

**TOWN OF TUFTONBORO
PLANNING BOARD
June 3, 2021
DRAFT MINUTES**

Members Present: Matt Young, Chairman, Gary Qua, Vice-Chairman, Bill Marcussen, Selectmen's Representative, Carol Bush, Kate Nesbit, Tony Triolo, Members, George Maidhof, Alternate.

Member Absent: Laureen Hadley, Member.

Staff Present: Lee Ann Hendrickson, Administrative Secretary.

Chairman Young opened the meeting at 7:00 PM at the Tuftonboro Town House.

It was moved by Tony Triolo and seconded Kate Nesbit to appoint George Maidhof, Alternate, to sit in for Laureen Hadley, Member. All members voted in favor. The motion passed.

I. Public Comment
None.

II. Approval of Minutes
May 6, 2021
Correction: Page 4, 11th paragraph; insert "not in" prior to "secondary"

It was moved by Tony Triolo and seconded by Bill Marcussen to approve the Tuftonboro Planning Board May 6, 2021 minutes as amended. All members voted in favor. The motion passed.

May 20, 2021

It was moved by Gary Qua and seconded by Tony Triolo to approve the Tuftonboro Planning Board May 20, 2021 minutes as submitted. All members voted in favor. The motion passed.

III. Public Hearing
Verizon Wireless and James & Barbara Duncan
Tax Map #50-2-17
Site Plan Review; Telecommunications Facility

Kate Nesbit recused herself stating that she is an abutter.

Scott Anderson, Verrill Dana, LLP, stated Verizon Wireless is proposing a 130' tower on James and Barbara Duncan's property located at 20 Eaglemere Road. He stated the proposal is low impact to the site and would be regulated by the FCC. He noted the maximum energy level is 2.14% (for a 130' tower) and at the property line the level is 1.5%. He stated the Board requested the applicant to review the Abenaki Tower site; noting the site is at a very low elevation and is located too far north to meet coverage objectives therefore, the site is not an adequate alternative site. He reviewed the collective sound impact (tower is designed to accommodate three additional carriers); noting modeling for all potential carriers on the tower showed it was under 50 decibels and therefore, meets the sound requirements of the ordinance. He stated the plan was amended to include a gate at the entrance. He noted a waiver for stormwater calculations was originally requested however, a stormwater assessment was done therefore the waiver is no longer necessary. He stated the tower site itself consists of crushed gravel and as a result of mitigation the stormwater would be minimized with no runoff to the abutting property. He stated a waiver for soils data and traffic analysis was

submitted. He stated following the construction of the site a technician would be at the site twice (or less) per month.

Matt Young questioned the construction of the site.

Scott Anderson stated a concrete foundation is delivered in sections. He stated the access road would be improved and designed for construction vehicles.

Matt Young confirmed the existing condition of the road is sufficient for construction vehicles and noted that if the road is damaged the applicant would be responsible to repair the road.

Gary Qua asked if the material would be flown in by a helicopter.

Scott Anderson replied no, the material would be delivered by a truck.

Gary Qua confirmed the base of the foundation is concrete.

Matt Young stated the Board would require a bond if the application is approved.

Gary Qua confirmed a wooden gate is proposed and the drive would be 12' with crushed stone and underground utilities.

Scott Anderson confirmed there would be a perimeter fence around the equipment and the gate would be locked.

Gary Qua asked if there are sensors if someone gets inside the fencing.

Scott Anderson replied there are no security sensors.

Carol Bush questioned "Keep Out" signage posted at the site.

Scott Anderson stated the signs would be placed on the fenced area.

Carol Bush questioned the rate of vandalism.

Scott Anderson stated he has not heard of any vandalism to a tower site in the past 13 years.

Matt Young confirmed that if there is a maximum number of carriers on the tower at max capacity that the level is 2.14% of the Federal regulations allowed.

Scott Anderson replied no, the 2.14% at 130' is Verizon Wireless only and is 1.5% at the property line.

Matt Young questioned the estimate for the percentage with the maximum number of carriers on the tower.

Oscar Swarez replied 15-20% at the tower.

Scott Anderson stated the percentage is lower at the property line.

Bill Marcussen questioned the maximum level if the tower is 108'.

Scott Anderson replied 2.3%.

Kate Nesbit, Cross Neck Road, asked if the applicant is permitting for 4G.

Scott Anderson replied yes.

Kate Nesbit asked if the applicant has to come back to the Board if it changes to 5G.

Scott Anderson replied yes, because the antennas will have to change; noting the request before the Board is for only one antenna.

Matt Young asked how often antennae are changed.

Brian Ross replied every 2-3 years.

Ivan Pagacik stated he conducted the peer review on the application and reviewed his findings, report, and coverage maps (information can be found in the file). He confirmed gaps in coverage as identified by the applicant.

Matt Young asked Mr. Pagacik to review his background and credentials.

Ivan Pagacik reviewed such.

Matt Young confirmed with Mr. Pagacik that the 2.14% noted by the applicant is typical and not abnormal.

Ivan Pagacik stated the Board could request a Power Density Study once the site is constructed.

Scott Anderson stated he agrees with Mr. Pagacik's assessment.

The Board, Scott Anderson and Ivan Pagacik reviewed the coverage maps and discussed such.

Matt Young asked if 128' is important for colocation.

Ivan Pagacik replied yes; noting there is a 10' separation between carriers therefore, the lower the tower the less amount of available space for additional carriers. He stated there is more available space on a 128' tower as opposed to a 108' tower.

Gary Qua asked if a 128' tower was taken into consideration with other tower locations.

Scott Anderson stated the tower is designed to hold three bands beneath Verizon Wireless.

Matt Young read the following correspondence/emails into the record, see attached; Julie Tryder, Dusty Davies, Kathleen and Albert Sciarappa, Halie and Scott Corning, Fredericka Hayes, Pamela Thayer, Steve Davis, Sarah Pelletier, Zach Graves, William Pottle, Karen Brewster and Gaylen Phillips and Ken Hoover.

Ken Hoover, Tuftonboro Neck Road, confirmed there are a total of four towers in Tuftonboro.

Matt Young stated the application is for a tower located on Eaglemere Road and are proposing additional towers at Sodom Road and Middle Road.

Ken Hoover asked if the installation of a tower could be stopped if there is a risk to endangered species.

Scott Anderson stated the FCC requires an endangered species, tribal and archeological study on the site; noting there were no resources found on site and therefore, the applicant can proceed with the proposal.

Matt Young asked Mr. Pagacik if Mr. Anderson's comments are accurate.

Ivan Pagacik replied yes.

Ken Hoover questioned the purpose of the RF engineer's study.

Scott Anderson stated the purpose is to ensure the site will operate within the allowable limits.

Ken Hoover requested that decay figures be defined.

Scott Anderson stated there are no health professionals at the meeting to speak to such. He stated the Federal government developed standards regarding health impact. He stated the site at 131' is operating well below the federal standards; noting the system has been designed to get the benefits of technology and do such in a safe manner.

Ken Hoover asked Mr. Pagacik if he has information on how it decays in 100' increments.

Ivan Pagacik stated such is not linear rather, exponential and that as you move away from the tower the signal drops. He noted the calculations are noted in the density study. He stated different frequencies have different wavelengths that are absorbed.

Matt Young stated the government has a standard and the applicant has an obligation to meet that standard which has been reviewed by a third-party engineer (Ivan Pagacik).

Ken Hoover asked when Verizon Wireless would be upgrading to 5G on the tower.

Scott Anderson stated he does not know.

Ken Hoover asked if there are any health studies on a 5G tower that state it is safe.

Ivan Pagacik stated 5G is typically a higher range frequency intended to have higher speed in a short area.

Ken Hoover questioned the likelihood of other carriers increasing to a higher frequency and the likelihood of Verizon and other carriers bump up their emissions.

Matt Young stated the Board will discuss such.

Kate Nesbit asked if the Board could deny the application if it meets all the criteria.

Matt Young replied no and reviewed the Dartmouth v. Hanover court case. He noted the request does not require a variance – a telecommunications facility is permitted in the Town of Tuftonboro.

Ken Hoover requested a copy of the federal law.

Scott Anderson stated such is available on the FCC website.

Janice Van Fleet, 79 Tuftonboro Neck Road, asked if the height of the tower is to defer Verizon Wireless costs by adding carriers. She asked how the towers are powered (underground or above ground) and questioned noise and blinking lights on the tower.

Matt Young stated power is from Eaglemere Road.

Brian Ross stated the electric includes 600-amp single phase and noted there is a small transformer outside of the compound. He stated each carrier is allowed 200 amps.

Scott Anderson stated there is no noise associated with the lines.

Steve Davis, Eaglemere Road, stated he is a Verizon Wireless customer and recognizes that coverage is not what it could be. He stated his concern is the visual pollution of the tower and requested the tower to be 108'. He requested the tower look more like a tree.

Ken Hoover stated he is concerned about property values and health issues associated with the proposal. He stated he also shares Mr. Davis' concern.

Christie Sarles, 56 Eaglemere Road, stated there are eagles that nest in the area and questioned the procedure if an eagle builds a nest on the tower.

Brian Ross stated eagles often nest between April – October; noting that no work can be done on the tower during that time.

Bruce Thayer, Tuftonboro Neck Road, stated that there are no pictures on the wall at the Town House that depict cell towers.

It was moved by Tony Triolo and seconded by Carol Bush to close the public hearing. All members voted in favor. The motion passed.

Matt Young asked the Board if they believe the 200' of underground utilities is adequate.

Bill Marcussen replied yes if the objective is to maintain the character of the neighborhood.

The Board agreed.

Matt Young stated the applicant submitted stormwater calculations and a sound study.

Bill Marcussen stated the calculations presented do not exceed federal regulations and noted the Board could require a Power Density Study as a condition of approval.

The Board discussed the design of the tower and agreed to include as a condition of approval the construction of a Monopine tower.

Matt Young requested motions to address the waiver requests and noted a condition of approval will include the request for a written waiver request to increase the height of the tower to 130'.

It was moved by Tony Triolo and seconded by Carol Bush to grant a waiver for Section 4.2.4.J. All members voted in favor. The motion passed.

It was moved by Tony Triolo and seconded by Carol Bush to grant a waiver for Section 4.4.3.M. All members voted in favor. The motion passed.

It was moved by Tony Triolo and seconded by Gary Qua to grant a waiver for to increase the tower height to 130'. All members voted in favor. The motion passed.

Matt Young reviewed the following conditions of approval;

1. Utilities shall be underground for 200' off of Eaglemere Road.
2. An aesthetically pleasing (wood or wood synthetic material, rustic and fitting to the neighborhood) gate shall be installed.
3. A Knox Box shall be installed at the site.
4. The top of the tower shall be reserved for Town emergency services, if desired.
5. The applicant shall return to the Planning Board for an amendment to the Site Plan approval for each additional carrier or any addition of antennae.
6. The applicant shall return to the Planning Board for Site Plan approval for any substantial increase in equipment at the base of the tower.
7. The applicant shall submit a bond for the removal of the tower.
8. This approval shall be subject to all local, State and Federal approvals and any conditions attached thereto.

9. The applicant shall obtain Fire Department signoff.
10. The applicant shall install a Monopine tower and shall work with two Planning Board members regarding the start of the placement of the trees on the tower.
11. The applicant shall submit a written waiver request to increase the height of the tower to 130'.
12. The applicant shall submit a Power Density Study upon completion of the construction of the tower.
13. The applicant is responsible for all damage to Town roads caused by construction vehicles.

Carol Bush and Tony Triolo volunteered to assist with condition #9.

It was moved by Tony Triolo and seconded by Carol Bush to approve the Verizon Wireless Site Plan Review application for 20 Eglemere Road, Tax Map #50-2-17, subject to the recommended conditions of approval. All members voted in favor. The motion passed.

IV. Other Business

None.

V. Public Comment

No public present.

It was moved by Gary Qua and seconded by Carol Bush to adjourn the June 3, 2021 Tuftonboro Planning Board meeting. All members voted in favor. The motion passed.

There being no further business before the Board, the meeting adjourned at 9:54 PM.

Respectfully Submitted,

Lee Ann Hendrickson

Lee Ann Hendrickson



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

FW: Cell tower

1 message

Cathy Pounder <selectmen@tuftonboro.org>

Mon, Apr 12, 2021 at 10:04 AM

To: "Lee Ann Hendrickson (hendrickson.leeann@gmail.com)" <hendrickson.leeann@gmail.com>

FYI

Cathy Pounder
Administrative Secretary
Town of Tuftonboro
240 Middle Road
P.O. Box 98
Ctr. Tuftonboro, NH 03816
(603) 569-4539 X10
selectmen@tuftonboro.org

-----Original Message-----

From: Julie [REDACTED]
Sent: Sunday, April 11, 2021 8:49 PM
To: Cathy Pounder <selectmen@tuftonboro.org>
Subject: Cell tower

CAUTION: This email originated from an external email. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Selectmen,

This email is to express my strong, very strong support for a cell tower to enhance the cell phone service in the area. Recently, it seems to have been worse than ever. Moreover, we have all learned, as a result of this pandemic, how essential different forms of connectivity to the outside world is. Thank you, Julie Tryder

9 Mirror Lake Dr
Mirror Lake
Sent from my iPhone



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

FW: Internet service

Cathy Pounder <selectmen@tuftonboro.org>

Mon, Apr 12, 2021 at 10:04 AM

To: "Lee Ann Hendrickson (hendrickson.leeann@gmail.com)" <hendrickson.leeann@gmail.com>

FYI

Cathy Pounder
Administrative Secretary
Town of Tuftonboro
240 Middle Road
P.O. Box 98
Ctr. Tuftonboro, NH 03816
(603) 569-4539 X10
selectmen@tuftonboro.org

-----Original Message-----

From: Dusty Davies [REDACTED]
Sent: Sunday, April 11, 2021 8:36 PM
To: Cathy Pounder <selectmen@tuftonboro.org>
Subject: Internet service

CAUTION: This email originated from an external email. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Selectmen,

This email is to express my strong, very strong support for a cell tower to enhance the cell phone service in the area. Recently, it seems to have been worse than ever. Moreover, we have all learned, as a result of this pandemic, how essential different forms of connectivity to the outside world is. Thank you, Dusty Davies Sent from my iPhone

April 4, 2021

Dear Tuftonboro Selectmen,

First, I'd like to thank each of you for your hard work and steady support of the Town of Tuftonboro. It's a great town and your contributions to continuing to keeping the town protected yet moving forward are so important.

Please accept this letter as evidence of support for adding a cell tower in Tuftonboro. I reside on Mirror Lake at 4 Chipmunk Lane and increasingly, I am doing more work from home. With dependence on Zoom and other platforms, especially for presentations, it is critical that my internet service be strong. It's not only frustrating and embarrassing to have an unstable connection during an important meeting, it hampers my ability to work. Most people I connect with around the country can no longer conceive of being in an area that does not have solid internet. Sometimes I work internationally and some of the smaller countries or more remote areas are not always stable. As a resident, I would find absolutely reliable connectivity very helpful.

I did happen to see exactly where the proposed tower could be placed off Tuftonboro Neck Road and believe that is a good spot where it will be mostly unseen and positioned to provide excellent service. I realize there are many factors to consider, but this upgrade is something that is critical for my household and helps move our town towards a positive future. It is my hope that you will facilitate the building of this tower. Please be in touch if I can address any questions or further explain my position.

Warm regards,

Kathleen and Albert Sciarappa
4 Chipmunk Lane
Tuftonboro, NH 03853
603-533-7412
kathleensciarappa@gmail.com



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

Opposition to proposed cell tower

1 message

Halie Corning [REDACTED]
To: myoung@melvinvillagemarina.com
Cc: hendrickson.leeann@gmail.com, Scott Corning [REDACTED]

Sun, Apr 18, 2021 at 10:45 AM

April 18, 2021

Dear Planning Board,

We request that this email be read into the minutes of the May 6, 2021 meeting.

We are writing to state opposition to the proposed cell tower at 20 Eaglemere Road. Our family (Buell/Corning) have been taxpayers on Eaglemere South (formerly also Eaglemere) since 1946.

Cell towers have only been around for less than 25 years. Their long-term effects on people are not known. Any effects from 5G tech, both short- or long-term are not known. Any technologies that are to come to our back yard and their effects on people are also unknown.

We value our property, our health and that of our children, grandchildren and generations to come.

This will also be an eyesore and may mar the gorgeous views from the lake forever.

Thank you for your consideration,

Halie and Scott Corning
15 Eaglemere South

May 6

To the Planning Board

For those of us, who have had property on the Neck, for well over a hundred years, we love the country, woods, wildlife, and dirt roads. This has been our past, and, hopefully our future.

The installation of a Cell Tower here, defies any words that could be used in Public.

Question

There are 3 "future plan" spaces shown within the 50'x50'.

* Does VERIZON get to decide what fills those spaces?

Or, does the Tuft. Plan. Board take part?

Thank you,
Frederick Hayes
1 South



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

Cell Tower

2 messages

Pamela Thayer [REDACTED]
To: "hendrickson.leeann@gmail.com" <hendrickson.leeann@gmail.com>

Thu, May 6, 2021 at 10:26 AM

As residents of Mirror Lake and having lived on Tuftonboro Neck for over thirty years, both my wife and I are expressing our strong opposition to the proposed cell tower on Tuftonboro Neck.

Bruce and Pam Thayer

Lee Ann <hendrickson.leeann@gmail.com>
To: Brian Ross <bross@structureconsulting.net>

Thu, May 6, 2021 at 10:27 AM

[Quoted text hidden]

5/19/2021

Gmail - [Tuftonboro NH] Verizon app for a cell tower on Eaglemere Rd (Sent by Steve Davis, Cuharo@aol.com)



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

[Tuftonboro NH] Verizon app for a cell tower on Eaglemere Rd (Sent by Steve Davis, Cuharo@aol.com)

Contact form at Tuftonboro NH <cmsmailer@civicplus.com>

Mon, May 10, 2021 at 7:20 PM

Reply-To: [REDACTED]
To: lkeathley <hendrickson.leeann@gmail.com>

Hello lkeathley,

Steve Davis ([REDACTED]) has sent you a message via your contact form (<https://www.tuftonboro.org/user/113/contact>) at Tuftonboro NH.

If you don't want to receive such e-mails, you can change your settings at <https://www.tuftonboro.org/user/113/edit>.

Message:

Good morning Lee Ann,

Would you please forward this email to the members of the Board? Thank you.

Dear board members,

Given that the initial hearing was done virtual and we were unable to hear or participate in the proceedings due to technical issues, I decided to come in person for the continued hearing with my neighbor Christy Sarles to share my concerns about the proposed cell tower. However, as you know, the hearing was continued till May 20th. Unfortunately, I will be traveling and unable to attend this meeting. As such, I decided to send this email to you.

I have written two letters to the Town expressing my concerns about the height of the tower (130 feet) compared to the height of the tree canopy (66 feet). While I am no engineer, I highly doubt it is necessary to have the top of the tower be more than 60 feet above the tree line. The tower, as proposed, will be an incredible eyesore when someone is on the lake either in a boat or on a snowmobile. We really don't need an eyesore like the cell tower in Melvin Village Bay. Verizon's application showed many pictures of locations where the tower could not be seen but conveniently did not show any photos from just off the shore line. I find that omission very interesting at the least, and possibly disingenuous.

So I respectfully ask that the following conditions be placed on the tower if you are so inclined to approve it. First, please require that the maximum height be no more than 90 feet (that is still 30 feet above the tree line) and second, that the tower be designed to look like a tree by installing artificial limbs on it.

Thank you for considering this request.

Sincerely,

Steve Davis
49 Eaglemere Road
Tuftonboro

[REDACTED]

[Tuftonboro NH] Development Concerns (Sent by Sarah Pelletier, sh.heaney@gmail.com)

Contact form at Tuftonboro NH <cmsmailer@civicplus.com>

Fri 5/14/2021 7:38 PM

To: Planning Board <planningbd@tuftonboro.org>

CAUTION: This email originated from an external email. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Ikeathley,

Sarah Pelletier [REDACTED] has sent you a message via your contact form
(<https://www.tuftonboro.org/user/113/contact>) at Tuftonboro NH.

If you don't want to receive such e-mails, you can change your settings at <https://www.tuftonboro.org/user/113/edit>.

Message:

Hello, I wanted to express our concerns with the huge increase of new construction/housing developments going up in town... our small town is growing too much too fast and is quickly losing the rural character we love. It will soon stress our town resources (school, police, fire, plowing, etc) as well. Something needs to be done to slow down development and try to keep large tracts of land in tact and undeveloped.

Furthermore, with Spiderweb Gardens for sale I am particularly worried about the possibility of that becoming a development too. It's a historic property, abuts a watershed, and its fields and farmland are big part of our rural heritage. I hope it will be preserved and continued under new ownership - please don't let it become another subdivision.

Thank you



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

Cell Tower on Tuftonboro Neck Rd

2 messages

Zach Graves <[REDACTED]>
To: "hendrickson.leeann@gmail.com" <hendrickson.leeann@gmail.com>

Thu, Jun 3, 2021 at 12:10 PM

Please read this letter into the minutes at the meeting for Verizon putting in a 130ft cell tower.

While cell towers are important to have, this is not the location to place one. For one, our cell service isn't bad enough to have a need for a cell tower to constructed in the area. The studies for how cell towers are harmful to ones health while also lowering the property value in the area should be enough to deny this proposal. Think of the health risk you are bringing to our children and families living on this road. I want to keep my health in tact so I may one day see my children graduate high school, get married and meet my grandchildren. You should deny this proposal for the health and well-being at a minimum. Members on the panel, I have one question. Would you pass this proposal if it was going in your back yard and endangering the lives of your families?

Lee Ann <hendrickson.leeann@gmail.com>
To: Scott Anderson <sanderson@verrill-law.com>, Brian Ross <bross@structureconsulting.net>

Thu, Jun 3, 2021 at 12:11 PM

[Quoted text hidden]



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

Fwd: Cell tower construction on Tuftonboro Neck

1 message

William Pottle <wpottle@gmail.com>
To: hendrickson.leeann@gmail.com

Thu, Jun 3, 2021 at 11:43 AM

To Whom It May Concern:

I am the land owner of 33 Cross Neck Road, Mirror Lake, NH 03853. I am strongly opposed to construction of the cell tower for both health and property value reasons.

Thank you,
William Pottle

Lee Ann

From: Gaylen Phillips <gaylen.phillips@comcast.net>
Sent: Thursday, June 3, 2021 5:20 PM
To: hendrickson.leeann@gmail.com
Subject: Proposed cell tower in Mirror Lake

Dear Members of the Board,

We are unable to attend tonight's meeting; please read this email into the record.

We are opposed to the construction of the cell tower on Tuftonboro Neck. We purchased our property in July of 2020 at a price above appraised value. We did so because Tuftonboro Neck is a beautiful rural setting with a robust history of rising property values. A cell tower within sight of our home would jeopardize our investment because not only are cell towers unsightly, they are possibly associated with adverse health effects.

Thank you for listening to our concerns and we deeply appreciate your thoughtful consideration of this issue.

Respectfully,
Karin L Brewster and M. Gaylen Phillips
81 Tuftonboro Neck Road
Mirror Lake, NH 03853



Lee Ann Hendrickson <hendrickson.leeann@gmail.com>

Ken Hoover: Cell Tower questions for the Planning Board

1 message

Mon, May 17, 2021 at 10:31 AM

Reply-To: [REDACTED]
 To: "hendrickson.leeann@gmail.com" <hendrickson.leeann@gmail.com>

Good morning Lee Ann,

I ran into Gary Qua the other day and in a brief conversation raised the questions outlined below. Gary suggested that I email the following to you and ask that you forward it to all planning board members today (if possible) so they may have ample time before Thursdays meeting to consider the content.

I've copied the section below of the Verizon Wireless Site Plan application that raises some thoughts and questions for me.

Here's where I need help in my understanding.

It would seem to me that if the planning board exercised and act of will, ie to "permit an increase in new tower height up to 190 feet". (Highlighted below) this would constitute a variance or special exception. Does this show that the planning board have the capability of refusing the increase height of the tower?

(From the Verizon Wireless Site Plan application)

Sec. 13.4.4

Height Standards.

RESPONSE. Based on the tree canopy survey shown on sheet Z-3 of the site plan, the average tree height within 150 feet of the proposed tower is approximately 68 feet. Section 13.4.4(D) of the zoning ordinance provides that, as an initial standard, towers should be designed to be no higher than 20 feet above the average tree canopy. At 88 feet this facility would not provide sufficient coverage to address the inadequate coverage in this area.

Section 13.4.4(E) provides that the Board may permit an increase in new tower height up to 190 feet upon a showing that a substantially better design will result from such an increase. As noted in the RF report, the chosen height of 130 feet is necessary to provide adequate coverage. Further, as shown on the photo simulations attached at Appendix M, visual impacts from the 130 foot high tower are not unreasonable or significant.

Under the waiver provision of Section 10.1 of the Site Plan Review Ordinance, the proposed 130 height is consistent with these standards and promotes the public interest. This facility, working in conjunction with others proposed for the town, will dramatically increase wireless service for residents of Tuftonboro and visitors. No colocation opportunities exist for the proposed site, and an 88 foot height tower would not provide adequate service. At 130 feet, the proposed tower is significantly shorter than a standard 190 foot tower, and the photo simulations show that visual impacts are minor. Permitting Verizon Wireless to construct at 130 feet will meet the purpose and intent of the wireless ordinance—specifically, to allow carriers to improve service while respecting the need for responsible cell tower development. For these reasons we respectfully request that the Planning Board authorize a tower at 130 feet.

Further, as I try to increase my understanding of the planning boards ability to vote against this tower as it relates to NH state law, I confess my understanding and experience in these areas is very limited. So I when researching this area I talked with a friend who is on the planning board of a neighboring town and he wrote the following. I offer this with his permission.

"I was referring to granting a Variance by Zoning Boards of Adjustment (ZBA). Every town with a Zoning Ordinance has a Planning Board and a ZBA. These, along with the Conservation Commission, are the Land Use Boards in NH towns.

So, to grant a Variance from any requirement of a Zoning Ordinance, the ZBA must conclude that all of five requirements are met. One of the five requirements is that the value of surrounding properties is not diminished. This requirement is also

used commonly for Special Exceptions (a variation on the same theme as a Variance).

So, my logic is that if the ZBA is always held to a standard that requires that granting a Variance or Special Exception must not diminish surrounding property values, and this is a well held and well understood tenet of land use, then a Conditional Use Permit or a Site Application in front of the Planning Board should be held to a similar standard. If it is a bad idea to grant Variances or Special Exceptions that diminish surrounding property values, should a cell tower that clearly *will* diminish surrounding property values, be approved? Should this standard not apply to a Planning Board decision if it clearly applies to ZBA decisions?

There are very likely plots of land somewhere in Tuftonboro that a cell tower could be placed on and not disturb the neighbors or reduce surrounding property values. So, why does this site need to be approved when it will impact the neighbors, eliminate your family's dreams of retirement homes, and lower your property values? Seems contrary to all that we hold dear in land use decisions here in NH"

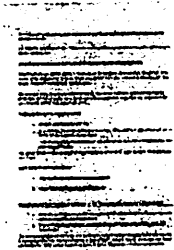
Please read and consider carefully. I will look forward to Thursday's meeting.

I've attached 2 articles that conclusively substantiate how cell towers diminish the property value.

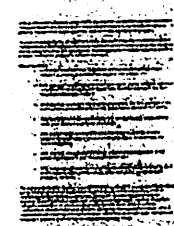
Thank You,
Ken Hoover
603-998-2647

PS
I'm sending a second email that will have an article attached that address the negative health conditions caused by cell towers.

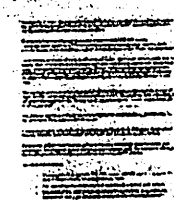
11 attachments



REAL ESTATE VALUE A PG1.jpeg
215K



REAL ESTATE VALUE A PG2.jpeg
246K



REAL ESTATE VALUE A PG3.jpeg
223K

REAL ESTATE VALUE B PG1.jpeg
159K

From: <https://scientists4wiredtech.com/what-are-4g-5g/cell-tower-installation-plans-lower-property-values/>

On 9/12/18, Redfin (844-759-7732) confirmed the following sales information for 503 Mariano Drive, Sonoma, CA.

<https://www.redfin.com/CA/Sonoma/503-Mariano-Dr-95476/home/2501530>

After a homebuyer of 503 Mariano Drive learned of the plans of a so-called "Small Cell" Cell Tower to be installed 28' from his house next to the home they selected in Sonoma, CA, the buyer canceled escrow and walked away.

Six months later, the house still hasn't sold; the owner has now reduced his price by \$150,000. Similar property value losses are occurring in other areas. See the targeted utility pole next to the For Sale sign in the photo.

Redfin confirmed the following details:

- Escrow established in late May
- A week later, the buyer pulled out of escrow, citing Verizon's plans for a cell phone tower on the pole next to the house
- Two or three price reductions later, the latest in late Aug, the asking price has been reduced to \$750,000

We talked briefly to the owner of 503 Mariano Drive, on 6/16/16 while we were video taping at his house.

More Sonoma information here:

- <http://mystreetmychoice.com/sonoma.html>
- <http://scientists4wiredtech.com/sonoma/>

Neighborhood Cell Towers & Antennas — Do They Impact a Property's Desirability?

- <https://www.businesswire.com/news/home/20140703005726/en/Survey-National-Institute-Science-Law-Public-Policy>
- <http://electromagnetichealth.org/electromagnetic-health-blog/survey-property-desirability/>

The National Institute for Science, Law and Public Policy's survey "Neighborhood Cell Towers & Antennas—Do They Impact a Property's Desirability?" initiated June 2, 2014, has now been completed by 1,000 respondents as of June 28, 2014. The survey, which circulated online

through email and social networking sites, in both the U.S. and abroad, sought to determine if nearby cell towers and antennas, or wireless antennas placed on top of or on the side of a building, would impact a home buyer's or renter's interest in a real estate property.

The overwhelming majority of respondents (94%) reported that cell towers and antennas in a neighborhood or on a building would impact interest in a property and the price they would be willing to pay for it. And 79% said under no circumstances would they ever purchase or rent a property within a few blocks of a cell tower or antenna.

Study Results

- 94% said a nearby cell tower or group of antennas would negatively impact interest in a property or the price they would be willing to pay for it.
- 94% said a cell tower or group of antennas on top of, or attached to, an apartment building would negatively impact interest in the apartment building or the price they would be willing to pay for it.
- 95% said they would opt to buy or rent a property that had zero antennas on the building over a comparable property that had several antennas on the building.
- 79% said under no circumstances would they ever purchase or rent a property within a few blocks of a cell tower or antennas.
- 88% said that under no circumstances would they ever purchase or rent a property with a cell tower or group of antennas on top of, or attached to, the apartment building.
- 89% said they were generally concerned about the increasing number of cell towers and antennas in their residential neighborhood.
- 57% had previously experienced cognitive effects from radiation emitted by a cell phone, wireless router, portable phone, utility smart meter, or neighborhood antenna or cell tower

The National Institute for Science, Law and Public Policy (NISLAPP) was curious if respondents had previous experience with physical or cognitive effects of wireless radiation, or if their concern about neighborhood antennas was unrelated to personal experience with the radiation. Of the 1,000 respondents, 57% had previously experienced cognitive effects from radiation emitted by a cell phone, wireless router, portable phone, utility smart meter, or neighborhood antenna or cell tower, and 43% had not experienced cognitive effects. 63% of respondents had previously experienced physical effects from these devices or neighborhood towers and antennas and 37% had not experienced physical effects.

The majority of respondents provided contact information indicating they would like to receive the results of this survey or news related to the possible connection between neighborhood cell towers and antennas and real estate decisions.

Comments from real estate brokers who completed the NISLAPP survey:

"I am a real estate broker in NYC. I sold a townhouse that had a cell tower attached. Many potential buyers chose to avoid purchasing the property because of it. There was a long lease."

"I own several properties in Santa Fe, NM and believe me, I have taken care not to buy near cell towers. Most of these are rental properties and I think I would have a harder time renting those units... were a cell tower or antenna nearby. Though I have not noticed any negative health effects myself, I know many people are affected. And in addition, these antennas and towers are often extremely ugly—despite the attempt in our town of hiding them as chimneys or fake trees."

"We are home owners and real estate investors in Marin County and have been for the last 25 years. We own homes and apartment building here in Marin. We would not think of investing in real estate that would harm our tenants. All our properties are free of smart meters. Thank you for all of your work."

"I'm a realtor. I've never had a single complaint about cell phone antennae. Electric poles, on the other hand, are a huge problem for buyers."

A study on property price declines was completed by Sandy Bond, PhD of the New Zealand Property Institute, and Past President of the Pacific Rim Real Estate Society (PRRES).

The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods, was published in The Appraisal Journal of the Appraisal Institute in 2006. The Appraisal Institute is the largest global professional organization for appraisers with 91 chapters.

The study indicated that:

- Homebuyers would pay from 10%–19% less to over 20% less for a property if it were in close proximity to a cell phone base station.
- The 'opinion' survey results were then confirmed by a market sales analysis.
- The results of the sales analysis showed prices of properties were reduced by around 21% after a cell phone base station was built in the neighborhood."



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POWERLINES AND CELL ANTENNAS LOWER PROPERTY VALUES

Wall Street Journal: The Electrifying Factor Affecting Your Property's Value "Vacant lots adjacent to power lines sell for significantly less than equivalent property further away as homeowners shy away from unattractive views...A recent study in the Journal of Real Estate Research by College of Charleston assistant professors Chris Mothorpe and David Wyman, finds that vacant lots adjacent to high-voltage transmission lines sell for 45% less than equivalent lots not located near transmission lines. Non-adjacent lots still located within 1,000 feet of transmission lines sell at a discount of 18%."

Cell Tower Public Comment at Anne Arundel Board of Education



Research indicates that over 90% of home buyers and renters are less interested in properties near cell towers and would pay less for a property in close vicinity to cellular antennas. Documentation of a price drop up to 20% is found in multiple surveys and published articles as listed below:

The US Department of Housing and Urban Development (HUD) long considers cell towers as "Hazards and Nuisances."

See HUD webpage

"With regard to new FHA originations, the guide provides that 'the appraiser must indicate whether the dwelling or

related property improvements are located within the easement serving a high-voltage transmission line, radio/TV transmission tower, cell phone tower, microwave relay dish or tower, or satellite dish," which is radio, TV cable, etc.

"If the dwelling or related property improvement is located within such an easement, the DE Underwriter must obtain a letter from the owner or operator of the tower indicating that the dwelling and its related property improvements are not located within the tower's engineered fall distance in order to waive this requirement."

"If the dwelling and related property improvements are located outside the easement, the property is considered eligible and no further action is necessary. The appraiser, however, is instructed to note and comment on the effect of marketability resulting from the proximity to such site hazards and nuisances."

THE IMPACT OF OVERHEAD HIGH VOLTAGE TRANSMISSION TOWERS AND LINES ON ELIGIBILITY FOR FEDERAL HOUSING ADMINISTRATION (FHA) INSURED MORTGAGE PROGRAMS. COMMITTEE ON FINANCIAL SERVICES U.S. HOUSE OF REPRESENTATIVES

Once built. Cell towers can go up an additional 20 feet- without community consent.

Most people in the United States are unaware that once a tower is built, it can go up to 20 feet higher with no public process due to the passing of Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012. In other words, a 100 foot tower can be increased to 120 feet after it is constructed and the community will have no input. Communities are largely unaware of this law.

The California Association of Realtors' Property Sellers Questionnaire specifically "cell towers" listed on the disclosure form for sellers of real estate. The seller must note "neighborhood noise, nuisance or other problems from..." and includes cell towers and high voltage transmission lines on the long list problems. Click here to see the California Association of Realtors' Property Sellers Questionnaire (p. 3-4 under K. Neighborhood)

Scroll down this page for resources on property de-valuation.

Read the peer reviewed published science documenting the public health risk at this link.

The realtor industry has written several articles documenting the property devaluation after communication towers are built near property.

NATIONAL ASSOCIATION OF REALTORS® REFERENCES

National Association of REALTORS Magazine "Homeowners Complain About 'Ugly' 5G Boxes in Their Yards" January 27, 2021

- "Wireless companies are installing boxes in front of homes as part of their 5G network rollout. But homeowners aren't pleased, calling the chest freezer-sized boxes a big eyesore in their front yards."
- "The boxes supply power and data to 5G antennas that are placed on utility poles nearby. Homeowners in Houston have been voicing their ire over the "ugly" installations from Verizon. The company is launching its 5G network in that city, and is now headed to its suburbs to install 5G transmission boxes there."
- "Wireless companies do not need to get permission from homeowners before installing the boxes. They don't even need

to notify them beforehand because the boxes are installed on a public right-of-way. This land is owned by the county, even if it does appear in a person's front yard."

Houston Chronicle
@HoustonChron



Streamlined 5G buildout puts 'ground furniture' in Houston's front yards

"It's ugly: Verizon 5G data boxes appear without notice on Houston fr...
5G is touted as another disruptive technology, and Houston residents are finding that...
houstonchronicle.com

7:14 AM · Jan 22, 2021



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Letter to the FCC by the The National Association of REALTORS "5G Could Hurt Property Owners"

The National Association of REALTORS® and other real estate organizations are urging the Federal Communications Commission to heed caution and ensure that its proposal to expand high-speed 5G networks nationwide doesn't violate property owners' rights. Read the National Association of REALTORS® Letter

"A coalition of real estate groups, including NAR, the National Multifamily Housing Council, the National Apartment Association, and the Institute of Real Estate Management, among others, submitted a letter to the FCC expressing concern over its proposed rule regarding over-the-air reception devices. The coalition says the rule could make it easier for antennas and other devices to be placed on properties without the owners' consent. The coalition flagged these two potential issues:

- The rule could allow residential or commercial tenants to install a 5G small cell or other wireless infrastructure on a balcony or within a leased space to boost individual coverage and also transmit a signal to other customers of the telecom provider.
- The rule could allow a telecom carrier who already leases rooftop space from a property owner (for antennas or other equipment) to be able to attach a 5G small cell or other wireless infrastructure on that existing equipment without having to change their agreement with the property owner.
- "The real estate associations strongly support the deployment of broadband infrastructure of all kinds because apartment residents, commercial tenants, and their customers need and want the service that the infrastructure supports," the coalition wrote in its letter to the FCC. "With the rise of e-commerce, changes in how consumers access media, and our ever-increasing reliance on the Internet for basic functions, broadband connectivity is a top priority for the industry."
- "The real estate associations believe strongly the marketplace is working, and so we urge the Commission to avoid measures that could prove counterproductive, and thereby harm investment, constrain competition, and limit consumer access to broadband service. We are also concerned that inopportune regulation could raise the cost of developing multifamily housing and commercial real estate."

- <https://magazine.realtor/daily-news/2019/06/24/nar-fcc-s-5g-plan-could-hurt-property-owners>

Wireless Towers and Home Values: An Alternative Valuation Approach Using a Spatial Econometric Analysis (*Journal of Real Estate Finance & Economics*, May 1, 2018)

- For properties located within 0.72 kilometers of the closest tower, results reveal significant social welfare costs with values declining 2.46% on average, and up to 9.78% for homes within tower visibility range compared to homes outside tower visibility range; in aggregate, properties within the 0.72-kilometer band lose over \$24 million dollars.

"Impact of Communication Towers and Equipment on Nearby Property Values" prepared by Burgoyne Appraisal Company, March 7, 2017

- "In 32 years of experience as a Real Estate Appraiser specializing in detrimental conditions, takings, adverse impacts and right-of-way, I have found that aesthetics (or rather the adverse impact on aesthetics) of externalities routinely has the largest impact on property values. As a result, proximity to towers of all types (cell, wind turbine, and electric transmission) has an impact on property values. The same is true with all sorts of surface installations such as pump stations and communication equipment boxes. This would apply to new small cell and DAS equipment, although again, one would expect that the less intrusive the facility, the less significant the impact. Small cell and DAS installations can be unsightly, bulky, inconsistent, and even noisy"

The Cost of Convenience: Estimating the Impact of Communication Antennas on Residential Property Values (*Land Economics*, Feb. 2016)

- "Re a study on property in Kentucky- "The best estimate of the impact is that a property with a visible antenna located 1,000 feet away sells for 1.82% (\$3,342) less than a similar property located 4,500 feet away. The aggregate impact is \$10.0 million for properties located within 1,000 feet"

The Lo Down on Cell Towers, Neighborhood Values, and the Secretive Telecoms (link is external) (*The Dissident Voice*, Dec. 19, 2015)

Cell Towers: Not in My Back Yard (*Tedium Blog*, Aug. 5, 2015)

"Examining Invisible urban pollution and its effect on real estate value in New York City" - by William Gatl in New York Real Estate Journal September 2017

- "Understanding EMF values of business and residential locations is relatively new for the real estate industry. Cell phone towers bring extra tax revenue and better reception to a section of the city, but many are skeptical because of potential health risks and the impact on property values. Increasing numbers of people don't want to live near cell towers. In some areas with new towers, property values have decreased by up to 20%."

"Cell Tower Antennas Problematic for Buyers" published in REALTOR® Magazine:

- An overwhelming 94 percent of home buyers and renters surveyed by the National Institute for Science, Law & Public Policy (NISLAPP) say they are less interested and would pay less for a property located near a cell tower or antenna.
- The NISLAPP survey echoes the findings of a study by Sandy Bond of the New Zealand Property Institute and past president of the Pacific Rim Real Estate Society (PRRES). "The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods," which was published in *The Appraisal Journal* in 2006, found that buyers would pay as much as 20 percent less for a property near a cell tower or antenna.

2014 Survey by the National Institute for Science, Law and Public Policy (NISLAPP) in Washington, D.C., "Neighborhood Cell Towers & Antennas—Do They Impact a Property's Desirability?"

- Home buyers and renters are less interested in properties located near cell towers and antennas, as well as in properties where a cell tower or group of antennas are placed on top of or attached to a building. 94% said a nearby cell tower or group of antennas would negatively impact interest in a property or the price they would be willing to pay for it.
- Read the Press Release: Survey by the National Institute for Science, Law & Public Policy

Cell Towers as Public Nuisance: Lower Property Values and the Inability to Sell

- <https://magazine.realtor/daily-news/2019/06/24/nar-fcc-s-5g-plan-could-hurt-property-owners>

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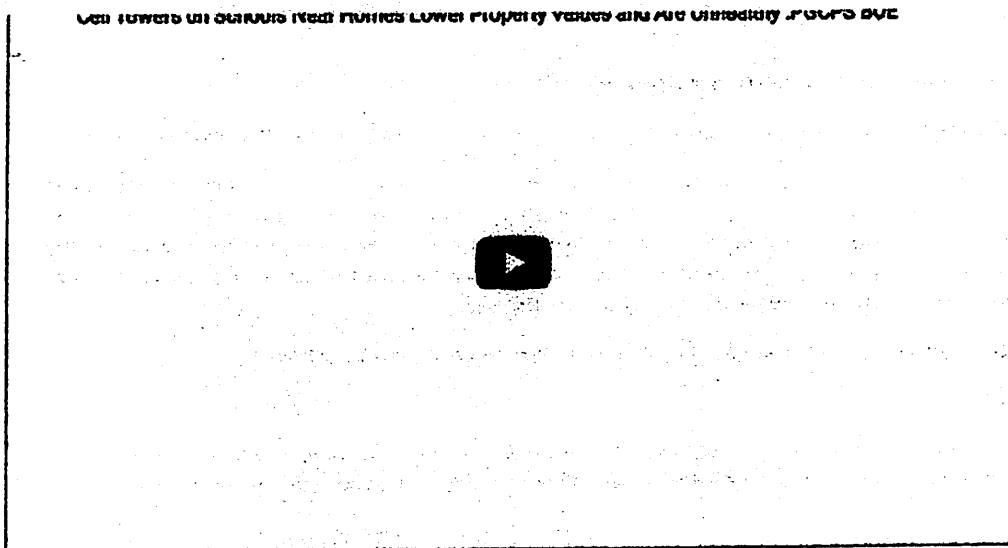
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- Read the Press Release: Survey by the National Institute for Science, Law & Public Policy

Cell Towers as Detrimental Externalities Affect Property Values and Desirability



Lawyers Write About the Property Value Drop.

Filings by Montgomery County Maryland a coalition that includes Ann Arbor, MI; Atlanta, GA; Berlin, MD; Berwyn Heights, MD; Boston, MA; Capitol Heights, MD; Cary, NC; Chesapeake Beach, MD; College Park, MD; Dallas, TX; DeSoto County, MS; Frederick, MD; Gaithersburg, MD; Greenbelt, MD; Havre de Grace, MD; LaPlata, MD; Laurel, MD; City of Los Angeles, CA; McAllen, TX; Monroe, MI; Montgomery County, MD; Myrtle Beach, SC; New Carrollton, MD; Perryville, MD; Pocomoke City, MD; Poolesville, MD; Portland, OR; Rockville, MD; Takoma Park, MD; University Park, MD; and Westminster, MD.

"many deployments of small cells could affect property values, with significant potential effect..."

-4/7/2017, Docket No. 16-421, Reply Comments of Smart Communities Siting Coalition which includes Montgomery County

"RE" Smart Communities and Special Districts Coalition - Ex Parte Submission: Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment, WT Docket No. 17-79: Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, WC Docket No. 17-84" Best Best and Krieger Letter to Ms. Marlene H. Dortch, Secretary Federal Communications Commission September 19, 2018

- "Further, the assumption that there is little to consider in a small cell application is belied by the definition the Commission adopts for "small wireless facility": while it justifies its rules based on the assumption that many small cells are the size of a pizza box, a pizza box is about 1/2 cu. ft. in size, while the Commission proposes to expedite permitting of equipment cabinets 28 cu. ft. in size - a stack of 56 pizza boxes - on front lawns throughout the country. Considering that the Smart Communities' prior filings show that the addition of facilities of this size diminish property values, it is strange for the Commission to assume that approval can be granted in the regulatory blink of an eye."
- "A good example lies in the Commission's discussion of undergrounding.⁶² The Commission at once appears to recognize that communities spend millions of dollars on undergrounding projects, and that allowing poles to go up in areas where poles have been taken down has significant impacts on aesthetics (not to mention property values)."

NEWS ARTICLES

New York Times: "A Pushback Against Cell Towers" August 2010

"If they have the opportunity to buy another home, they do."

She said cell antennas and towers near homes affected property values, adding, "You can see a buyer's dismay over the sight of a cell tower near a home just by their expression, even if they don't say anything."

The Times of India: "Property hit where signal masts rise" July 2012

"Property dealers across the city say that buildings which host mobile phone towers have 10-20 % less market value.

"Forget buying these properties, people don't want to take them on rent even, particularly when they have a choice. If a person is going to invest crores, why would he buy a property with a tower?" asks Pal. According to LK Thakkar, a Defence Colony-based property dealer, while the cost of the building which has the tower is relatively less, other buildings in the vicinity also get affected. "No one wants to buy a house within 100 metres of the building which has the tower. The rates for such properties drop by 10-20 %, and sometimes even more," said Thakkar, co-owner of A-One Associates."

"Do neighborhood cell towers impact property values?" Pennsylvania Association of Realtors,

2014

- A recent survey by the National Institute for Science, Law & Public Policy (NISLAPP) found that 94 percent of homebuyers are "less interested and would pay less" for a property located near a cell tower or antenna.

"Appraiser: Cell Tower Will Affect Property Values" New Jersey Patch on T Mobile Cell Tower

- "Properties that are approximately close to the tower will suffer substantial degradation to their value based on the nature of the unusual feature in the residential neighborhood."

Homeowners speak out against plans to build 2 cellphone towers in Liberty Township



STUDIES ON IMPACTS OF TOWERS

Sandy Bond, Ph.D., Ko-Kang Wang, "The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods," The Appraisal Journal, Summer 2005; Source: Goliath business content website.

- "Overall, respondents would pay from 10%- 19% less to over 20% less for a property if it were in close proximity to a CPBS."

"Cellular Phone Towers: Perceived impact on residents and property values" University of Auckland, paper presented at the Ninth Pacific-Rim Real Estate Society Conference, Brisbane, Australia, January 19-22, 2003; Source: Pacific Rim Real Estate Society website.

A Field Guide to Cell Towers, The National Association of Realtors

The effect of distance to cell phone towers on house prices S Bond, Appraisal Journal, Fall 2007, Source, Appraisal Journal (Found on page 22) See also Using GIS to Measure the Impact of Distance to Cell Phone Towers on House Prices in Florida

Florida State University Law Review Volume 24-1 Issue 1 Article 5 1996 The Power Line Dilemma: Compensation for Diminished Property Value Caused by Fear of Electromagnetic Fields

New Zealand Ministry for the Environment, "Appendix 5: The Impact of Cellphone Towers on Property Values" Source: New Zealand Ministry for the Environment website

Powers, turbines and transmission lines impacts on property value edited by Sally Bond Sally Sims and Peter Dent, 2014

The US Department of Housing and Urban Development (HUD) considers cell towers as "Hazards and Nuisances."

- HUD requires its certified appraisers to take the presence of nearby cell towers into consideration when determining the value of a single family residential property.
- HUD guidelines categorize cell towers with "hazards and nuisances." HUD prohibits FHA underwriting of mortgages for homes that are within the engineered fall zone of a cell tower.
- "The appraiser must indicate whether the dwelling or related property improvements is located within the easement serving a high-voltage transmission line, radio/TV transmission tower, cell phone tower, microwave relay dish or tower, or satellite dish (radio, TV cable, etc)."
- Read it here at the US Department of Housing and Urban Development.

Cell Towers are Discussed in the Written Testimony of Bobbi Borland Acting Branch Chief, HUD Santa Ana Homeownership Center Hearing before the Subcommittee on Insurance, Housing and Community Opportunity U.S. House of Representatives Committee on Financial Services on "The Impact of Overhead High Voltage Transmission Towers and Lines on Eligibility for Federal Housing Administration (FHA) Insured Mortgage Programs" Saturday, April 14, 2012

- With regard to the new FHA originations, the guide provides that: "The appraiser must indicate whether the dwelling or related property improvements are located within the easement serving a high-voltage transmission line, radio/TV transmission tower, cell phone tower, microwave relay dish or tower, or satellite dish (radio, TV cable, etc)."

ONCE BUILT, TOWERS COULD BE ALLOWED TO GO 20 FEET TALLER

Middle Class Tax Relief and Job Creation Act of 2012, Sec. 6409(a)

The Federal Communications Commission (FCC) has proposed and is currently considering rules to clarify and implement the requirements of Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012. Under section 6409(a), "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." The FCC considers eligible facilities' requests to include requests for carrier co-locations and for replacing existing antennas and ground equipment with larger antennas/equipment or more antennas/equipment.

The FCC has proposed, as part of these rules, applying a four-pronged test, which could lead to cell towers increasing in height by 20-plus feet beyond their approved construction heights.

Applying the test may also lead increases in the sizes of compounds, equipment cabinets and shelters, and hazardous materials used for back-up power supplies, beyond what was originally approved.

Under this test, a "substantial increase in the size of the tower" occurs if:

- 1) [t]he mounting of the proposed antenna on the tower would increase the existing height of the tower by more than 10%, or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to avoid interference with existing antennas; or
- 2) [t]he mounting of the proposed antenna would involve the installation of more than the standard number of new equipment cabinets for the technology involved, not to exceed four, or more than one new equipment shelter; or

3) (t)he mounting of the proposed antenna would involve adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to shelter the antenna from inclement weather or to connect the antenna to the tower via cable; or

4) (t)he mounting of the proposed antenna would involve excavation outside the current tower site, defined as the current boundaries of the leased or owned property surrounding the tower and any access or utility easements currently related to the site.

<http://apps.fcc.gov/efds/document/view?id=7521070994>

Liberty Township neighbors fight cell tower construction



Environmental Health Trust
info@ehtrust.org
P.O. Box 58
Teton Village WY 83025

Express mail:
7100 N Rachel Way Unit 6
Eagles Rest
Teton Village WY 83025

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> RADIATION EXPOSURE OR
CELL TOWERS

Cell Phone Towers

The widespread use of cell phones in recent decades has led to a large increase in the number of cell phone towers (also known as **base stations**) being placed in communities. These towers have electronic equipment and antennas that receive and transmit cell phone signals using [radiofrequency \(RF\) waves](#)¹.

Cell phone towers are still relatively new, and many people are understandably concerned about whether the RF waves they give off might possibly have health effects.

At this time, there's no strong evidence that exposure to RF waves from cell phone towers causes any noticeable health effects. However, this does not mean that the RF waves from cell phone towers have been proven to be absolutely safe. Most expert organizations agree that more research is needed to help clarify this, especially for any possible long-term effects.

How do cell phone towers expose people to RF waves?

Cell phone base stations can be free-standing towers or mounted on existing structures, such as trees, water tanks, or tall buildings. The antennas need to be high enough to adequately cover a certain area. Base stations are usually from 50 to 200 feet high.

Cell phones communicate with nearby cell towers mainly through RF waves, a form of energy in the electromagnetic spectrum between FM radio waves and microwaves. Like FM radio waves, microwaves, visible light, and heat, they are forms of **non-ionizing radiation**. This means they do not directly damage the DNA inside cells, which is how stronger (**ionizing**) types of radiation such as [x-rays](#), [gamma rays](#)², and [ultraviolet \(UV\) rays](#)³ are thought to be able to cause cancer.

ELECTROMAGNETIC SPECTRUM

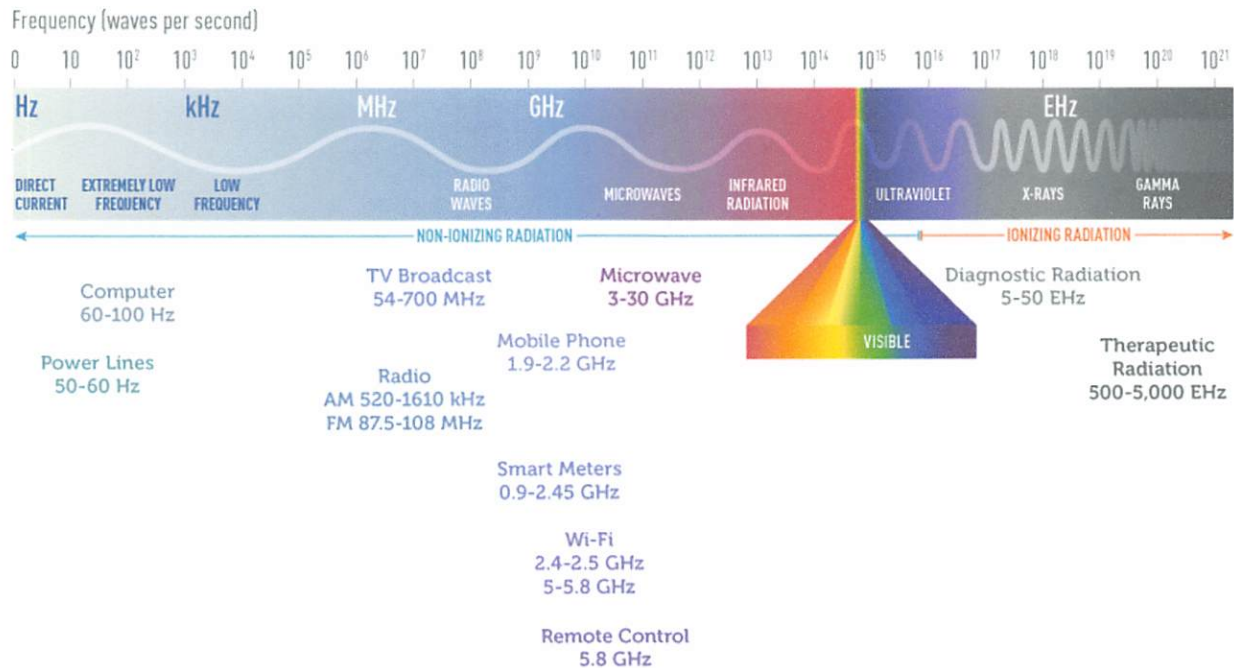


Image credit: National Cancer Institute

The electromagnetic spectrum illustration above shows the possible frequencies of electromagnetic energy, ranging from extremely low frequencies (such as those from power lines) to extremely high frequencies (such as x-rays and gamma rays), and includes both non-ionizing and ionizing radiation.

At very high levels, RF waves can heat up body tissues. But the levels of energy used by cell phones and towers are much lower.

When a person makes a cell phone call, a signal is sent from the phone's antenna to the nearest base station antenna. The base station responds to this signal by assigning it an available RF channel. RF waves transfer the voice information to the base station. The voice signals are then sent to a switching center, which transfers the call to its destination. Voice signals are then relayed back and forth during the call.

When RF signals are transmitted back and forth to the base station during calls, the RF waves produced at the base station are given off into the environment, where people can be exposed to them.

On the ground near a cell phone tower

RF waves from a cell phone tower antenna, like those from other telecommunication antennas, are directed toward the horizon (parallel to the ground), with some downward scatter. Base station antennas use higher power levels than other types of land-mobile antennas, but much lower levels than those from radio and television broadcast stations. The amount of energy from RF waves decreases rapidly as the distance from the antenna increases. As a result, the level of exposure to RF waves at ground level is much lower than the level close to the antenna.

At ground level near typical cellular base stations, the amount of energy from RF waves is hundreds to thousands of times less than the limits for safe exposure set by the US Federal Communication Commission (FCC) and other regulatory authorities. It is very unlikely that a person could be exposed to RF levels in excess of these limits just by being near a cell phone tower.

On a roof with a cellular antenna

When a cellular antenna is mounted on a roof, it is possible that a person on the roof could be exposed to RF levels greater than those typically encountered on the ground. But even then, exposure levels approaching or exceeding the FCC safety guidelines are only likely to be found very close to and directly in front of the antennas. If this is the case, access to these areas should be limited.

Indoors with a base station mounted on the outside of the building

The level of energy from RF waves inside buildings where a base station is mounted is typically much lower than the level outside, depending on the construction materials of the building. Antennas are pointed away from the side of the building, and the energy level **behind** the antenna is hundreds to thousands of times lower than in front. On top of this, wood or cement block reduces the exposure to energy from RF waves by a factor of about 10. Therefore, if an antenna is mounted on the side of a building, the exposure level in the room directly behind the wall is typically well below the recommended exposure limits.

Near a 5G base station

Newer, smaller versions of base stations (often referred to as **small cells**), which are part of fifth generation (5G) cellular networks, are discussed below.

Do cell phone towers cause cancer?

Some people have expressed concern that living, working, or going to school near a cell phone tower might increase the risk of cancer or other health problems. At this time, there isn't a lot of evidence to support this idea. Still, more research is needed to be sure.

What expert agencies say

The American Cancer Society (ACS) does not have any official position or statement on whether or not radiofrequency (RF) radiation from cell phones, cell phone towers, or other sources is a cause of cancer. ACS generally looks to other expert organizations to determine if something causes cancer (that is, if it is a carcinogen), including:

- The **International Agency for Research on Cancer (IARC)**, which is part of the World Health Organization (WHO)
- The **US National Toxicology Program (NTP)**, which is formed from parts of several different government agencies, including the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA)

Other major organizations might also comment on the ability of certain exposures to cause cancer.

What they say about cell phone towers

So far, neither IARC nor the NTP have classified the cancer-causing potential of RF waves from cell phone towers specifically. However, some other agencies have commented on cell tower safety.

The **US Federal Communications Commission (FCC)** has said this about cell phone towers near homes or schools:

“[R]adiofrequency emissions from antennas used for cellular and PCS [personal communications service] transmissions result in exposure levels on the ground that are typically thousands of times below safety limits. These safety limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety. Therefore, there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students.”

What they say about RF radiation in general

Based on a review of studies published up until 2011, the **International Agency for Research on Cancer (IARC)** has classified RF radiation as “possibly carcinogenic to humans,” based on limited evidence of a possible increase in risk for brain tumors among cell phone users, and inadequate evidence for other types of cancer. (For more information on the IARC classification system, see [Known and Probable Human Carcinogens](#)⁴.)

More recently, the **US Food and Drug Administration (FDA)** issued a technical report based on results of studies published between 2008 and 2018, as well as national trends in cancer rates. The report concluded: “Based on the studies that are described in detail in this report, there is insufficient evidence to support a causal association between radiofrequency radiation (RFR) exposure and [tumor formation].”

So far, the **National Toxicology Program (NTP)** has not included RF radiation in its *Report on Carcinogens*, which lists exposures that are known to be or reasonably anticipated to be human carcinogens.

What studies have shown

Researchers generally use two types of studies when trying to determine if something might cause cancer:

- **Studies looking at groups of people**
- **Studies done in the lab (using lab animals or cell cultures)**

The following is a brief summary of the major studies that have looked at this issue to date. However, this is not a comprehensive review of all studies that have been done.

Studies in people living near cell phone towers

So far, not many studies in people have focused specifically on cellular phone towers and cancer risk, and the results of these studies have not provided clear answers.

- A large British study comparing families of young children with cancer with families of children without cancer found no link between a mother’s exposure to the towers during pregnancy (based on the distance from the home to the nearest tower and on the amount of energy from RF waves given off by nearby towers) and the risk of early childhood cancer.

- Researchers in Taiwan compared children with cancer to a group of similar children without cancer. They found slightly higher overall risk of cancer in those who lived in towns that had an estimated RF exposure from cell phone towers that was above the midpoint level in the study. However, this finding was less apparent when RF exposure was categorized in other ways.

Both of these studies relied on estimates of RF exposure. Neither of them measured the actual exposure of people to RF waves from nearby cell phone towers. This limitation makes it harder to know what the results of these studies might mean.

Studies looking at cell phone use

The amount of exposure from living near a cell phone tower typically is many times lower than the exposure from using a cell phone. Several dozen studies have looked at possible links between cell phone use and tumors in people. Most studies to date have not found a link between cell phone use and cancer, although these studies have had some important limitations. This is an area of active research. For more information, see [Cellular \(Cell\) Phones⁵](#).

Lab studies on RF waves

RF waves given off by cell phone towers don't have enough energy to damage DNA directly or to heat body tissues. Because of this, it's not clear how cell phone towers might be able to cause cancer. Some studies have found possible increased rates of certain types of tumors in lab animals exposed to RF radiation, but overall, the results of these types of studies have not provided clear answers so far.

Large studies published in 2018 by the US National Toxicology Program (NTP) and by the Ramazzini Institute in Italy exposed groups of lab rats (as well as mice, in the case of the NTP study) to RF waves over their entire bodies for many hours a day, starting before birth and continuing for most or all of their natural lives. Both studies found an increased risk of uncommon heart tumors called malignant schwannomas in male rats, but not in female rats (nor in male or female mice, in the NTP study). The NTP study also reported possible increased risks of certain types of tumors in the brain and in the adrenal glands.

While both of these studies had strengths, they also had limitations that make it hard to know how they might apply to humans being exposed to RF waves from cell phone towers. A 2019 review of these two studies by the International Commission on Non-ionizing Radiation Protection (ICNIRP) determined that the limitations of the studies

didn't allow conclusions to be drawn regarding the ability of RF energy to cause cancer.

Still, the results of these studies do not rule out the possibility that the RF waves used in cell phone communication might somehow impact human health.

What about 5G networks?

Fifth generation (5G) cellular networks are now being rolled out in many parts of the United States and in other countries. 5G networks are capable of transmitting much larger amounts of data over shorter periods of time than previous generations (4G, 3G, etc.).

Earlier generation networks have used RF wavelengths below 6 gigahertz (GHz). 5G networks will use some wavelengths in this range, but will also use some higher frequency wavelengths, at the lower end of the **millimeter wave** spectrum (which ranges from 30 GHz to 300 GHz). While these RF waves are higher frequency (higher energy) than those used by older generations, they are still forms of **non-ionizing** radiation, so they still lack the ability to directly damage DNA.

The higher frequency waves used by 5G travel shorter distances and don't go through objects (such as buildings, or even tree leaves) as well as lower frequency waves. Because of this, 5G networks require many more, smaller versions of base stations (often referred to as **small cells**) in some places, especially in densely populated areas. These small cells can be mounted on streetlights, utility poles, buildings, and other structures. This could result in the antennas being closer to people, although small cells typically operate at much lower power levels than the larger (macro) base stations.

The addition of the higher wavelengths from 5G networks could also expose people to more RF waves overall.

At the same time, these higher frequency RF waves are less able to penetrate the body than lower frequency waves, so in theory they might be less likely to have any potential health effects. But so far this issue has not been well studied.

At this time, there has been very little research showing that the RF waves used in 5G networks are any more (or less) of a concern than the other RF wavelengths used in cellular communication.

Hyperlinks

1. www.cancer.org/cancer/cancer-causes/radiation-exposure/radiofrequency-

[radiation.html](#)

2. www.cancer.org/cancer/cancer-causes/radiation-exposure/x-rays-gamma-rays.html
3. www.cancer.org/cancer/cancer-causes/radiation-exposure/uv-radiation.html
4. www.cancer.org/cancer/cancer-causes/general-info/known-and-probable-human-carcinogens.html
5. www.cancer.org/cancer/cancer-causes/radiation-exposure/cellular-phones.html
6. <http://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>
7. <http://www.fda.gov/radiation-emitting-products/home-business-and-entertainment-products/cell-phones>
8. <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>
9. <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>
10. <http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>
11. <http://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm>
12. <http://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>
13. <http://www.fda.gov/radiation-emitting-products/home-business-and-entertainment-products/cell-phones>
14. <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>
15. <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>
16. <http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>
17. <http://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm>

Additional resources

Along with the American Cancer Society, other sources of information include:

Federal Communications Commission RF Safety FAQ: www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety (<http://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>)⁶

Food and Drug Administration Cell Phones: www.fda.gov/radiation-emitting-

products/home-business-and-entertainment-products/cell-phones
(<http://www.fda.gov/radiation-emitting-products/home-business-and-entertainment-products/cell-phones>)⁷

National Cancer Institute Cell Phones and Cancer Risk: www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet
(<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>)⁸ Electromagnetic Fields and Cancer: www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet
(<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>)⁹

National Institute of Environmental Health Sciences Electric and Magnetic fields: www.niehs.nih.gov/health/topics/agents/emf/index.cfm
(<http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>)¹⁰ Cell Phone Radio Frequency Radiation: www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm
(<http://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm>)¹¹

** Inclusion on this list does not imply endorsement by the American Cancer Society*

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