

## Talking to the Town: A Zoning Ordinance Primer

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As you go through the process of obtaining a permit to erect and maintain your ham antenna support structure, you may be asked questions by local zoning authorities. Most communities have some sort of permit process for structures above a particular height limit. This article *does not* cover covenants and deed restrictions—PRB-1, the partial federal preemption of local zoning ordinances, does not apply to private contractual agreements.

Here are a few tips to remember when dealing with local zoning boards:

- Unless you are prepared to challenge it, comply with your zoning ordinance! Even if an ordinance doesn't comply with PRB-1, you're still bound to follow a zoning ordinance until you and other amateurs successfully convince your zoning board to rewrite it or a court overturns it.

- Speak to the right person. The desk clerk may not know the answers to your questions. The building inspector or code enforcement officer should, however. Before you speak to that person, you should purchase your own copy of the community zoning code (available from your local zoning department for a nominal fee) and read it thoroughly. If the code is blatantly illegal under PRB-1 because there is no way for the city or town to "accommodate" you, you'll have to speak with the town's attorney, since the code enforcement officer can't change the rules. At this point, you'll want to consider speaking with an ARRL volunteer counsel, a ham who is also a lawyer. Also, obtain a copy of the building code.

- Don't call it a "tower." You may know it is only 12 to 18 inches wide, but people you speak with might imagine it to be 12 feet wide at the base and 3 feet wide at the top, with 10-foot microwave dishes on top! Call it an *antenna support structure*—which may be the words used in your local ordinance, anyway.

- Request two copies of all necessary forms (in case you make a mistake, you'll have an extra). Remember that you may also need to apply for an electrical permit if you want to run a 110 V ac line to your tower to power a winch (for a crank-up tower) or simply for a place to plug in a soldering iron or light.

- If you are faced with an overly restrictive local antenna ordinance, purchase the PRB-1 package from the Regulatory Information Branch at ARRL HQ. It consists of over 100 pages of information, and includes a copy of PRB-1, numerous cases, sample ordinances and articles. It will also include the names and addresses of ARRL volunteer counsels (hams

who are lawyers) and ARRL volunteer consulting engineers (hams who are engineers). VCs and VCEs will provide an initial consultation at no charge. The cost of the package is \$10 for ARRL members and \$15 for nonmembers—a small price to pay when you are preparing to pay hundreds or thousands of dollars for a tower!

- If your time before the zoning board is very limited, as it probably will be, show them a copy of Section 97.15(e) in which the 11-page PRB-1 document is summarized in a few lines. It can be found by zoning authorities as 47 CFR 97.15(e). See any recent version of Part 97 for a copy.

You can download a copy of the PRB-1 document from the ARRL Web by clicking on "Regulatory" and then "PRB-1." The site is at <http://www.arrl.org/field/regulations/local/prb-1.html>. The complete lists of VCs and VCEs can also be downloaded from the ARRL Web.

When making an application for a building permit, experience has shown that the following exhibits can be helpful and may even be required (however, some ham attorneys advise against furnishing information that is not required by local ordinances):

- A plan showing the lots and streets in your neighborhood. This will orient your zoning board. It may be helpful to add distances from neighboring homes and lots.

- A plot plan showing an outline of your house and the site of your proposed antenna support structure. Include the distances from the proposed structure to neighboring property lines. Consider including a "tree line" to show that a view of the tower will be blocked from some neighbors.

- A copy of your FCC license.
- A specification sheet from the manufacturer of your antenna showing the wind loading.

- Construction plans for the base and for the erection of your antenna support structure.

- A copy of your homeowner's general liability policy, or at least a letter from your insurance agent stating your coverage.

Here are some typical questions, some proven answers, and some things to avoid when making an application to your town or city hall for a building permit for your antenna installation:

**Q: Why does it [the tower] have to be so high? I know a ham who makes contacts all over the world with a small antenna on his garage.**

**A:** Under exactly the right conditions, remarkable things can happen, which makes Amateur Radio very exciting. But when conditions are

less than ideal, increased antenna height makes a significant improvement in communication reliability, especially for long-distances. For the foreign areas I contact on one of my favorite bands (14 MHz), 75 feet is really the minimum height for reliable communication. This 75-foot is really a minimum—for some paths or other frequencies, the optimum height can actually be much higher.

Suggestion: A study prepared by Gerald Hall, K1TD, retired ARRL associate editor, explains these issues in detail and it can be very helpful. It is a part of the PRB-1 package. Two books, *The ARRL Antenna Book* and *Physical Design of Yagi Antennas*, available from ARRL HQ and from most Amateur Radio book dealers, provide technical information. Regulatory information on antennas can be found in *The FCC Rule Book*, published by the ARRL.

Explain that, on VHF and UHF, you need an antenna tall enough to help get over large trees in your yard or to get over a nearby hill or other obstacles. Avoid answers that are the equivalent of:

- Because I want to. (Problem: Towns prevent people from doing what they want to do every day.)

- Because I've always dreamed of erecting a Cadillac of radio stations. (Problem: Someone is bound to say: "Couldn't you get along with a Chevy?")

- Because guys in other towns can do it and I should be able to also. (Problem: The Board of Zoning Appeals—and certainly your neighbors—think your new town is much classier than those other towns, where such things are permitted.)

- Because it is my land and a man's home is his castle, and you can't stop it. (Problem: The day when this argument was effective has long since passed. Local bureaucrats and the volunteers who serve on boards *love* local regulations. And they can stop it!)

**Q: Are radio signals dangerous?**

**A:** A very strong field can be dangerous under some circumstances, but my Amateur Radio station using authorized power levels is relatively low powered and transmits intermittently. My power is very low, compared to broadcast stations using 50,000 W, or to TV stations with effective powers of a million watts or more on a continuous basis. Exposure to a strong field is unlikely in my case. I am fully prepared to abide by all state and federal regulations.

The FCC has recently issued new regulations for all radio services that cover RF exposure. They have set limits based on the frequencies being used. For the Amateur Radio

Service, these rules go into effect on January 1, 1998. If you can demonstrate that you are already in compliance with them, it will work to your advantage. Amateur stations are required to perform a "routine station evaluation," to demonstrate compliance with these rules. Show how you have performed your evaluation, preferably by using the FCC's recommended methods. For more information on these regulations, see January 1996 *QST*, pp 47-49. [At press time, the FCC had not yet completed all of their documentation. Contact the ARRL Regulatory Information Branch for the current status of the FCC's material.—Ed.]

You can then explain, and demonstrate with some of the antenna tables prepared by the FCC, that the *higher* the antenna, the *safer* it is!

**Q: Those tall towers are eyesores. They're ugly!**

**A:** There are no "legal" answers to "ugly," only opinions. Some really big towers are so beautiful that they become symbols of a city. To me, my antenna system is as beautiful as is the Eiffel Tower to the people of Paris.

**Suggestion:** If you locate your antenna in the least obtrusive area of your property, you will have fewer concerns over the aesthetics issue. Be prepared with photos that show that an antenna support structure becomes less evident because of its lattice structure when set against a background of woods. Once you concede that someone could hold "ugly" as a valid opinion, you make the question open to discussion. In some instances, a 100-foot Yagi isn't ugly to anyone. In others, in the eyes of some, a 30-foot antenna is an eyesore. If you reply that some people may consider it ugly, but others don't, you concede that it is ugly to some. That might not be a wise approach to the problem.

**Q: Won't it cause interference?**

**A:** Much like the answers about RF safety, the more distant the antenna, the less likely it is that interference will occur. Of course, a taller

support structure will help by providing vertical distance between the antenna and potentially susceptible equipment. For example, if my antenna is 18 feet above ground, it would be *much* closer to sensitive consumer equipment than the 300-foot tower I would like to put up.

Explain that you will, of course, fix any interference problems caused by the improper operation of your station, as required by FCC rules. You should point out, however, that some interference is not caused by a problem with the transmitter, but results because many consumer equipment manufacturers left out the inexpensive filters that would permit the equipment to work properly near a radio transmitter. Although the FCC doesn't require it, you usually should help your neighbor *locate* solutions to interference problems. (They don't know about high-pass filters and such, so they can rely on your expertise.) You should also actively *cooperate* in cleaning up any interference that occurs, for example, by running tests with the phone company when they show up to fix the problem. Steer your neighbors to the manufacturer of their device for advice and help.

The ARRL publishes a pamphlet written to explain interference issues in non-technical terms. It is available for a self-addressed, stamped envelope to the ARRL Technical Department Secretary. It also publishes the "ARRL RFI Package," available from the same source for \$2 for members, or \$4 for non-members. *Radio Frequency Interference: How to Find It and Fix It* was written by a group of experts. It is available from the ARRL Publications Sales Department or at most radio dealers.

You can also point out that federal law is pretty clear that interference is an area in which a city or town may not act, as it is exclusively governed by federal law. The Regulatory Information Branch at ARRL HQ makes avail-

able to members (send a business-size SASE) the ARRL RFI-legal preemption package, which details the FCC's exclusive jurisdiction in interference cases.

Avoid answers are the equivalent of:

- I'll fix any problems that crop up. (Problem: He who touches the neighbor's set, owns it. A TV might break the day after a high-pass filter is installed, and the ham will be asked to pay for the repair of this 28-year-old set.)

- There will never be any interference. (Problem: The zoning board could decide, however illegally, to make your permit contingent on no interference.)

Restrictive zoning ordinances can be an impediment to your enjoyment of Amateur Radio, but with a little information and a lot of planning, they can be overcome.

*First licensed in 1956 as WN1NJL, at age 10, attorney Fred Hopengarten, a long-time ARRL VC, holds three degrees, none of which is in engineering—to his everlasting regret—BA, Colby; JD, Boston College; and MBA, Harvard. He spent seven years in management consulting before starting Channel One, a satellite and cable TV company, in 1978. Selling the company to Continental Cablevision in 1990, he is now the General Manager of Strong Signals LLC, a company formed to own and manage tall communications towers. His principal interest in ham radio is contesting.*

[Feedback on this column as well as regulatory questions can be sent to John Hennessee, N1KB (formerly KJ4KB) at ARRL HQ by letter; fax (860-594-0259—specify JCH on the cover sheet); telephone (860-594-0236); or by e-mail (n1kb@arrl.org or jhennessee@arrl.org.)

Correction: In the December 1998 column, the price of *Radio Frequency Interference: How to Find It and Fix It* was incorrectly stated. The correct price is \$18. Also, the correct file name for the ARRL EMI-Electrical package is RFI-elec.txt.]