

Cleveland Park Citizens Association

P.O. Box 11444
Washington, D.C. 20008

Testimony of the Cleveland Park Citizens Association on Zoning Commission Case No. 01-02 (Text Amendment – Regulation of Antennas, Antenna Towers, and Monopoles)

I am Ann Hume Loikow, Second Vice President of the Cleveland Park Citizens Association (CPCA). CPCA was founded in 1911 to represent the Cleveland Park area. Among its purposes, as stated in its Constitution are "to foster and to advance all public interests in the District of Columbia, especially in the area delineated ..., including, but not limited to preservation, protection and enhancement of: ... environmental values; the promotion of historical preservation in the District of Columbia; ...(and) integrity of zoning regulations" CPCA has long been concerned about the proliferation of antennas and antenna towers throughout the city, but most dramatically in upper northwest. CPCA participated in the Commission's 2001 antenna rulemaking/roundtable (Z.C. Case No. 00-29TA) and petitioned the Commission to correct the miscodification of its 1989 antenna order (Order No. 587), which the Commission did last month in Order No. 968.

Since the Commission's roundtables in the spring of 2001, CPCA participated in the Office of Planning's (OP) antenna task force which participated in the development and review of the proposed regulations before you today. As you are aware, members of the task force agreed to disagree about some issues, but the process was a very useful and worthwhile experience. OP's staff has diligently sought to research the issues raised at the roundtable and develop workable regulations that will protect the public interest.

CPCA is generally pleased with the proposed regulations as developed by OP. In particular, we support consolidating all the antenna regulations in one chapter (a new chapter 26). The fact that the District's antenna regulations were scattered throughout Title 11 of DCMR is one reason the miscodification problem took so long to surface and be resolved. We also support having separate definitions for "antenna," "antenna tower" and "monopole." This makes it much easier to which regulations apply to towers versus antennas.

CPCA strongly supports the revised regulations for new towers and monopoles. In particular, we support limiting the matter of right siting of new towers and monopoles in industrial districts, the prohibition of new towers and monopoles in R (residential) and C-1 (neighborhood shopping) districts and allowing them only as a special exception in C-2 through C-4, SP, CR, W, and CM districts. We also support the doubling of the required setbacks. The new regulations require a minimum distance of from each lot line of the greater of 20 feet or one-third of the total mounted height. Setbacks are particularly important to protect the public's health and safety from both failing ice and debris as well as from exposure to excessive radiofrequency (RF) radiation emissions since RF exposure is directly related to distance from the source (or transmitting antenna).

ZONING COMMISSION
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EXHIBIT NO. 83

Other witnesses will discuss the issue of the need to protect the public from falling ice and debris and tower collapse. [CPCA is attaching several articles on tower collapses and similar issues.] CPCA agrees that antenna tower and monopole applicants and owners should be required to include maintenance plans in their application. Given the District's climate, such plans should specifically indicate how they will prevent ice buildup and how they will protect the public from falling ice and debris (including bird kill). Depending upon the size and height of the tower, the BZA should be empowered to expand the required setbacks to protect the public from such falling debris and from injury due to possible tower collapses. **Sections 2610.2 and 2611.12** should be amended to specifically allow the BZA to require larger setbacks where necessary to protect the public and adjacent and nearby property.

Because hospitals and nursing homes are 24 hour homes to their patients and residents and because children are especially susceptible to RF radiation emission exposure, CPCA recommends that the setback in **§ 2608.1(a)** apply to schools, hospitals and nursing homes, as well as to residentially developed or zoned property. Similarly, CPCA recommends that **§ 2611.11(a)** be amended to require that an applicant for a new antenna tower or monopole show the location of schools, nursing homes and hospitals in the area the tower is to serve.

All applications for a building permit for a transmitting antenna (the kind that emits radiofrequency (RF) radiation, as opposed to a receiving antenna) must be accompanied by a certification from a licensed engineer that the antenna will comply with the FCC's RF radiation guidelines and OSHA regulations and must specifically include information on the RF radiation to be generated by the antenna and the cumulative RF radiation generated by all other antennas at the proposed site and within 200 feet. This is a very important provision, as it will allow the District to have the information needed to begin to monitor radiation levels for compliance with the FCC RF exposure guidelines. CPCA discussed the need for this provision and its rationale in its submission at the March 5, 2001 roundtable.

CPCA would like to propose some minor changes to **§ 2601's** provisions regarding the certification of compliance with FCC RF radiation guidelines. First, the accuracy of RF measurements is affected by, and may be amplified by, the topography, both of the natural and built environment and the interaction of multiple antennas in or near the site of proposed new antenna. Given the complex urban environment that the District of Columbia is, **§ 2601.2(c)** should be amended to require that actual field measurements, rather than just computer simulations, be used to determine the maximum potential cumulative RF radiation generated by all existing antennas at the site for the proposed new antenna.

Second, in any application for a new antenna tower or monopole, whether by matter of right or special exception, the applicant should be required to provide information on the maximum capacity of the tower or monopole, including the number of each type of antenna the tower could hold and the estimated maximum RF radiation emissions from the tower when filled to capacity. This would allow the BZA or OP/Zoning Administrator to determine if the requested size was necessary for the purpose for which it was requested and allow them to develop a cap on the total number of antenna that may be mounted on the tower, similar to the cap on the maximum number of students at a school approved as a special exception or campus plan. Additionally, the tower owner, once it is constructed, should be required to file a periodic report, perhaps

quarterly, on what antennas are on the tower and to provide, in conjunction with the antenna owners, periodic updates on the total RF radiation emission level from all antennas on the tower.

CPCA is concerned by the proposed regulations' requiring antenna tower and monopoles to comply with the condition that they agree to design and make the tower or monopole available for co-location by other telecommunications service providers (§§ **2608.1(g)** and **2611.4**). Co-location may make sense in some locations, but in others it just guarantees that a larger, more intrusive tower or monopole is constructed. These two provisions should be deleted.

Similarly, § **2607**, on antenna additions to existing antenna towers and monopoles, should be revised by adding conditions:

- a. that the application must include information on maximum capacity of the tower or monopole, including the number of each type of antenna it will hold and the estimated maximum RF radiation emissions from the tower when filled to capacity;
- b. that any antenna added to an existing tower must not increase the cumulative RF radiation emissions from the tower above the FCC guidelines (and CPCA would recommend with some reasonable margin of safety below the limit to allow for variations in measurement) and
- c. that no new antennas should be added to existing towers in those districts where new towers would be prohibited (R and C-1 districts) or, if any are allowed, only by special exception in those districts.

Section **2610.1**, antennas subject to BZA approval, should be amended to add a new subsection (i) requiring submission and certification of the information necessary to determine if the antenna would be in full compliance with OSHA regulations and the FCC's individual and cumulative site RF emission guidelines.

Because antennas are often mounted on rooftops and may be in close proximity with rooftop recreation space, § **2604.1**, antennas placed on a roof, should be amended to require the owner of an antenna that is placed on a roof that has an outdoor recreation space to conduct and submit within 60 days of installation of the antenna the results of field monitoring of the RF radiation emissions in the outdoor recreation space.

The Oct. 3, 2002 Supplemental OP Report reinstates the prohibition against antenna towers and monopoles in the Capitol Interest District (the immediate area around the US Capitol). This prohibition was removed in the September 9 technical corrections order because it was affected by the miscodification of the 1989 antenna order. CPCA endorses reinstating this prohibition in the Capitol Interest District.

The Oct. 3, 2002 Supplemental OP Report proposes a new § **2614** that would require that owners, at their expense, to remove any antenna, antenna tower, monopole or equipment cabinet that has not been used for one year. This provision would help clean up the city and landscape and is one CPCA supports.

CPCA strongly opposes including the provisions in § **2606.1 (alternative)** regarding stealth structures. A stealth structure is merely a matter of right antenna, or what may effectively be an

antenna tower or monopole, that is to some extent disguised, whether as a flagpole, tree, bell tower, etc. A notable current example is the Verizon installation at the Fitzgerald Tennis Courts and the flagpole at St. John's College High School on Military Road, NW. As proposed, this provision would become part of the "exempted antennas" and thus not subject to any provisions except the certification of FCC compliance for transmitting antennas in §§. **2601 and sec. 2602** (no broadcast antennas in R districts as a matter of right). Thus, there would be very few controls on these structures or the type or size of antenna put in or on them and no public notice or process. I would recommend that this provision be deleted and the provisions of § **2603** (ground-mounted antennas), § **2604** (antennas placed on a roof), and § **2605** (building-mounted antennas) apply instead. Any antenna installation that is not a matter of right under these three provisions would be subject to the special exception process. As OP noted in its Oct. 3, 2002 Supplemental Report, they have already received a "real world" proposal for a second stealth flagpole at one site that could easily result in the proliferation of such structures and turn it into a tower farm.

Several issues that the proposed regulations don't address and should are:

1. The lights chosen to meet FAA air traffic warning light requirements for tall towers. Given the need to protect the streetscape, landscape, skyline, scenic beauty, and aesthetic interests of the District of Columbia which is the Nation's capital, CPCA believes that the lights chosen for a particular tower should be the least visually obtrusive. CPCA also suggests that the regulations, like the National Capital Planning Commission's (NCPC) Guidelines and Submission Requirements for Antennas on Federal Property in the National Capital Region, amended August 2, 2001 (NCPC Guidelines):
 - (a) prohibit any signals, lights, or illumination of an antenna or its support structure, including and antenna tower, or monopole, unless required by the FCC or FAA or other Federal agency and
 - (b) prohibit any commercial advertising on an antenna or its support structure, including and antenna tower, or monopole.
2. There are no provisions addressing antenna equipment cabinets and equipment shelter that are not roof structures. Since equipment shelters "are generally 12 feet wide and from 20 to 30 feet long and are generally under 12 feet in height" (April 10, 2001 letter from Edward L. Donohue, on behalf of AT&T Wireless), they are the size of a small house and some design and screening provisions should apply to them.
3. **Section 2612**, regarding non-conforming antennas should reference § **2610** (antennas subject to BZA approval) and contain criteria for the BZA to use in considering an application for a special exception to make a permanent replacement of a nonconforming antenna.
4. In the NCPC Guidelines, approval of antennas is normally limited to five years, after which time an antenna owner can apply for renewal. The applicant must show that all the conditions of the original approval have been and continue to be satisfied, the original installation is structurally sound and technological advances or operational changes have not offered any alternative that permit the elimination of the antenna or the reduction in

its size to minimize visual impacts, or reduction in RF radiation to minimize its health and safety effects. The initial time period may be increased to 10 years if the NCPC, in its discretion, finds that the proposed antenna will not have an adverse impact on the Monumental Core and surrounding lands, designated historic buildings and districts, or nearly residential areas and is satisfied that the technology proposed is not likely to be replaced in the next ten years by new technology that could either reduce the visibility or RF radiation levels of the proposed equipment. I would suggest that the Zoning Commission consider similarly limiting District antenna permits to a set time period (5-10 years) for the reasons described above.

5. The regulations should include a provision similar to the existing **§ 211.7** which recognizes that some antenna or antenna tower or monopole applications, because of where they are located, should be reviewed, prior to BZA action, by the Historic Preservation Review Board or the US Commission of Fine Arts.
6. Finally, CPCA would urge the Zoning Commission to determine whether it has authority to regulate antennas in public rights of way, particularly those that may be attached to utility poles. These antennas, both in the visual clutter and industrial look they give the city, particularly in historic districts, and in the possible effects on public health and safety, are of a concern to citizens. Such installations already exist in parts of the city, particularly along Foxhall Road, NW. This may require joint action with the District Department of Transportation which regulates the use of the public rights of way and the Public Service Commission which regulates utilities.

CPCA has a few minor suggested corrections, in the nature of typos or conforming changes, which are attached. CPCA thanks the Commission for the opportunity to present its views and participate in this rulemaking. We would be happy to assist the Commission in any way we can.

Suggested Technical and Conforming Amendments

§ 2601.2(g) and (i): change “principle” to “principal”

§ 2605(f): add “and minimize RF radiation emission exposure to inhabitants” after “To avoid off-site reception interference” and before “, a transmission antenna shall not be directed into any adjacent building window.”

§2606.4:in the second line, change **§2606.2**” to **§2606.3**”.

Note on p. 7718 regarding “Add the following new **§535.12**” should be “Add the following new **§534.12**”.

§534.12: change “side yard” to “rear yard”.

The new sentence to be added to all the height provisions in **§§ 530.3, 630.3, 770.3, 840.2** should be the same as in **§ 930.3**: “This section shall not be interpreted to bypass otherwise required special exception reviews or mayoral approvals.” For clarity, the Commission also may want to

add to this sentence citations to the sections specifying the special exception reviews referred to and specifically cite the 1910 Height Act with reference to the mayoral approval.

Provisions deleting §§ **701.6(g)** and **701.7 through 701.9** are obsolete given the Commission's Sept. 9, 2002 Order No. 968.

Cleveland Park Citizens Association

P.O. Box 11444
Washington, D.C. 20008

**RESOLUTION OF THE CLEVELAND PARK CITIZENS ASSOCIATION REGARDING
ZONING COMMISSION CASE NO. 01-02**

(Text Amendment – Regulation of Antennas, Antenna Towers, and Monopoles)

October 5, 2002

WHEREAS the Zoning Commission of the District of Columbia has published a notice that a public hearing in the rulemaking case number 01-02(Text Amendment – Regulation of Antennas, Antenna Towers, and Monopoles) will be held on Thursday, October 17, 2002; and

WHEREAS all individuals, organizations, or associations wishing to testify in this case should file their intention to testify in writing prior to that date; and

WHEREAS the Cleveland Park Citizens Association (Association) has been concerned about the proliferation of antennas and antenna and broadcast towers in the District of Columbia, participated in the Commission's 2001 antenna rulemaking/roundtable (Z.C. Case No. 00-29TA) and petitioned the Commission to correct the miscodification of its 1989 antenna order (Order No. 587); and

WHEREAS the Association is also concerned about impact of such structures on adjacent neighborhoods, the public's health and safety, and the visual and physical impact of such structures on special physical and historical character of Washington, DC and firmly believes that the public should have notice of applications to construct antenna towers and broadcast towers and that such structures should be subject to the special exception process with clearly defined criteria:

NOW, THEREFORE, BE IT RESOLVED that the Association shall testify in this case and authorizes the President to so notify the Office of Zoning; and

BE IT FURTHER RESOLVED that Association will be represented by the Second Vice President Ann Loikow or such person as the President shall designate.

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Tower collapses during DTV modification

Dan Trigoboff
Broadcasting & Cable
9/26/2002 2:30:00 PM

Two workers died Tuesday and three more were injured when the nearly 2,000-foot KDUH-TV Scottsbluff, Neb., tower in Box Butte County, Neb., collapsed.

Lawrence A. Sukalec, 59, of Valier, Ill., and Daniel E. Goff, 25, of Sesser, Ill., who were not station employees but had been contacted by KDUH-TV, were working on strengthening a small transmission facility on the Duhamel Broadcasting Enterprises-owned tower to accommodate digital transmissions, the station said, when the tower collapsed.

The cause of the collapse is under investigation locally and by the Occupational Safety & Health Administration.

Three other workers were injured, but they were treated and released at local hospitals.

The tower was the tallest structure in the state, but all that remained following Tuesday's collapse was about 50 feet. Only cable viewers could receive station programming.

Several nearby vehicles were reported crushed, and small fires were set by sparks from the downed tower.

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Web posted Tuesday, July 24, 2001

Lightning burns fire chief's home

By NATE REENS
Staff writer

A lightning bolt to a 199-foot communications tower likely caused a Monday blaze at the business and home of Blendon Fire Chief Russ Hirdes and his wife, according to Assistant Chief Tom Meeuwsen.

The flames, which ignited at about 10:30 a.m. and kept Olive firefighters occupied until 4 p.m., severely damaged the video, electronic, and bait and tackle shop Hirdes runs from a building attached to his home at the southwest corner of Port Sheldon Street and 96th Avenue.

Hirdes' wife also operates a real estate and lease management business from the building, according to the couple's daughter, Laurel von Douschutz.

Hirdes, a 27-year veteran fireman, was in Lansing for a firefighting convention and could not be reached Monday afternoon, according to his daughter and Meeuwsen.

"The radio service and equipment is likely a total loss, but the structure itself appears to be in good shape," Meeuwsen said. "We'll have to wait until he gets back to determine exactly what works and what doesn't."

Firefighters battled the blaze by ripping off the building's siding and cutting holes in the roof to gain access to the persistent flames, which shrugged off heavy rains and caused "light structural damage to the attic."

Meeuwsen said Hirdes' home received smoke damage, but was otherwise unaffected by the fire.

"My mom will probably cry and I don't know what Dad will do," a rain-soaked von Douschutz said at the scene of the fire. "He had a lot of inventory in there and has been in business for 30 years."

Von Douschutz said the tower, which stands adjacent to the business portion of the structure, has been hit before during severe thunderstorms.

Meeuwsen said Hirdes would be glad his department saved what they were able to, considering the force also was aiding Robinson Township firefighters battle a large barn fire near 112th Avenue and Pierce Street.

"I think he'd be pretty proud of the guys," the assistant chief said. "They did a good job."



FIRE: Blendon firefighters cut through the roof of Russ' communications to get at the fire, Monday afternoon.
Sentinel/Brian Forde

Lightning strikes rooftop mobile phone a paging antennas Two people sent to the hospital

Mecosta County, Michigan 7/19/02

Reported by WPNB-WTOM TV Traverse City, MI

Two people are sent to the hospital after lightning strikes just blocks from a crowded sidewalk sale. The lightning struck near the corner of Maple Street and Michigan Avenue in downtown Big Rapids, Thursday afternoon.

Fortunately no one at the outdoor sale was injured, but employees at some nearby businesses were not so lucky. Some workers had just headed outside to grab a bite to eat when they saw the sky light up.

Brian Goodenow, manager of Net-Port, "It was just like an explosion and then accompanied by a crackling sound you'd associate with electricity. That's when i knew it had hit our building or very close to our building."

The lightning bolt actually struck the tower directly on top of the building that holds Net-Port and Select Cellular and Paging. And the scary bolt did more than just physical damage to the stores. It sent a shock to employees below.

A woman who was sitting at a workstation had the electricity travel through the keyboard and apparently into her body. She started feeling a little faint and co-workers drove her to Mecosta County General Hospital where she was kept overnight for observation.

Next door at Select Cellular, the only employee in the business at the time drove herself to the emergency room feeling some of the same effects.

In addition to the injured employees, a lot of the Net-Port business equipment was damaged by the strike. Three workstations were also destroyed by the power surge. And Net-Port employees are still finding glitches around the office as they try to cleanup. But they say none of their major.

Health officials warn to stay away from water and electrical equipment during storms. And if you are outside, get low to the ground to avoid being struck by lightning.

Janet Newton, President
The EMR Network, P.O. Box 221, Marshfield VT 05658
Web Site: www.EMRNetwork.org

TV tower collapses; 3 broadcast stations are off the air

FORDLAND (AP) -- A 1,560-foot television tower collapsed in southwest Missouri Friday, briefly cutting power to dozens of homes and taking three broadcast stations off the air.

There were no injuries, and the cause of the collapse was under investigation. Between 50 and 75 homes served by Webster Electric lost power, but the homes were back online Friday, utility spokesman Phillip Ragsdale said.

KDEB, Springfield's Fox affiliate, lost its signal after the tower collapsed on itself north of Fordland, about 15 miles east of Springfield. KDEB's cable signal in Springfield was not affected.

Radio station KTXR, which rented space on the tower, also was taken off the air briefly before resuming its broadcast from a backup site later Friday morning.

Power to a nearby tower that broadcasts radio station KWFC also was cut. Ragsdale said power could be restored to the station as early as Friday night.

KDEB crews were on the scene assessing damage. KDEB Vice President and General Manager Kemp Nichol says the Quorum Broadcasting owned station could be back on the air by Saturday night.

Freezing rain and drizzle had hit the region in recent days, forming ice on structures across the area.

Antenna and Tower Safety

Many amateurs enjoy building and installing their antennas and consider this one of the most enjoyable aspects of their hobby. Since antennas are generally outdoors, they are affected by such potentially hazardous weather as wind, ice and lightning. Learning about the potential hazards of towers and antennas and how to do antenna work safely will pay dividends.

Any heavy, large and permanent structure that fails or collapses can potentially hurt or even kill somebody. The complete installation *must* comply with all applicable structural and building codes. Professional engineers design towers to withstand code loadings—that is, dead weight, wind and ice loadings that are applicable to the environment at your particular location. The latest revision of the EIA-222 standard is the document from which professional engineers work to ensure that their tower designs are structurally safe.

To ensure structural safety and integrity, you must demonstrate that your tower has been designed by a qualified engineer to withstand EIA-222 loadings at your specific geographic area. Further, the tower, foundation, guys and anchors must be installed (and maintained) according to any drawings, instructions and specifications supplied by the professional engineer. Remember: A properly designed, installed and maintained tower should be as safe as a building or a bridge!

It is not feasible to discuss each type of antenna and tower in detail, so this section will include only highlights. For a full understanding of the specific hardware you will be working with, consult the manufacturer or supplier. You should discuss your antenna plans with a qualified engineer. The ARRL Volunteer Consulting Engineer program can steer you to a knowledgeable engineer.

When using slingshots or arrows to string up the antenna, be sure no one is in range before you launch.

In addition, your town or city will probably require that you obtain a building permit to erect a tower or antenna. This is their way to help ensure that the installation follows good practices and that the installation is safe. Wise amateurs realize that an independent review of drawings and site inspections are beneficial and can result in fewer problems in the future.

Towers must have a properly engineered support, both for the tower sections themselves as well as guy wire attachments. Sometimes towers are braced to buildings for added support. The Antenna Supports chapter of *The ARRL Antenna Book* covers this subject in greater detail. Towers are available commercially in both guyed and self-supporting styles, and constructed of both steel and aluminum materials. Masts may be wood or metal. One popular and inexpensive mast used to support small antennas is the tubular mast often sold for TV antenna use. These come in telescoping sections, in heights from 20 to 50 feet.

Aluminum extension ladders are sometimes used for temporary antenna supports, such as at Field Day sites. One problem with this approach is the difficulty in holding down the bottom section while “walking up” the ladder. Do *not* try to erect this type of support alone.

Trees are sometimes pressed into service for holding one end of a wire antenna. When using slingshots or arrows to string up the antenna, be sure no one is in range before you launch.

Tower Tips

- Towers have design load limitations. Make very sure the

tower you consider has the capacity to safely handle the antenna(s) you intend to install in the kind of environment that is applicable to your location.

- The antenna must be located in such a position that *it cannot possibly tangle with power lines, both during normal operation or if the structure should fall.*

- Sufficient yard space must be available to position a guyed tower properly. A rule of thumb is that the guy anchors should be between 60% and 80% of the tower height in distance from the base of the tower.

- Provisions must be made to keep children from climbing the support.

- Soil conditions at the tower site should be investigated. The footings need to be designed around actual soil conditions, particularly on a rocky site.

- Beware of used towers. Have them professionally inspected and contact the manufacturer for installation criteria.

- Check with your local building officials.

- Liability may be increased with a tower installation. Check with your insurer to ensure your coverage is adequate.

- Make sure you have all the tools needed before starting. Some specialized tools (such as a gin pole) may be required.

- The assembly crew as well as those climbing the tower during erection must wear hard hats and use appropriate personal protective equipment including gloves, boots, climbing belt or harness. Don't forget that lifelines are needed when the belt is unattached from the tower while moving.

- Assign someone in the erection crew to monitor the use of safety equipment.

- After the tower is installed, keep the installation safe. Inspection and maintenance recommended by the tower's manufacturer should be carefully followed.

- If making attachments to houses or installations on roofs, have a qualified person determine that the method is adequate and the loading conditions are satisfactory.

- Avoid metal ladders if there are any utility lines in the vicinity. Assume that any line is energized—including cable television and telephone lines.

Power Lines

Hundreds of people have been killed or seriously injured when attempting to install or dismantle antennas. In virtually all cases, the victim was aware of the hazards, including electrocution, but did not take the necessary steps to eliminate the risks. Never install antennas, towers and masts near power lines. How far away is considered safe? Towers and masts should be installed twice the height of the installation away from power lines. Every electrical wire must be considered dangerous. If the installation should contact power lines, you or those around you could be killed! If you have any questions about power lines, contact your electrical utility, city inspector or a qualified professional.

If, for some reason your tower starts to fall, get away from it immediately. If it touches energized lines it may be a lethal hazard if you are in contact with the antenna. If a coworker becomes energized, do not touch the person. Instead, use an insulated wooden pole to knock the energized conductor away from them. Don't become a victim yourself! If the person is not breathing, immediately start CPR and call for emergency assistance.—*excerpted from the 2000 ARRL Handbook*

QST



Eighth District Public Affairs (504) 589-6287
RELEASE NO:035-00

Date: January 28, 2000
Contact PA2 Mark Mackowiak

RADIO RELAY TOWER COLLAPSED

A radio relay tower, located in Venice, La., used by Coast Guard officials to monitor radio transmissions from vessels at sea, collapsed today about 11 a.m. No one was injured in the accident.

The 500-foot tower was used to gather signals broadcast from VHF-FM radios onboard pleasure boats, commercial fishing vessels and other commercial mariners. The tower's coverage spanned a radius of approximately 25-miles in diameter, including Coast Guard Station Venice.

Coast Guard officials at Station Venice, and Group New Orleans, are able to monitor CH16 and other channels, because of a back-up tower located at Station Venice. This tower however is much smaller and has a radius of 10-miles in diameter.

The Coast Guard leases the collapsed tower from American Tower in Houston. The cause of the accident is under investigation, but high winds are believed to be the cause. Prior to the accident, Station Venice was reporting wind gusts of 65 mph. American Tower isn't sure if the tower will be rebuilt or replaced.

The Coast Guard's National Distress System, (NDS) is the backbone of the Coast Guard's short-range communications system. It provides VHF-FM coverage in the U.S. coastal areas and navigable waterways and gives the Coast Guard the ability to monitor the International distress frequency, coordinate search and rescue and other mission operations, and communicate with mariners. Coast Guard officials are in the process of modernizing the NDS at a cost of \$240-300 million and it is expected to be fully operational in 2005.

USCG-

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Coast Guard Home
[www.uscg.mil]

Last Updated: December 04, 2000

Technical Highlights

Radio Tower Support Failure Investigation on NIST WWVB Pin

The NIST operated WWVB tower in Ft. Collins, Colorado partially collapsed as a result of an insulator pin failure. The Materials Reliability Division investigated the failure of the pin to determine why the failure occurred after only 2 to 3 years of operational service. The results of this study will be used for the design of new insulator pins to prevent a recurrence of the problem.

The failure of an insulating support pin was responsible for the collapse of the uppermost 30 meters of the 122-meter NIST WWVB transmitter tower in Ft. Collins, CO; see Figure 1. The tower continuously broadcasts time and frequency signals at 60 kHz throughout North America. These signals automatically synchronize electronic products such as wall clocks, clock radios, and wristwatches used by millions of people in the U.S. In addition, the signals are used for high-level applications such as network time synchronization and frequency calibrations. The support pin was one of four groups of nine that support the four towers that make up the WWVB transmitter facility. The tower, originally constructed in 1962, was refurbished in 1999 when the

pins, used to accommodate an insulator on the guy wires, were replaced; see Figure 2. Thus, the failed pin had been in service only 2 to 3 years compared to 37 years for the old pins. In order to assess the cause of this premature failure, the Materials Reliability Division conducted a detailed analysis. This Division has been involved in numerous other failure investigations. A rapid assessment was needed, since WWVB is a highly visible NIST service, and a return to operation at full power was necessary to maintain nationwide coverage. We recommended the removal of all the "new" pins and replacing them with the "old" pins until the investigation was completed.

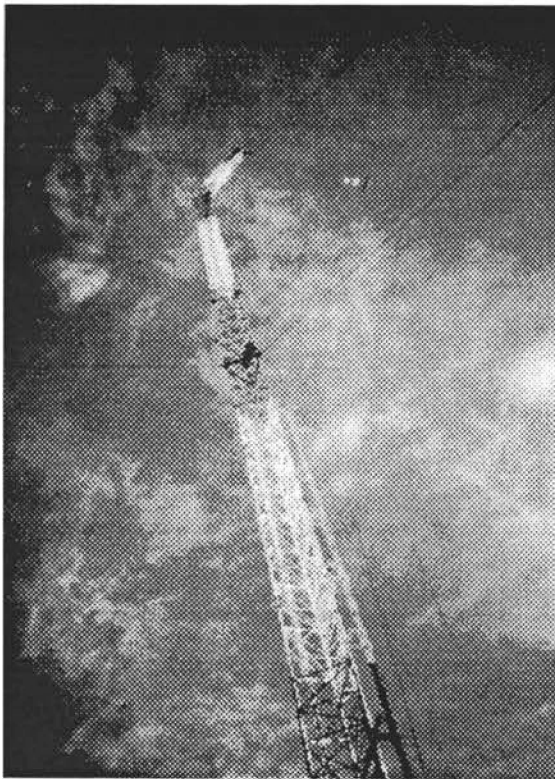


Figure 1. Photo shows results of failure of insulator pin. The uppermost 30 meters of the 122-meter tower has collapsed.

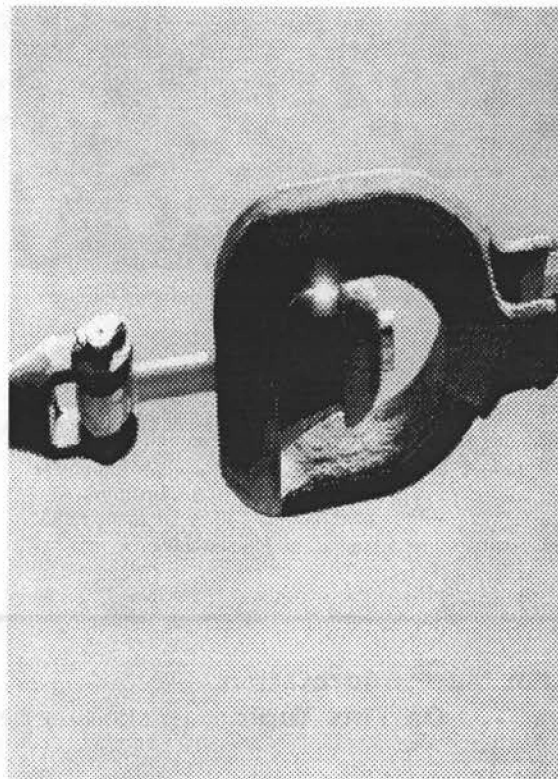


Figure 2. Close-up of insulator and pin arrangement. Pin length is 61 cm.

Initial examination of the failed pin showed that failure was initiated by fatigue. The fatigue crack was located in the radius of the head-to-shank fillet of the pin, Figure 3. The pin is large, 38 mm in diameter with a 51 mm head. Visual, chemical and microscopic metallurgical examinations of the pin were performed. The conclusion was that a fatigue crack initiated at the fillet and propagated across the diameter of the pin body until the remaining area of the pin was no longer capable of sustaining the loads imposed by the tower, with the resulting catastrophic failure. This occurred because the new pin had a fillet radius approximately half that of the old pins, increasing the stress concentration in the shank-to-head transitional region. In addition, circumferential tool marks, tool chatter and surface pitting had further increased the stress concentration that led to the fatigue failure.

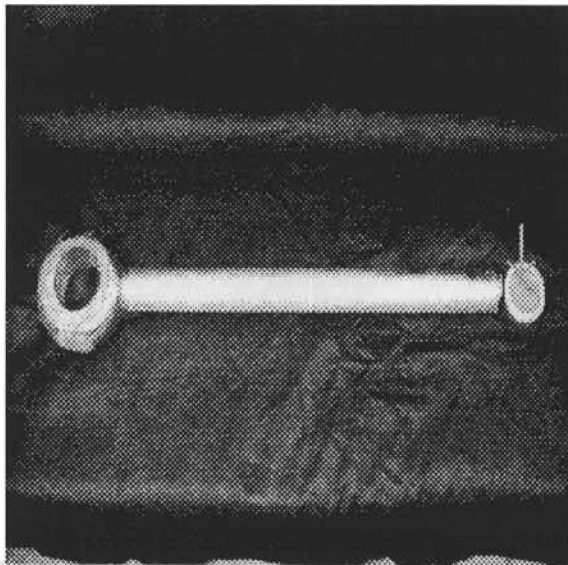


Figure 3. The failed pin and pin head showing fatigue fracture surface.

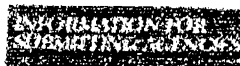
This information will form the basis for specification and production of a new set of pins. In the meantime, the old pins have been reinstalled, a new top section of the tower put in place, and WWVB is back on the air at full power. The information generated will be useful for future evaluations of other installations – there are many radio towers of similar design around the country.

For More Information

On This Topic: J.D. McColiskey, C.N. McCowan, R.L. Santoyo (NIST)

Submission Guidelines - Antennas

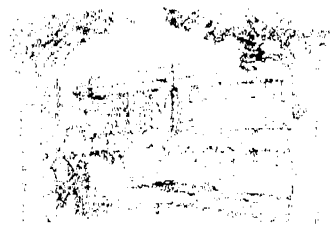
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Guidelines and Submission Requirements for Antennas on Federal Property in the National Capital Region

Approved: January 7, 1988

Amended: April 6, 1989, November 6, 1997, and August 2, 2001

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Background

In January of 1988, the Commission adopted "Guidelines and Submission Requirements for Antennas on Federal Property in the National Capital Region" (Antenna Guidelines) in accordance with the National Capital Planning Act of 1952 (as amended). The Antenna Guidelines were developed to address the aesthetic impact of various types of antennas on the skyline of the Nation's Capital.

In light of increasing concerns about the effects of transmitting antennas on health and safety, the Commission, in the Spring of 1994, created the Antenna Task Force. One of the purposes of the Task Force was to investigate the various visual, health and safety issues raised by the general public regarding the proliferation of antennas in the National Capital Region (NCR). The Commission's Antenna Task Force examined various issues, including: aesthetic concerns related to antennas; human health and safety effects associated with exposure to radiofrequency (RF) radiation; the cumulative visual and health effects of transmitting antennas; and the potential for new telecommunications technology to replace existing antennas.

As a result of its investigations, the Task Force recommended revisions to the Antenna Guidelines, which the Commission adopted on November 6, 1997. The 1997 revisions can be grouped into four categories: language to conform the Antenna Guidelines to existing Commission policy or federal legislation; wording to clarify which antennas do and do not require submission; language to clarify necessary materials to be included in each submission; and language detailing applicable RF standards with which antenna submissions should comply.

In the fall of 2000, the Commission decided to revisit the Antenna Guidelines again with the objective of updating the guidelines to be consistent with new regulations, and clarifying the review schedule, including an explanation of when regional referrals would be required. Also, new sections have been proposed to address the placement of commercial antennas on federal property, and to provide definitions for the terms used in the guidelines. The process for renewing Commission approval for antennas that are still needed has been simplified, and these proposed renewals are now eligible for approval by the Executive Director through the Commission's delegation of authority.

Introduction

The Commission finds that antennas, as well as antenna support structures including monopoles, towers, equipment shelters and other structures, may adversely impact the landscape, skyline, and scenic character of the Nation's Capital, general appearance of federal facilities in the NCR, and health and welfare of federal employees, visitors to the Nation's Capital, and the Region's population.¹ Therefore, in order to minimize the visual impacts of such facilities and to protect the health and welfare of the public from potential adverse biological effects resulting from RF radiation from transmitting antennas, the Commission is providing the following Guidelines and Submission Requirements. The Guidelines are to be

used by federal agencies in the NCR in the preparation and submission of plans for all antenna installations on federal property in the NCR.

Section 1 - Review Authority

Prior to the installation of any antenna(s) on federal property in the NCR, except as noted in Section 5 below, federal agencies shall submit (pursuant to Section 5 of the National Capital Planning Act of 1952 (Planning Act), as amended; D.C. Code, sec. 5-432, in the District of Columbia; and, as appropriate, Section 4 of the International Center Act of 1968, as amended) such installation proposal to the Commission for review and comment.² Approval by the Commission of such installation will normally be limited to five years. This time period may be increased to ten years at the Commission's discretion where the proposed antenna(s) will not have an adverse impact on the Monumental Core² and surrounding lands, designated historic buildings and districts, or nearby residential areas; provided that the Commission is satisfied that the wireless telecommunication technology proposed is not likely to be replaced in the next ten years by new technology that could either reduce the visibility or RF radiation levels of the proposed equipment.

The Commission reviews all antennas and antenna support structures (such as towers, monopoles, and equipment shelters), whether federally owned or leased, on federal property, with the exception of those listed in Section 5 below.⁴ The Commission also reviews antennas that are proposed to be located on private buildings that are leased, or intended to be leased, 80 percent or more, to the federal government. Existing antennas that are moved or relocated to another location on a federal facility are also subject to the Commission's review. Further, any change to a previously approved antenna that affects the public health or welfare, the skyline or scenic character of the Nation's Capital, or is contrary to the intent of these guidelines must be resubmitted for Commission review as well. Under certain specified conditions, as contained in Section 6, the Executive Director may approve, under delegated authority, proposals for receive-only antenna installations, and the renewal of antenna approvals.

Section 2 - Review Process and Scheduling

Sponsoring agencies are encouraged to contact the Commission staff early in the process of developing antenna proposals to discuss the need for a submission and the specific materials required for Commission review. This early consultation process is designed to assist federal agencies in expediting the review process. Staff can help the sponsoring agency determine which of the items listed in Section 8, "A" through "M", may not be applicable for a particular submission.

For cases requiring Commission review, agencies must make submissions to the Commission (including submissions that may be handled by the Executive Director under delegated authority) in

accordance with established monthly deadlines. Submission deadlines normally are approximately 30 days in advance of the scheduled Commission meeting at which a particular proposal will be considered. However, if the proposal meets the criteria for projects requiring a regional referral pursuant to the Commission's Procedures for Intergovernmental Cooperation in Federal Planning in the National Capital Region, the submission deadline would be approximately 90 days in advance of the scheduled Commission meeting at which the proposal will be considered. View a schedule of Commission meetings and submission deadlines on our website.

In accordance with P.L.106-113 and NCPC's project submission guidelines, the Commission will take final action on each proposed telecommunication facility no later than 120 days after receiving a complete project submission (as specified in Section 8) from the federal submitting agency.

The Commission staff will notify the federal agency of the schedule for review and any need for participation in the presentation of the submission to the Commission at the scheduled meeting. The Commission will provide notification of its action in a letter to the federal agency immediately following such action. For projects involving commercial telecommunication facilities on federal land or buildings, a copy of the letter will also be sent to the telecommunication service provider. If a siting request is not approved, the Commission's letter will contain a full explanation for the action.

Section 3 - Criteria Applying to Antenna Installation

A. All proposals for the installation of antennas on federal property shall be consistent with the applicable policies and implementation strategies contained in the Federal Elements of the Comprehensive Plan for the National Capital. Applicable policies and implementation strategies are contained in Appendix A.

B. All antennas and their support structures including towers, monopoles, and equipment shelters erected within the District of Columbia shall be consistent with the provisions of the Height of Buildings Act of 1910.

C. To the extent possible, federal agencies should anticipate the need for antennas on all new buildings and design such buildings to screen the needed antennas in a manner appropriate to the building's design. Antenna requirements also should be considered and included as part of federal agency master plans.

D. Rooftop antennas on existing federal buildings or ground-level installations in the NCR should be designed and installed in a manner that minimizes or eliminates the visibility of the antenna and all support structures from adjacent properties, including public rights-of-way and nearby residential areas. Where appropriate to the character of a building, retrofitting to screen antennas not accommodated in original building designs and plans should be provided.

E. Reasonable precautions are necessary in locating and operating *transmitting antennas because of potential adverse RF radiation effects*. Because of the numerous variables regarding power and frequency levels for each installation, RF radiation impacts will have to be evaluated on a site-specific basis taking into account any existing nearby emission sources in compliance with guidelines established by the Federal Communications Commission. (See Section 8-L).

F. Consistent with technical communications requirements, rooftop *antennas should be installed at the lowest possible elevation above the roof line, set back from the edge of the building a distance at least equal to the antenna's height above the roof, and screened as appropriate from any public views* In cases in which screening designs compatible with the architectural character of the building can be developed (see Section 8-H).

G. Ground-level antennas should be sited in locations that minimize public views, installed at the lowest possible elevation above grade, and screened to the extent practicable by landscaping and screening elements that reduce visual impacts as well as exposure to RF radiation.

H. The screening plan should respond to public safety concerns by restricting public access near ground-mounted and roof-mounted antennas.

I. Materials used in the construction of antennas and their mountings should not be bright, shiny, or reflective and should be of a color that blends with the building's materials or landscape.

J. Any masts or towers should be non-combustible, corrosion resistant or protected, and protected against electrolytic action.

K. No commercial advertising shall be allowed on an antenna or support structure.

L. No signals, lights, or illumination shall be permitted on antennas or support structures unless required by the Federal Communications Commission, the Federal Aviation Administration, or other federal government agency.

M. The National Capital Planning Commission shall receive written notification upon the removal of all antennas that no longer need to be located on federal property or upon the completion of their approval period.

Section 4 - Siting Commercial Antennas on Federal Property

Commercial telecommunications service providers planning to locate facilities on federal land or buildings must first seek the approval of the federal agency with jurisdiction. That federal agency will evaluate the proposal based on applicable criteria, and will assess the effects the proposal pursuant to the National Environmental Policy Act and

the National Historic Preservation Act. If the federal agency determines that the proposal meets applicable criteria, the sponsoring agency shall submit the proposal to the Commission for review, prior to signing a lease or permitting the installation of the telecommunications facility.

The Commission encourages early consultation with both the federal agency and the telecommunications service provider. Early consultation with the Commission staff is the most effective way of expediting Commission review of proposals. In early consultation, staff can identify the specific materials that would be needed for Commission review, and can help the sponsoring agency determine which of the items listed in Section 8 may not be applicable for a particular submission. In addition, the staff can indicate if a regional referral of the proposal will be needed, pursuant to the Commission's Procedures for Intergovernmental Cooperation in Federal Planning in the National Capital Region.

The Commission encourages federal leaseholders to make provisions within the lease for the removal of antennas at the end of the lease period, or Commission approval period, whichever comes first. This could help prevent antennas, towers, poles, and structures from remaining in place longer than they are needed due to lack of funds dedicated to their removal.

Section 5 - Exceptions

The following types of individual receive-only antenna installations may be made without referral to the Commission:

- A. Receive-only antennas with the boom or any active element not exceeding eight feet in any dimension and the mounted vertical dimension (from the point on the ground or building at which the antenna is mounted to the highest point of any active element, tower, mast, pole, or related support element) not exceeding 12 feet. Rooftop antennas must be set back from the edge of the building a distance at least equal to the antenna's height above the roof.
- B. Receive-only whip antennas not exceeding 2 1/2 inches in diameter and a mounted dimension (vertically and laterally, for antennas which include two or more prongs or attachments) not exceeding 12 feet in any direction.
- C. Receive-only antennas of any type entirely enclosed within an existing building (including the penthouse portion of a building).
- D. Receive-only temporary antennas to be mounted on a building, the ground, or a vehicle for a period not to exceed 60 days, provided the temporary placement does not alter the site or building and that all necessary safety precautions are observed in the temporary placement.

Section 6 - Review by the Executive Director

A. The Commission delegates approval authority to the Executive Director for receive-only antenna installations that are:

1. Located on a reservation or site for which the Commission has submitted its report and recommendations on a current master plan.
2. Not inconsistent with the recommendations of the Commission on the land use and circulation plan elements of the master or its action on final project plans.
3. Determined by the Executive Director to:
 - a. Have no adverse environmental impact.
 - b. Have no adverse visual impact on properties beyond the boundaries of the federal reservation or site.
 - c. Meet the general criteria of Section 3.

B. The Commission delegates approval authority to the Executive Director for the renewal of previously-approved antennas which meet all of the requirements of Section 7 and propose no change to the physical parameters of the original proposal.

Section 7 - Renewal of Antenna Approvals

Approved antennas that are still needed beyond the approval period must be resubmitted for renewal. Federal agencies should submit requests for renewals several months prior to the antenna's expiration so that no interruption in service occurs. Any antenna that does not receive re-approval by the Commission should be removed as soon as possible after the expiration of the Commission's approval period. Antennas that are no longer needed should be removed immediately.

Each request for renewal should be accompanied by the following information, unless it is determined through the Commission's early consultation process that such information is not needed:

A. A certification by the sponsoring agency or the telecommunication service provider that the proposed transmitting antenna complies with the RF radiation guidelines adopted by the Federal Communications Commission and applicable health and safety regulations adopted by the Occupational Safety and Health Administration.

B. A copy of the previous Commission approval.

C. A statement that:

1. All conditions of the original approval have been, and continue to be, satisfied.
2. The original installation is structurally sound and continues to meet all of the submission requirements.

3. Technological advances or operational changes have not offered any alternatives that permit the elimination of the antenna, or the reduction in its size to minimize visual impacts, or reduction in RF radiation to minimize its health and safety effects to humans.

Section 8 - Specific Submission Requirements

The following information shall be submitted with each antenna installation proposal, unless it is determined through the Commission's early consultation process, discussed in Sections 2 and 3, that such information is not needed:

- A. A letter from the federal agency to the Executive Director requesting Commission review.
- B. Description of, and purpose for, the proposed antenna installation, including information for all of the proposed elements such as towers, monopoles, and equipment buildings and shelters (if applicable). The description should include information on: the building or site location; the tenant agency where the antenna or tower is located; the antenna's physical dimensions; transmitting frequency and frequency of operation; the potential for accommodating additional antennas on the support structure; and any other appropriate data regarding the particular installation consistent with security considerations.
- C. Description of any existing antennas located on the building and/or site, structure, or tower. The description should state the functional relationship of the proposed antenna (if applicable) to existing antennas as well as the status of any existing antennas that are proposed-to-remain. If the site and/or building contains existing antennas that are subject to Commission approval but have not yet been approved, the submission for the proposed antenna must include all of the required information for the existing antennas as well.
- D. Site plan and building roof plans and elevations (for antennas mounted on a building, structure or tower) showing the form, dimensions, and location of the proposed antenna(s) and any existing antennas that are proposed to remain.
- E. Construction drawings.
- F. Description of the texture and color of antenna materials to be used.
- G. Screening plan, where appropriate, including proposed materials, color and texture of screening elements for rooftop and ground-level installations.
- H. Discussion of the alternatives that were considered to meet the telecommunications needs of the submitting agency or the service provider.

I. *Sight line studies and photosimulations of the proposed installation and alternatives considered, illustrating the extent to which the proposed antenna(s) will be visible from surrounding streets, public open spaces, and nearby residential areas.*

J. Environmental documentation prepared by the federal agency pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended, and the Council on Environmental Quality regulations.

K. A determination by the agency as to whether the project is subject to Section 106 of the National Historic Preservation Act of 1966, as amended. *If a Section 106 review is required, submissions must include a summary of any consultation with the appropriate State Historic Preservation Officer and the Advisory Council on Historic Preservation and documentation of the affected resources. Copies of all correspondence should be provided. The Section 106 review process shall be completed prior to submitting the final proposal to the Commission for review.*

L. A certification by the agency that the proposed transmitting antenna complies with the RF radiation guidelines adopted by the Federal Communications Commission and the health and safety regulations adopted by Occupational Safety and Health Administration.

M. A commitment to perform periodic upkeep of the antenna installation to ensure its continued safe operation, particularly after severe weather events.

Section 9 - Definitions

Antenna: A metallic device (rod, whip, dish) or other instrument used for radiating (transmitting or sending) or receiving radio waves and microwaves.

Antenna Task Force: A group of NCPC Commission members, staff and invited local government officials and technical experts, established periodically to explore issues associated with the installation of antennas in the National Capital Region.

Executive Order: A legal proclamation or directive used by the President to exercise authority.

Radiofrequency Electromagnetic Field: The presence of electromagnetic energy at a given location. The field can be described in terms of the electric and/or magnetic field strength at that location.

Radiofrequency Radiation (RF radiation): the propagation of energy through space in the form of waves or particles.

Telecommunications Act of 1996: The Act facilitates opportunities related to recent advancements in telecommunications technology and the rapid growth of the Nation's communications infrastructure. The Act makes federal property available for the siting of mobile

services antennas and, among its many provisions, provides for safeguards to human health and property.

1. The National Capital Region (NCR) includes the District of Columbia, Montgomery and Prince George's Counties in Maryland, Arlington, Fairfax, Loudoun, and Prince William Counties in Virginia; and all the independent cities in Maryland and Virginia within the geographic area bounded by their outer boundaries.
 2. The Guidelines are also intended to be consistent with the Telecommunications Act of 1996, the President's Executive Memorandum on "Facilitating Access to Federal Property for the Siting of Mobile Services Antennas" dated August 10, 1995, and the General Services Administration's "Placement of Commercial Antenna on Federal Property" dated June 11, 1997, and Public Law 106-113.
 3. The Monumental Core includes the Mall, Ellipse, and White House Grounds, East and West Potomac Park, Federal Triangle, Northwest Federal Office Area, Southwest Federal Office Area, Lady Bird Johnson Park, and the Pentagon.
 4. Section 5(b) of the Planning Act generally exempts projects within the Capitol Grounds or structures erected by the Department of Defense during wartime or national emergencies within existing military, naval, or Air Force reservations. In the latter case, the affected Defense agency should consult with the Commission if off-site effects are anticipated.
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Appendix A

Comprehensive Plan Policies and Implementation Strategies Applicable to Placement of Antennas on Federal Property in the National Capital Region

Policies and Implementation Strategies contained in the Parks, Open Space, and Natural Features Element

Policies:

1. The location of towers, antennas, or similar structures in or adjacent to the federal park system should be discouraged, to the extent possible.
2. In rare instances where antennas or towers must be located within a federal park or open space, they shall conform to the Commission's Guidelines for Antennas on Federal Property in the National Capital Region as well as the following:
 - a. Every effort should be made to avoid locating antennas and tower structures within the viewsheds of established natural and cultural landscapes and open spaces.
 - b. Every effort should be made to avoid locating antennas and tower structures within the viewsheds of established natural and cultural landscapes and open spaces.
 - c. Innovative designs that reduce the visibility of antennas and towers in a natural setting should be encouraged.

The use of compatible alternative tower structures that are similar in design or appearance to trees or other tall features may help to reduce the visual impact of these structures.

3. Federal and local agencies should, to the extent practical, identify appropriate locations for the siting of antennas and towers through their master plans and comprehensive plans. This should help protect the functional integrity of, and the important viewsheds to and from, federal parks and open space areas.

Short-term Implementation Strategy:

25. In order to minimize the potential for antennas, water and communication towers, or similar structures to be located on or adjacent to federal park or open space lands, federal and local agencies should work closely with the Commission and the telecommunication industry to identify alternative means of accommodating telecommunication needs. Existing antennas and towers in natural parks, such as Rock Creek Park, should be relocated outside of park boundaries, when feasible.

Policies and Implementation Strategies contained in the Federal Environment Element

Policies:

1. Precautions should be taken in locating and operating transmitting antennas because of the potential for adverse RF field emission effects.
2. To minimize possible RF exposure from single pole antennas and the potential combined (cumulative) effects of placing multiple antennas at one location (collocation) and to better control and monitor emissions, federal agencies are encouraged to reduce the number of antennas in the Region.
3. To further reduce the number of antennas in the Region, federal agencies should evaluate the possibilities for joint-use of antennas (cooperative antenna technology) and where no other alternative exists, collocating antennas at one location, particularly in areas any potential adverse effects can be mitigated.
4. Where there are multiple transmitters at one location, federal agencies should evaluate the overall cumulative effects of the transmitters to ensure that the combined RF energy emissions continue to meet FCC guidelines.
5. Where occupational/controlled exposure may be present, persons who may be exposed should be made fully aware of the risks. Federal agencies should place warning signs and labels that provide:
 - a. Information and instructions that establish awareness of the risk of potential exposure in known high exposure locations.

b. FCC- and OSHA-approved procedures for working in the vicinity of RF sources to prevent exposures in excess of the maximum allowable exposure identified in the FCC guidelines.

6. Where there are multiple transmitters at a site, federal agencies should evaluate the overall cumulative effects of all transmitters.

7. With respect to rooftop environments and multiple on-site transmitters, adequate interior building attenuation measures should be incorporated to reduce RF field penetration into the interior habitable areas of the building.

8. Federal agencies are encouraged to: seek information on RF radiation-related health and safety issues; monitor changes in standards and guidelines for the installation of antennas; keep abreast of advances in technology, such as fiber optics, the availability of cooperative antenna technologies and teleports; and implement the most appropriate application which would reduce or minimize public exposure to RF fields.

9. Federal agencies are encouraged to implement a policy of "prudent avoidance" in locating new antennas on property they control. This suggests that federal agencies reduce the exposure of workers and the public to RF fields where they may be prevalent, including those from power lines, antennas, equipment and other recognized sources of RF and EMF emissions.

10. The telecommunications industry and federal agencies are encouraged by the Food and Drug Administration to:

a. Continue to support needed research into possible biological effects of RF field of the type emitted by mobile phones.

b. Design mobile phones in a way that minimizes any RF field exposure to the user and nearby pedestrians that is not necessary for device function.

c. Providing mobile phone users with the best possible information on what is known about the possible effects of mobile phone use on human health.

11. Through shielding or other mitigating design, and to the extent possible, federal agencies should minimize the exposure of federal employees and the public to EMFs from strong magnetic fields generated from electrically powered transportation in the National Capital Region.

Short-term Implementation Strategies:

1. Federal agencies with proposals to install transmitting antennas should coordinate with the Federal Communications Commission (FCC) to determine compliance with the FCC standard for human

exposure to RF radiation. The FCC provides applicants with guidance in the form of a technical bulletin that is designed to minimize the burden required by an applicant to determine compliance with the guidelines prior to submitting an application.

2. Prior to the installation of any antenna(s) on federal property in the NCR, federal agencies shall submit (pursuant to Section 5 of the National Capital Planning Act of 1952 (Planning Act)) plans and proposals to the National Capital Planning Commission for its review and action.

3. Federal agencies should coordinate and consult such proposals with NCPC and obtain the Commission's "Guidelines and Submission Requirements for Antennas on Federal Property in the National Capital Region" at the earliest opportunity, in the preparation of plans for antenna installations.

4. Prior to the installation of antenna(s) on federal property, applicants, as part of their submission to the NCPC for the review and approval of antennas in the NCR, must provide certification, in accordance with the NCPC Antenna Submission Guidelines Requirements, that the proposed transmitting antenna complies with RF radiation guidelines adopted by the FCC.

5. Pursuant to FCC guidelines, federal agencies responsible for antenna installations should develop an RF exposure protection program which addresses safety and health issues including training, emissions monitoring, protective procedures, engineering controls, hazard assessments, employee involvement, and designated responsibilities for program implementation. Federal agencies that have an RF exposure protection program are encouraged to periodically update their protection guidelines as necessary in accordance with current FCC policies.

Long-term Implementation Strategies:

6. In relation to antennas sited within or nearby schools or daycare facilities, RF beams of greatest intensity from antennas should not fall on any part of the school grounds or building without the knowledge and agreement from the school or responsible federal agency managing such facilities.

7. Federal agency supported projects should avoid conducting activities involving power lines and other sources of potentially high EMF fields in close proximity to daycare or school projects. Children play areas or exterior activity areas directly under power lines or adjacent to high-voltage power transformers for underground lines, or large electrical substations, should be avoided.

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