

# Antennas

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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.<sup>1</sup> 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 provisions in Section 5 of the National Capital Planning Act of 1952, as amended, 40 USC § 8722(b) and (d); D.C. Code § 6-641; and the International Center Act of 1968, as amended, P.L. 90-553(1968) and P.L. 97-186 (1982) at Section 3) such installation proposal to the Commission for review and comment.<sup>2</sup> 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 Core<sup>3</sup> 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.<sup>4</sup> 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 of 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 plan 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.

## **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, colocating antennas at one location, particularly in areas where 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.