactive approach, to break with the view that let's just put it out there. Nowhere do we examine the impact of cumulative exposure of all these devices on children. Government can force industry to look at safer alternatives. We know that 3-10% of our general population are highly sensitive to certain technologies. Less than 2% of our children have peanut sensitivity, but we take broad action to protect them. This should be similar.

Q: We see a lot of bills about technologies or devices or issues that could potentially have a serious impact. But without exception that could be said. It's true of every other state as well. Is Congress doing this and if not, why not?

A: It has to start somewhere.

Q: You see children everywhere with computers and cell phones. Do you think that's a problem?

A: I would never have wifi in my home. Studies on female rats show an impact on

their ability to get pregnant. After 5 years they are infertile. Studies show harm to humans and animals, but the levels are well below the FCC requirements, so nothing is done.

Q: In Europe you have to show it's safe before you can sell a product. Here in the US it's the reverse. You have to show the harm before you can take the product off the market. Requirements in Italy and Switzerland are 100 times more protective. They use on-demand devices. Baby monitors in Europe only emit radiation when the baby makes noise, here they are constantly pulsing and emitting radiation.

Paul Heroux, McGill University, PhD in Physics and Electrical

Engineering. - Worked with Hydro Quebec, then McGill Occupational Medicine. He currently teaches toxicology and a graduate course in the health effects of electromagnetism. In his work Dr. Heroux asks questions and looks into the issues surrounding electro-magnetism. He stated that industry is all too often driven by performance, and the capabilities of a technology. They don't spend a great deal of effort looking at the possible health consequences. Those are seen as peripheral, and as possibly impeding acceptance. Government standards use a standard of "accepted exposure levels." But there is no unique standard that is generally applicable – safe levels are not same for me, my wife, or my children. The US Air Force has been influential in keeping the standard high, but that's for a very different population with very different exposure levels than the general population.

The FCC is unwilling to hear about the real risks, and under current federal law communities cannot challenge the placement of entities like cell towers. In 1997, Dr. Heroux was a consultant with Nortel. They were developing cell phones and the design goal at the time was to find a way to hide the antenna within the body of the phone, so there would be no concern about what they called "the antenna effect." It was believed that if the antenna were visible it would put people off. They didn't want people to be scared off, so they made it not visible.

The people setting the standards are electrical engineers at the American Standards Institute, which is a conglomerate of firms. The people who work there have no knowledge of biology or medicine. The Navy after WWII knew there were issues about radar. But it was so important a measure of our defense, it would have been seen as anti-patriotic to question it. When GM decided to use lead instead of ethanol in gasoline, 50 million US children lost 10 IQ points.

The safety standard is set in terms of heat, but that is not the real issue. It's a red herring. Troubling studies were dismissed as rumors, and discredited. The latest science in the literature – for example the Bio-Initiative Report - sets a standard 10,000 times lower (more rigorous) than the level the FCC accepts now. Is there any evidence that the FCC's level is too high? Yes, there's been a lot of evidence over the years. But there has been no response from the industry. Research on radiation has shown suppression of metabolism, the undermining of basic cell physiology, and that exposure leads to a lot of chronic dysregulation. But the FCC says the research is still inadequate. His own lab in Montreal saw major effects at levels 100s of times lower than the current standard. He saw it in dealing with cancer cells, and that became his life work. The US standard has spread across most of the western world – and it's wrong. There are measurable impacts from cell phones. Yes, it will increase the chances of brain cancer. In Italy they saw that cell

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Cecilia Doucette, Asland, MA, Public Health Technology Safety Educator - RF radiation is radio frequency radiation. For the hands free option, you have to have 5 or 6 antennas constantly pulsing. Ms. Doucette worked at the first school to initiate precautionary measures. They read the fine print about the limits of legal liability, and took action to protect their students. Children are even more vulnerable than the general population. RF radiation is biologically hazardous. In MA there is currently a bill that includes both 5G and small cell technologies. The Boston Globe began reporting about this last month. Smart grid meters make your house into a RF antenna. We have water and solar meters and inverters. Some symptoms reported from smart meters include depression, and poor sleep. High voltage power lines have similar impacts. The MA bill calls for a 5G task force. Current science is confirming that RF radiation is extremely toxic. Lloyds of London and others have walked away from covering policies for it. Last week there was a Hearing in Congress and Blumenthal asked - "Can you show me it's safe?" He got no response. There are many excellent solutions. The National Institute of Law and Policy has put out a booklet, it's free online. The best document is from Generation Zap. There is an international group working to develop Best Management Practices. The Grass Roots environmental folks put out a model local ordinance.

Denise Ricciardi, representing self from Bedford, NH Supports.

Ms. Ricciardi provided a personal account of her own and her child's response to this radiation. She claims that the fox is watching the hen house. This is the live free or die state. This should be unconstitutional. Can't you stop it? This is an issue of public safety.

Jen White, representing self from Stratham, NH - Supports.

Ms. White is electro sensitive, and so is her child. She provided a detailed personal account of her own and her child's response to this radiation. They can't go out in society, and undertake normal activities without becoming ill. She asked the committee to allow all our children to thrive, to establish a commission to look into the issues, to study it, and slow the rush to deployment down so that we can learn the possible cumulative effects.

Blue Sheet: Pro, 3; Con, 0

Respectfully Submitted:

A handwritten signature in purple ink, appearing to read "Lee Oxenham". The signature is fluid and cursive, with a large initial "L" and "O".

Lee Oxenham, Clerk

Public Hearing on HB 522

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Denise Ricciardi– member of the public. Supports.

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Testimony

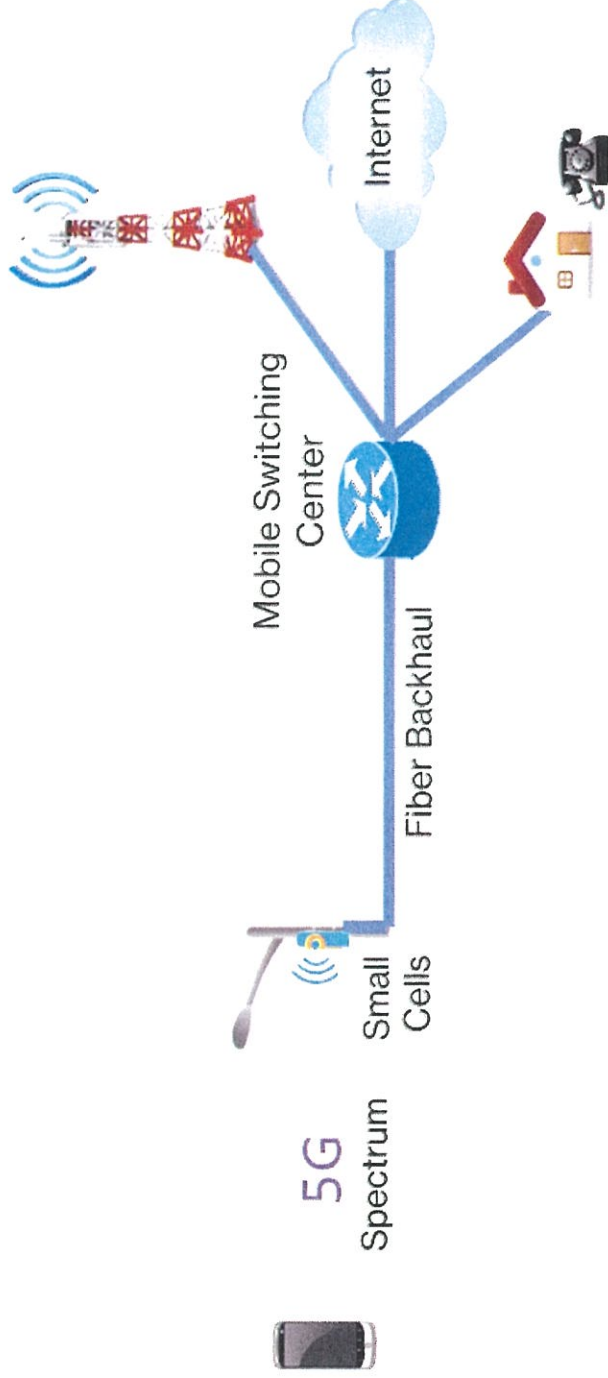
New Hampshire: Wireless Service

House Science Technology Energy
February 12, 2019

Patricia Eagan – **Verizon**

Owen Smith – **AT&T**

Wireless Antennas Have Dedicated Fiber Backhaul



Growing Reliance on Mobile Wireless Service

- More people than ever before rely on wireless connections to manage their lives and businesses.
- Wireless providers are expanding their 4G wireless networks and laying groundwork for next generation services.



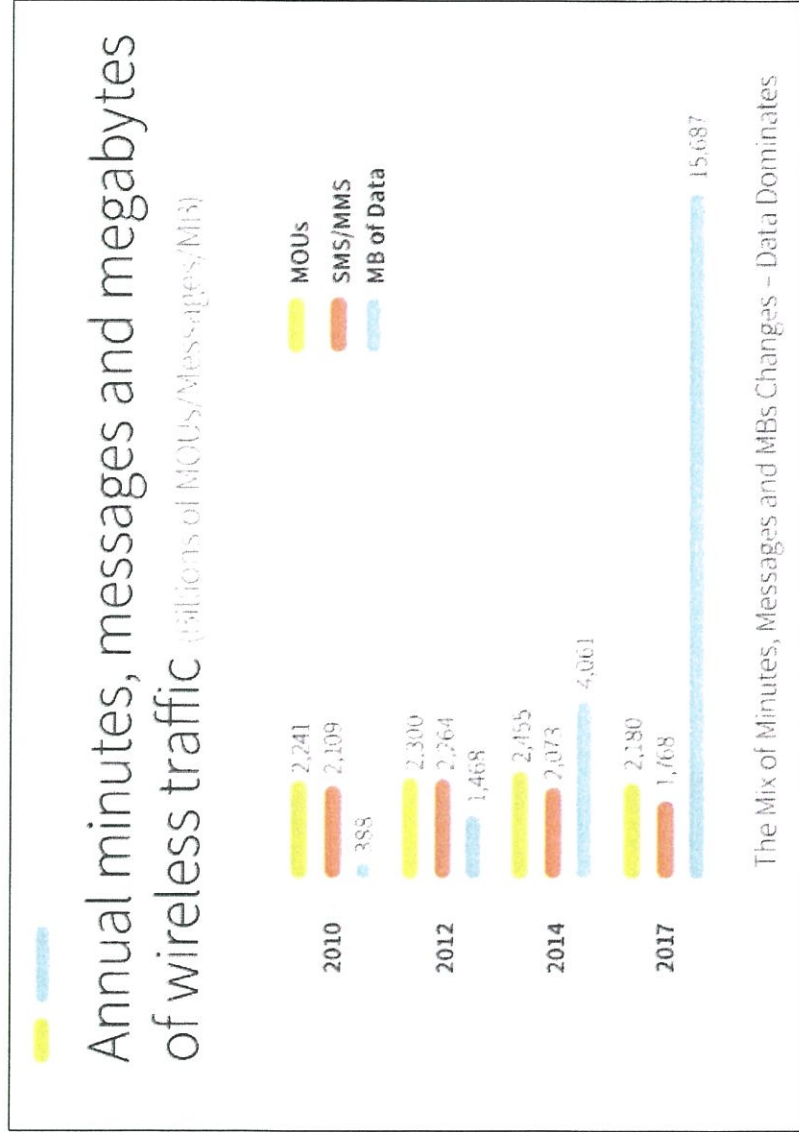
- More than 52 percent of American households are wireless-only.¹



In North America, the average household has 13 connected devices with smartphones outnumbering tablets 6 to 1.²

1.. CDC's 2018 Wireless Substitution: Early Release Estimate from National Health Interview Survey, July –Dec
2. HIS Market Connected Device Market Monitor: Q1 2017, June 7, 2016

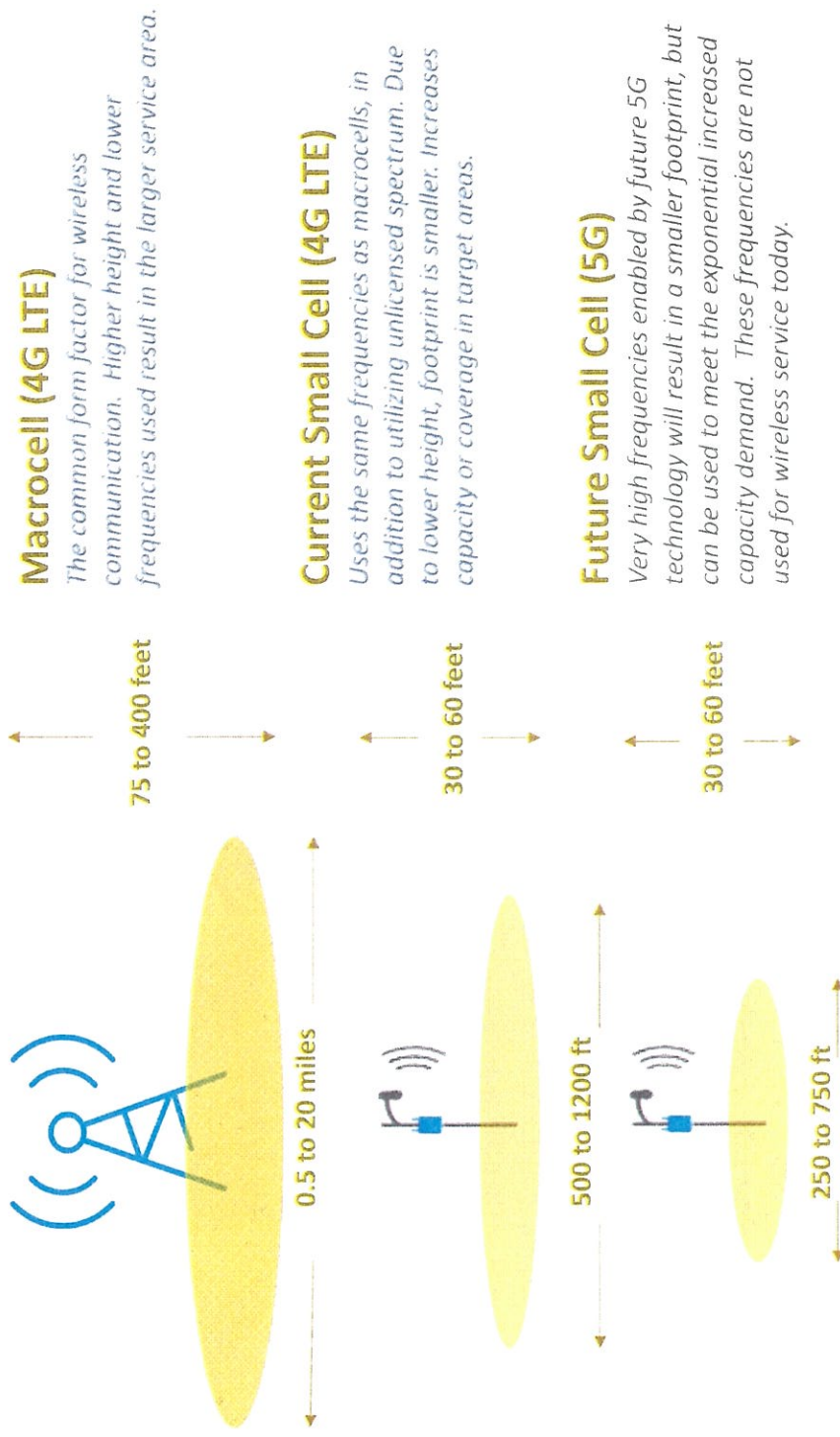
Explosion in Data Usage



Ways to Increase Wireless Network Capacity



The footprint, or service area, of a site is determined by height and by frequency band



Macrocell (4G LTE)

The common form factor for wireless communication. Higher height and lower frequencies used result in the larger service area.

Current Small Cell (4G LTE)

Uses the same frequencies as macrocells, in addition to utilizing unlicensed spectrum. Due to lower height, footprint is smaller. Increases capacity or coverage in target areas.

Future Small Cell (5G)

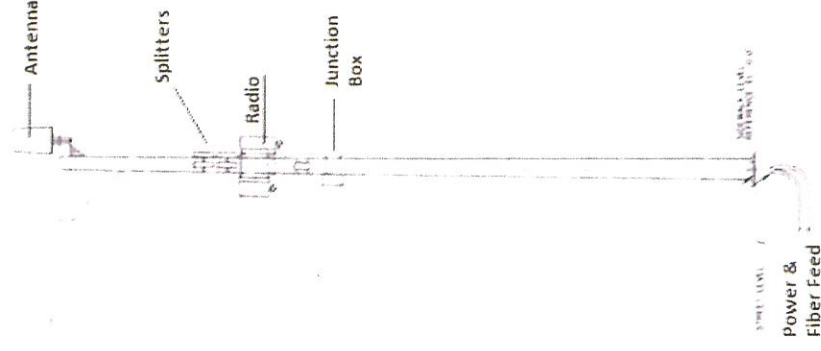
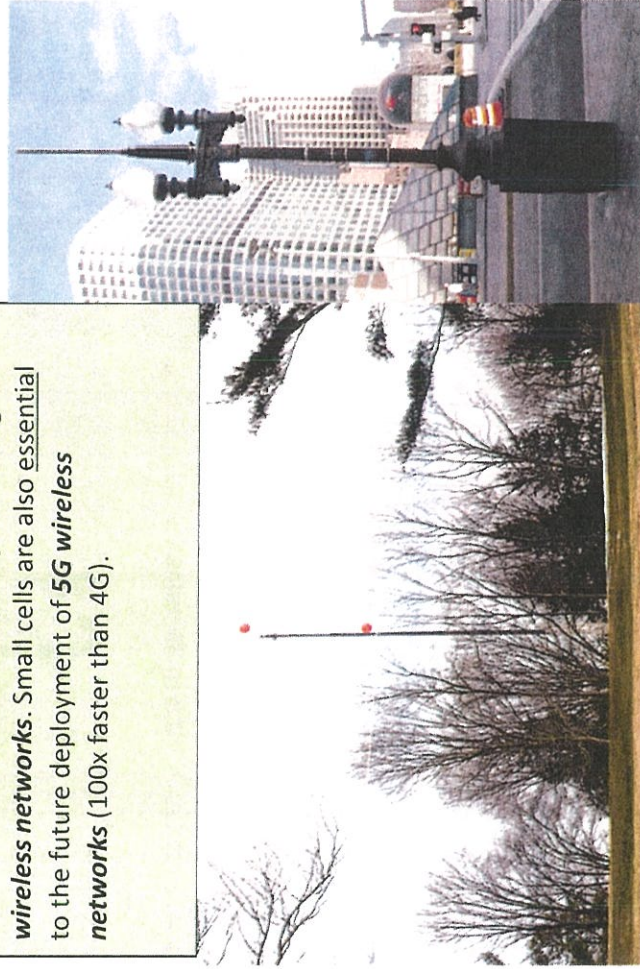
Very high frequencies enabled by future 5G technology will result in a smaller footprint, but can be used to meet the exponential increased capacity demand. These frequencies are not used for wireless service today.

- Heights and service areas are approximations
- Small cell sites supplement vs. replace macrocell sites

Small Cells vs. Macro Cells

What are Small Cells?

Small cells are **antennas and radios** (just a few feet in size) that mount to poles and similar facilities in order to **add capacity** to existing **4G wireless networks**. Small cells are also **essential** to the future deployment of **5G wireless networks** (100x faster than 4G).



What is 5G?

Fifth generation wireless technology, also known as “5G”, will deliver enhanced mobile broadband capabilities that are up to 100 times faster than speeds today with immediate responsiveness.

5G will be transmitted over higher wave frequency spectrum bands.

Higher frequency bands do not propagate well – they typically require “line-of-sight” and do not pass through obstacles.

This will require a high level of cell densification via “small cells” in locations such as lampposts, buildings, and utility poles.

5G will:

Significantly increase speed and provide real-time information.
Connect everything

The image shows the text "5G" in a bold, blue, sans-serif font. The letters have a slight glow or shadow effect behind them, giving it a modern, digital appearance.

New Possibilities: Smart Cities and Internet of Things



- **Smart Farming**
- Water Management
- Crop Analytics

- **Public Safety**
- Collision Avoidance
- Hazard Warnings

- **Connected Homes**
- Smart appliances
- Security systems

- **Movies & Media**
- Information kiosks
- Download stations

5G

- **Command & Control**
- Traffic Management
- Emergency Management

- **Energy & Environment**
- Smart Grid
- Environmental monitoring

- **Wearable & Tag Devices**
- Fitness Monitors
- Location Sensors



- **Tele-Health**
- Robotic Surgery
- Remote Health Care



- **Smart Infrastructure**
- Tolls & Access
- Connected Infrastructure



- **Future Transportation**
- Autonomous Vehicles
- Advanced Driver Assistance



New Hampshire Economic Impact



Governor

Chris Sununu

(R) - NH



Serves 301,221 accounts statewide



Has invested \$35,434,398 in plant and equipment statewide



Has 686 employees living in the state



Operates 17 buildings and locations throughout the state



Has 304 employees working in the state



Made \$109,234 in charitable and civic contributions in the state



Has 6,256 Verizon shareholders living in the state



Pays \$15,025,000 annually in healthcare costs for employees living in the state



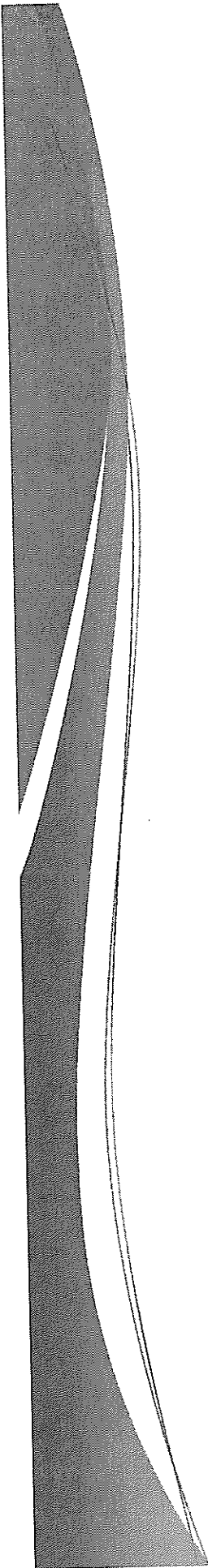
Has 3,038 retirees living in the state



Pays \$117,545,943 annually to vendors & suppliers in the state

New! New Hampshire Corporate Responsibility Messaging: <https://vz.epacweb.com/impact/pdfs/NH.pdf>

Verizon Government Relations

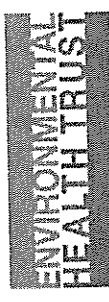
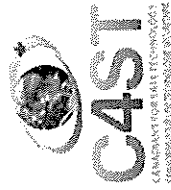


**Presentation Prepared for NH House Science
Technology Committee in Support of HB522
An Industry Perspective
on 5G Wireless Technologies**

**Environmental Health Trust
Canadians for Safe Technology**

Frank Clegg

Feb. 12, 2019



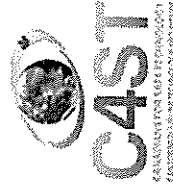
Bio and Organization's Focus

- 40+ years in the technology industry
 - Most recent position, President of Microsoft Canada
- C4ST: Canadians for Safe Technology (CEO and Chairman)**
- Not-for-profit, completely volunteer-based, national coalition of parents, citizens and experts
 - To educate and inform Canadians about the dangers of the exposures to unsafe levels of radiation from wireless technology
 - To work with all levels of government to create healthier communities for children and families from coast to coast to coast.

Environmental Health Trust (Co-Chairman Business Advisory Group)

The only nonprofit in the world today that both:

- Carries out high-level critical research on controllable environmental health hazards
- Works directly with local communities, teachers, parents and students as well as policy makers to understand and mitigate these hazards through research, education and advocacy.



Abysmal track record of protecting citizens

- Asbestos
 - Cigarette smoking
 - Bisphenol-A (BPA)
 - Thalidomide
 - Urea formaldehyde insulation
-
- Concrete action was not taken until decades after the original science showing harm was published
 - Cisco projects 500 billion wireless connected objects by 2030
 - On average 59 per individual¹ on earth (will be higher in developed countries)

¹ The UN projects a population of 8.5 billion people by 2030; <https://www.un.org/sustainabledevelopment/blog/2015/07/un-projects-world-population-to-reach-8-5-billion-by-2030-driven-by-growth-in-developing-countries/>

My Industry has lost the public's trust

- Lloyd's of London and Swiss Re have identified EMR as emerging risks
- 10K reports identify business risks with EMR (Verizon and British Telecom)
- Facebook's breach that impacted 80+ million consumers
- Similar to Yahoo's 2014 security breach impacting 500 million customers that wasn't reported until 2016
- The \$35million fine may not impact the behaviour of companies with billions of dollars on their balance sheet.
- France's "Phonagate" that showed 90+% of phones exceed safety regulations

Challenging the business case of wireless solutions

Schoechle, Timothy, Re-Inventing Wires: The Future of Landlines and Networks, National Institute for Science, Law & Public Policy Washington, DC. (2018)

Wireless networks:

- Continue to be about 100 times slower than wired systems
- Are unreliable, more vulnerable to security and privacy problems and prone to both latency and delay issues
- Consume significant amounts of energy and are not sustainable
- Can leave people vulnerable in the event of a power grid failure
- Increase the points of vulnerability hundreds of thousands of times
- Significantly increase the amount of personal and business data at risk

My Industry's strategy

- If asked if the technology is safe, states "We meet Federal Guidelines (if used correctly)"
- Bury warnings inside devices or their manuals so they are legally protected
- Resist any actions that will slow the deployment/acceptance of new technology
- Pre-emptively introduce legislation that will streamline the installation of new technology (5G)
- Constipate the regulation process with industry funded studies that are inconclusive or fail to show harm
- Continue to take advantage of the current process of introducing new technology and letting others monitor for damage

Government needs to take a proactive approach

- The penetration of wireless devices is unprecedented in history and will escalate
- Government regulation must break the current paradigm of introducing new technology and then monitoring for damage
- Pass HB522 to understand the consequences of an unmonitored 5G deployment
 - Investigate, monitor and regulate the cumulative effects of 59 devices per person
 - Challenge/Encourage industry to explore and develop safer alternatives
 - Test the technology before it is released to the market
 - Employ and develop alternatives and maintain spaces for individuals who are Electrosensitive

(Appendix): Manufacturers should

For devices

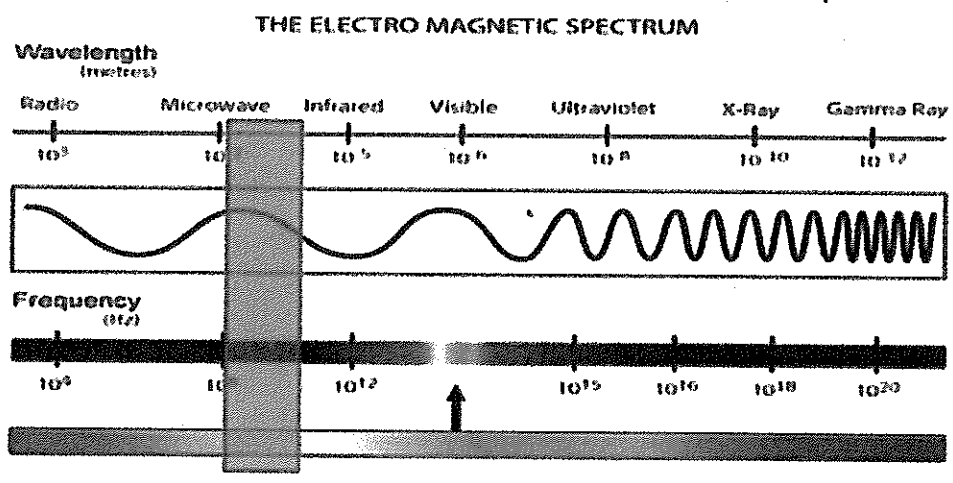
- Post visible warnings of potential harm on all devices
 - Orange, prominent in Europe and Africa, offers advice on the safe use of cell phones.
- Make available in the North American market “on demand” technology for baby monitors, portable phones, etc. (models that are already in use in Europe)
- Improve use of devices for their safe use
 - Off-line mode in schools (hardware and software)
 - Ear bud ease of use
 - Default settings to “off” for sharing or “low” for radiation power levels
 - Turn cell phone off or send warning if placed near the body

For installations

- Start with a wired approach to solutions vs. wireless
- Develop a mindset with developers, designers, installers to meet consumer demand with minimal radiation exposure
 - Smart meters on a point-to-point system vs. a wireless grid
 - Refrain from placing cell towers and antennae close to sensitive areas

Millimeter waves

The term millimeter waves generally refers to the portion of electromagnetic spectrum between 30 and 300 GHz, corresponding to wavelength of 10 to 1 mm. Thus, the millimeter wave spectrum lies between the microwaves and infrared portions.



Damage from pollutants:

Verizon and ATT's own mobile device insurance does not include coverage for emission of Pollutants which they clearly define Wireless Radiation by all its names (EMF, electromagnetic fields, microwaves, non-ionizing radiation) as a pollutant actually in greater detail than any of the other pollutants. See direct quotes from their current insurance as of 10-14-18. See attached for copies of their insurance plans.

Verizon

"Pollution The discharge, dispersal, seepage, migration, escape or presence of pollutants. Pollutants means any solid, liquid, gaseous, or thermal irritant or contaminant including smoke, vapor, soot, fumes, acid, alkalis, chemicals, artificially produced electric fields, magnetic field, electromagnetic field, sounds waves, microwaves, all artificially produced ionizing or non-ionizing radiation and/or waste. Waste includes materials to be recycled, refurbished or reclaimed."

Source: https://www.phoneclaim.com/verizon/pdf/ASVZW-713_TMP_WebReady_NW-FL.pdf

ATT

"P. "Pollutants" means: Any solid, liquid, gaseous, or thermal irritant or contaminant including smoke, vapor, soot, fumes, acid, alkalis, chemicals, artificially produced electric fields, magnetic field, electromagnetic field, electromagnetic pulse, sound waves, microwaves, and all artificially produced ionizing or non-ionizing radiation and waste. Waste includes materials to be recycled, reconditioned or reclaimed."

Source: https://www.phoneclaim.com/att/pdf/ATT_MI_v1.pdf

Insurance Industry Exclusion of Wireless Radiation from Coverage - Define as a Pollutant

Exclusions of Coverage for injury or damage caused by pollutants with wireless radiation (Electromagnetic fields or radiation) included as a pollutant are common place. For instance, from a non-profit Directors and Officers Insurance Plan with Hartford Insurance:

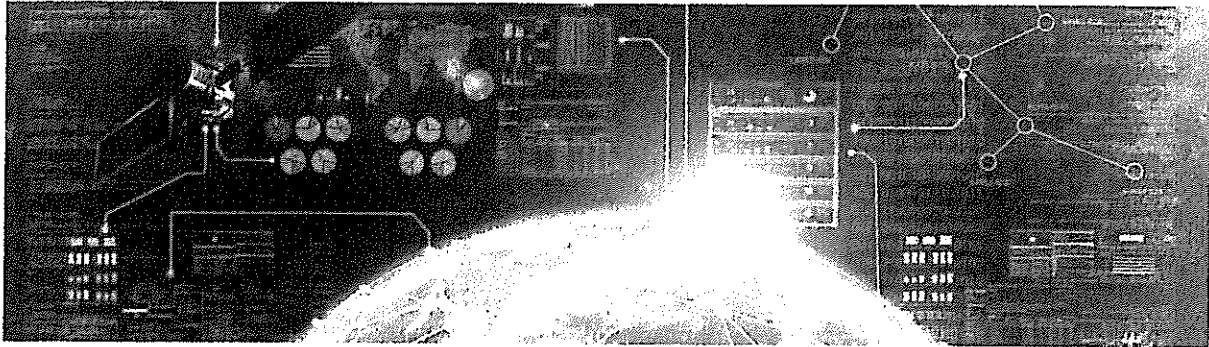
"**Pollutants**" means any solid, liquid, gaseous or thermal irritant, nuisance or contaminant, including, without limitation, smoke, vapor, soot, fumes, acids, alkalies, chemicals, odors, noise, lead, oil or oil product, radiation, asbestos or asbestos-containing product, waste and **any electric, magnetic or electromagnetic field of any frequency**. Waste includes, without limitation, material to be recycled, reconditioned or reclaimed. Pollutants also means any substance located anywhere in the world identified on a list of hazardous substances issued by any federal agency (including, nonexclusively, the Environmental Protection Agency) or any state, county, municipality or locality or counterpart thereof, or any foreign equivalent thereof.

7 Clair Road West, P.O. Box 27051, Guelph, ON, N1L 0A0 → Tel: 519-240-8735
support@slt.co → www.slt.co

International Radio Frequency "RF" Exposure Limits for 1800 MHz Range

(Cell Phone, WiFi, Smart Meters, etc)

Location	Reference	Exposure time	Limit Based on	Lower by	µW/m ²	V/m
Most of Western Europe	IEEE C95.1-1999 and ICNIRP	30 minutes	Thermal / Heating	-	10,000,000	61.4
USA	(FCC) IEEE C95.1-1999 and ICNIRP	30 minutes	Thermal / Heating	-	10,000,000	61.4
Canada	Safety Code 6, Table 5 (2015)	6 minutes	Thermal / Heating	66 x	4,393,278.4	40.7
Russia	Sanitary Norms and Regulations 2.2.4/2.1.8.055-96	3 hours +	Biological Effects	100 x	100,000	6.14
China	UDC 614.898.5 GB 9175 -88	3 hours +	Biological Effects	100 x	100,000	6.14
Italy	Sanitary Norms and Regulations 2.2.4/2.1.8.055-96	3 hours +	Biological Effects	100 x	100,000	6.14
Most of Eastern Europe	Sanitary Norms and Regulations 2.2.4/2.1.8.055-96	3 hours +	Biological Effects	100 x	100,000	6.14
Switzerland	Ordinance on Protection from Non-Ionising Radiation (NISV)	Long Term	Precautionary	100 x	100,000	6.14
Toronto Board of Health, Canada	Proposed 1999	Long Term	Precautionary	100 x	100,000	6.14
Bio-initiative Report recommendation	Bio-Initiative Report 2007	Long Term	Biological / Precautionary	10,000 x	1,000	0.614
Salzburg Resolution on Mobile Telecommunication	Preventive public health protection, Salzburg, June 7-8, 2000	Long Term	Precautionary	10,000 x	1,000	0.614
European Parliament	Resolution 1815, Strasbourg, May 27, 2011	Long Term	Precautionary	10,000 x	106	0.2
Building Biology Guidelines Germany (Sleeping Areas)	SBM2008 - Level of No Biological Concern	Long Term	Precautionary	100,000,000 x	0.1	0.006,14
Cell Phone Operational Requirements				10,000,000,000 x	0.001	0.000,061,4
Natural Cosmic Radiation	MAES 2000	Long Term	Natural Exposure	10,000,000,000,000 x	0.000,001	0.000,000,061,4
Average Indoor Urban Exposure Toronto, Canada	Safe Living Technologies Inc. 2011	Long Term			200 - 5000	0.3 - 1.4



*Microwave Radiation, when used to transfer data from Point-A to Point-B, is comprised of **micro-second pulses of electrical power sprayed through the atmosphere.** Microwave radiation either penetrates or reflects off of anything or anyone in its path. The data transferred are electrical impulses or "bullets" traveling at the speed of light, **about 670 million miles per hour.** These pulses of data transmission can cause harm to many living organisms, including humans,*

How Do Microwaves Radiate Over Long Distances?

Electromagnetic waves are produced whenever charged particles are accelerated. In the near-field region (within 3-4 wavelengths from the source antenna charges), waves are incoherent, erratic, and choppy, with high micro-second peaks of Electric and Magnetic fields. This creates a toxic "hell-stew" of powerful zaps, crackles, and pops that are difficult to characterize with any degree of accuracy. Unfortunately, this is the range

where people typically hold their wireless devices, and where many "smart" home appliances or other IoT things, sensors, robots, machines, etc. may be found. Whenever one sends/receives wireless digital data from a device, machine, or "thing", a toxic spherical cloud, 36" to 48" in diameter, forms around it, exposing everyone nearby to peaks of RF/MW radiation.

How Does Microwave Radiation Send and Receive Digital Data?

A wavelength carries massive numbers of erratic pulses of digital data, that wirelessly transmit text, image, audio and video data to and from computers, tablets, phones and the (predicted) billions of IoT machines, appliances, "things," sensors and devices. Unfortunately, the microwaves used for this purpose are not the smooth sine waves you may have learned about in text books that describe the transmission of visible light (430 to 770 THz) or Alternating Current electrical power (60 Hz). Natural Electromagnetic Fields (EMF) come from two main sources: the sun, and thunderstorm activity. Human-made, pulsed RF/EMF differ from natural EMF .

Human-made Radio-Frequency Electromagnetic Fields (RF/EMF) and the resulting RF/MW radiation are defined by the equation: $c = f \lambda$, where c = the speed of light, f = the frequency, and λ = the wavelength. This means that since c is a constant, as frequency increases, wavelength decreases.

Frequency is measured in a unit called **Hertz**, which represents the number

of cycles or oscillations of a wave in one second. The unit Hertz is named after Heinrich Rudolph Hertz, discussed below, a German scientist who first demonstrated that electromagnetic waves radiate at a constant speed.

In order to transmit digital data, an antenna's microchips distort the waves' shape or pace to modulate (encode) the data stream onto the carrier waves at the source before the antenna transmits them. At the destination, other microchips demodulate (decode) the data stream so the destination device can display the text/image or play the audio/video. A **modem** is a device that literally **modulates** and **demodulates** data streams; engineers shortened the name to **modem**. Each antenna in this scheme is a two-way microwave radiation transmitter/receiver.

There are an infinite number of combinations of wavelength, frequency, intensity, and modulation, the mathematical transformations that encode data onto a carrier wave. Each combination is a new **digital fingerprint** that uniquely identifies a new human-made, potentially toxic agent that, when transmitted into the air, instantly fills our homes, schools, workplaces or public spaces. Below is a list of the Microwave Radiation frequencies that – with the advent of 5g – will be added to our already EMF saturated airwaves.

The Panoply of Microwave Radiation

Frequencies/Wavelengths in a 4g/5g World

- 5g: 600 MHz = waves 20 inches long
- 4g: 700 MHz = waves 17 inches long
- 3g/4g: 800 MHz = waves 15 inches long

- 3g/4g: 900 MHz = waves 13 inches long
- 3g/4g: 1800 MHz = waves 7 inches long
- 3g/4g: 2100 MHz = waves 6 inches long
- Wi-Fi: 2450 MHz = waves 5 inches long (unlicensed)
- 5g: 3100 MHz to 3550 MHz = waves 3.8 to 3.3 inches long
- 5g: 3550 MHz to 3700 MHz = waves 3.3 to 3.2 inches long
- 5g: 3700 MHz to 4200 MHz = waves 3.2 to 2.8 inches long
- 5g: 4200 to 4900 MHz = waves 2.8 to 2.4 inches long
- Wi-Fi: 5800 MHz = waves 2.0 inches long (unlicensed)
- 5g: 24,250 to 24,450 MHz = waves 0.5 inch long
- 5g: 25,050 to 25,250 MHz = waves 0.5 inch long
- 5g: 25,250 to 27,500 MHz = waves 0.4 inch long
- 5g: 27,500 to 29,500 MHz = waves 0.4 inch long
- 5g: 31,800 to 33,400 MHz = waves 0.4 inch long
- 5g: 37,000 to 40,000 MHz = waves 0.3 inch long
- 5g: 42,000 to 42,500 MHz = waves 0.3 inch long
- 5g: 57,000 to 64,500 MHz = waves 0.3 inch long (unlicensed)
- 5g: 64,000 to 71,000 MHz = waves 0.2 inch long
- 5g: 71,000 to 76,000 MHz = waves 0.2 inch long
- 5g: 81,000 to 86,000 MHz = waves 0.1 inch long

All of the waves listed above are examples of both Microwaves and Radio waves, therefore, scientists use the term Radio-Frequency Microwave Radiation (RF/MW radiation) to describe this entire range of wavelengths/frequencies.

- **Radio waves** are from 1 mm to 100,000,000 meters (frequency of 300,000 MHz down to 3 Hz)
- **Microwaves** are from 1 mm to 1 meter (frequency of 300,000 MHz down to 300 MHz)

Microwave radiation can have different properties, depending on its wavelength. The longer waves (20" down to 5") travel further and penetrate

deeper into buildings and living tissue. The shorter waves (0.5" down to 0.1") are called millimeter waves (mm-waves) because they measure from 10 mm (at 30,000 MHz), down to 1 mm (at 300,000 MHz). The mm-waves are not as efficient because they don't travel as far, tend to reflect off of buildings, and deposit mainly into the eyes and skins of living organisms.

Millimeter waves (from 10-mm|30GHz to 1-mm|300GHz) are readily absorbed by the atmosphere and by the eyes and skin of living organisms

In the first quarter of 2017, the US population was being irradiated primarily by the following pulsed microwave radiation:

- **700 million to 2.1 billion** microwaves per second for 2G/3G/4G mobile data sent to cell phones
- **2.4 billion to 5.8 billion** microwaves per second for Wi-Fi data to tablets/laptops

In the second-half of 2017, if Verizon, AT&T, and other wireless carriers have their way, we will be radiated with the following pulsed microwave radiation in 10-15 targets cities – **24 billion to 90 billion** microwaves per second for 5g services and for navigation-assisted cars

By encouraging the construction of four or five competing wireless networks to provide 10+ Gbps wireless data transfers, the US government has created a serious problem as this scheme is energy-inefficient, ludicrously redundant, and extremely hazardous to wildlife and to us.

How Did Our Government Respond to the “Partial Findings” of the NTP Study

In May of 2016, scientists at the US National Toxicology Program released “partial findings” from a \$25 million study on cellphone radiation, that found that both hyperplasias (abnormal increases in volume of a tissue or organ caused by the formation and growth of new normal cells) and tumors occur at significantly higher rates in the presence of continuous radio frequency/microwave radiation,

Disregarding these findings, six short weeks later, the FCC approved a move to 5g, and the wireless industry got to work installing Distributed Antenna Systems (a network of small cells) on utility poles around the country just as quickly as they possibly could. Some antennas have been placed as close as 20 feet from second story bedroom windows and will spray 4g or 5g radio frequency/microwave radiation 24/7/365 on the unfortunate person who unknowingly sleeps there. Cancer clusters have been documented for people living closer than 2,000 feet to mobile communications base stations, so **antennas for mobile communications base stations should never be lower than 200 feet, and no closer than 2,000 feet to people and other living organisms.**

Massive electromagnetic pollution is spiraling out of control, with both Industry and Government denying the scientific proof of harm from microwave radiation. Our Government and the Wireless Industry should not transmit digital data wirelessly, using the data-dense modulation schemes:

Orthogonal Frequency-Division Multiplexing (OFDM/OFDMA) used in Wi-Fi, 4g/LTE and 5g – because the **US Government has already proven that the data-sparse 2G modulation is hazardous. We must, instead, transmit data from Point A to Point B to every business, every home, every school and farm with far superior fiber optic cables.**

On Jan. 8th, 2018, President Trump issued an Executive Order to expedite Broadband to rural America. The gist of the Order is that rural areas are to be outfitted with wireless infrastructure. The American people have already paid for fast, safe, reliable, cyber secure, energy efficient fiber to all homes and businesses around the country, including rural areas! Only a fraction of that fiber was delivered. And now the wireless industry, with the support of our government, is trying to pull a "bait and switch" and substitute slower, harmful, less cyber secure and less energy efficient wireless broadband both in rural America and in urban areas as well. (See article about the Book of Broken Promises by Bruce Kushnick, https://www.huffingtonpost.com/bruce-kushnick/the-book-of-broken-promis_b_5839394.html) For more on this please see <http://scientists4wiredtech.com/regulation/kushnick-primer/>

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2

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New Hampshire Science, Technology and Energy Public Hearing

February 12, 2019

HB522, Establishing a commission to study the environmental and health effects of evolving 5G technology

Good afternoon. My name is Cecelia Doucette from Ashland, Massachusetts.

I became a technology safety educator after helping Ashland Public Schools become the first in the nation to begin taking precautions with wireless technology.

The Fine Print

When our schools read the fine print that comes with all our wireless devices, they recognized they had legal exposure for harm. If any of you have an iPhone with you, I'd like to guide you to where the industry's legal fine print is written.

Please take out your iPhones and go into Settings. Then scroll down a bit and remember the acronym GAL. Hit **G**eneral, and at the top hit **A**bout. Then scroll all the way down and hit **L**egal. At the bottom of Legal, hit RF Exposure.

That legal fine print contains two really important warnings. One, keep radiation devices away from your body or you may exceed the FCC limits for public radiation exposure. Mind you, those FCC exposures were never safety tested and are now proven to be extremely toxic in the scientific literature.

Two, the fine print also tells us to use a hands-free option such as speaker phone. What they don't tell us is that our one device now has five or six separate antennas that are constantly pulsing radiation for a handshake with the nearest cell tower or router.

Just by holding a device in active mode, you are getting radiation from a cell antenna, a data antenna, a wi-fi antenna, a Bluetooth antenna, a locator antenna, and by now a public hotspot because the industry is using us as their network.

We don't need that, we can learn to put our devices in airplane mode and just go active periodically to check for messages, and/or, hardwire them through an Ethernet cable and turn off the antennas when we're not on the go.

Legislation

I have also collaborated with the Massachusetts legislature, as have other citizens. We lead the nation with seven sponsored bills, and a dozen more introduced by constituent request. Here's a brief history of our sponsored bills:

1. Senator Karen Spilka introduced a bill on my behalf last session that would **form a commission to address wireless radiation and public**

health. It was reported out favorably by the Massachusetts Joint Committee on Public Health and referred to the Senate Rules Committee where it expired on December 31st.

Senator Spilka is now our Senate President and can no longer introduce legislation. So, my State Representative, Jack Lewis, has brought back her bill and modified the language to also include 5G and small cell antennas.

2. Senator Julian Cyr introduced a **right to know bill** last session, and one to **protect children from hand-held devices**. The science shows children are even more vulnerable than adults.

Senator Cyr's bills were assigned to the Massachusetts Joint Committee on Consumer Protection and Professional Licensure. Upon investigation, the Committee wrote its own bill to form a commission to address the wireless radiation impact on public health and the economy. The bill was referred to our Senate Ways & Means Committee where it expired on December 31st.

3. Senator Cyr has reintroduced Consumer Protection's bill this session, along with his bill to protect children.
4. Representative Carolyn Dykema has a federal Americans with Disabilities Act lawsuit in her district against the Fay school where children have become ill from the industrial strength wi-fi system and wireless devices.

She has introduced a bill to have the Massachusetts Department of Elementary and Secondary Education **address wireless radiation in schools and colleges**.

I've educated our Department of Elementary and Secondary Education, and they are just waiting for higher authorities to publish safe technology guidance. That may come through our legislature, or the Massachusetts Department of Public Health which I helped to write a series of fact sheets. They have guidances for cell towers, cell phones and wi-fi, plus one for high voltage power lines which emit another form of toxic man-made radiation.

The Boston Globe investigated the wireless radiation issue in January, and in their article the Department of Public Health indicates the fact sheets will be released in the next six months.

5. Senator Michael Moore has a returning bill to allow the public to **opt out of hazardous utility "smart" meters**. Vermont already allows a no-fee

opt-out.

6. Representative David Linsky has a returning bill to **address the high voltage power lines** as there is a cancer cluster under them in his district.
7. Lastly, Massachusetts has a new bill with Republican leader Representative Bradley Jones to set up a **5G task force**.

The Industry

As you may already be seeing, the industry is frantically trying to pass bills at the federal level and put in by-laws at the state and local level that would take away home rule from our local municipalities.

They aim to install this toxic infrastructure for 5G and the Internet of Things (IoT) before the public catches on that current science confirms wireless radiation is carcinogenic and causes DNA damage, and that other studies link it to our skyrocketing rates of infertility, neurotoxicity, autism, Alzheimer's and more.

There is much push-back, however. The U.S. Conference of Mayors has put out a position statement opposing 5G, California Governor Jerry Brown already vetoed a 5G bill, and 80 towns are suing the state of Ohio to retain local control.

Burlington, Massachusetts ratified a Small Cell Policy that would require the telecom companies to annually recertify their equipment is still viable, and Burlington will charge the vendor an annual fee so the town can hire an independent consultant to execute the annual recertification process.

The Verizon lawyer indicated his client did not wish to set precedent for recertification or for a fee, so he withdrew Verizon's seven small cell applications.

In your packet you will find links to this information and more on the 5G and IoT page from my personal research repository, Understanding EMFs.

The FCC

Harvard reports the FCC is captured by the industries it presumably regulates, and has been using the big tobacco playbook to suppress evidence of harm and create doubt among consumers while promoting their toxic products.

FCC Commissioner Brendan Carr recently stated publicly that 5G is safe, and in December Senator Richard Blumenthal and Congresswoman Anna Eshoo sent a formal letter asking him to provide the science on which he based that claim. The FCC failed to respond.

Congresswoman Eshoo then filed a federal bill in January to block the FCC from taking away local control.

Last week, Senator Blumenthal questioned the FCC in a hearing with the Senate Commerce, Science, and Transportation Committee. The wireless carriers conceded they are not aware of any independent scientific studies on the safety of 5G technologies. Blumenthal also criticized the FCC & FDA for inadequate answers on outstanding public health questions.

Legal Issues

As Mr. Clegg indicated, Lloyds of London, Swiss Re and others already recognize wireless radiation as a leading risk and put exclusions in their policies.

That means the industry may not be insured for damages, and they typically pass that liability onto those with whom they sign contracts, namely our towns, schools, etc.

With regard to 5G, there are lawsuits mounting against the FCC and industry, as well as states for letting this technology in. Court cases are already being won around the world for wireless damages so it would behoove New Hampshire to proactively get ahead of this.

Solutions for Responsible Technology Infrastructure

We are fortunate to have many solutions today to help implement responsible technology. The bottom line is, wireless technology is harmful and unreliable so it is best to bring hard-wiring to the premises and teach the public to use technology safely.

I have brought with me hard copies of the policy book, "Re-Inventing Wires". I have one for the chairs and the public record, and others are welcome to download it. Many communities are building and managing their own fiber-optic networks which New Hampshire may wish to consider.

Grassroots Environmental Education has also collected best practices from cities and towns all over the country that are pushing back against the FCC and the unfettered rollout of small cell wireless facilities.

They have developed a Model Wireless Telecommunications Ordinance to help you protect New Hampshire property values, privacy, safety, energy consumption and public health.

Solutions for Educating the Public

As for educating the public, the film that won Best Documentary at the D.C. Independent Film Festival is called Generation Zapped. In 74-minutes everyone can understand the urgency of this issue.

The non-profit Wireless Education also provides easy half-hour courses on-line to quickly train entire families, schools, communities and workforces.

Almost immediately, when one chooses to reduce wireless radiation exposures, we see a drastic reduction in insomnia, headaches, nosebleeds, nausea, fatigue, brain fog, behavior issues, anxiety, depression and more.

However, if wireless infrastructure is allowed to continue to be installed for "small cells" and "smart" utilities, our bodies will never get a chance to recover.

Please, enact House Bill 522 to ensure responsible technology infrastructure in New Hampshire, and teach the public to use their personal devices safely.

Thank you for your time and consideration. I would be honored to answer any questions you may have now or when you form a commission.



Submitted by Cecelia Doucette, Technology Safety Educator,
31 Fatima Drive, Ashland, MA, 01721 c2douce@gmail.com, 508-881-3878

Understanding EMFs

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5G & IoT

The Issue

- **Wireless networks are highly profitable for industry but they are not as fast, secure, reliable or energy-efficient as wired systems.** The policy paper, "[Re-Inventing Wires: The Future of Landlines and Networks](#)," indicates the U.S. should instead invest in hard-wired telecommunications infrastructure to support economic growth, bridge the digital divide and diminish risks to security, privacy, public health and the environment.

You can listen to a 2018 **Commonwealth Club** audio presentation on Re-Inventing Wires:

<https://www.commonwealthclub.org/events/archive/podcast/reinventing-wires-future-landlines-and-networks>

- **Grassroots Environmental Education** has put together a **tool kit** with resources for communities to protect themselves from toxic 5G small cell antennas, including tips on how to start this conversation with your town, letters to invite neighbors to meet, a 5G fact sheet, and a sample ordinance towns can use to protect property values, privacy, safety and public health:

<https://www.telecompowergrab.org/tool-kit.html>

The Science

- In September 2017 over **180 scientists and doctors from 35 countries** sent a declaration to officials of the European Commission demanding a **moratorium** on the increase of cell antennas for planned 5G expansion. Experts have also signed on from the U.S. and other non-European countries:

<https://drive.google.com/file/d/0B14R6QNkmaXuelFrNWRQcThNV0U/view>

- In 2018, **Martin Pall, PhD**, Professor Emeritus of Biochemistry and Basic Medical Sciences wrote:

[5G: Great risk for EU, U.S. and International Health: Compelling evidence](#)

for eight distinct types of great harm caused by electromagnetic field (EMF) exposures and the mechanism that causes them

- Arthur Firstenberg explains “**phased array**”, the most dangerous aspect of 5G cellular antennas:

<http://www.cellphonetaskforce.org/5g-from-blankets-to-bullets/>

- With gratitude to Lena Pu, the following **studies and articles** provide additional information:

- <https://www.ncbi.nlm.nih.gov/pubmed/27087527?dopt=Abstract>

- https://www.researchgate.net/profile/Daniel_Fels/publication/281409607_of-the-cell.pdf

- <http://jnlp.defense.gov/About/Frequently-Asked-Questions/Active-Denial-System-FAQs/>

- http://preventdisease.com/news/09/110109_body_scanners_thz_waves

- <http://aph.huji.ac.il/people/feldman/research.htm#Human%20Skin%20a%20Helical%20Antennas%20in%20the%20Millimeter%20and%20Submil>

- <https://jasonprall.com/blog/millimeter-wave-scanners-alter-dna/>

- [Radio Frequency Technology damages Plant DNA in 48hrs and is carcinogenic, new research reveals | EmaxHealth](#)

- [Radiofrequency radiation injures trees around mobile phone base stations](#)

- [Anthropogenic Radio-Frequency Electromagnetic Fields Elicit Neuropathic Pain in an Amputation Model](#)

- https://www.researchgate.net/publication/51394628_Human_Skin_as_f

Legal Issues

- **Montgomery County, Maryland**, is suing the FCC over unsafe 5G radiation:

<https://bethesdamagazine.com/bethesda-beat/government/county-to-sue-fcc-over-radio-frequency-emission-standards-for-small-cell-antennas/>

- **Michigan Senator Patrick Colbeck** provides testimony to the legislature indicating 5G and IoT are biologically hazardous, and reminds his colleagues it is their primary duty to protect public health over technological convenience or economic growth:

https://www.youtube.com/watch?time_continue=1&v=hkDDQgDVsbk

See Senator Colbeck's website for additional actions he is taking to educate the legislature and the public:

<https://www.senatorpatrickcolbeck.com/wireless-radiation/>

- **Massachusetts** is leading the U.S. with multiple bills to address man-made radiation that citizens can ask their legislators to emulate:

[Massachusetts EMF Bills](#)

- **In the U.S., the industry is fast-tracking many federal bills** to remove control from local municipalities to install small cell antennas/distributed antenna systems (DAS) throughout our neighborhoods every four to 12 houses. If not stopped, these bills will set the infrastructure for the Internet of Things, and allow hazardous radiation to be emitted on our citizens at street level 24/7. See [S.3157 STREAMLINE Small Cell Deployment Act](#), [S.19 MOBILE Now Act](#), [S.88 DIGIT Act](#), [S.1682 AIRWAVES Act](#), [HR. 3895 Smart Cities and Communities Act](#), and [HR. 3901 Moving FIRST Act](#). Citizens are encouraged to ask their federal legislators to prevent these bills from advancing as this technology has been proven biologically harmful. See the [Science](#) page.
- In October 2018 **FCC Commissioner Brendan Carr** indicated 5G is safe during a Souix Falls, SD hearing:

<https://www.youtube.com/watch?v=0bb8sPOozso&t=1s>

In December 2018, **Connecticut Senator Richard Blumenthal** and **Congresswoman Anna Eshoo** formally asked Mr. Carr to provide the scientific proof of safety he claims:

https://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Felectromagnetichealth.org%2Fwp-content%2Fuploads%2F2018%2F12%2FIMG_20181203_0002.pdf&esheet=5US&anchor=for+pressing+FCC+Commissioner+Brendan+Carr%2C+Esq.&ind

Senator Blumenthal held a **press conference** on 5G technology and his request that the FCC provide proof of safety:

<http://ct-n.com/ctnplayer.asp?odID=15794&jump=0:00:01>

Medical and science journalist and radiofrequency radiation expert **B. Blake Levitt** shared comments at the above press conference, including the Harvard report indicating the FCC is a "Captured Agency" dominated by the industry it presumably regulates. The transcript of her remarks are as follows:

<https://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Felectromagnetichealth.org%2Fwp-content%2Fuploads%2F2018%2F12%2FBlumenthals-FCC-Letter-Press-conference.pdf&esheet=51908511&newsitemid=20181203006017&lan=en-US&anchor=See+Levitt+Remarks.&index=4&md5=33047ab8a542ccc9933a6>

- **Congresswoman Eshoo** subsequently introduced federal legislation to restore local control in deployment of 5G:

<https://eshoo.house.gov/news-stories/press-releases/eshoo-introduces-legislation-to-restore-local-control-in-deployment-of-5g/>

<http://scientists4wiredtech.com/wp-content/uploads/2019/01/2019-0114-HR-530.pdf>

- In February 2019, **Senator Blumenthal** called out the **FCC** in a Senate Commerce, Science, and Transportation Committee hearing. Blumenthal also criticized the FCC & FDA for inadequate answers on outstanding public health questions, and the wireless carriers concede they are not aware of any independent scientific studies on safety of 5G technologies:

<https://www.blumenthal.senate.gov/newsroom/press/release/at-senate-commerce-hearing-blumenthal-raises-concerns-on-5g-wireless-technologys-potential-health-risks>

- Should the federal bills fail, the industry is already trying to get laws into place **state by state** that would take away local authority for 5G infrastructure:

- Cleveland and 80 other towns are **suining the State of Ohio** over one such bill. One lawsuit has already **struck down the industry**, the Franklin County judge ruled for local governments in micro-wireless equipment dispute:

<http://www.dispatch.com/news/20170602/franklin-county-judge-rules-for-local-governments-in-micro-wireless-equipment-dispute>

- **California's Governor Jerry Brown vetoed** a similar bill in October 2017, **SB.649**:

<http://www.mercurynews.com/2017/10/16/california-gov-jerry-brown->

[vetoed-bill-easing-permits-on-cell-phone-towers/](#)

- The **California State Association of Counties** submitted an opposition letter: <http://blob.capitoltrack.com/17blobs/b4e0d108-b979-42a8-95d9-e0cd461d5a19>. The **League of California Cities** also opposed SB.649: <https://www.cacities.org/SB649>. You can see their **testimonies** [here](#), along with many others opposing this bill.
- The **California Alliance for Safer Technology** has produced a [two-page fact sheet](#) for their legislators that can be used by others.
- See the **SMALL WIRELESS FACILITIES MODEL ORDINANCE - MASSACHUSETTS** below. This is a by-law Verizon is trying to persuade municipalities to adopt. It would pass the legal risk liability on to the towns, and place restrictions on local control:

<https://docs.google.com/viewer?>

<a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx1bmRlcnN0YW5kaW!>

- **Grassroots Environmental Education** has collected the best ideas from cities and towns all over the country that are pushing back against the FCC and the unfettered roll-out of small cell wireless facilities.

If your town is receiving requests from wireless carriers or antenna construction companies for permission to construct small cell facilities in public rights-of-way, this document is **what towns need to get started with code** to protect property values, privacy, safety and public health.

[Click here for a copy of the code.sample_small_cell_code_v1.3.pdf](#)

- The **U.S. Conference of Mayors** issued a formal statement opposing the usurping of local property rights:

<https://www.usmayors.org/2018/09/10/statement-by-u-s-conference-of-mayors-ceo-executive-director-tom-cochran-on-fccs-order-proposing-to-usurp-local-property-rights/>

- **Native American tribes** are suing to prevent the industry from circumventing permitting processes and forcing 5G infrastructure onto their lands:

<http://www.insidesources.com/more-tribes-signing-on-to-lawsuit-fighting-fcc-rule-change-for-5g-installation-permits/>

- The **insurance industry has identified EMF/RF as a leading risk**. Lloyds of London, Swiss RE and others have already put exclusions in their policies. See the [Legal Issues](#) page.
- The Environmental Health Trust is tracking **activity in each state**: <https://ehtrust.org/list-us-state-bills-streamlining-wireless-small-cells-das-nodes-rights-way/>.
- The **Town of Burlington, Massachusetts** proactively adopted a small cell policy in October 2018 and when they included a fee assessed on the telecom vendors for an annual recertification, the Verizon lawyer withdrew their applications for seven small cell systems:

Burlington Cable Access Television reported, "Verizon Drops Small Cell Wireless Booster Application in Face of Fees

<http://www.bcattv.org/bnews/top-stories/verizon-drops-small-cell-wireless-booster-application-in-face-of-fees>

- See more Burlington details on the [Cell Towers](#) page.

Cost Analysis

- IEEE has done the cost analysis and concluded Fiber "Optical access networks are the most energy efficient of the available access technologies." **Wireless consumes much more energy than hard-wired fiber optics**:

<https://ieeexplore.ieee.org/document/5783987/>

- The **California Department of Finance** opposed the 5G S. 649 bill for the following fiscal reasons:

<http://wireless.blog.law/wp-content/uploads/2017/08/SB-649-20170823084049AM-SB006491.pdf>

- The following letter from the Law Offices of Harry V. Lehmann PC addresses the **liability shifting** aspect which implies possible billions in losses at the state level since the industry has no liability insurance:

<http://scientists4wiredtech.com/wp-content/uploads/2017/10/2017-0719-SB649-CA-Liability-Lehmann-to-Galehouse.pdf>

- **Russia's** largest telecommunications company, MTS, **does not see the business case for 5G** and is instead continuing to invest in fiber-optics to carry data signals:

https://www.theregister.co.uk/2017/03/30/russian_megatelco_mts_exec_no_bi

- **Root Cause in the Dramatic Rise of Chronic**

Disease links chronic illness to peroxynitrite from environmental toxins, at a conservatively estimated cost of \$2.5 trillion per year in the U.S. In this 16-minute lecture, **Dr. Martin Pall** explains how EMF/RF creates peroxynitrite:

<https://www.youtube.com/watch?v=3kQQyU8NHv8>

- **Bloomberg** indicates, "Upgrade to 5G Costs \$200 Billion a Year, May Not Be Worth It":

<https://www.bloomberg.com/news/articles/2017-12-18/upgrade-to-5g-costs-200-billion-a-year-and-may-not-be-worth-it>

- Although fiber-optics is better for the country, the industry is trying to block it at the state and municipal level. **Millions of Americans have been priced out of, or entirely excluded from, the reach of modern internet networks.** Maria Smith, an affiliate of the Berkman Klein Center for Internet & Society and Harvard Law School, created the four-part documentary series *Dividing Lines* to highlight these stark divides, uncover the complex web of political and economic forces behind them, and challenge audiences to imagine a future in which quality internet access is as ubiquitous as electricity:

<https://www.dividinglines.org/>

Medical Perspective

- **Dr. Cindy Russell's** article overviews 5G, the Internet of Things (IoT), scientific findings, and what we can do to protect our citizens:

<https://docs.google.com/viewer?>

[a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx1bmRlcnN0YW5kaW5nZW1](https://docs.google.com/viewer?)

- **Dr. Russell** also published the following 5G article in **Environmental Research August 2018**, "5G wireless telecommunications expansion: Public health and environmental implications":

<https://docs.google.com/viewer?>

[a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx1bmRlcnN0YW5kaW5nZW1](https://docs.google.com/viewer?)

- 5G Technology: Potential Risks To Human Health: Excerpts From **Scientific Conference:**

<https://www.youtube.com/watch?v=QvPg1AyQ43I>

Additional Resources

- The **Environmental Health Trust** continually updates information on 5G, and ordinances being put in place by proactive communities:

<http://ehtrust.org/?s=5G+>

<https://ehtrust.org/usa-city-ordinances-to-limit-and-control-wireless-facilities-small-cells-in-rights-of-ways/?fbclid=IwAR0irnkuNUOpOI6VPMK-DDvvCyVrOvG8quimzQcY7nJSsOZ9sdggnJNEqDw>

- **Montgomery County, Maryland, USA**, put together a presentation that provides guidance on what local municipalities can do to offer some protections for their citizens from 5G pole installations in their community:

https://docs.google.com/presentation/d/1AluFrpBNIKrkAXFNwGO-b5r2ZL_RM-y2VHGCAmHEE5s/edit?ts=58b35a8a#slide=id.p

- This **website** offers insights on what 5G is:

<http://whatis5g.info/>

- San Francisco City Planner Omar Masry wrote this very helpful article for those in California seeking to improve **wireless facility zoning ordinances** -- this also may help educate/inform other local governments on how to manage these installations and keep up with the latest changes in law:

<https://medium.com/@omarmasry/a-brave-new-world-for-cell-antennas-in-california-39d864a876d4>

- The **Huffington Post** discusses how **AT&T** has been manipulating the accounting of its mostly copper-based, state-based, utility networks to force-march customers into wireless service for the home instead of maintaining and upgrading the networks to fiber for residential and business customers —because it makes them more money:

<http://www.huffingtonpost.com/entry/59adac5de4b0bef3378cda83>

- Citizens in **Huntington, NY** demonstrate what the 5G exposures are in their community:

Resident's home: <https://www.youtube.com/watch?v=shOhGH01Z2Y>

Local playground: <https://www.youtube.com/watch?v=TqLgE8r7bnI>

Huntington: https://www.youtube.com/watch?v=082sA_w5U20

Cold Spring Harbor: <https://www.youtube.com/watch?v=VJdr93RRHcC8>

Their Facebook page.

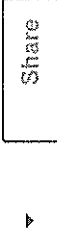
<https://www.facebook.com/groups/151072495506584/>

Note: The information provided here is publicly available on the Internet.

It is intended to provide a starting point to inform you of EMF dangers.

Please do your own research, draw your own conclusions, and act accordingly to protect those you love.

<http://tinyurl.com/Understanding-EMFs>



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Massachusetts EMF Bills 2019-20
Massachusetts EMF Bills 2017-2018
State House Journey
Expert Video Clips

Massachusetts EMF Bills 2019-20

The following two documents provide background information for our public servants, journalists and the public on the electromagnetic fields (EMFs) of radiation emitted by all of today's wireless technology:

[Executive Summary](#)

[EMF Points of Confusion vs. Fact](#)

[Boston Globe 1/17/19 article:](#)

["Could your cell phone's electromagnetic field make you sick?"](#)

[Click here to see a summary of where the bills left off in the 2017-2018 legislative session.](#)

[Click here for easy 1-2-3 instructions for seeking bill co-sponsorship from your legislators.](#)

Summary of 2019-20 Bills

- Senators and State Representatives are **directly sponsoring eight bills this session**, most of which were introduced in prior sessions. We know public policy is a marathon, not a sprint, and it bodes well that many of the bills progressed

through important steps last session.

- Constituents have also written an **additional set of bills** that are presented by their legislators. See below for both sets of bills.
- If you are not in Massachusetts, please consider using these to ask your own legislators to file similar man-made radiation bills where you are.
- Once the bills are assigned to committees, then a **public hearing** will be scheduled for each bill sometime in the next 18 months or so. We will be grateful if you can submit spoken and/or written testimony. **Please consider writing your story now** so when the time comes you can just polish it and send it in for the respective bills. We usually only receive about a week's notice of a public hearing. I will provide a template with the appropriate committee members and other key state-level influencers when the time comes.

Docket #	Sponsor	Title	Bill History
<u>SD.2116</u>	<u>Julian Cyr</u>	Resolve relative to disclosure of radio frequency notifications	Forms a commission to investigate wireless radiation health and economic impact. Written by the Joint Committee on Consumer Protection & Professional Licensure in the 190 th session as <u>Senate Resolve 2431</u> ,

<u>SD.2119</u>	<u>Julian Cyr</u>	An Act relative to the safe use of electronic devices by children	and attached Senator Cyr's right-to-know bills <u>S. 107</u> and <u>S. 108</u> .
<u>SD.77</u>	<u>Michael O. Moore</u>	An Act relative to utilities, smart meters, and ratepayers' rights	Provides product packaging radiation warnings on wireless devices. Advanced as <u>S. 107</u> by the Joint Committee on Consumer Protection & Professional Licensure in the 190 th session. Gives the public the right to choose non-radiation emitting utility meters. Introduced by Thomas P. Conroy in the 188 th session, Rep. Stephen DiNatale in the 189 th and Senator Michael Moore in the 190 th as <u>S. 1864</u> .
<u>HD.3903</u>	<u>Jack Lewis</u>	An act establishing a commission to study the environmental and health effects of evolving 5G technology	Addresses all wireless radiation impacts based on non-industry funded peer-reviewed science. Reported out favorably in the 189 th and 190 th sessions by the Joint Committee on Public Health. This was Senator Spilka's

			<p><u>Resolve S. 1268</u>. As Senate President now she can no longer introduce legislation. Rep. Lewis introduced her bill this session and has added language to also address toxic 5G technology.</p>
<p><u>HD 3568</u></p>	<p><u>Carolyn Dykema</u></p>	<p>An Act relative to best management practices for wireless in schools and public institutions of higher education</p>	<p>Asks the DESE to establish protective practices regarding wireless radiation emissions in schools and colleges. Released by the Joint Committee on Education to the Joint Committee on Public Health in the 190th session as <u>H. 2030</u>; reported out favorably.</p>
<p><u>HD 443</u></p>	<p><u>David Linsky</u></p>	<p>An Act relative to a special commission to study electric and magnetic fields</p>	<p>Addresses hazardous high voltage electric power line radiation. Introduced in 2011; reported out favorably by the Joint Committees on Public Health, and Health Care Financing in the</p>

			190 th session as <u>H. 1192</u> .
<u>HD 3903</u>	<u>Bradley H. Jones, Jr.</u>	An Act relative to a 5G Technology Task Force	A new bill aiming to ensure economic and regulatory fairness with 5G technology.

The following bills have also been newly introduced by request from constituents:

Bill	Presenter	Title	Additional Information
<u>HD 3428</u>	<u>John J. Mahoney</u>	Resolve to investigate the results reporting of the National Grid Worcester smart meter pilot program and its implications for the department of public utilities grid modernization, time of use, and smart meter proceedings	See <u>DPU hearing testimonies</u> on fraudulent data analysis, cost overruns and health risks of the smart meter pilot program.
<u>HD 3596</u>	<u>Shawn Dooley</u>	An Emergency Act to Investigate the Results Reporting of the National Grid Worcester Smart Meter Pilot Program and its Implications for the Department of Public Utilities Grid Modernization, Time	See <u>DPU hearing testimonies</u> on fraudulent data analysis, cost overruns and health risks of the smart meter pilot program.

			of Use, and Smart Meter Proceedings		
<u>HD</u> <u>994</u>	<u>Aaron Vega</u>	An Act providing for environmental risk fact sheets from the state Department of Public Health	An Act providing for environmental risk fact sheets from the state Department of Public Health	See <u>1/17/19 Boston Globe</u> article indicating MA DPH has health guidance sheet for man-made radiation exposures awaiting release to the public.	
<u>HD</u> <u>996</u>	<u>Aaron Vega</u>	An Act reducing public school nonionizing radiation and wireless exposures	An Act reducing public school nonionizing radiation and wireless exposures	See Environmental Health Trust school reference below.	
<u>HD</u> <u>1003</u>	<u>Aaron Vega</u>	An Act requiring privacy protections and supporting safer technology in schools	An Act requiring privacy protections and supporting safer technology in schools	See Environmental Health Trust school reference below.	
<u>SD</u> <u>1738</u>	<u>Donald F. Humason, Jr.</u>	An Act Accounting for technological privacy and safety in schools with local and state committees	An Act Accounting for technological privacy and safety in schools with local and state committees	See Environmental Health Trust https://ehtrust.org/policy/how-to-reduce-emf-exposure-in-schools-and-classrooms/	
<u>SD</u> <u>1737</u>	<u>Donald F. Humason, Jr.</u>	An Act Limiting School Screen Time	An Act Limiting School Screen Time	See American Academy of Pediatrics <u>Media and Young Minds Policy.</u>	
<u>SD</u> <u>1786</u>	<u>Donald F. Humason, Jr.</u>	An Act reducing library non-ionizing radiation exposures from wireless and electricity	An Act reducing library non-ionizing radiation exposures from wireless and electricity	See Dr. Ron Powell's <u>Message to Public Libraries about Wireless Devices and Health.</u>	

<u>SD</u> <u>1736</u>	<u>Donald F.</u> <u>Humason,</u> <u>Jr.</u>	An Act educating patients on environmental health risks such as wireless exposures	See the non-profit <u>Wireless Education</u> on-line courses.
<u>SD</u> <u>1787</u>	<u>Donald F.</u> <u>Humason,</u> <u>Jr.</u>	An Act Ensuring safer technology investment by the Massachusetts Broadband Institute	See Dr. Timothy Schoechele's policy paper, <u>Re-Inventing Wires: The Future of Landlines and Networks.</u>
<u>SD</u> <u>1788</u>	<u>Donald F.</u> <u>Humason,</u> <u>Jr.</u>	An Act registering wireless facilities to allow for monitoring and to ease access to contact information	See <u>AntennaSearch.Com</u> for current and future cell tower and antenna installations in your area.
<u>SD</u> <u>1789</u>	<u>Donald F.</u> <u>Humason,</u> <u>Jr.</u>	An Act banning especially dangerous wireless facilities, emissions, and products	See Dr. Martin Pall's paper, <u>5G: Great risk for EU, U.S. and International Health: Compelling evidence for eight distinct types of great harm caused by electromagnetic field (EMF) exposures and the mechanism that causes them</u>

How a Bill Becomes a Law

For those who remember School House Rock, you may appreciate this three-minute refresher on how a bill becomes a law at the federal level which is not too different from

the state level:

<https://www.youtube.com/watch?v=tyeJ55o3E10>

The following indicates how a bill becomes a law in Massachusetts; other states will have their own processes on file:

<https://malegislature.gov/Content/Documents/HowAnIdeaBecomesLaw/HowAnIdeaBecomesLaw>

Note: The information provided here is publicly available on the Internet. It is intended to provide a starting point to inform you of EMF dangers.

Please do your own research, draw your own conclusions, and act accordingly to protect those you love.

<http://tinyurl.com/Understanding-EMFs>



 Add files

1



February 12th, 2019

State House
Concord
New Hampshire

STATE OF NEW HAMPSHIRE
House Bill #22

Rep. Abraham, Sen. Sherman

**What you are not told about 5G and
the Internet of Things**



Paul Héroux, PhD paul.heroux@mcgill.ca
Professor of Toxicology and Health Effects of Electromagnetism
McGill University Medicine
Department of Surgery, McGill University Health Center
inViroPlus Laboratory, Tel. (514) 398-6988
<http://www.inviroplus.mcgill.ca>

2

THERE HAVE ALWAYS BEEN STRONG DISAGREEMENTS ABOUT SAFE LEVELS FOR ELECTROMAGNETIC RADIATION

In 1960, at a meeting between
the American National Standards Institute,
the US Navy and
the Institute of Electrical and Electronics Engineers,
it was found that a number of RF-MW limits were being used since 1953 by various groups.

THE STANDARDS (1960) FOR EXPOSURE TO RADIO-FREQUENCY AND MICROWAVE RADIATION

US Air Force	10 mW/cm ²
General Electric	1 mW/cm ²
Bell Laboratories	0.1 mW/cm ²
Soviets	0.01 mW/cm ²

3



Adam Smith
The Wealth Of Nations
(1776)
Book IV, Chapter VIII,
p. 145,
paragraphs c29-30.

**To widen the market and to narrow the
competition, is always the interest of the
dealers...**

**The proposal of
any new law or regulation of commerce
which comes from this order, ought
always to be listened to with great
precaution, and ought never to be
adopted till after having been
long and carefully examined,
not only with the most scrupulous,
but with the most suspicious attention.**

**It comes from an order of men, whose
interest is never exactly the same with
that of the public, who have generally an
interest to deceive and even oppress the
public, and who accordingly have, upon
many occasions, both deceived and
oppressed it.**

SMITH WARNS US ABOUT LETTING THE MERCHANTS MAKE THE RULES

4

WORLD HEALTH ORGANIZATION
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

**IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC
RISKS TO HUMANS**

VOLUME 80
NON-IONIZING RADIATION, PART 1:
STATIC AND EXTREMELY LOW-FREQUENCY
(ELF) ELECTRIC AND MAGNETIC FIELDS

2002
Lyon, France

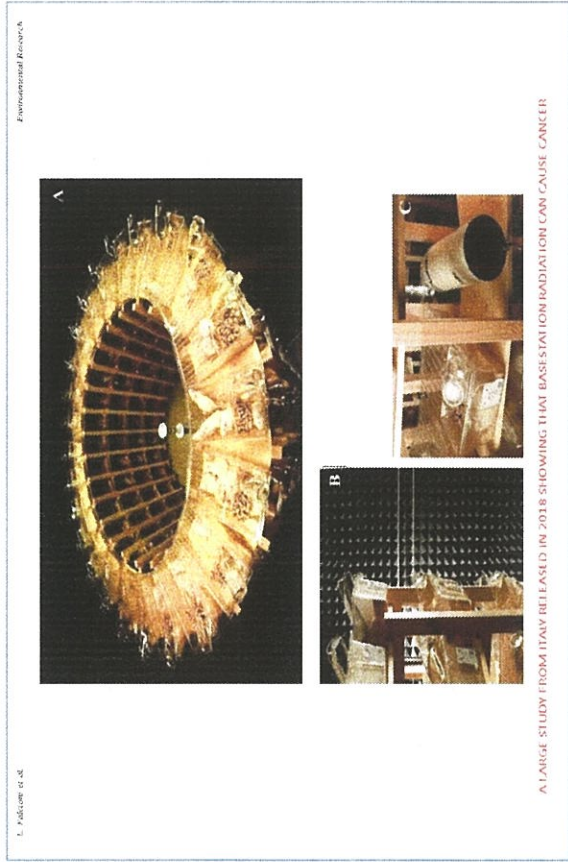
IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS

TWO MAJOR WORLD REPORTS ON CANCERS CAUSED BY ELECTROMAGNETIC RADIATION

5



National Toxicology Program
 National Institutes of Health Public Health Service
 U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
 LABORATORY TESTS (25 MS) CONFIRMING THE ABILITY OF CELL PHONE RADIATION TO CAUSE CANCER



L. Faldut et al.
 Environmental Research
 A LARGE STUDY FROM ITALY RELEASED IN 2018 SHOWING THAT BASE STATION RADIATION CAN CAUSE CANCER

6

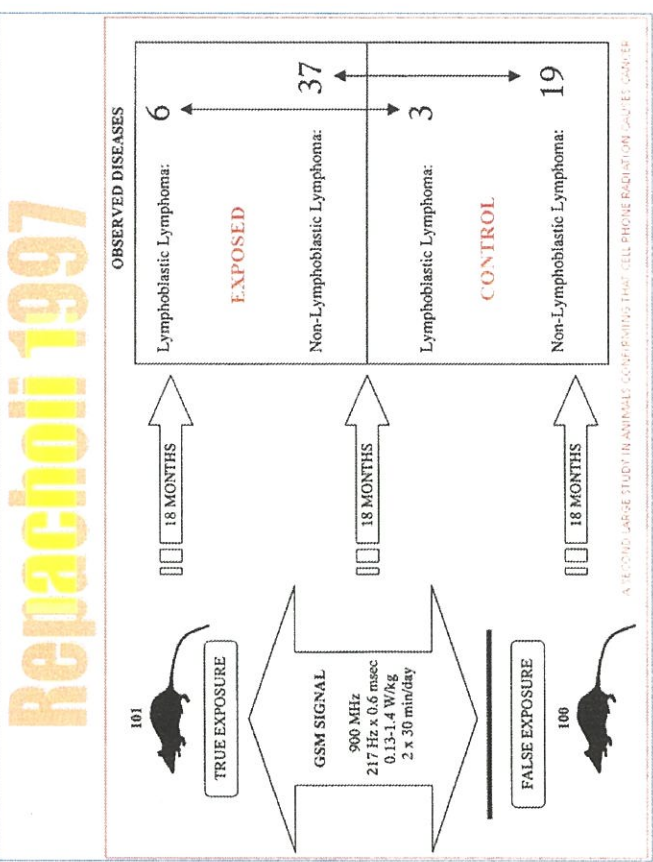
7

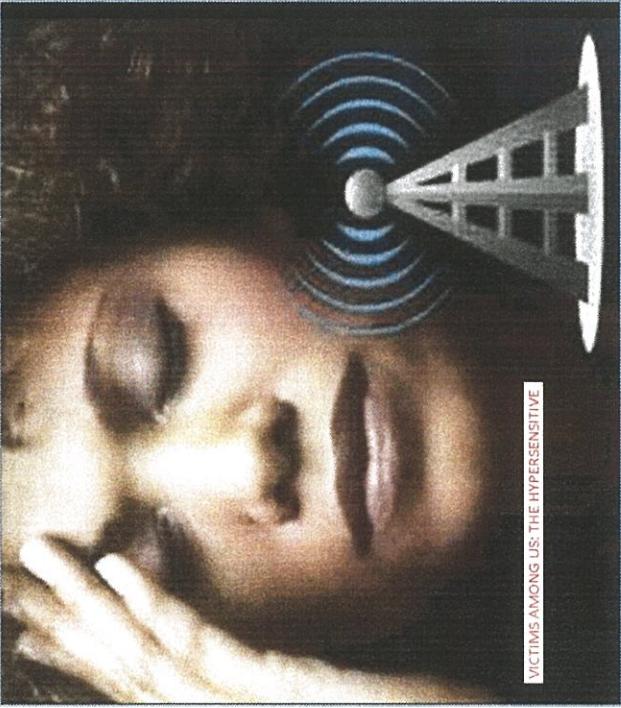
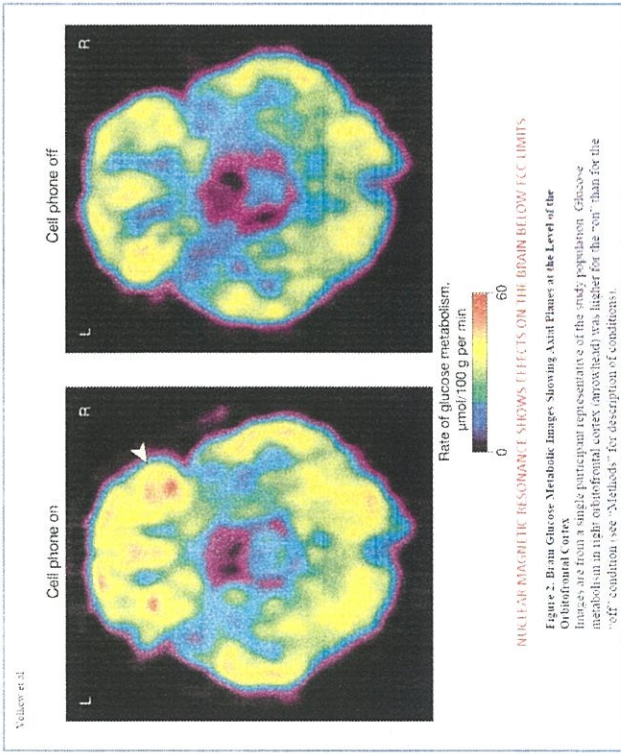
Chou, 1992

The finding of a near fourfold increase of primary malignancies in the exposed animals is provocative. These data cannot be considered as an artifact because different statistical analyses led to similar results. Although the overall difference in numbers of primary malignancies is statistically significant, the biological significance of this difference is open to question. First, detection of this difference required the collapsing of sparse data without regard for the specific type of malignancy or tissue of origin. Also, when the incidence of the specific primary malignancies in exposed animals was compared with specific tumor incidence reported in the literature, the exposed animals had an incidence similar to that of untreated control rats of the same strain maintained under similar SPF conditions. It is important to note that no single type of primary malignancy was enhanced in the exposed animals. From the standpoint of carcinogenesis and under the assumption that the initiation process is similar for both benign and malignant tumors, benign neoplasms have considerable significance. That treatment groups showed no difference in incidence of benign tumors is an important element in defining the promotion and induction potential of microwave radiation for carcinogenesis.

ONE OF THE FIRST LARGE STUDIES IN ANIMALS CONFIRMING THAT CELL PHONE RADIATION CAUSES CANCER

8



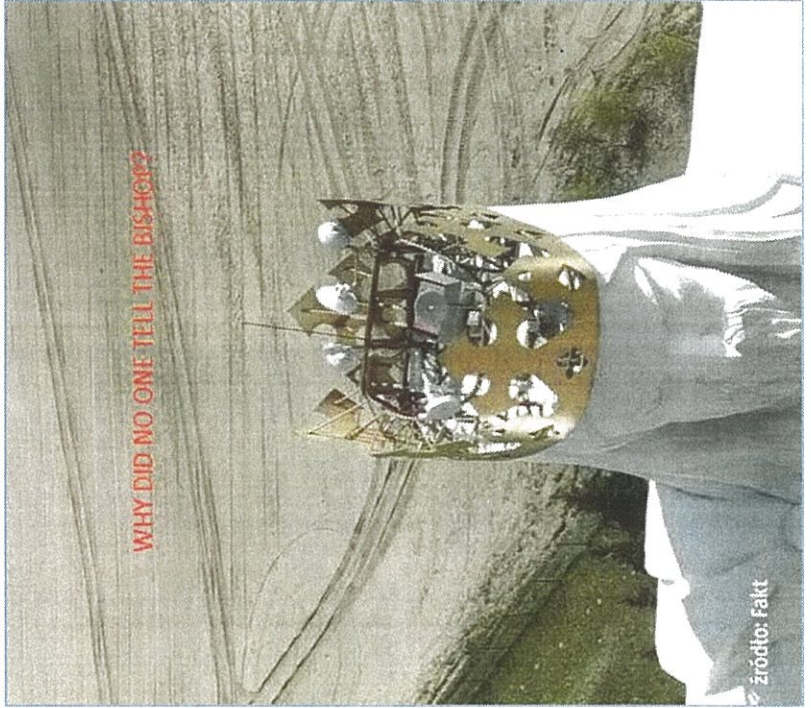


Timothy Schoechle, PHD

Re-Inventing Wires: The Future of Landlines and Networks

National Institute for Science, Law & Public Policy
 Washington, DC

OPTICAL FIBER AND TELEPHONE WIRES ARE A SUPERIOR SOLUTION





Fixed Wireless Advancements

Wireless performance **up 10-fold** over last 10 years

- ✓ **Gen 1** (2000-2005): <10 Mbps, expensive
- ✓ **Gen 2** (2005-2009): 10-50 Mbps using standard chips, inexpensive
- ✓ **Gen 3** (2010-2017): 25-100 Mbps using enhanced chips & 2 antennas, inexpensive
- ✓ **Gen 4** (2017-): 100-500 Mbps, initially expensive “massive” MU-MIMO, 4+ antennas, beam-steering
- ✓ **Also** (2017-): sub millimeter frequencies for fiber-like speeds, short line-of-sight, inexpensive



Wireless technology is less asset intensive than other platforms. Typically 1/3 the cost

- This technology has been proven:
 - Wireless technology is reliable
 - Wireless technology is less susceptible to weather related events
 - Wireless technology enables community coverage and customer acquisition at prices acceptable in the marketplace.
- Wireless technology continues to develop and improve at a faster rate than other wireline technologies
 - Fixed Wireless - 1Mbps to over 100 Mbps in 10 years
 - DSL - 14Kbps to 14Mbps in 25 years



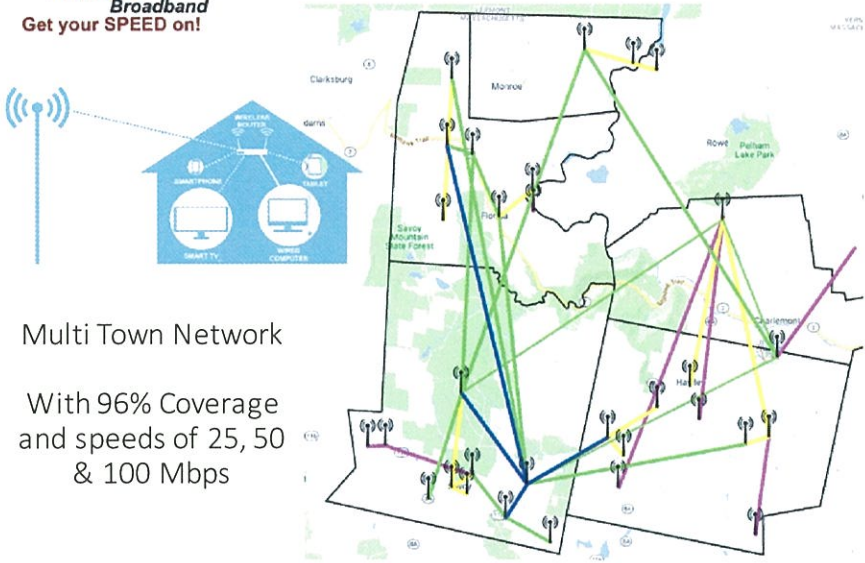
CAF II Auction Winners

- The FCC released the names of the winners of its Connect America Fund Phase II distributing around \$1.5 billion to telecommunications companies to deploy broadband services to rural areas.
- Notably, a more than 75% of the winners in the auction said they plan to use fixed wireless technology to build out telecommunications services in rural areas. The table below shows the top 10 winners with more than 70% of the funding for fixed wireless

Top Bidders (1-5)	Award	Locations	Top Bidders (6-10)	Award	Locations
AMG Technology Investment Group	\$281.3 M	100,661	Commnet Wireless	\$79.9 M	31,824
Wisper ISP	\$220.3 M	80,149	Benton Ridge Telephone	\$52.4 M	23,957
Rural Electric Coop	\$186 M	66,322	Cal.net	\$50.5 M	20,859
Viasat, Inc	\$122.5 M	190,595	Midcontinent Comm	\$38.9 M	9,371
California Internet	\$87.8 M	11,845	Wilkes Telephone	\$32.3 M	13,886

*Dk gr = 100% wireless
Lt gr = mixed*

WiValley
Broadband
Get your SPEED on!



Multi Town Network

With 96% Coverage
and speeds of 25, 50
& 100 Mbps

The diagram illustrates a multi-town network. On the left, a central wireless router is shown connected to various smart devices: a Smartwatch, Smart TV, and Smart Car. To the right, a map shows the network's coverage area, including towns like Clarkburg, Monroe, Rowle, Pelham Lake Park, and others. The map features numerous signal towers and connecting lines, indicating a dense network structure.

WiValley
Broadband
Get your SPEED on!

Smart Phones with Dual Sim Cards

- Mobile Phone Provider
- Fixed Wireless Broadband Provider



Fixed-Wireless Network Conversion Technologies, Solutions

The graphic features a background of blue light rays emanating from the top right. The text 'Fixed-Wireless Network Conversion Technologies, Solutions' is displayed in white and yellow. A small yellow box with the word 'CAMBRIDGE' is visible at the bottom left of the graphic.

Science and Technology Committee

HB 522

February 12, 2019

My name is Deb Hodgdon. I am a retired Accountant and I have been a resident of Stratham for over thirty years. Never in my wildest dreams did I ever envision that when I retired, I would be concerned about informing others of the dangers of wireless technology. But here I am. As one of the canaries in the coal mine, I feel compelled to share what I have learned. Everyone is affected by wireless, not just the canaries who can feel it and its effects.

Most of us are still unaware, as I was, that many symptoms felt by people every day as well as very serious chronic health issues can be directly linked to wireless technology. I discovered this inadvertently while trying to find a safe way to come off of the Coumadin that I had been on for over a decade after having unexplained multiple Pulmonary Embolisms in both lungs.

In my research, I discovered that the RF waves can cause blood to clot or clump together. That got my attention. There is such an abundance of scientific research alerting to its danger. I consider myself pretty well informed and I had no idea. The prevalence of depression, panic attacks, behavior and attention issues, and what appear to be mystery illnesses and fertility issues today should come as no surprise given the research but we do not ever hear of wireless technology addressed in relationship to those issues.

So it begs the question.... Why is this happening? Why is this evidence ignored or suppressed? Why are citizen's rights to protect themselves, their families and their property, allowed to be at risk according to the 1996 Telecom Act as it stands today? How can the Federal government decide that states, towns and citizens have no right to protect themselves from an environmental health risk posed by this technology?

Perhaps, we all just want the conveniences this new technology brings and do not want to hear about anything possibly bad for us. Or more likely, many of us mistakenly think ... that if it was harmful, "they" would not allow it to be sold. Unfortunately, that is not true.

In order for each of us, as well as those in our local, state and federal governing bodies to make sound, prudent decisions with regard to technology we must be fully aware of the possible very serious health consequences for all living things.

One cannot possibly make good decisions in a vacuum where only those voices who have a large stake and a lot of power are influencing the decision makers whom, I am sure, ultimately only want to do what they think is right with what they know. Well, now we all know. There is evidence.

We also now know that the FCC just admitted that there are no studies showing 5G is safe. Yet, there is a rush to roll it out anyway. How is that possible? Last fall, in the Netherlands, a 5g test was run at the Hague and 150 birds fell out of the sky right where the test was run.

Coincidence? I don't think so. At my home, a small plant sat in my kitchen window for a year doing nothing much at all, until we turned off the wireless. It suddenly grew over 15 inches in two months! To my surprise, I also discovered many seemingly unrelated symptoms also disappeared. I am no scientist but that is eye opening.

How can we move forward with a rollout of 5g that the FCC admitted has no studies proving it's safety or ignore the dangers of current technology and do nothing? I have always thought of New Hampshire as prudent, independent and a leader.

Please support HB 522 to establish a commission on the safety of 5g and other current technologies. None of us want to find ourselves unwitting participants in a large scale science experiment that we cannot opt out of.

Sincerely,

Deb Hodgdon

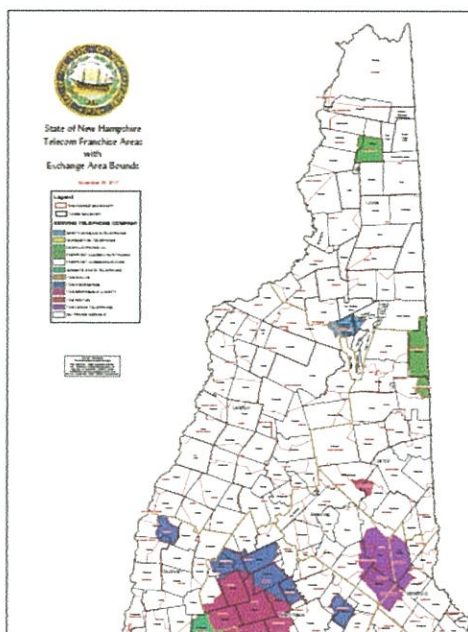
Stratham, NH

Overview of Broadband Technologies and Availability from Landline Companies

February 12, 2019

Presented by
Ellen Scarponi
Consolidated Communications
ellen.scarponi@consolidated.com

Scott Brooks (TDS Telecom)
TDS Telecom
scott.brooks@tdstelecom.com



Broadband Residential Availability

Bretton Woods	100%
Consolidated Communications	95%
Dunbarton	100%
Granite State	100%
TDS	99.8%

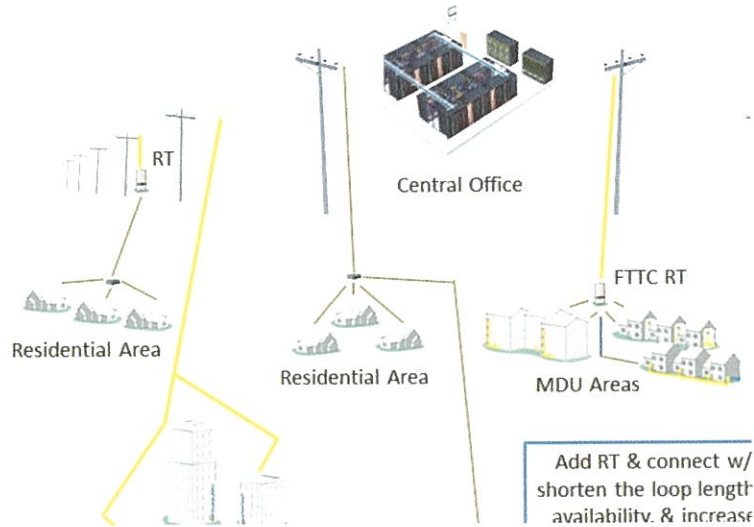
Focus is on increasing residential speeds and capabilities.

In 2008 top download speed across copper was 3Mb.
Today it is 1gig.

Last 5% is so rural not even the federal programs are offering assistance.
\$40,000-\$50,000K per passing
for \$42/month revenue

Public/private partnerships may offer solutions

Broadband Service is delivered via copper and fiber



Many technology options depending on need, location & budget

Copper Based Technologies:

- **DSL, ADSL2+ Bonded**, up to 25M
 - Primary Internet access solution for residential; available to businesses
 - Asymmetrical
 - Speed eligibility is distance-sensitive
 - Extends to 16,000 – 18,000 cable feet
- **VDSL (Fiber to the Curb)**, up to 100M
 - Asymmetrical
 - Fiber to the curb, copper to the premises
 - Speed eligibility is distance-sensitive
 - Extends to 4,000 cable feet
- **G.FAST (Fiber to the Home)**, up to 1G
 - Shared facilities - GPON
 - Symmetrical and Asymmetrical options
- **Business Broadband Elite**, up to 20M
 - Symmetrical
 - Dedicated
 - Delivered over copper (multiple pairs)
- **Carrier Ethernet**, up to 20 M
 - Symmetrical
 - Dedicated (not shared)
 - Internet & Private IP (Point to Point & Wide Area Network)
 - Service Level Agreements
 - Delivered over copper (up to 20 M)

Consolidated Communications:
With the continued evolution of technology, we can create customized plans to expand broadband access and bandwidth to towns by leveraging both new and existing assets. In doing so, we deliver high-speed services to most households and businesses in each area.

Many technology options depending on need, location & budget

Fiber Based Technologies:

- Fiber to the Home, up to 1G
 - Distance not a factor in last mile delivery
 - Less susceptible to weather and outside interference
 - More consistent service experience and lower trouble rates
 - Fiber is an overlay to existing networks making it often cost prohibitive in areas where densities are small or geography is challenging

TDS:

FTTH which is a form of fiber-optic communication which is delivered right to the side of our customer's home.

The fiber extends from our central office all the way to our customer's home and then is spliced into an optical network terminal (ONT) that is used to terminate the fiber optic line. Once the fiber is terminated at the ONT, a Category 5e or Category 6 twisted pair cable is run from the ONT to a modem or router inside the home to deliver our service.

This service is capable of delivering speeds up to 1Gig and we can offer triple-play services which include, voice, video and broadband. This service also allows our customers to watch and record multiple television shows at the same time while also streaming from such providers at Netflix, Roku and YouTube via their broadband connection.

To deliver these services, TDS utilizes a passive optical network (PON) which is a point-to-multipoint FTTH network architecture in which unpowered optical splitters are used to enable a single optical fiber to serve up to 128 customers.

It is much more cost effective than running point-to-point fiber from our central office to each home.

Today, TDS serves 24 rural towns spread across New Hampshire, of which, 82% of those addresses have access to fiber-to-the-home. The long term plan is to migrate the remaining 18% of our copper customers to fiber so that our network is 100% fiber in New Hampshire.

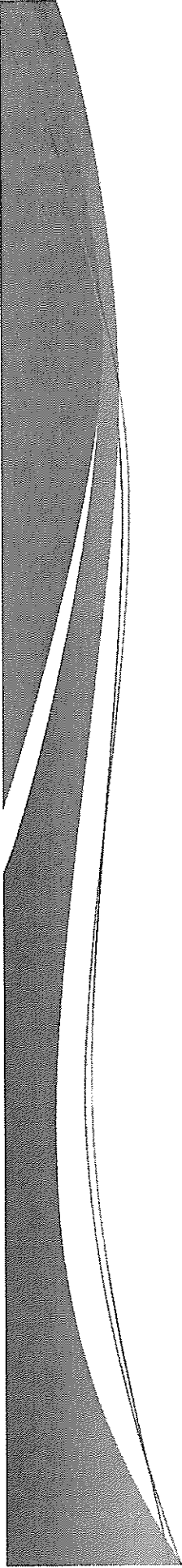
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Many technology options depending on need, location & budget

Fiber Based Technologies:

- **Carrier Ethernet**, up to 10G
 - Business/Government/Education
 - Symmetrical
 - Dedicated (not shared)
 - Internet & Private IP (Point to Point & Wide Area Network)
 - Service Level Agreements
 - Delivered over fiber

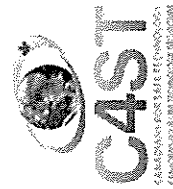
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**Presentation Prepared for NH House Science
Technology Committee in Support of HB522
An Industry Perspective
on 5G Wireless Technologies**

**Environmental Health Trust
Canadians for Safe Technology**

**Frank Clegg
Feb. 12, 2019**



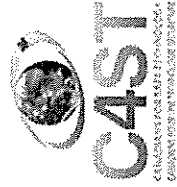
Bio and Organization's Focus

- 40+ years in the technology industry
 - Most recent position, President of Microsoft Canada
- C4ST: Canadians for Safe Technology (CEO and Chairman)**
- Not-for-profit, completely volunteer-based, national coalition of parents, citizens and experts
 - To educate and inform Canadians about the dangers of the exposures to unsafe levels of radiation from wireless technology
 - To work with all levels of government to create healthier communities for children and families from coast to coast to coast.

Environmental Health Trust (Co-Chairman Business Advisory Group)

The only nonprofit in the world today that both:

- Carries out high-level critical research on controllable environmental health hazards
- Works directly with local communities, teachers, parents and students as well as policy makers to understand and mitigate these hazards through research, education and advocacy.



Abysmal track record of protecting citizens

- Asbestos
 - Cigarette smoking
 - Bisphenol-A (BPA)
 - Thalidomide
 - Urea formaldehyde insulation
-
- Concrete action was not taken until decades after the original science showing harm was published
 - Cisco projects 500 billion wireless connected objects by 2030
 - On average 59 per individual¹ on earth (will be higher in developed countries)

¹ The UN projects a population of 8.5 billion people by 2030;
<https://www.un.org/sustainabledevelopment/blog/2015/07/un-projects-world-population-to-reach-8-5-billion-by-2030-driven-by-growth-in-developing-countries/>

My Industry has lost the public's trust

- Lloyd's of London and Swiss Re have identified EMR as emerging risks
- 10K reports identify business risks with EMR (Verizon and British Telecom)
- Facebook's breach that impacted 80+ million consumers
- Similar to Yahoo's 2014 security breach impacting 500 million customers that wasn't reported until 2016
- The \$35million fine may not impact the behaviour of companies with billions of dollars on their balance sheet.
- France's "Phonegate" that showed 90+% of phones exceed safety regulations

Challenging the business case of wireless solutions

Schoechle, Timothy, Re-Inventing Wires: The Future of Landlines and Networks, National Institute for Science, Law & Public Policy Washington, DC. (2018)

Wireless networks:

- Continue to be about 100 times slower than wired systems
- Are unreliable, more vulnerable to security and privacy problems and prone to both latency and delay issues
- Consume significant amounts of energy and are not sustainable
- Can leave people vulnerable in the event of a power grid failure
- Increase the points of vulnerability hundreds of thousands of times
- Significantly increase the amount of personal and business data at risk

My Industry's strategy

- If asked if the technology is safe, states "We meet Federal Guidelines (if used correctly)"
- Bury warnings inside devices or their manuals so they are legally protected
- Resist any actions that will slow the deployment/acceptance of new technology
- Pre-emptively introduce legislation that will streamline the installation of new technology (5G)
- Constipate the regulation process with industry funded studies that are inconclusive or fail to show harm
- Continue to take advantage of the current process of introducing new technology and letting others monitor for damage

Government needs to take a proactive approach

- The penetration of wireless devices is unprecedented in history and will escalate
- Government regulation must break the current paradigm of introducing new technology and then monitoring for damage
- Pass HB522 to understand the consequences of an unmonitored 5G deployment
 - Investigate, monitor and regulate the cumulative effects of 59 devices per person
 - Challenge/Encourage industry to explore and develop safer alternatives
 - Test the technology before it is released to the market
 - Employ and develop alternatives and maintain spaces for individuals who are Electrosensitive

(Appendix):Manufacturers should

For devices

- Post visible warnings of potential harm on all devices
 - Orange, prominent in Europe and Africa, offers advice on the safe use of cell phones.
- Make available in the North American market “on demand” technology for baby monitors, portable phones, etc. (models that are already in use in Europe)
- Improve use of devices for their safe use
 - Off-line mode in schools (hardware and software)
 - Ear bud ease of use
 - Default settings to “off” for sharing or “low” for radiation power levels
 - Turn cell phone off or send warning if placed near the body

For installations

- Start with a wired approach to solutions vs. wireless
- Develop a mindset with developers, designers, installers to meet consumer demand with minimal radiation exposure
 - Smart meters on a point-to-point system vs. a wireless grid
 - Refrain from placing cell towers and antennae close to sensitive areas

Comparison of Utility Property Tax Applied to Different Types of Generation

This is admittedly an overly simplified analysis. The NH DRA explains how they value property for the Utility Property Tax here: <https://www.revenue.nh.gov/mun-prop/property/documents/appraising-utilities.pdf>. Cost is 1 of 3 approaches used. Cost is based on purchase (or replacement) cost less depreciation. The analysis below assumes all costs at original capital cost, although the results would be similar if all were depreciated on a straight-line over the same number of years, at the same age of original investment. The last column shows an approximation of the relative Utility Property Tax burden assuming equal value/kWh produced based on income method with equal weight to the two methods, a not uncommon way of using more than one valuation approach. The 3rd method is market value based on sales, which is less often used because the infrequency of arms-length market based sales of utility scale generation.

The approximate effect of using an income method of value, assuming all kWh are of = value is shown below with 50:50 weighting of cost and income methods with the last column showing resulting ratio of tax/kWh compared with natural gas CC:

Type of Generation	Capital Cost/MW	Tax Rate /\$1,000	Tax/MW	Ave. Cap. Factor	Ave. MWh/yr.	8760	Tax/MWh	Cost/kWh Compared w/nat. gas CC	relative tax/kWh = + 2 = + 1 2 1
Nat. Gas Combined Cycle (CC)	1,091,000	\$ 6.60	\$ 7,201	53%	4,643		\$ 1.55	1	1 2 1
Solar -- fixed tilt	2,316,000	\$ 6.60	\$ 15,286	15%	1,314		\$ 11.63	7.5	X + 1 9 4.3
Solar -- tracking 1 axis	2,471,000	\$ 6.60	\$ 16,309	18%	1,577		\$ 10.34	6.7	X + 1 8 3.8
Wind	2,510,000	\$ 6.60	\$ 16,566	35%	3,066		\$ 5.40	3.5	X + 1 4 2.2
Battery Storage	2,201,000	\$ 6.60	\$ 14,527	11%	964		\$ 15.08	9.7	X + 1 11 5.4
Conventional Hydropower	1,904,000	\$ 6.60	\$ 12,566	40%	3,504		\$ 3.59	2.3	X + 1 3 1.7

Results if distributed renewables are taxed at Statewide Education Property Tax

Solar -- fixed tilt	2,316,000	\$ 2.06	\$ 4,771	15%	1,314		\$ 3.63	2.3	X
Solar -- tracking 1 axis	2,471,000	\$ 2.06	\$ 5,090	18%	1,577		\$ 3.23	2.1	X
Wind	2,510,000	\$ 2.06	\$ 5,171	35%	3,066		\$ 1.69	1.1	X
Battery Storage	2,201,000	\$ 2.06	\$ 4,534	11%	964		\$ 4.71	3.0	X

Capital Cost is from EIA for New England region: https://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf

Average Capacity Factor is from ISO-NE 5 year averages from NERC (for New England) and educated guesstimates (because NERC doesn't separately estimate for solar, battery, and wind). The battery estimated 11% capacity factor is for one round trip per day with a Tesla battery discharged at the daily rate proposed in Liberty's battery pilot.

<https://www.revenue.nh.gov/mun-prop/property/documents/appraising-utilities.pdf>

https://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf

Bill as Introduced

HB 522 - AS INTRODUCED

2019 SESSION

19-0261
05/01

HOUSE BILL

522

AN ACT establishing a commission to study the environmental and health effects of evolving 5G technology.

SPONSORS: Rep. Abrami, Rock. 19; Sen. Sherman, Dist 24

COMMITTEE: Science, Technology and Energy

ANALYSIS

This bill establishes a commission to study the environmental and health effects of evolving 5G technology.

.....

Explanation: Matter added to current law appears in *bold italics*.
 Matter removed from current law appears ~~[in brackets and struckthrough.]~~
 Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Nineteen

AN ACT establishing a commission to study the environmental and health effects of evolving 5G technology.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 1 New Subdivision; Commission to Study the Environmental and Health Effects of Evolving 5G
2 Technology. Amend RSA 12-K by inserting after section 11 the following new subdivision:

3 Commission to Study the Environmental and Health Effects of Evolving 5G Technology

4 12-K:12 Commission Established. There is established a commission to study the
5 environmental and health effects of evolving 5G technology, which includes the use of earlier
6 generation technologies. Fifth generation, or 5G, wireless technology is intended to greatly increase
7 device capability and connectivity but also may pose significant risks to humans, animals, and the
8 environment due to increased radiofrequency radiation exposure. The purpose of the study is to
9 examine the advantages and risks associated with 5G technology, with a focus on its environmental
10 impact and potential health effects, particularly on children, fetuses, the elderly, and those with
11 existing health compromises.

12 12-K:13 Membership.

13 I. The members of the commission shall be as follows:

14 (a) Three members of the house of representatives, including one member from the
15 house science, technology, and energy committee, and one member from the health, human services
16 and elderly affairs committee, appointed by the speaker of the house of representatives.

17 (b) Two members of the senate, appointed by the president of the senate.

18 (c) A member of the public, appointed by the governor.

19 (d) The attorney general, or designee.

20 (e) Two members of the New Hampshire High Technology Council, appointed by the
21 council.

22 (f) One member representing the Business and Industry Association, appointed by the
23 association.

24 (g) One member of the New Hampshire Medical Society who specializes in
25 environmental medicine and is familiar with electromagnetic radiation, appointed by the society.

26 (h) One member representing the university system of New Hampshire knowledgeable
27 in radiofrequency radiation, appointed by the chancellor.

28 (i) One member of the cell phone/wireless technology industry, appointed by the
29 president of the senate.

30 (j) The commissioner of the department of health and human services, or designee.

1 (k) One public member with expertise in the biological effects of radiofrequency
2 radiation, appointed by the speaker of the house of representatives.

3 II. Legislative members of the commission shall receive mileage at the legislative rate when
4 attending to the duties of the commission.

5 III. The members of the commission shall elect a chairperson from among the members.
6 The first meeting of the commission shall be called by the first-named house member. The first
7 meeting of the commission shall be held within 45 days of the effective date of this section. Seven
8 members of the commission shall constitute a quorum.

9 12-K:14 Duties and Reporting Requirement.

10 I. The commission shall:

11 (a) Examine the health and environmental impacts from radiofrequency (RF) radiation
12 emitted from the waves in the 30-300 gigahertz(GHZ) range of the electromagnetic spectrum, which
13 falls somewhere between microwaves and infrared waves, and which are required with the rollout
14 of 5G technology.

15 (b) Assess the health and environmental impacts of 5G technology, which requires
16 small cell towers to be placed at a distance of 250 meters from each other at telephone pole height
17 from the ground and will operate in conjunction with the 3G and 4G technology infrastructure.

18 (c) Receive testimony from the scientific community including but not limited to
19 physicists and electrical engineers, the medical community including but not limited to cellular
20 experts and oncologists, the wireless technology industry including but not limited to cell phone
21 businesses and businesses working on the development autonomous vehicles which will rely on 5G
22 technology, as well as other organizations and members of the public with an interest in 5G
23 technology.

24 (d) Consider the following questions and the impact on New Hampshire citizens,
25 municipalities, and state government of:

26 (1) Why the insurance industry recognizes wireless radiation as a leading risk and
27 has placed exclusions in their policies not covering damages caused by the pathological properties of
28 electromagnetic radiation?

29 (2) Why do cell phone manufacturers have in the legal section within the devise
30 saying keep the phone at least 5mm from the body?

31 (3) Why have 1,000s of peer-reviewed studies, including the recently published U.S.
32 Toxicology Program 16-year \$30 million study, that are showing a wide-range of statistically
33 significant DNA damage, brain and heart tumors, infertility, and so many other ailments, being
34 ignored by the Federal Communication Commission (FCC)?

35 (4) Why are the FCC-sanctioned guidelines for public exposure to wireless radiation
36 based only on the thermal effect on the temperature of the skin and do not account for the non-
37 thermal, non-ionizing, biological effects of wireless radiation?

38 (5) Why are the FCC radiofrequency exposure limits set for the United States 100

1 times higher than countries like Russia, China, Italy, Switzerland, and most of Eastern Europe?

2 (6) Why did the World Health Organization (WHO) signify that wireless radiation is
3 a Group B Possibly Carcinogenic to Humans category, a group that includes lead, thalidomide, and
4 others, and why are some experts who sat on the WHO committee in 2011 now calling for it to be
5 placed in the Group 1, which are known carcinogens, and why is such information being ignored by
6 the FCC?

7 (7) Why have more than 220 of the worlds leading scientists signed an appeal to the
8 WHO and the United Nations to protect public health from wireless radiation and nothing has been
9 done?

10 (8) Why have the cumulative biological damaging effects of ever-growing numbers
11 of pulse signals riding on the back of the electromagnetic sine waves not been explored, especially
12 as the world embraces the Internet of Things, meaning all devices being connected by
13 electromagnetic waves, and the exploration of the number of such pulse signals that will be created
14 by implementation of 5G technology?

15 II. The commission shall prepare and publish an interim and final report of its findings and
16 recommendations. The reports shall:

17 (a) Outline the advantages of, and risks associated with, 5G technology running in
18 conjunction with the 3G and 4G technology infrastructure.

19 (b) Develop a strategy, if deemed necessary, to limit RF radiation exposure from 5G or
20 lesser generation technology relying upon electromagnetic waves.

21 (c) Include a public policy statement on 5G wireless systems, which either declares the
22 technology safe or outlines actions required to protect the health of its citizens and environment.

23 (d) Consider alternatives to 5G technology that will accelerate information flow speeds
24 and volumes without the use of electromagnetic waves that emit high levels of radiation.

25 (e) Provide any recommendations for proposed legislation developed by the commission.

26 III. The commission shall submit the interim report required under paragraph II to the
27 speaker of the house of representatives, the president of the senate, the house clerk, the senate
28 clerk, the governor, and the state library on or before November 1, 2019, and shall submit the final
29 report on or before November 1, 2020.

30 2 Repeal. RSA 12-K:12 - 12-K:14 and the subdivision heading preceeding RSA 12-K:12, relative
31 to commission to study the environmental and health effects of the evolving 5G technology, are
32 repealed.

33 3 Effective Date.

34 I. Section 2 of this act shall take effect November 1, 2020.

35 II. The remainder of this act shall take effect upon its passage.