U.S. Department of
Transportation

FEDERAL AVIATION
ADMINISTRATION

INITIAL REGULATORY EVALUATION, INITIAL REGULATORY FLEXIBILITY DETERMINATION, INTERNATIONAL TRADE IMPACT ASSESSMENT, AND UNFUNDED MANDATES ASSESSMENT

SAFE, EFFICIENT USE, AND PRESERVATION OF THE NAVIGABLE AIRSPACE

PROPOSED RULE
(14 CFR PART 77)

Office of Aviation Policy and Plans
Operations Regulatory Analysis Branch, APO-310
Scott M. Straub
December 2004

Table of Contents

EXECUTIVE SUMMARY CHECKLIST

This draft regulatory evaluation examines the costs and benefits associated with the proposed rule to amend 14 CFR part 77. These proposed amendments pertain to the rules for obstruction evaluation standards, aeronautical studies, scope of the FAA's authority, and notice provisions regarding objects and electromagnetic interference in situations where either could create a hazard to air navigation.

Total Costs and Benefits of this Rulemaking

The FAA estimates the cost to private industry would be approximately $13.7 million ($8.8 million, discounted) over the next ten years. The estimated cost of the proposed rule to the FAA would be approximately $19.9 million ($12.8 million, discounted) over the next ten years. Therefore, over the next ten years, the total cost associated with the proposed rule would be approximately $33.6 million ($21.5 million, discounted).

There are two main qualitative safety benefits of the proposed rule. First, this proposal would enhance the protection of air navigation in the vicinity of private use airports with FAA-approved instrument approach procedures. Second, the proposed rule would protect the flying public from signal interference from broadcast sources disrupting vital communications or altering the performance of vital avionics. Therefore, the FAA contends that the qualitative benefits of the proposed rule adequately justify the costs of the proposed rule.

Who is Potentially Affected by this Rulemaking?

This proposed rule would affect anyone who is proposing to construct a transmitting structure, who would construct a transmitting structure, or who would alter an existing transmitting structure (i.e. television operators, radio stations, cellular phone providers). This rulemaking may also

affect individuals or corporations proposing construction or alteration because obstruction standards modified by this rule could result in more structures determined to be obstructions.

Our Cost Assumptions and Sources of Information

Discount rate – 7%

Period of Analysis 2006 – 2015

Monetary values expressed in 2004 dollars

Cost for an individual to file an Obstruction Evaluation (OE) notice or an Electromagnetic Interference (EMI) notice - $10.00

Cost for a consulting firm to file an OE notice or an EMI notice - $445.00

Cost for the FAA to conduct an aeronautical study – $520.00

Initial Regulatory Flexibility Determination

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Administrator of the FAA certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

This rulemaking affects domestic entities operating within the United States. Therefore, this proposed rulemaking would not have an impact on international trade.

Unfunded Mandates Assessment

This proposed rulemaking does not impose any unfunded mandates on any State, local, or tribal governments.

I. INTRODUCTION

The primary objective of the proposed rule is to maintain efficiency and capacity of the national airspace system while promoting safety. In addition, the proposed amendments are intended to enhance understanding to construction or alteration proponents, local zoning authorities, and others covered by this proposed rule, as well as making the rule easier for the FAA to administer. The proposed rule includes obstruction notification standards for construction or alteration of structures at or near private airports with at least one FAA-approved instrument approach procedure (IAP), and at heliports, and for electromagnetic interference (EMI) in general. The NPRM also would amend certain civil airport imaginary obstruction surfaces to promote harmonization between these surfaces and other FAA airport design documents. Finally, the proposed rule would revoke the public hearing provisions of Subpart E and the antenna farm provisions of Subpart F.

II. BACKGROUND

Part 77 establishes the standards for identifying obstruction, describes requirements for submitting notice to the FAA of proposed construction alterations of structures, and provides for aeronautical studies of obstructions to determine their impact on airspace use. Submission of notice to the FAA is only the first step in a complex process established by Part 77 to determine if a proposed construction or alteration is a hazard to air navigation. A general discussion of the process is provided here because of its major influence on any assessment of the economic impact that may result from these proposals.

The criteria for screening a Notice of Proposed Construction or Alteration are applicable to all public use airports and are designed to complement other Federal Regulations and standards

established to protect air navigation. The fundamental consideration in this process is the structure's physical as well as electromagnetic effect on aviation safety and on existing and planned air navigation aids, airport facilities[1] and communication aids. In screening a submitted notice, the FAA evaluates the proposal using the obstruction standards in Subpart C of Part 77.

Once a structure is classified as an obstruction, the FAA initiates further aeronautical study to determine if it would create adverse effects on aeronautical operations. The aeronautical study involves an evaluation of the obstruction's impact on the safety of aircraft operations and the efficient utilization of the navigable airspace by aircraft. For example, a proposed structure or alteration would have an adverse effect if it would:

a. Require a change to an existing or planned IFR minimum flight altitude, a change to a published or standard instrument procedure, or a change to an IFR departure procedure.
b. Require a VFR operation (excluding operations conducted under FAR part 137, VFR military training routes (VRs), and any operation conducted under a waiver or exemption to FARs) to change from a regular flight course or altitude.
c. Cause an electromagnetic effect upon the operation of an air navigation facility or the signal used by aircraft.
d. Restrict a clear view of runways, taxiways, or traffic patterns from the airport traffic control tower.
e. Derogate airport capacity/efficiency.

[1] The proposed rule would include private use airports with FAA-approved instrument approach procedures. This addition to the rule is examined in further detail in the Regulatory Changes and Cost sections of this regulatory evaluation.

f. Affect future VFR and/or IFR operations indicated by plans on file with the FAA.

g. Affect the useable length of an existing or planned runway.

A finding that a proposed construction or alteration has an adverse effect on the navigable airspace would be subject to further analysis. A proposed structure or alteration would have a substantial adverse effect if there is a combination of an adverse effect on a significant volume of aeronautical operations.

The determination of substantial adverse effect relates directly to the volume of aircraft activities that would be adversely affected. If the FAA concluded that a proposed construction or alteration had a substantial adverse effect, then the FAA would state that the proposed construction or alteration was a hazard to safe navigation of the airspace. The Notice of Proposed Construction or Alteration allows the FAA to: (1) assess the effect that the construction or alteration would have on the navigable airspace and/or navigational facilities, as well as (2) determine whether or not proposed construction or alteration, if built, would be a hazard to navigation.

The FAA is not empowered to prevent construction or alteration proponents from proceeding with construction, even if it determines that the structure presents a hazard. Under the current rule, proponents are only required to provide the FAA with a 30-day notice before initiating construction. However, in the case of a Federal Communications Commission (FCC) licensed structure, a hazard determination involving EMI issues frequently invokes the rules of the FCC. Also, a hazard determination often gives rise to safety concerns of other state, or local agencies. In addition, a hazard determination may impede the economic interests of affected local governments. Local authorities and related licensing organizations often, in response to these

aviation obstruction concerns and interests, make rulings that result in the project being altered, relocated, or even abandoned. For example, local authorities would seldom issue a construction permit to a project that has received a hazard determination because the obstruction would likely diminish safety and impair the flow of air commerce to their community.

Table 1 illustrates the number of obstruction evaluation (OE) notices filed over the seventeen-year period from 1987 to 2003. The number of OE notices processed by the FAA range from a low of 11,873 notices in 1987, to a high of 46,877 in 2001. The average number of notices processed over this period is 24,070, and had a compound growth rate of approximately 7.18 percent over this same time period.

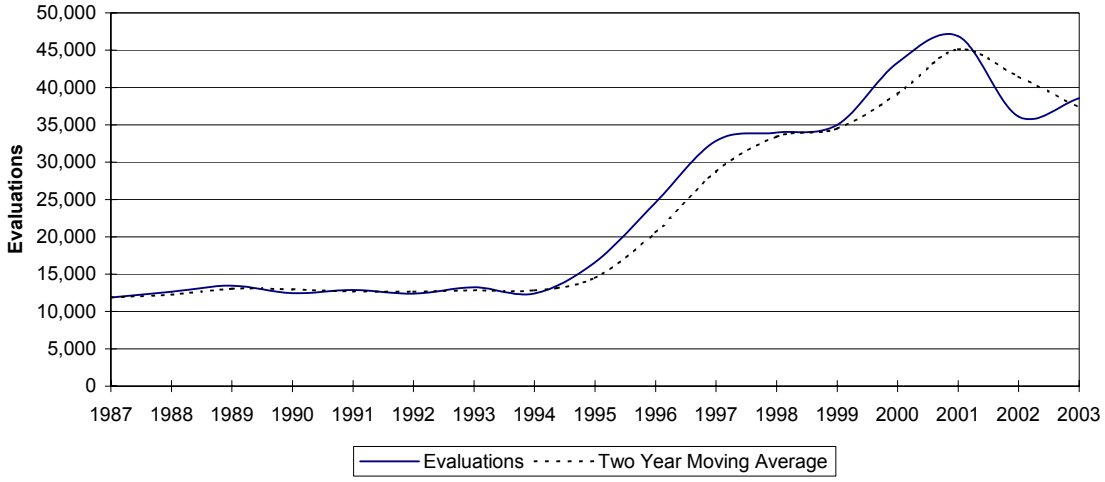
Table 1. Obstruction Evaluation Notices (1987 - 2003)

Year	Caseload
1987	11,873
1988	12,644
1989	13,460
1990	12,446
1991	12,884
1992	12,382
1993	13,243
1994	12,400
1995	16,580
1996	24,593
1997	32,840
1998	33,970
1999	35,000
2000	43,330
2001	46,877
2002	36,088
2003	38,577
Average	24,070

Source: U.S. DOT, FAA, APO-310, December 2004

Historically, approximately 15 percent of the cases require further investigation in the form of a full aeronautical study.[2] As illustrated in Figure 1 below, the FAA has experienced significant growth in the obstruction evaluation (OE) caseload beginning in 1995. The growth in the use of personal communication systems (PCS) and the FCC's antenna structure registration process[3] are two of the major drivers of the annual growth in the number of obstruction evaluation notices that are processed and evaluated.

Figure 1. Obstruction Evaluation Caseload Observed (1987 - 2003)



Source: DOT, FAA, APO-310, December 2004

[2] "Obstruction Evaluations (OE): Process and Cost Analyses." Berg, Robert M. and Fauntleroy, Jo. Corbin, The CNA Corporation, Institute for Public Research. Alexandria, VA Final Report, December, 1996.

[3] The FCC adopted an antenna structure registration process under which each antenna structure that requires FAA notification – including new and existing structures – must be registered with the FCC by its owner. Some antenna structures were never studied by the FAA and part of the registration requirement was that the antenna owner/sponsor had to give the FCC its aeronautical study number. Many of the owner/sponsors did not have an aeronautical study number. Therefore, they had to go to the FAA and get another study done. Registration for existing structures began on July 1, 1996 and ended on June 30, 1998. FCC Fact Sheet, Number 15, May 1996.

The compound growth rate of OE notices filed and processed during the seven-year period from 1987 through 1993 was approximately 1.57 percent. With the advent of cellular telephones and the rapid construction of transmitting towers during the mid 1990's, the compound growth rate for OE notices filed during the three-year period from 1994 to 1996 was approximately 25.64 percent. The number of OE notices filed increased from 12,400 in 1994 to 24,593 in 1996.

After this period of robust growth, the compound growth rate for OE notices processed over the following three years, from 1997 to 1999, declined from 25.64 percent to 2.15 percent. This period is more in line with the lower compound growth rate experienced before the rapid emergence of the telecommunications industry, and represents a slight increase in activity form the pre telecommunications period. However, there was another mini-boom with respect to the number of OE notices filed with the FAA from 1999 to 2001; this three-year period had a compound growth rate of approximately 10.23 percent, as the number of OE notices filed increased from 35,000 in 1999, to 46,877 in 2001. Most of the increase in OE notices filed during this period can be attributed to the increased demand for new cellular antenna towers and side mounts to existing antenna towers. This demand is fueled by competition within the PCS industry, which has resulted in expanded coverage areas and enhanced services.[4]

Furthermore, the compound growth rate of OE notices over the seven-year period from 1997 to 2003, which includes the three-year mini-boom period, was approximately 2.33 percent. The FAA believes that this compound growth rate of 2.33 percent is

[4] The FAA's Southern Region headquarters (the Region that processes more OE notices than any other Region) estimates that of all the OE notices filed in 2000 through their Region, 50 percent were for new cellular towers, 30 percent for side mounts, 10 percent for proposed buildings and other proposed structures, and 10 percent for cranes used in building construction.

indicative of the number of OE notices to be filed over the next ten years. This growth rate is slightly higher than the growth rate before the emergence of the PCS industry, and accounts for the increased number of structures that can be altered as a result of this industry expansion. The FAA solicits comments from affected entities with respect to the above estimates and requests that all comments be accompanied with clear documentation.

III. REGULATORY CHANGES IMPLEMENTED BY THE PROPOSED RULE

Amendments and revisions to part 77 have been under discussion and have been proposed in the Federal Register several times over the last two decades. Nonetheless, each time the agency was close to completing a final rule, a significant change, either legislatively or in the industry, occurred which required rethinking and restructuring the proposal. For example, due to the advent of personal communication systems the telecommunications industry has gone through several changes that made many of the previous recommendations and comments no longer valid. Two other examples include the Greater Orlando Aviation Authority (GOAA) court decision[5] and Pub. L. 100-223,[6] which have required changes in the way the FAA conducts aeronautical evaluations.

Pub. L. 100-223 contained four main requirements that modified the notification process. First, a notice must be filed with the FAA in situations that promote the safe, efficient use, and preservation of the navigable airspace. Secondly, the Act required an aeronautical study if a proposed structure would obstruct the safe navigation of the National Airspace System

[5] Greater Orlando Aviation Authority v. the FAA, 939 F .2d 954 (11th Cir. 1991). This impact of this decision is discussed in greater detail in a latter section.

[6] The Airport and Airway Safety and Capacity Expansion Act of 1987. Public Law 100-223 was enacted on December 30, 1987

(NAS). Thirdly, the Act requires that a full report be issued considering any adverse impact a structure would have on the safe and efficient use of the NAS. Lastly, the Act required that the Federal Communications Commission (FCC) and the FAA coordinate their efforts when performing aeronautical studies.

Rather than proceed with previously proposed regulations, which no longer completely reflect the needs of the FAA's obstruction evaluation program, the previously issued NPRM and SNPRM (Notice Nos. 90-18; FR 31722, 90-19; 55 FR 35152, and 90-19a; 55 FR 53680) were withdrawn (in July 2003) by a separate notice published in the Federal Register. The FAA believes the best interests of all parties would be served by withdrawing the previously issued NPRM and SNPRM, and proposing this rule.

The following is a discussion of the major proposals in this proposed rule.[7] Most of the proposed amendments are intended to simplify the existing regulations. For example, numerous changes have been made to clarify the notice criteria, the obstruction evaluation process, and the types of determinations that may be issued. Two provisions of the proposed rule, Electromagnetic Interference (Notice Criteria) and Protection of FAA-Approved Instruments Approach Procedures, are additions to the current rule. These provisions would change the criteria for which a notice must be filed and are expected to slightly increase the number of notices the FAA receives.

Rule Title

The FAA proposes to retitle this part from "Objects Affecting Navigable Airspace" to "Safe, Efficient Use, and Preservation of the Navigable Airspace." The FAA believes this title accurately reflects the purpose and intent of the rule.

[7] A substantial portion of the discussion of the proposed rule was provided by Air Traffic Airspace Management Program, Airspace Rules Division (ATA-400).

Rule Format

The FAA proposes to reformat the rule into subparts that follow the sequence of the aeronautical study process. The proposed format is aligned with the process used by the FAA and the public for the current obstruction evaluation process and would make finding information easier.

Definitions

The FAA proposes to amend current definitions that are frequently used in the obstruction evaluation process and to add new terms in Subpart A, section 77.3. The new definitions are not currently defined in any FAA document, and some of the current definitions are no longer applicable to current industry practices. This proposed rulemaking action clarifies the obstruction evaluation process.

The NPRM would amend the definitions of the various types of runways. As a result of the advancement in technology (e.g., flight management systems (FMS) and global navigation satellite systems (GNSS)), the FAA proposes new definitions that use visibility minimums in lieu of descent capabilities. For example, the proposed definition of a precision instrument approach runway is a runway that has an instrument approach procedure with visibility minimums of less than 3/4 mile.

Requirement to File Notice with the FAA

The FAA proposes to amend the requirement to file notice by extending the period from 30 days to 60 days before either construction begins or the date that an application is submitted to local authorities for a permit. The FAA's experience in processing notices and conducting aeronautical studies has shown that the current 30-day period is too brief, and most notices filed require more than 30 days for study and processing.

Currently, a notice of proposed construction must be filed at least 30 days prior to the earlier date of the beginning of construction or the date that an application for a construction permit is filed. A problem arises for all concerned parties when the FAA cannot complete the aeronautical study until after the comment period for that study closes.[8] Consequently, the 30-day time period does not allow the FAA adequate time to consider all comments received during the circularization process in a timely manner. Therefore, the FAA proposes that a notice must be filed 60 days before either the date construction begins or the date an application is submitted to any State or local government for the aeronautical studies to be completed in a timely manner.

GOAA Decision

As a result of the Greater Orlando Aviation Authority (GOAA) court decision, the FAA has changed the way it conducts aeronautical evaluations. The United States Court of Appeals for the Eleventh Circuit's decision in this case affects long-standing FAA policy and practice concerning the consideration given to proposals for a planned or proposed airport that is on file with the FAA or on file with the appropriate military service. This decision directed the FAA to consider the effect a proposed structure's effect on any existing or planned public use or military airports, air navigation facilities, procedures, or other proposal submitted to the FAA prior to the close of the comment period regarding an aeronautical study. The decision also applies to any plans or notices that are related to a military airport.

[8] If a structure is determined to be an obstruction, the FAA must then identify any adverse effects that the proposed structure may have on the navigable airspace. This process often requires distribution of the proposal to the aviation community and State/local governments for additional information. If the FAA finds it necessary to receive additional information, the agency provides 30 days for notified parties to submit comment.

In response to the court's decision, the FAA proposes to amend the application of its obstruction standards. In some cases, the impact of a proposed structure on the navigable airspace of an airport's planned runway (or navigable airspace of a planned airport) must be assessed if the FAA has received notification from the airport sponsor that they are planning to build a runway (or airport). Consequently, anyone planning to build or modify a commercial structure must notify the FAA if their proposed structure would affect the navigable airspace of a planned for, but yet to be built airport or runway. Additionally, the FAA believes that the principle of the GOAA decision should be applied both to cases that are circulated for public comment, and to cases that are not circulated for public comment. This rulemaking action would provide the FAA with the most up-to-date information in considering aeronautical effect, which results in the most accurate determination.

No Notice Required/Notice Acknowledgements

The FAA proposes to remove §77.15, Construction or Alteration Not Requiring Notice, and section 77.19, Acknowledgement of Notice. Current section 77.15 denotes certain proposed construction or alteration for which notice to the FAA is not required. These same exceptions to the notice requirement have been incorporated into proposed §77.9. This places all information pertinent to the filing of notices in one section of the rule and creates easier, less confusing access to that information. As for §77.19, Acknowledgement of Notice, the FAA proposes to remove this section. The information contained in this section would be contained in the proposed §77.31.

Obstruction Standards: Objects

The proposed rule would revise this section to maintain air navigation safety. Currently, part 77 states that a proposed or existing structure is an obstruction to air navigation if it is

higher than 500 feet (ft.) above ground level (AGL). Therefore, a proposed or existing structure that is at a height of exactly 500 feet AGL is not considered an obstruction. Under existing part 91, section 119 (Minimum safe altitudes: General), no person may operate an aircraft, over other than congested areas, below 500 feet above the surface.

As a result of these two regulations, under certain conditions, an aircraft may operate at 500 ft. AGL and while at this altitude, the aircraft could possibly encounter a structure or object that does not meet the current obstruction standards. This is a potentially hazardous situation.

In response, the FAA proposes a technical amendment to lower the height of a structure identified as an obstruction from above 500 ft. to above 499 ft. Accordingly, under this proposed amendment, all structures that are exactly 500 ft. tall would be obstructions and would be studied by the FAA to determine their effect on the navigable airspace. This regulatory action would ensure that all useable airspace at and above 500 ft. AGL is addressed during the aeronautical study and that this airspace is protected from obstructions that may create a hazard to air navigation. The FAA believes that this proposed amendment would impose negligible cost, if any, on the proponents.

Evaluating Aeronautical Effects

Subpart D, of the current rule, contains general provisions regarding aeronautical studies, and the relevant factors used to consider the impact of proposed construction or alteration on the navigable airspace. The FAA proposes to add a section entitled, Evaluating Aeronautical Effect, §77.29, which would incorporate the specific factors listed in Pub. L. 100-223 for consideration during an aeronautical study. The inclusion of this language into Part 77 would not add or delete any factors currently

considered in an aeronautical study. This proposal would merely incorporate the statutory provisions into part 77 and would provide the public with more specific information as to the factors that the FAA considers in determining the effect of a proposed construction or alteration on the navigable airspace.

Extension to a Determination of No Hazard

Under the existing rule, the effective period of a Determination of No Hazard, if not subject to an appropriate construction permit from the Federal Communications Commission (FCC), expires 18 months after its effective date unless it is otherwise extended, revised, or terminated. The current rule also allows the sponsor of a construction proposal to request an extension of the expiration date from the FAA official who issued the Determination of No Hazard. The rule contains no provision for the time period for which an extension may be granted. Generally, it is extended for however long the FAA official deems appropriate.

For structures not subject to an FCC construction permit, the FAA proposes to allow, upon request, a one-time extension of a no-hazard determination for up to 18 months. However, if a proponent requires a longer time period, the proponent would have to submit a new Form 7460 (notice of construction) to the FAA to restudy the proposed structure.

For structures subject to an appropriate FCC permit, a Determination of No Hazard may be extended for 12 months, provided that the sponsor has submitted evidence that an application for a construction permit was filed and that additional time is needed because of FCC requirements. Therefore, if the FCC extends the original FCC construction completion date, the sponsor must request an extension of the FAA's Determination of No Hazard from the issuing FAA regional office.

Currently, once the FCC issues an extension to a construction permit, the FAA's Determination of No Hazard is automatically extended. This practice presents a problem because once the FAA issues a Determination of No Hazard, the FAA considers the proposed structure when establishing or modifying flight procedures or air traffic operations in the area containing the structure. In the past there have been cases where air traffic operations or flight procedures have been delayed or adjusted for years to accommodate a structure that was never actually built.

Effective Period of Determinations

The current rule does not contain a section that addresses the effective period of a determination. Information regarding a determination's effective date is contained in the actual determination issued to the sponsor. However, this information is not included in the regulations. As a result, the FAA proposes to include a regulatory provision that provides for a determination to become effective 40 days after the date of issuance, unless a petition for discretionary review is received by the FAA within 30 days of issuance. This amendment would provide information to the general public who may have an interest in certain proposed construction or alteration projects.

Petitions for Discretionary Review

The existing rule provides for the submission of a petition for discretionary review for those persons who have a substantial aeronautical objection to the issued determination, or who were not given an opportunity to comment during the aeronautical study process. The FAA proposes to expand this section to include information pertaining to the processing of petitions for discretionary review. The FAA is proposing this change in order to simplify and clarify the process.

The FAA also proposes to exclude from the discretionary review process determinations of temporary structures and recommendations for marking and lighting. Because of the very nature of temporary structures, it is not feasible to apply the discretionary review process to these structures. Also, since marking and lighting recommendations are simply recommendations, there is a separate process for a waiver of, or deviation from the recommendations. The FAA does not find it necessary to extend the discretionary review process to these determinations.

Public Hearings

The current subpart E lists the rules of practice for a public hearing concerning a proposed construction or alteration of a structure. The hearing procedures cited in subpart E have not been used in recent years because petitioners are given ample opportunity to submit all the material they believe is necessary to support their positions. Further, the courts have upheld a review process exclusively based on the submission of written materials by the petitioner. For all of the above reasons, the FAA proposes to delete subpart E in its entirety.

Antenna Farms

The current subpart F describes the scope, policy, and general provisions for the establishment of antenna farms. An antenna farm is an area in which antenna structures may be grouped to localize their effect on the use of the navigable airspace. The existing regulatory provision for the establishment of antenna farm areas has never been used, nor has the need to designate antenna farms been demonstrated. During this rulemaking action, the FAA consulted with the FCC regarding this specific proposal. The FCC, who also has authority to propose an antenna farm under this part, has no objections to removing this section. Therefore, the FAA proposes to delete subpart F in its entirety.

Civil Airport Imaginary Surfaces

The current §77.25 describes civil airport imaginary surfaces, which are used to assist in determining whether or not a proposed structure would be an obstruction to air navigation at civil airports.[9] The FAA proposes to amend certain imaginary surfaces (i.e., primary surface and approach surface), which would broaden their applicability and would promote harmonization between these standards and other FAA airport design documents. This rulemaking action would amend the description of the primary surface[10] when there is an instrument approach procedure for that runway, irrespective of the type of runway surface. Currently, if a runway has a specially prepared hard surface (such as asphalt or concrete), the primary surface extends 200 feet beyond each end of that runway; if a runway has no specially prepared or planned hard surface, the primary surface ends at each end of that runway. The FAA proposes to amend the description of the primary surface for a runway that does not have a specially prepared or planned hard surface to include the 200 feet extension beyond the end of the runway to accommodate the instrument approach procedure.[11] The FAA believes this amendment would assist in maintaining the necessary clearance from obstacles at airports that have instrument approach procedures, but do not have specially prepared hard surfaces.

In determining the width of the primary surface, the current regulation specifies different widths for utility runways and for other than utility runways. These two runway types are further categorized as visual approach, instrument approach with

---

[9] If a proposed structure penetrates any one of the imaginary surfaces, then the structure is an obstruction. The FAA then conducts an aeronautical study determine whether or not the obstruction adversely affects a significant number of operations and therefore would be a hazard to navigation.

[10] The primary surface is longitudinally centered on the runway.

[11] Instrument approach procedures for runways that do not have a specially prepared hard surface are becoming more prevalent in remote areas of the country, such as the Western United States.

distinguishing flight visibility minimums, and approach with day or night criteria. The FAA proposes to remove the term "utility runway" and replace it with the phrase "runways used by small aircraft."[12] The FAA also proposes to use three categories of runway types[13] in determining the primary surface width. By adopting these terms and categories, which are similar to the terms and categories used in FAA airport design documents, the current rule setting forth the primary surface would be amended from five runway types to three runway types.

The proposed rule would also amend the imaginary approach surface.[14] As a result of this proposed rulemaking action, if the runway is a visual runway, used by small aircraft or restricted to day only instrument operations, the surface width expands uniformly to 1,250 feet (ft.). If the runway is a visual runway, used by other than small aircraft or for instrument night circling the surface width would expand uniformly from 1,500 ft. to 3,500 ft. If the runway is a non-precision instrument or precision instrument runway, the surface width expands uniformly to 4,000 ft. and 16,000 ft., respectively.

Other changes would include removing approach surface widths of 1,500 ft. and 2,000 ft., increasing the width for some non-precision runways from 2,000 ft. to 4,000 ft. These proposed changes are consistent with runway criteria in FAA Order 8260.3.

---

[12] Small aircraft, as defined in Title 14 CFR part 1, are aircraft 12,500 pounds or less, maximum certificated takeoff weight.

[13] The three categories of runway types in determining the primary surface width: (1) the runway is visual, used by small aircraft or is restricted to day only instrument operations; (2) the runway is visual, used by other than small aircraft, or has instrument night circling minimums; and (3) the runway is a non-precision runway or precision instrument runway.

[14] The approach surface is defined as a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

The FAA is proposing to amend the primary surface and the approach surface for several reasons. The United States Standard for Terminal Instrument Procedures (TERPS) has expanded the requirements for obstruction clearance in the visual area of instrument approach procedures.[15] The proposed changes to the airport imaginary surfaces would support the more stringent TERPS requirements for visual area protection. Without these proposed changes to the rule, an obstruction may be built in a surface that has previously been identified as clear of obstacles or structures without the benefit of an aeronautical study being conducted by the FAA to determine the impact on instrument operations and the navigable airspace.

These proposed changes would harmonize TERPS criteria, airport design standards, and part 77. The lack of harmonization among instrument approach procedure criteria, airport design standards, and part 77 obstruction evaluation criteria has been a source of confusion among both airport managers and the FAA. With this rulemaking, the FAA intends to improve uniformity and consistency among criteria for airports, instrument approach procedures, and obstructions.

These proposals regarding surfaces would not change the notice requirements for proposed construction or alteration of existing structures. However, the amending of the imaginary surfaces (primary and approach surfaces) may result in more proposed structures being classified as obstructions and consequently would require further study by the FAA to determine whether or not the structure is a hazard to air navigation. By studying more proposed obstructions that are in areas critical to the takeoff and landing of aircraft, the FAA has the ability to evaluate and maintain the integrity and safety of instrument

[15] This includes a new visual area assessment for runways to which a pilot can circle to land from an instrument approach

approaches, as well as airport capacity and efficiency. It is important to note that exceeding part 77 obstruction standards alone does not necessarily identify a structure as a hazard until further study is conducted. As such, the FAA contends that these proposed amendments would have a negligible impact on the additional number of hazard determinations by the FAA. The FAA contends that there will be negligible charting costs imposed on the FAA as a result of these proposed changes, but there will not be any costs imposed on the public. The FAA solicits comments from affected entities with respect to this finding and determination.

Electromagnetic Interference (EMI) Notice Requirements

Section 206 of Public Law 100-223 requires that aeronautical studies under part 77 consider whether proposed construction or alteration could cause interference with air navigation facilities or equipment, such as radar or an instrument land system (ILS). It is evident by the legislative history of this statutory provision that Congress intended for the FAA to include electromagnetic interference [16] as a factor during aeronautical studies. Accordingly, the FAA proposes to require notice of construction or alteration that may result in EMI[17] to air navigation and communication facilities.

In particular, the FAA proposes to require that notice be filed for the following: (1) construction of a new facility or modification of an existing facility which supports a radiating element for the purpose of radio frequency transmission; (2) any changes or modifications to a system, when specified in the

[16] EMI is defined as any interference or impediment to the transmission or quality of navigation or communication signals to or from aircraft, meteorological equipment, navigation equipment, communications equipment, or air traffic control facilities.

[17] The cause of EMI can be from a power source, radio frequency transmitter, or an object or surface that emits, reflects, or reradiates an electromagnetic signal or electrical pulse.

original FAA determination including a change in the authorized frequency, the addition of new frequencies, an increase in effective radiated power (ERP) equal to or greater than three decibels (db), or the modification of any radiating elements[18].

Broadcasting facilities generally fall within the following six categories: (1) FM Broadcast[19]; (2) VHF and UHF TV; (3) Personal communication devices or cellular telephone; (4) AM Broadcast; (5) Land Mobile Radio; and (6) Microwave Repeater. In addition to these facilities, the FAA reserves the ability to categorize a proposed structure as an obstruction that otherwise does not fall into one of the six stated categories above but has the potential for EMI and would be a hazard.[20]

Antenna towers that are used for FM broadcast services present a concern to the FAA. The FM band (88-108 MHz) is immediately adjacent to the FAA's navigation/communications band (108-136.5 MHz) and utilizes a much greater transmitting power than the FAA Very High Frequency Omni-directional Range Station (VOR), ILS, or communications system. When EMI affects an ILS, inaccurate navigational guidance may result that would not be apparent to the pilot. This particular EMI affect may indicate that an aircraft is on course when the aircraft is not, in fact, on course. Also, in the case of air-to-ground communications, EMI

[18] Examples of a modification of radiating elements include a change in the antenna mounting location(s) if increased 100 feet or more (irrespective of whether the overall height is increased), changes in antenna specifications (including gain, beam-width, polarization, pattern), and a change in antenna azimuth/bearing (e.g. point-to-point microwave systems).

[19] The FAA finds that it needs to study all proposed transmitting antennas because the FM frequency bands, 88 – 108 MHz, are immediately adjacent to the FAA navigational frequencies and communication frequencies (108 –136.5 MHz). This close proximity makes it imperative to study all FM broadcasting frequencies to determine any interference.

[20] For example, a television broadcast station may get a new Doppler radar system that because of its proximity to an FAA facility, it is necessary for further aeronautical study.

can cause pilots and/or air traffic controllers to miss vital flight communications transmissions.

Similarly, the VHF-TV bands (54–72 MHz, 76–88 MHz, and 174-216 MHz) are adjacent to the FAA communications navigation bands for marker beacons (75 MHz), government land mobile facilities (162-174 MHz), and bands used for communication with the military air traffic (225-328.6 MHz). When EMI affects these bands, critical landing information may be lost, data link communications of ground systems may become unreliable, and as stated above, pilots and/or air traffic controllers can miss vital flight communications. The FAA believes that this proposed notice requirement and the other specified notice requirements addressed above are needed to maintain the integrity of critical air navigational and communication competence of the National Airspace System.

With technological advancements in the wireless communications industry, new transmitting devices are being developed that would not fall into any of the categories listed above, which could result in EMI that would be hazardous to aviation communications or navigational facilities. In order for the FAA to retain the ability to determine any adverse impact on the safe and efficient use of the airspace, or FAA facilities and equipment, the FAA needs the discretion to conduct aeronautical studies on proposed structures that could result in adverse EMI.

For many years, many broadcasting companies have been filing notice voluntarily with the FAA when constructing a new antenna tower. Moreover, though not required by any FAA regulation, many broadcasting companies have been filing notice with the FAA when changing frequencies or frequency power. This has allowed the FAA to study potential EMI effects and, thus avoid potentially hazardous situations. Since many broadcast companies already submit notice to the FAA, the FAA does not believe the increase

in the annual number of new EMI notices would be more than one-half the current number of annual OE notices filed.[21] The estimated incremental cost associated with the increase in EMI-related notices is examined in further detail in the cost section below.

Electromagnetic Interference – Obstruction Standards

The FAA is proposing that any radiating element that would transmit in the frequencies listed in the section above, be studied to determine whether it will cause EMI with specific FAA communication and navigational facilities. The FAA needs to study a proposed antenna site's impact to established and proposed FAA navigational and communication facilities.[22] As discussed above, transmitting in these frequencies may interfere with FAA navigational aids and communication systems that are adjacent to FAA frequencies. As a result, proposed facilities that would transmit in these frequencies need to be studied to determine their potential impact on air navigation or communication facilities and equipment. The FAA believes that this process is simpler for entities proposing construction of a new, or modification of an existing transmitting facility that intends to operate in the aforementioned frequency bands.

It is difficult to accurately determine the effect that the proposed electromagnetic interference consideration requirements contained in the rule would have on the number of obstruction classifications and hazard determinations. The FAA believes that the proposed rule would have a negligible impact on the current number of hazard determinations because most of the companies impacted by this requirement have been voluntarily submitting

[21] The FAA took a conservative approach in estimating the additional number of notices that would be filed as a result of the proposed EMI notice requirements.

[22] In this study, the FAA must consider a number of variables, including the structure, frequency, and location of the EMI source, as well as the distance between the EMI source and navigational aids and communication facilities potentially affected.

notices for antenna structures and frequencies for several years. The FAA solicits comments from affected entities with respect to this finding and determination, and requests that all comments be accompanied with clear documentation.

FAA-Approved Instrument Approach Procedures

There has been an increase in the number of IAPs developed and approved by the FAA for use at private-use airports and at heliports serving medical facilities. Since notice of construction or alteration at or near a private-use airport is not required under the existing part 77, the FAA may not be notified of proposed construction or alteration that may impact aircraft executing the IAP at that private-use airport. In order for the FAA to properly assess the safety impact of proposed construction or alterations on aircraft conducting an instrument approach, the FAA must consider proposed structures that would affect all FAA-approved IAPs, regardless of whether the procedure is at a public or private-use airport.[23] Therefore, the FAA is proposing to require that notice of construction or alteration on or near a private-use airport or heliport must be filed with the FAA if that private-use airport or heliport has at least one FAA-approved IAP.

It is important to note that the FAA is not requiring notice of proposed construction on or near all private-use airports and heliports. The FAA is only proposing that notice be filed for construction or alteration at or near a private-use airport or heliport that has at least one FAA-approved IAP.[24] Accordingly, if a private-use airport has an FAA-approved IAP, then a

[23] Section 44718 of the U.S.C., in pertinent part, provides that "a person must give adequate public notice… when the notice will promote- (1) safety in air commerce; and (2) the efficient use and preservation of the navigable airspace and of airport traffic capacity at public-use airports."

[24] Currently, the obstruction standards in part 77 are applied to proposed structures at or near all public-use airports, regardless of whether the airport has IAPs.

construction sponsor would be required to notify the FAA of a proposed construction or alteration that exceeds the notice criteria in proposed §77.17. This action would give the FAA adequate time to adjust the IAP, if needed, and to inform those who use the IAP.

Additionally, IAPs at private-use airports or heliports are not currently listed in any aeronautical publication. The FAA proposes to list the private-use airports and heliports with IAPs on the FAA website. As a result of this proposal, sponsors of construction or alteration at or near a private-use airport or heliport should consult the FAA website to determine whether an FAA-approved IAP is listed for that airport. If the airport is listed in the website, the sponsor would be required to file notice with the FAA. The estimated incremental cost associated with the new obstruction evaluations at private use airports with FAA-approved IAPs is examined in further detail in the Cost section.

IV. COSTS

The FAA estimates that total costs, as a result of this proposed rule, would be approximately $33.6 million ($21.5 million, discounted) over the next ten years. This cost estimate is based on two components: (1) cost to private industry of approximately $13.7 million ($8.8 million, discounted) to file newly required notices of proposed construction or alteration and (2) FAA costs of approximately $19.9 million ($12.8 million, discounted) to process and evaluate these newly required notices.

A. Assumptions

- Monetary values are expressed in 2004 dollars, unless noted otherwise.

- Discount rate applied is 7 percent as mandated by the Office of Management and Budget.
- Number of OE notices filed will grow at an annual rate of 2.33 percent.
- The ratio of OE notices to private-use airports (see table 2 below) with at least one FAA-approved IAP, would be similar to that of the ratio of current OE notices to public-use airports.
- 20 percent of companies will process OE notices in-house, while 80 percent will contract out this function.
- 40 percent of companies will process EMI notices in-house, while 60 percent will contract out this function.

B. Notice Required for Proposed Construction or Alteration on or Adjacent to Private-Use Airports with FAA-Approved Instrument Approach Procedures

The notice criteria in proposed §77.9 (a), (b), (c), and (d), (1), (2), (3) are currently contained in §77.13, and are being moved to §77.9 for continuity purposes. This change is editorial in nature, and would not have any cost impact on the affected entities. However, proposed §77.9 (d)(4), which is not currently in §77.13, would establish notice criteria for construction or alterations on a private use airport, or heliport, or in the proximity of an airport, or heliport, with at least one FAA-approved instrument approach procedure. Proponents of construction or alteration projects that meet the notice requirements of proposed §77.9 (d)(4) would incur costs because they would be required to notify the FAA. The objective of this proposal is to enable the FAA to provide protection for aircraft conducting instrument approaches at those private-use airports. As discussed in the background section above, this section of the proposed rule applies only to a specific subset of private use airports.

With the advent of GPS and the development of flight management systems, more IAPs for private use airports are being requested and approved by the FAA. As of December 2004, there were 384 private-use airports with at least one FAA-approved IAP and this number is expected to increase by no more than seven a year, and not exceed 454 over the next ten years.[25]

By using historical data on the number of public-use airports, the number of current OE notices filed, and the number of private-use airports affected by the proposed rule,[26] the FAA was able to estimate the potential annual number of additional OE notices that would be evaluated over the next ten years.

As shown in table 2, the FAA estimates that it would receive 3,137 OE notices of construction or alteration proposals in the year 2006, the first year the rule is expected to take effect. The number of OE notices are estimated to increase to about 4,600 in 2015. The FAA solicits comments from affected entities with respect to this finding and determination and requests that all comments be accompanied by clear documentation.

[25] Based on an estimate provided by FAA Flight Standards Service. The original estimate given was no more than five new airports per, and was inflated to seven per year as a precautionary measure. Based on FAA expert opinion and an internal database, the FAA estimates that as of March 2004, there were 384 private-use airports with at least one FAA-approved IAP. The database was last updated on March 23, 2004. http://www.faa.gov/ats/ata/ata100/afs400_SIAPS_webpage.pdf

[26] Compound growth rates for these components were calculated into the cost equation. The compound growth rate for public-use airports (-0.27%) was determined from annual data (1995 to 2003) available in the Administrator's Fact Book, March 1998, January 2001, December 2003, November 2004. http://www.atctraining.faa.gov/factbook.

Table 2. Estimated Number of OE Notices Filed at Private Use Airports with at Least One FAA-Approved IAP					
Year	Obstruction Evaluation Notices Filed at Public Airports	Public Airports Affected by Current Rule	Ratio of OE Notices Filed to Public Airports Affected	No of Private Airports Affected By Proposed Rule	New OE Notices filed at Private Use Airports with at Least One FAA Approved IAP
2006	41,333	5,244	7.88	398	3,137
2007	42,295	5,230	8.09	405	3,275
2008	43,279	5,216	8.30	412	3,419
2009	44,286	5,202	8.51	419	3,567
2010	45,316	5,188	8.74	426	3,721
2011	46,371	5,174	8.96	433	3,881
2012	47,450	5,160	9.20	440	4,046
2013	48,554	5,146	9.43	447	4,217
2014	49,683	5,132	9.68	454	4,395
2015	50,839	5,119	9.93	461	4,579
Source: U.S. DOT, FAA, APO-310, December 2004					

As with OE notices at public-use airports, proponents of projects at private-use airports, meeting the notice criteria would be required to notify the FAA. As noted in the Assumptions section, the FAA estimates that twenty percent of the proponents filing a notice would incur an estimated individual entity cost of approximately $10 per notice,[27] while the other eighty percent

[27] Filers of FAA Form 7460-1 were polled by ATA-400 in 1998 to determine how much time is required to complete the form without the service of a consulting firm. The average time required to file the form was 19 minutes (0.32 hours). The average hourly labor wage rate for the polled filers, including fringe benefits estimated at 23.45% of the hourly wage rate, was $22.19. At the time, the average cost for an individual to file the notice was 0.23 x $22.19 = $5.20. The total average cost, including the purchase of a $4.00 USGS map, was $9.10. In 2004 dollars, the total average cost is $10.02.

The FAA believes the average cost to proponents filing an EMI evaluation notice (individually or through a consulting firm) would be similar to the cost of filing an obstruction evaluation notice.

The fringe benefit factor can be found in Table 4-5, page 4-22, Economic Analysis of Investment and Regulatory Decision – Revised Guide, FAA-APO-98-4, June 1998.

To update costs to 2004 dollars, Table 10.1 – Gross Domestic Product and Deflators Used in the Historical Tables: 1940-2008 of the Budget of the United States Government (Fiscal Year 2004) was used.
http://w3.access.gpo.gov/usbudget/fy2004/pdf/hist.pdf

would employ the services of a consulting firm.[28] The FAA believes that, initially, many of these proponents may require outside assistance to prepare a notice.

The FAA estimates the average cost to proponents employing the services of a consulting firm to file an obstruction evaluation notice would be approximately $445 per case.[29] Note that if a company submits more than one notice per year, the knowledge gained from that first experience should result in a decrease in the incremental cost for the other notices. However, to be conservative, the FAA will base the costs for all such applications $445.

Based on the 3,137 expected OE notices in 2006, the estimated cost to those proponents filing the paperwork themselves would be approximately $6,300[30], while for those who outsource to a contracting firm to complete this task, the costs would be $1.1 million for the first full year of the proposed rule. As shown in Table 3, the ten-year cost would approximately $13.7 million ($8.8 million, discounted).

[28] It is important to note that many broadcasting and cellular companies currently have resources dedicated to providing this type of information.
[29] This cost includes expenses such as research, data collection, legal and engineering consultations and form preparation.
The consultant's average fee was updated from 1997 dollars to 2004 dollars.
[30] $6,300 is derived by multiplying the 3,137 notices by 20%, which is the number of entities that will process the notices in-house, as discussed in the assumptions section, which equals about 630 notices. Each notice will cost the individual company $10 to file, for a total of approximately $6,300.

Table 3. Estimated Proponent OE Costs at Private Use Airports						
Year	Estimated Number of OE Notices filed at Private Use Airports with at Least One FAA-Approved IAP	Costs for an Individual to File (20% of All Notices)	Cost for a Consulting Firm to File (80% of All Notices)	Total Cost	Discount Rate	Discounted Cost
2006	3,137	$6,274	$1,116,772	$1,123,046	0.8734	$980,912
2007	3,275	$6,550	$1,165,900	$1,172,450	0.8163	$957,068
2008	3,419	$6,838	$1,217,164	$1,224,002	0.7629	$933,785
2009	3,567	$7,134	$1,269,852	$1,276,986	0.7130	$910,473
2010	3,721	$7,442	$1,324,676	$1,332,118	0.6663	$887,646
2011	3,881	$7,762	$1,381,636	$1,389,398	0.6227	$865,247
2012	4,046	$8,092	$1,440,376	$1,448,468	0.5820	$843,022
2013	4,217	$8,434	$1,501,252	$1,509,686	0.5439	$821,169
2014	4,395	$8,790	$1,564,620	$1,573,410	0.5083	$799,842
2015	4,579	$9,158	$1,630,124	$1,639,282	0.4751	$778,811
Total		$76,474	$13,612,372	$13,688,846		$8,777,976
Source: U.S. DOT, FAA, APO-310, December 2004						

The FAA would also incur additional costs to process and evaluate the increased volume of OE notice generated by these requirements. In 1996, the FAA received a final report[31] from CNA Corporation (CNA) that analyzed the obstruction evaluation process and the costs associated with that process. The analysis identified and assessed the detailed activities in the component parts of the obstruction evaluation process; estimated the manpower resources used in performing each of those activities in each of the component obstruction evaluation processes in the total. Based on a cost analysis completed by CNA, the average FAA cost is $520 per obstruction evaluation notice.[32]

[31] "Obstruction Evaluation (OE): Process and Cost Analyses." Berg, Robert M. and Fauntleroy, J. Corbin, the CNA Corporation, Institute for Public Research. Alexandria, VA. Final Report, December 1996.

[32] The average cost, updated to 2004 dollars, is the sum of all costs (including salaries, vacation pay, holiday pay, retirement, benefits, and overhead) associated with obstruction evaluations divided by the number of cases processed in 1995 in the Southwest region. Due to time and resource constraints, only two regions were studied: the Southwest region and the Southern region. The Southwest region was selected as representative of the obstruction evaluation process based on the growth and change of caseload, OE process, staffing mix of grades, and quality of service. For further detail, see the cited CNA Final Report.

As shown in table 4, the estimated cost of the proposed rule to the FAA would be approximately $19.9 million ($12.8 million, discounted) over the next ten years.

Table 4. FAA Cost of Obstruction Evaluation Review at Private Use Aiports

Year	Estimated Number of OE Notices filed at Private Use Airports with at Least One FAA-Approved IAP	Cost per Case[1]	Total Cost	Discount Rate	Discounted Cost
2006	3,137	$520	$1,631,240	0.8734	$1,424,788
2007	3,275	$520	$1,703,000	0.8163	$1,390,155
2008	3,419	$520	$1,777,880	0.7629	$1,356,336
2009	3,567	$520	$1,854,840	0.7130	$1,322,475
2010	3,721	$520	$1,934,920	0.6663	$1,289,319
2011	3,881	$520	$2,018,120	0.6227	$1,256,784
2012	4,046	$520	$2,103,920	0.5820	$1,224,501
2013	4,217	$520	$2,192,840	0.5439	$1,192,760
2014	4,395	$520	$2,285,400	0.5083	$1,161,781
2015	4,579	$520	$2,381,080	0.4751	$1,131,234
Total			$19,883,240		$12,750,133

Source: U.S. DOT, FAA, APO-310, December 2004
1) "Obstruction Evaluation (OE): Process and Cost Analyses." Berg, Robert M. and Fauntleroy, J. Corbin, the CNA Corporation, Institute for Public Research. Alexandria, VA. Final Report, December, 1996.

C. Notice Required for Electromagnetic Interference

Proponents of construction or alteration projects that meet the notice requirements of section §77.9 (e) (1), and (2) would incur costs[33] because they would be required to notify the FAA. New §77.9 (e)(1) -- any construction of a new, or modification of an existing facility, which supports a radiating element(s) for the purpose of radio frequency transmission operating on the following frequencies:

[33] The costs associated with this provision would be attributed to Public Law 100-223, Section 206.

a. 54 – 108 MHz,
b. 150 – 216 MHz,
c. 406 – 420 MHz,
d. 932 – 935 / 941 - 944 MHz,
e. 952 – 960 MHz,
f. 1390 – 1400 MHz,
g. 2500 – 2700 MHz,
h. 3700 – 4200 MHz,
i. 5000 – 5650 MHz,
j. 5925 – 6525 MHz,
k. 7450 – 8550 MHz,
l. 14.2 – 14.2 GHz, and
m. 21.2 – 23.6 GHz.,

§77.9 (e)(2) any changes or modifications to a system, when specified in the original FAA determination including -- changes in authorized frequency, addition of new frequencies, increases in effective radiated power of more than 3db, or modification of radiating elements such as: i. Antenna mounting location(s) if increased 100 feet or more, irrespective of whether the overall height of the structure is increased; ii. changes in antenna specifications (including gain, beam-width, polarization, pattern); iii. Change in antenna azimuth/bearing (e.g. point-to-point microwave systems). The proposed amendments to the rule would affect FM and VHF-TV stations. The FAA is aware that the EMI notice requirements could increase the number of obstruction evaluation (OE) notices filed.

The FAA assumes that the increase in EMI evaluation notices would be approximately one-half the number of annual OE notices,[34] and the cost to file an EMI notice is the same as the cost to file an OE notice. As discussed previously in the Background section of this evaluation, and as illustrated in Table 1 and Figure 1, the number of OE notices filed for 2003 was 38,577, with annual

[34] Estimate based on FAA expert opinion.

increases expected at 2.33 percent from 2006 to 2015.[35] As such the FAA estimates the 2006 EMI evaluation caseload would involve 20,666 notices.

With this information, the FAA applied the same methodology used to determine potential cost for filing OE Notices to determine the potential cost for filing EMI notices, except for one change. The FAA assumed that individuals and some businesses would file 40 percent of the notices themselves, costing $10 each, and 60 percent of the notices would be filed through a consulting firm, costing $445 each.

As shown in Table 5, the ten-year cost would be approximately $62.2 million ($40.3 million, discounted). This cost would be attributed to Public Law 100-223, Section 206 and not to the proposed rule.

Table 5. Estimated Proponent Cost of Filing EMI Notices

Year	Number of EMI Notices Filed	Costs for an Individual to File (40% of Notices Filed)	Cost for a Consulting Firm to File (60% of Notices Filed)	Total Costs	Discount Rate	Discounted Cost
2006	20,666	$82,664	$5,517,822	$5,600,486	0.8734	$4,891,681
2007	21,147	$84,588	$5,646,249	$5,730,837	0.8163	$4,678,070
2008	21,639	$86,556	$5,777,613	$5,864,169	0.7629	$4,473,746
2009	22,143	$88,572	$5,912,181	$6,000,753	0.7130	$4,278,454
2010	22,658	$90,632	$6,049,686	$6,140,318	0.6663	$4,091,553
2011	23,185	$92,740	$6,190,395	$6,283,135	0.6227	$3,912,821
2012	23,725	$94,900	$6,334,575	$6,429,475	0.5820	$3,742,013
2013	24,277	$97,108	$6,481,959	$6,579,067	0.5439	$3,578,577
2014	24,842	$99,368	$6,632,814	$6,732,182	0.5083	$3,422,300
2015	25,420	$101,680	$6,787,140	$6,888,820	0.4751	$3,272,829
Total		$918,808	$61,330,434	$62,249,242		$40,342,044

Source: U.S. DOT, FAA, APO-310, December 2004

The FAA cost[36] to process and evaluate EMI notices is shown in table 6. As a result of the EMI notices, the estimated cost to

[35] 2.33% = ((38,577/32,540)^(1/7))-1

the FAA would be approximately $119.4 million ($77.4 million, discounted) over the next ten years. This cost would be attributed to Public Law 100-223, Section 206 and not to the proposed rule.

Table 6. FAA Cost to Process and Evaluate EMI Notices

Year	Number of EMI Notices Processed and Evaluated	Cost Per Notice	Total Cost	Discount Rate	Discounted Cost
2006	20,666	$520	$10,746,320	0.8734	$9,386,252
2007	21,147	$520	$10,996,440	0.8163	$8,976,371
2008	21,639	$520	$11,252,280	0.7629	$8,584,311
2009	22,143	$520	$11,514,360	0.7130	$8,209,580
2010	22,658	$520	$11,782,160	0.6663	$7,850,951
2011	23,185	$520	$12,056,200	0.6227	$7,507,995
2012	23,725	$520	$12,337,000	0.5820	$7,180,246
2013	24,277	$520	$12,624,040	0.5439	$6,866,641
2014	24,842	$520	$12,917,840	0.5083	$6,566,775
2015	25,420	$520	$13,218,400	0.4751	$6,279,967
Total			$119,445,040		$77,409,088

Source: U.S. DOT, FAA, APO-310, December 2004

D. Summary of Costs

Over the next ten years, the total proponent and FAA cost attributed to the proposed rule would be approximately $33.6 million ($21.5 million, discounted), as displayed in Table 7.

[36] As discussed in footnote 32, the FAA would incur additional costs ($520 per notice) to process and evaluate the increased volume of obstruction evaluation notices generated by this requirement.

Table 7. Costs Attributed to the Proposed Rule					
Year	Proponent Costs	FAA Costs	Total Cost	Discount Rate	Discounted Cost
2006	$1,123,046	$1,631,240	$2,754,286	0.8734	$2,405,700
2007	$1,172,450	$1,703,000	$2,875,450	0.8163	$2,347,224
2008	$1,224,002	$1,777,880	$3,001,882	0.7629	$2,290,121
2009	$1,276,986	$1,854,840	$3,131,826	0.7130	$2,232,949
2010	$1,332,118	$1,934,920	$3,267,038	0.6663	$2,176,965
2011	$1,389,398	$2,018,120	$3,407,518	0.6227	$2,122,031
2012	$1,448,468	$2,103,920	$3,552,388	0.5820	$2,067,522
2013	$1,509,686	$2,192,840	$3,702,526	0.5439	$2,013,929
2014	$1,573,410	$2,285,400	$3,858,810	0.5083	$1,961,623
2015	$1,639,282	$2,381,080	$4,020,362	0.4751	$1,910,045
Total	$13,688,846	$19,883,240	$33,572,086		$21,528,110
Source: U.S. DOT, FAA, APO-310, December 2004					

In addition to the above cost of the proposed rule, the FAA determined the cost of the legislative action to the industry and the FAA. As mentioned earlier, this law requires that aeronautical studies under part 77 consider whether proposed construction or alteration could cause interference (i.e., EMI) with air navigation facilities or equipment, such as radar or instrument landing system (ILS). As shown in Table 8, the total ten-year cost attributed to legislative action would be approximately $181.7 million ($117.8 million, discounted). The FAA is proposing this requirement in compliance with Public Law 100-223, Section 206. Accordingly, the cost associated with filing EMI notices would be attributed to the Act and not to the proposed rule.

Table 8. Costs Attributed to Public Law 100-223					
Year	Proponent Cost of Filing EMI Notices	FAA Cost to Process and Evaluate EMI Notices	Total Cost	Discount Rate	Discounted Cost
2006	$5,600,486	$10,746,320	$16,346,806	0.8734	$14,277,933
2007	$5,730,837	$10,996,440	$16,727,277	0.8163	$13,654,441
2008	$5,864,169	$11,252,280	$17,116,449	0.7629	$13,058,057
2009	$6,000,753	$11,514,360	$17,515,113	0.7130	$12,488,034
2010	$6,140,318	$11,782,160	$17,922,478	0.6663	$11,942,504
2011	$6,283,135	$12,056,200	$18,339,335	0.6227	$11,420,816
2012	$6,429,475	$12,337,000	$18,766,475	0.5820	$10,922,259
2013	$6,579,067	$12,624,040	$19,203,107	0.5439	$10,445,218
2014	$6,732,182	$12,917,840	$19,650,022	0.5083	$9,989,075
2015	$6,888,820	$13,218,400	$20,107,220	0.4751	$9,552,795
Total	$62,249,242	$119,445,040	$181,694,282		$117,751,132
Source: U.S. DOT, FAA, APO-310, December 2004					

As illustrated in Table 9, the total combined cost of the proposed rule and the legislative action over the next ten years would be approximately $215.3 million ($139.3 million, discounted).

Table 9. Total Cost of the Proposed Rule and Legislative Action					
Year	Cost of the Proposed Rule	Cost of Public Law 100-223	Total Cost	Discount Rate	Discounted Cost
2006	$2,754,286	$16,346,806	$19,101,092	0.8734	$16,683,634
2007	$2,875,450	$16,727,277	$19,602,727	0.8163	$16,001,664
2008	$3,001,882	$17,116,449	$20,118,331	0.7629	$15,348,178
2009	$3,131,826	$17,515,113	$20,646,939	0.7130	$14,720,982
2010	$3,267,038	$17,922,478	$21,189,516	0.6663	$14,119,469
2011	$3,407,518	$18,339,335	$21,746,853	0.6227	$13,542,847
2012	$3,552,388	$18,766,475	$22,318,863	0.5820	$12,989,781
2013	$3,702,526	$19,203,107	$22,905,633	0.5439	$12,459,147
2014	$3,858,810	$19,650,022	$23,508,832	0.5083	$11,950,698
2015	$4,020,362	$20,107,220	$24,127,582	0.4751	$11,462,840
Total	$33,572,086	$181,694,282	$215,266,368		$139,279,241
Source: U.S. DOT, FAA, APO-310, December 2004					

V. BENEFITS

There are two main qualitative safety benefits of the proposed rule. First, this proposal would enhance the protection of air navigation in the vicinity of private use airports with FAA-approved instrument approach procedures. Because structures that interfere with approach procedures erode the safety of the NAS, this proposal would require that the FAA be notified of proposed structures meeting certain obstruction criteria in order to study the impact on air navigation, chart the objects, and amend procedures if necessary. Second, the proposed rule would provide the public with a higher level of protection against signal interference from broadcast sources of vital aviation communications or avionics. For example, air traffic controllers (ATC) are tasked with providing separation services to aircraft operating in the NAS in addition to providing weather information, airport closures or construction, and current Notices to Airmen via radio. If communications are disrupted, important ATC instructions could be missed or separation among

aircraft could be lost, resulting in a possible aviation accident.

A. Notice Required for Proposed Construction or Alteration on or Adjacent to Private-Use Airports with FAA-Approved Instrument Approach Procedures

There could be instances where temporary or permanent construction projects on a private use airport or in the vicinity of a private use airport would cause interfere with navigational aids and disrupt operations. Objects, such as construction cranes, elevated advertising signs, power lines, and parking lot tower lights, could block or deflect ILS signals and cause radar screening reflection problems. If a proposed structure is a hazard, descent information could be flawed, resulting in the possibility of an accident. For example, if the FAA approves an IAP for a hospital heliport, and a structure was erected penetrating the approach path, that new structure could severely compromise the safety of that operation by disrupting the designated flight path of the helicopter. Even though hospital heliports are generally for private use only, the benefit to the public is substantial, because many lives have been saved, due to the timely transportation of patients via helicopters to medical facilities.

In order to study whether or not a proposed structure could be a hazard, the FAA must be notified of its potential existence. Advanced knowledge that an obstruction is proposed would allow the FAA adequate time to make a determination if the structure posed an aviation hazard, and to adjust the approach, if warranted, allowing the FAA time to disseminate the information to the airport owners within the approach.

B. Notice Required for Electromagnetic Interference

Broadcast signal interference from television and radio stations can degrade vital aircraft navigation and communication signals giving rise to potentially life-threatening situations. The notice requirements for EMI contained in the proposed rule are necessary to ensure that this type of degradation of navigation signals is detected before impairing the safety of the NAS.

Air traffic controllers are tasked with providing separation services to known aircraft operating in the NAS. ATC also provides weather information, airport closures or construction, and current Notices to Airmen via the radio. Until data link technology is available to all airspace users, the radio is the primary means available for issuing clearances, instructions, and this information.[37] If there is a breakdown in communications, even for a matter of seconds, important ATC instructions or information could go unheard, and separation among aircraft could be lost possibly resulting in a midair collision.

A substantial body of evidence indicates that FM signals can seriously encroach and disrupt aviation VHF transmissions. FM signal interference can also affect airborne ILS localizer and VOR receivers. FM interference during an instrument approach can disrupt localizer and glide scope cockpit indicators. However, the major concern with FM interference to an ILS frequency is that the interference is not as obvious as FM interference to communications. Lab tests, verified by flight-testing, have shown that when such interference occurs, it has a tendency to center the needle on the course deviation indicator (CDI)[38] when

[37] Although it is possible for pilots to navigate without assistance from ATC, they are not aware of the position of other aircraft in their immediate vicinity, nor do they know the intentions of the pilots of other aircraft.

[38] The CDI is a cockpit instrument that indicates to the pilot whether they are on course and which direction to steer if they are not.

in fact the aircraft is not on course. A centered needle indicates that the pilot is on centerline of the runway or on the proper VOR course, when in fact this may not be the course.

FM interference conflicts are often associated with the first broadcasts of new stations, or with frequency or power changes to existing transmitting FM stations. When these interruptions occur, the FAA must act to correct the potentially hazardous condition. Pilots often rely on surface based navigational aids for en route navigation and approach landings. In weather conditions where visibility is reduced, pilots rely on the signals received from localizers, VORs, etc. If there was an interruption in the signal or the signal in some way were compromised, an aircraft could veer off course, or could miss the airport. Furthermore, if the pilot was unaware of interference and its affect on the ILS signal, that pilot might make a flawed approach, landing too wide, too high, or too low. Loss of life could result from any of these flawed landings.

For example, after a radio station in Aurora, IL was sold, the new owners planned to build a new transmitting tower and move the station's transmitter to a location that allowed the station to be heard in the downtown Chicago area as well as in Aurora. However, due to the station's transmitting frequency and the many airports and their associated navigational aids in the Chicago area, every proposed location for a tower was found to result in electromagnetic interference. Because of the difficulty finding a suitable location for the new tower, and because there is no filing requirement regarding side-mounted antennas, the station finally placed an antenna on the side of an AM tower and began transmitting immediately. Consequently, the FAA was forced to

change two ILS frequencies and place restrictions on several other NAVAIDS that cost the FAA approximately $135,000.[39]

In another case, the owner of a radio station in Traverse City, Michigan filed for a new AM radio tower. Once the tower was built, an FM antenna was installed on the side of the tower. Two days after the radio station started broadcasting, interference to the ILS at Cherry Capital Airport was reported by the pilot of a commuter plane who was experiencing auto-pilot unlock. In this case, the FCC assisted in shutting down the station until the station owner paid to have the ILS frequency changed.[40]

This proposed rule would reduce the frequency of incidents. However, the benefits associated with reducing EMI and its effects on the National Airspace System are attributed to Public Law 100-223, and not the proposed rule.

VI. COMPARISON OF COSTS AND BENEFITS

The estimated cost of the proposed rule to proponents is the cost to notify the FAA of any construction or alteration projects on or in the vicinity of a private-use airport, or heliport, with at least one FAA-approved instrument approach procedure. The FAA estimates this cost would be approximately $13.7 million ($8.8 million, discounted) over the next ten years. The estimated cost of the proposed rule to the FAA would be approximately $19.9 million ($12.8 million, discounted) over the next ten years. Therefore, over the next ten years, the total cost associated with the proposed rule would be approximately $33.6 million ($21.5 million, discounted).

[39] DOT, FAA, Spectrum Assignment and Engineering Division. The cost estimate updated from 1997 dollars to 2004 dollars, and equaled $135,287.
[40] DOT, FAA, Spectrum Assignment and Engineering Division.

The qualitative benefits of the proposed rule would enhance the protection of aircraft on approach from potential obstructions resulting from unknown construction or alteration projects on or in the vicinity of private-use airports with FAA-approved IAPs, and ensure the signal accuracy of NAVAIDS and air traffic communications. The proposed rule, in conjunction with Public Law 100-223, would also assist in the prevention of interference with NAVAIDS and air traffic control. Therefore, the FAA contends that the qualitative benefits of the proposed rule adequately justify the costs of the proposed rule.[41]

VII. INITIAL REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principal, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide-range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis (RFA) as described in the Act.

[41] It is important to note that the FAA is not claiming the resultant benefits associated with Pub. Law 100-223 as justification of the costs of this proposed rule.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 Act provides that the head of the agency may so certify and an RFA is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

With regards to the impact of the proposed EMI requirements on small entities, as stated earlier, the FAA is proposing these requirements in compliance with Public Law 100-223, Section 206. Accordingly, the cost associated with filing EMI notices would be attributed to the Act, and not to the proposed rule.

While the FAA does not maintain data on the size of businesses that file notices, the FAA estimates that approximately forty percent of the OE notices would be filed by small business (comprised of business owners and private-use airport owners) as defined by the Small Business Administration. Consequently, in 2006 when the rule is expected to take effect, the FAA expects approximately 3,140 OE notices would be filed. Of those applications filed, approximately 1,260 notices are estimated to be filed by small businesses (using 40 percent assumption).

For those small businesses that are inexperienced in submitting the necessary paperwork, the FAA believes they would either hire a consultant or spend as much as the consultant fee ($445) in staff time to understand, research, complete, and submit the form(s). For the purpose of this regulatory flexibility assessment, the FAA assumes that it would cost all small entities approximately $445 per case to meet the proposed requirements of part 77.

The FAA believes that any individual small business is unlikely to submit enough OE notices in a calendar year that would cost

them more than $1,500 (three notices including consultant fees would cost approximately $1,335). Accordingly, the Federal Aviation Administration certifies that the proposed rule would not have a significant economic impact on a substantial number of small entities. The FAA solicits comments from affected entities with respect to this finding and determination and requests that all comments be accompanied by clear documentation.

VIII. INTERNATIONAL TRADE IMPACT ASSESSMENT

The Trade Agreement Act of 1979 prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and where appropriate, that they be the basis for U.S. standards.

In accordance with the above statute, the FAA has assessed the potential effect of this proposed rule and has determined that it would have only a domestic impact and therefore create no obstacles to the foreign commerce of the United States.

IX. UNFUNDED MANDATES ASSESSMENT

The Unfunded Mandates Reform Act of 1995 (the Act) is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses

an inflation-adjusted value of $128.1 million in lieu of $100 million.

This proposed rule does not contain such a mandate. The requirements of Title II do not apply.