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Noise Compatibility Program Report

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SECTION 5
Aircraft and Airport Operations Noise Abatement and Mitigation Alternatives

As previously stated, the Federal Aviation Regulation (FAR) Part 150 Study is being published as three volumes:

- Volume I (Sections 1 through 4, published separately) presents the data used to develop the official Noise Exposure Maps (NEMs);
- Volume II, this Volume, presents Sections 5 through 9 of the FAR Part 150 Study document—the Noise Compatibility Program (NCP) report that includes the technical analyses of noise mitigation measures and the recommendations of the Study; and
- Volume III, (the Public Participation Program) presents the public participation associated with the Study.

5.1 Introduction

The purpose of this Volume is to document various aircraft and airport operational noise abatement and mitigation actions that were considered during the FAR Part 150 Study to reduce land use incompatibility with aircraft noise around HJAIA. A full range of alternatives was examined based on the requirements of FAR Part 150, as well as input from the Noise Mitigation Advisory Council (NMAC), the Operations Advisory Committee (OAC), and the general public. The following airport-related and aircraft operational issues were identified for consideration during the FAR Part 150 Study. A number of these measures are existing measures that have been implemented at the Airport. Other measures were considered for possible implementation in the future:

- Airport and Airspace Use Actions
  - Preferential Runway Use for Nighttime Hours (Existing)
  - Monitoring Use of Aircraft Departure Procedures (Existing)
  - Effects of RNAV (Existing)
  - Restrictions in Ground Movement
- Aircraft Operation Actions
  - Departure Climb Profile (Existing)
  - Use of Reverse Thrust
- Airport Facility Actions
  - Maintenance Run-Ups and Run-Up Locations (Existing)
  - Displaced Thresholds
  - Use of Walls and Noise Barriers
• Other Options Required for Review Under FAR Part 150
  - Curfews
  - Noise Related Landing Fees
  - Limits on Numbers or Types of Operations or Types of Aircraft

Each of these categories is discussed in the following sub-sections.

5.2 Airport and Airspace Actions

Preferential Runway Use for Nighttime Hours (Existing)

A preferential runway system, as the name implies, refers to the allocation of arriving and departing aircraft to preferred runway ends. Because aircraft normally takeoff and arrive into the prevailing wind, preferential runway flow can be implemented only during weather conditions allow such flow; that is, when wind direction and speed do not dictate runway use. On an annual basis, aircraft depart to the west and land from the east approximately 65 percent of the time at HJAIA. Based on historical wind data, this has been the case for many years with the year-to-year variation typically being less than five percent.

The majority of aircraft operations occur during the daytime hours of 7:00 a.m. to 10:00 p.m. (approximately 90 percent). During these hours, HJAIA has established the use of the four northernmost runways as being preferred. When demand dictates, the southernmost runway (Runway 10-28) is used as well. At night (between 10:00 p.m. and 7:00 a.m.), the northern four runways are again preferred with Runway 10-28 receiving little or no use. This preferential system is used to reduce the impact on those communities affected by the new arrival and departure corridors off Runway 10-28 which opened for use in May of 2006.

Use of the preferential runway system will continue.

Monitoring Use of Aircraft Departure Procedures (Existing)

Certain departure corridors that are currently used at HJAIA are designed to minimize the noise impacts to people living near the Airport while maintaining the necessary operating efficiency. Through the use of the Noise and Operations Monitoring System (NOMS), Airport staff review aircraft adherence to flight procedures. Air Traffic personnel review these reports and identify areas that need to be addressed.

The DOA’s existing monitoring system has enhanced adherence to noise abatement procedures and will continue to be used.

Effects of Area Navigation (Existing)

During the preparation of this FAR Part 150 Study, the FAA, working with airline operators and the DOA, tested the use of an existing navigational technology called Area Navigation (RNAV). RNAV has traditionally been used in the enroute environment to provide more direct routing at
high altitudes. However, RNAV use in providing navigation for departing aircraft has been on-going at HJAIA since the Spring of 2005. RNAV uses waypoint coordinates to direct aircraft departures and replaces, to a great extent, the vector directed headings used in the past.

The key benefit of using RNAV is the continual adjustment of the aircraft’s departure track to its next waypoint. This adjustment minimizes the impact of wind drift and other factors that cause an aircraft to vary from a designated flight path. Figure 5-1 illustrates a representative plot of the wider splay of aircraft prior to RNAV and the narrower splay with the use of RNAV.

The FAA’s continued implementation of RNAV procedures at HJAIA has been successful and its use will continue at the Airport.

Restrictions in Ground Movement of Aircraft

Restricting the movement of aircraft on the airfield (in terms of time or location) could reduce ground-generated noise. This action is typically used at airports where the taxiway system is configured with certain taxiways closer to residential areas than others. Alternative taxi patterns could be used in such situations to minimize noise to nearby residential areas.

The terminal facilities at HJAIA are located between the two sets of dual runways. Aircraft taxiing between the facilities and runways do not taxi in close proximity to residential and other noise sensitive uses. Thus, no changes to the ground movement of aircraft for noise mitigation purposes are proposed.

5.3 Aircraft Operation Actions

Departure Climb Profile (Existing)

A departure thrust cutback is a procedure where an aircraft’s thrust or power setting is reduced soon after departure in an effort to reduce noise levels on the ground. Although the thrust cutback causes the aircraft to climb at a slower rate, an overall noise benefit results from the thrust reduction.

The FAA has developed guidance for the development of two thrust reduction climb profile noise abatement departure procedures. FAA Advisory Circular 91-53A (FAA AC 91-53A) establishes standards and operational guidelines for implementation of these procedures. The guidelines identify that each aircraft operator develop two Noise Abatement Departure Procedures (NADPs) for each airplane type in its fleet. These are designed as either a “Close-in community NADP” or a “Distant community NADP”. The terms “Close-in” and “Distant” refer to the physical distance from an airport runway to the community. A “Close-in community NADP” is designed to reduce noise at locations close to an airport while a “Distant community NADP” is designed to reduce noise at a location more distant from an airport.

Figure 5-2 is an illustration of the two departure profiles. With the “Distant” profile, the engine cutback is initiated farther down range while the “Close-in” cutback is initiated earlier during climb out. A review of the noise abatement departure profile procedures typically used at HJAIA
Pre-RNAV

8,700’ (1.65 miles)
9,000’ (1.70 miles)
7,300’ (1.38 miles)
8,670’ (1.64 miles)

Full RNAV

2,400’ (.47 miles)
3,000’ (.57 miles)
3,900’ (.79 miles)
2,670’ (.51 miles)

LEGEND

MSL ALTITUDE (ft)

Approx 9000 ft

11000
9000
7000
6000
5000
4000
3000
2000

SOURCE: NOMS Data

Hartsfield-Jackson Atlanta International Airport FAR Part 150 Study

Figure 5-1
RNAV Jet Departures
Runway

Departure Climb Gradient

Cut Back

Reduce Power

Resume Normal Climb

SOURCE: FAAAC 91-53A / ESAAirports

Hartsfield-Jackson Atlanta International Airport FAR Part 150 Study

Figure 5-2
Change in Departure Climb Profile
shows that it is a hybrid of the two. This departure procedure involves pilots applying takeoff power until reaching approximately 1,000 feet above the ground. At that point the power is cut back to reduce noise levels on the ground and regular climb power is reapplied when reaching an altitude of about 3,000 feet. This departure climb procedure, also illustrated on Figure 5-2, has been successfully used at HJAIA and no modifications to the current NADPs are proposed in this Study.

Use of Reverse Thrust

Noise from the use of jet-engine thrust reverse is another source of ground noise at the Airport. The effects of this noise are typically more noticeable during the nighttime hours when other aircraft noise sources are less frequent and community background noise levels are low.

Reverse thrust redirects the flow of the jet-engine exhaust toward the front of the aircraft. Reversing the power in this way slows the aircraft when on the ground. Pilots use reverse thrust for braking and to maintain directional control.

Noise events from thrust-reversal use have unique characteristics in that they differ from noise emitted during other segments of an aircraft’s arrival. Thrust-reverser noise is a short-duration event that starts and ends relatively quickly. There can also be great variability in the noise level from one event to another. The characteristics of thrust-reverser noise include:

- Short-duration noise event (typically averages 20 to 25 seconds)
- Quick on-set and drop-off rates for the noise
- Frequency characteristics include a large, low-frequency component
- Large variability of the noise level from event to event
- Magnitude of the noise is typically lower than departure noise

Although reverse thrust noise can be annoying, it is an essential part of safely stopping an aircraft. Thus, no recommendations related to the use of reverse thrust are made in this Study.

5.4 Airport Facility Actions

Displaced Thresholds

A displaced threshold is a runway marking that identifies the runway end for landing aircraft, at a location other than the physical end of the runway. Because the displaced threshold is farther down the runway than the actual runway end, aircraft on approach would maintain a higher altitude on final approach. For every 1,000 feet that the threshold is displaced, the aircraft, on a three degree approach, would be approximately 52 feet higher. The closest residential communities are approximately 8,000-10,000 feet from the ends of the runways at HJAIA. At this distance arriving aircraft are approximately 500 feet in altitude and an additional 50 or 100 foot increase in altitude (resulting from a 1,000 or 2,000 foot displacement) would not provide any perceptible change in noise level on the ground.

This Study does not recommend that displaced thresholds be established at HJAIA.
Maintenance Run-Ups and Run-Up Locations (Existing)

Airlines must regularly conduct maintenance or repairs on aircraft systems and engines. For certain types of maintenance, the airlines must conduct an engine run-up to demonstrate that the aircraft’s in-flight systems are working properly. Off-Airport noise can be heard when run-up testing occurs. As a result, airports often establish locations on the airfield for run-ups to reduce the noise impact to nearby residences.

The current run-up regulations at HJAIA include:

- Regulations concerning location of all aircraft run-ups
- Three primary locations for run-ups during the daytime
- Secondary locations on the airfield to be used as needed
- Two run-up locations for nighttime run-ups between the hours of 10:00 p.m. and 7:00 a.m.

City of Atlanta Ordinance 22-168(n) identifies requirements for engine run-ups for testing or maintenance purposes. The Ordinance states:

> Aircraft engines shall be started or operated only in the places designated for such purposes by the Aviation General Manager. Engine run-ups for test or maintenance purposes between the hours of 11:00 p.m. and 6:00 a.m. shall be permitted only in specific locations approved by the Aviation General Manager for such purposes during such periods.

To comply with the dictates set forth in the City’s Ordinance, the Aviation General Manager has established the following procedures associated with approved run-up locations between 11:00 p.m. and 6:00 a.m.

> Run-ups shall be permitted at various sites within the AOA (Aircraft Operating Area), as established by the General Manager, provided they do not violate local noise ordinances or adversely affect the communities that are adjacent to HJAIA. Ordinarily, run-ups occur at three regular locations: the City Blast Pad, at the north end of the AOA; Delta’s TOC, at the east end of the AOA; and Northwest’s blast fence, at the south end of the AOA. The South Cargo Ramp, also at the south end of the AOA, continues to serve as an alternate run-up location; its use is to be coordinated through the Operations Division (this area has no accoutrements such as a blast fence or dedicated space – hence its use is not preferred).

> In addition, some types of “limited run-ups” may occur within certain boundaries of the Movement Area, including taxiways and runways. Ordinarily, run-ups that transpire within the confines of the Movement Area are hard to distinguish from departing or arriving aircraft. Run-ups occurring in this area between 23:00 and 06:00 have been, and shall continue to be, coordinated through the Department of Aviation’s Operations Division. Selection of space shall be based on weather conditions, direction of traffic flow, and be subject to availability. Portions of specific taxiways which may violate College Park’s noise ordinance will not be used, and restrictions in the use of other taxiways will be based on a periodic review of complaint histories.
Additionally, due to College Park’s noise ordinance, the City Blast Pad shall not be used from the hours of 22:00 and 07:00. The Operations Division will coordinate use of this pad at all other times.

Run-ups requiring additional support technicians or vehicles may not be allowed without safety equipment that satisfies FAA criterion.

Because of the success of this policy, no additional requirements associated with engine maintenance run-ups have been recommended in this Study.

Use of Walls and Noise Barriers

A noise barrier is an obstruction to the path of sound transmission. Barriers include walls, earth mounds (or berms), or placement of buildings and landscaping. In the case of barriers, neighbors are shielded from the noise source as long as the barrier is solid and sufficiently breaks the line-of-sight from the noise source to the listener. Barriers can potentially provide noise reduction benefits for communities near an airport from aircraft ground operations. However, once an aircraft becomes airborne, barriers have no further effect. Thus, noise barriers around airports are not frequently constructed because they have marginal benefit in reducing noise from airborne aircraft.

To be effective, a barrier needs to be close to the source of noise (aircraft) and/or close to the receiver (noise sensitive site). A good example of effective noise barriers is the construction of barriers along interstate highways (barrier close to the source and receiver). With respect to aircraft, due to aircraft operational safety requirements, barriers close to the source (aircraft) could not be constructed. In addition, by placing barriers close to a receiver, the distance from the source of noise at HJAIA is so far that a barrier would be ineffective.

Due to the physical distances from the source to the receiver and barrier height limitations due to safety considerations, barriers were not recommended in this Study.

5.5 Other Use Restriction Options Required for Consideration by FAR Part 150

Curfews

Airport-related curfews limit the types of operations that occur during certain times of the day. Typically, curfews are used to restrict aircraft operations during nighttime hours. Some airports have instituted curfews in the past, however, no new curfews (or other use restrictions) have been approved at any air carrier airport within the United States since the passage of the Airport Noise and Capacity Act in 1990. That Act prohibits use restrictions at airports until a FAR Part 161 document is approved by the FAA.

A mandatory restriction on nighttime operations at HJAIA would be considered an access restriction and would require compliance with FAR Part 161. A FAR Part 161 Study includes a rigorous cost/benefit and noise/land use study. The ability of an airport operator to implement
any form of use restrictions is quite limited. In addition, such restrictions are subject to vigorous constitutional analysis to ensure compliance with interstate commerce interests and discrimination concerns.

It is not recommended that a FAR Part 161 Study be initiated at HJAIA.

**Noise Related Landing Fees**

As a means of discouraging noisier operations, differential-landing fees may be levied based on the noise levels of particular aircraft types. That is, the noisiest aircraft would pay more than the quietest.

As with curfews, the establishment of noise based landing fees can also represent a use restriction and be subject to FAR Part 161 approval. A very limited number of airports have noise based landing fees and no new noise based landing fee programs have been established since the Airport Noise and Capacity Act of 1990.

It is not recommended that noise based landing fees be instituted at HJAIA.

**Limits on Numbers or Types of Operations or Types of Aircraft**

A third use restriction option is the consideration of setting limits on the number of aircraft operations, aircraft types, total cumulative noise level, or other similar measures intended to reduce overall noise at the Airport. Such measures would also require compliance with FAR Part 161.

For the same reasons iterated for curfews and landing fees, it is not recommended that a FAR Part 161 Study be conducted to evaluate this limitation as it is extremely unlikely that it would be approved.
SECTION 6
Sound Insulation and Property Acquisition

6.1 Previous Acquisition of Property/Residences

In 1975, the DOA initiated an acquisition program. The initial purchase and relocation was the community of Mountain View in Clayton County due east of the Airport. In 1980, the Airport Noise and Land Use Compatibility (ANALUC) Study was completed by the City of Atlanta and surrounding jurisdictions. The ANALUC Study set the stage for land use compatibility planning and mitigation.

The last official Part 150-related NCP for HJAIA was prepared in 1985. Over the past 20 years, the DOA has acquired or sound insulated noise sensitive properties located within the 65 DNL of the 1985 map. Figure 6-1 identifies the general areas where properties were acquired (shown in green) and the areas receiving sound insulation (shown in purple). As shown, the vast majority of the noise sensitive properties closest to the Airport were acquired. The acquisition program associated with the 1985 NCP has been essentially completed. To date, the DOA has spent approximately $192 million purchasing impacted properties.

The DOA’s noise mitigation program (sound insulation of residential properties component) was accomplished for those remaining areas within the 1985 65 DNL contour limit. As shown on Figure 6-1, a substantial portion of the area (area shown in purple) has already received sound insulation.

The goal of the 1985-map based mitigation program was to reduce noise levels within the homes around the Airport, thereby reducing noise impact to area residents and maintaining the residential nature of the neighborhoods. Most of the properties included in the noise mitigation program to date (those receiving sound insulation) have been single-family residences, duplexes and triplexes. The DOA administration at that time opted not to include larger multi-family structures and complexes in the 1985 NCP. To date, the DOA has spent approximately $160 million sound insulating impacted properties.

6.2 Future Noise Mitigation Boundaries

The current FAR Part 150 Study uses the 2007 NEM as the basis for establishing the preliminary limits of the future sound insulation and property acquisition program. The year 2007 contours, shown previously on Figure 3-6, are smaller than the 1985 contours due to a substantial reduction in noise exposure from the newer generation of aircraft that occurred over the past 20 years (despite the increased level of aircraft activity).

The FAA identifies that residences and other noise sensitive uses located within the 65 DNL contour are considered to be exposed to significant aircraft noise. To reduce the impacts on those
located within this area, the Study evaluated the potential for acquiring residential properties within the 70 DNL contour and providing sound insulation to residences and other noise sensitive structures located between the 65 and 69 DNL contours. Properties potentially eligible for acquisition or sound insulation are shown on Figure 6-2.

As indicated in Section 3, approximately 14,350 residents are located within the 65 DNL and greater contours of the 2007 NEM. Notably, some of these residents reside in dwellings that have already been sound insulated; some are located in homes whose owners have previously declined to participate in the 1985 program; some are ineligible for the future program because their dwellings were constructed after 1985; and others are located in multi-family complexes that were not addressed in the 1985 program.

### 6.3 Estimated Property Acquisition Costs

A review of the existing land use indicates that approximately 876 residential structures are located within the 70-74 DNL of the 2007 NEM. Of these residences, it is estimated that three are single-family and 873 are multi-family units in seven apartment complexes. All of these units are located within the City of College Park. The current DOA administration recognizes them as being noise sensitive and as a mitigation measure proposes to acquire eligible multi-family structures and complexes located between the 70-74 DNL contours.

The Fulton County Board of Assessors (BOA) website was referenced to help estimate property values of the residences for potential acquisition. The three single-family properties ranged from a 2006 value of $46,900 to $81,500 (based on 2005 “Appraised Values” for purposes of 2006 taxes) while the per-unit value for rental properties averaged just over $32,000. In developing the fair market values used in the Study, it was noted that the Fulton County BOA sets an Appraised Value target for tax purposes equal to 90 percent of fair market value. Therefore, in estimating fair market value a multiplier factor of 1.11 was applied to the BOA Appraisal Values to adjust the valuation from 90 percent to 100 percent of the market value. However, in cases where recent sales exceeded this multiplier, the actual sale price of the property was used in this study instead of the lower calculated number. Based on this approach, it was estimated that the cost of the acquisition of the three homes would total roughly $208,667. Using a similar approach, the cost of acquisition of the multi-family buildings (873 units) would cost approximately $28 million dollars.

In addition to acquiring the property itself, a number of additional funds are typically paid out to the property owners and tenants in an acquisition program. Under the Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR Part 24), guidelines are set forth identifying relocation assistance that must be provided to homeowners and tenants that are impacted as a result of a federally-funded project. Payments which are available to a homeowner include:

- **Replacement Housing** – This payment is the difference between the value of the home being acquired and the purchase of a comparable home.

- **Mortgage Interest Differential Payment** – This payment compensates for the increased interest costs a person would otherwise incur when financing a replacement home. This payment is the difference in the interest rate for the number of years remaining on the note.
AERIAL SOURCE: GlobeXplorer, January 2004

Figure 6-2

Hartsfield-Jackson Atlanta International Airport FAR Part 150 Study

Properties Potentially Eligible for Acquisition or Sound Insulation
• **Closing Cost Payment (on home purchase)** – A variety of closing costs for the purchase of a new home will be covered under this payment. This includes professional home inspection costs.

Based on the limits established in the Act, the combined maximum allowed value of the above three items is $22,500. In addition to the costs related to a home purchase, costs related to relocation are eligible for payment.

• **Moving Payment** – This payment is for moving expenses. One of two types of moving expenses is allowed. One is the self move, where the displaced person moves herself/himself. The other method is to have commercial movers. For the purposes of this FAR Part 150 cost estimate, an average payment of $1,350 for either method was assumed.

For a tenant who is renting the property from the owner, the following payments are provided for in the Act.

• **Rental Supplement Payment** – This payment is for rental assistance for a tenant who is displaced. It is to assist in covering the difference in the rent of the replacement dwelling compared to the displaced dwelling. A rent supplemental payment is limited to $5,250 per tenant. It has been assumed that for the purpose of estimating costs, the full amount would be provided to each relocated tenant.

• **Moving Payment** – Again one of two types of moving expenses is allowed – self move or the use of commercial movers. For the purpose of developing costs for moving expenses, a payment amount of $1,220 was assumed for each rental unit.

All of these payments have guidelines that govern the amounts paid and are reflected as part of the property acquisition program. Based on the assumptions above, these additional payouts were estimated to be approximately $5.72 million as shown in **Table 6.1**

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Assumed Units</th>
<th>Average Estimated Payout per Property Type</th>
<th>Total Payout</th>
</tr>
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<tbody>
<tr>
<td><strong>Rental</strong></td>
<td>873</td>
<td>$6,470</td>
<td>$5,648,310</td>
</tr>
<tr>
<td><strong>Owner</strong></td>
<td>3</td>
<td>$23,850</td>
<td>$71,550</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>876</td>
<td>-</td>
<td>$5,719,860</td>
</tr>
</tbody>
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Notes:

1. Owner payout assumed the following:
   - a. $22,500 for replacement housing
   - b. $1,350 moving expenses

2. Tenant payout assumed the following:
   - a. $5,250 rental supplement
   - b. $1,220 moving expenses

Source: ESA Airports

Thus, the estimated cost for acquisition (including the cost of the property and supplemental payments) would be approximately $33.9 million dollars ($200,000 plus $28 million plus $5.7 million). The development of the property acquisition program and its administration, management, legal coordination, appraisal fees, Phase I environmental site assessment, and...
demolition and removal of structures is estimated to be between 20 and 25 percent of the above costs depending on issues such as hazardous materials or other unique conditions that may arise. Thus, the total cost for a property acquisition program as described in this section is estimated to be approximately $42 million dollars assuming 100 percent participation in the program.

### 6.4 Property Acquisition and Sound Insulation Boundary Used for Implementation

This Study establishes the preliminary limits for eligibility in the residential property acquisition program as the 2007 NEM 70 and greater DNL contour and the sound insulation program as the 65-69 DNL. The limits are considered preliminary because the FAA requires that noise contour limits be representative of the year in which property acquisition and sound insulation programs begin.

It should be noted that certain residences located within the 65 and greater DNL contour may not be eligible for the property acquisition/sound insulation program. If a residence is located within the 70 and greater DNL of the 1985 Noise Exposure Maps (approved by the FAA on April 10, 1985), to be eligible for acquisition the residence must fall into one of the following categories.

- The residence must have been constructed prior to April 10, 1985;
- The residence must have been under construction on that date; or
- The property owner must have made a financial or construction commitment prior to or on that date.

Any residential development that occurred after April 10, 1985 that was within the limits of the 1985 70 and greater DNL contour was constructed with the knowledge of the extent of significant noise exposure and would not be eligible for the acquisition program. See Section 6.6 for additional information on this subject.

### 6.5 Sound Insulation Program Overview

Other noise sensitive properties located within the 2007 NEM 65 DNL contour (not included in the property acquisition program) were evaluated for possible noise reduction through sound insulation.

The objective of a Sound Insulation Program (SIP) is to reduce the interior noise level of a residential dwelling (or other noise sensitive site) by making modifications to the building. Literally soundproofing a residence so that no aircraft noise is heard is usually not practical or cost-effective. The goal of providing sound insulation is to reduce the interior noise level from aircraft operations to an acceptable level so that it no longer interferes with the resident’s daily indoor activities. Since noise travels through air, sound insulation is accomplished by reducing the unwanted infiltration of air into a home. Since the highest level of air infiltration in a typical home occurs through existing windows, doors, and attic/roof vents, an effective treatment program typically includes windows, insulation, doors, and venting modifications. As established by the FAA, the goal of noise reduction is to achieve a maximum interior noise measurement of 45 DNL after modification, and an overall minimum 5 dB reduction from pre-insulation conditions as a result of the modifications.
A review of existing land uses and DOA records indicates that a total of approximately 3,372 residences are located within the 65-69 DNL contour. Of these residences, approximately 61 are single-family residences and 3,311 are multi-family units in 48 apartment complexes. While the DOA has historically provided sound insulation to single-family homes, it did not provide sound insulation to multi-family structures. The DOA now proposes to insulate eligible multi-family structures located between the 65-69 DNL contours.

In addition to residential properties, other noise sensitive sites (schools, owner occupied day care centers, places of worship, health/retirement centers) are located within the 2007 NEM 65 DNL limits. These uses are considered by the FAA as being incompatible with aircraft noise and potentially eligible for sound insulation. It is estimated that 4 schools, 3 day care facilities, 16 places of worship, and one health care/retirement center are located within the 65-69 DNL limits. It is proposed that the owners of these noise sensitive properties located within the 65-69 DNL contour, if eligible, be offered sound insulation as a way to reduce interior noise levels. This would be a voluntary program and it would be the decision of the owner(s) whether to have their noise sensitive site sound insulated.

### 6.6 Candidates for Sound Insulation

Currently, residential structures and other noise sensitive structures are candidates for sound insulation provided they meet the following criteria:

- The structures are within the 65 or greater DNL at the time of implementation.
- They are of a construction capable of being sound insulated.
- They were constructed prior to April 10, 1985 (See Section 6.4)
- They were not sound insulated through any previous offering by the DOA.
- The property owner provides a right-of-flight (aviation easement) in return for the sound insulation.

### 6.7 Estimated Sound Insulation Costs

A review was made of the costs of past DOA sound insulation activities, as well as the costs of insulating a variety of noise sensitive sites around other airports throughout the United States. A preliminary review of unit costs and estimated total costs of the HJAIA sound insulation program is provided in Table 6.2. Once the sound insulation program is initiated, a more detailed cost estimate will be developed.

As shown in Table 6.2, the estimated cost for the sound insulation construction would be approximately $65,195,000. The development of the sound insulation program and its administration, management, legal coordination and environmental reviews is estimated to be approximately 20 percent of this value. Therefore, the total cost for the sound insulation program is estimated to be approximately $78 million dollars assuming 100 percent participation in the program (as previously stated, some of these residences and other noise sensitive sites may not be eligible for the program).
### TABLE 6.2

<table>
<thead>
<tr>
<th>Type of Facility</th>
<th>Cost Per Unit</th>
<th>Estimated Number of Units</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-family Residences</td>
<td>$40,000</td>
<td>61</td>
<td>$2,440,000</td>
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<tr>
<td>Multi-family Residences</td>
<td>$15,000</td>
<td>3,311</td>
<td>$49,665,000</td>
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<tr>
<td>Schools</td>
<td>$2,000,000</td>
<td>4</td>
<td>$8,000,000</td>
</tr>
<tr>
<td>Places of Worship (Large)</td>
<td>$500,000</td>
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<td>$2,500,000</td>
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<tr>
<td>Places of Worship (Medium)</td>
<td>$200,000</td>
<td>6</td>
<td>$1,200,000</td>
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<tr>
<td>Places of Worship (Small)</td>
<td>$30,000</td>
<td>5</td>
<td>$150,000</td>
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<tr>
<td>Day Care Centers(^{a})</td>
<td>$80,000</td>
<td>3</td>
<td>$240,000</td>
</tr>
<tr>
<td>Health Care/ Retirement Center</td>
<td>$1,000,000</td>
<td>1</td>
<td>$1,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$65,195,000</strong></td>
</tr>
</tbody>
</table>

\(^{a}\) Day care centers are only eligible if they are owner occupied.

Source: ESA Airports

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### 6.8 Sound Insulation and Property Acquisition Priorities

Although the final priority system would be established prior to implementation, it is proposed that the property acquisition program be implemented concurrently with the sound insulation program. For the sound insulation program, two priority systems have been considered. The first is by noise exposure level (DNL level) with the highest noise exposure areas offered the insulation program first (regardless of use). A second method of prioritization could be based on the amount of time people spend in the structures on a daily basis as shown in the list below.

1. Owner occupied residences and low-income family rental units;
2. Schools;
3. Health facilities;
4. Owner occupied day care centers;
5. Other residential units; and
6. Churches

Under these assumptions, the first priority would be owner occupied residences and low-income family rental units. During discussions with members of the NMAC, low-income family units were felt to be a high priority since these families do not have the flexibility to relocate as other renters do. Thus, low-income units were identified as a high priority in the above list. Schools would be second to enable an improved learning environment for children. Health facilities and owner occupied day care centers would be next, followed by other (non low-income family) rental residential units and churches.

Discussions with HJAIA’s NMAC indicated that the prioritization list is a good place to start but there was a general preference for each local political jurisdiction to have the flexibility to set their own priorities. Since the NMAC will continue to meet prior to implementation phase of the program, the establishment of priorities would be finalized following the approval of the sound insulation recommendations by the FAA and prior to initiating the program.
6.9 Summary of Costs

In summary, the property acquisition and sound insulation program would cost an estimated $42 million dollars for acquisition and $78 million dollars for sound insulation for a total of approximately $120 million dollars in 2005 dollars.
SECTION 7
Land Use Compatibility Actions

7.1 Introduction

Airports throughout the United States have been adversely affected by the encroachment of land uses that are not compatible with the levels of sound generally associated with aircraft ground and flight operations. In response to the increasing encroachment of these non-compatible land uses, local units of government, working with local airport officials, have initiated land use management actions to facilitate the compatibility of development occurring in airport environs across the United States.

This section of the NCP presents guidance to local governments on ways in which local land use and zoning requirements can be supplemented to enhance future compatibility with aircraft noise in the HJAIA environs. The recommendations have been styled such that they could be implemented by all local governments without having to change the underlying structure of their current planning, zoning, and building permit processes. In other words, with the proposed plan, the current practices for development approvals within local jurisdictions would remain the same but would be supplemented by the establishment of noise overlay zones that would apply only to specific geographical locations surrounding HJAIA. Notably, the controls associated with the overlay zone concept would only apply to new development or redevelopment. Current development within the zones would be grandfathered from the requirements.

It is recognized that neither the FAA nor the DOA has control over land use and zoning decisions beyond the Airport’s boundaries. Land use planning and zoning is the responsibility of local governments. Thus, the overlay zone plan presented in this Section is provided as a framework to local governments proximate to HJAIA that would enable them to provide an equitable and workable method of maintaining (or enhancing) land use compatibility.

This section also presents information associated with the establishment of overlay zones for the environs around HJAIA. It includes the identification of proposed limits for the overlay zones, recommendations for controls within the zones, and discussions on how the zones would apply to comprehensive plans, land development codes, zoning regulations, and building codes.

7.2 Establishment of Airport Overlay Zones

One of the more effective tools for maintaining the compatibility of future development in the Airport environs is to establish a noise overlay zone. A noise overlay zone creates one or more specialized zoning districts that are intended to supplement the underlying jurisdictional zoning regulations. Regulations associated with noise overlay zones could limit the development of noise sensitive uses; could require new development to incorporate sound insulation into the
design of buildings; could require some form of publication (through avigation easement or notification, for example) advising future buyers as to the existence of aircraft overflights and noise; and/or other measures. The determination as to which of the controls should apply for any given situation is based on the extent of the noise exposure at the proposed development site.

As previously stated, the overlay zones would only apply to new development and redevelopment within the zones. Typically, the overlay zone requirements would be triggered when a rezoning is requested that, if approved, would reduce the compatibility of the property with aircraft noise (for example, a re-zoning from Agriculture to Residential or a rezoning from Residential-2 units per acre to Residential-5 units per acre, etc.). To avoid potential land use taking issues, all current development and current zoning within the overlay zones would be grandfathered and unaffected by the overlay zone requirements.

### 7.3 Overlay Zone Geographic Limits and Regulations

The geographic limits of noise overlay zones are typically based on DNL noise contours for an airport. For HJAIA, it is proposed that the outer limit of the overlay zone would be the 60 DNL contour for the 2012 NEM. Within these geographic limits, three noise contour ranges would be used:

- Overlay Zone 1 - The area within the 70 DNL contour and greater;
- Overlay Zone 2 - The area between the 65 and 70 DNL contours; and
- Overlay Zone 3 - The area between the 60 and 65 DNL contours.

**Figure 7-1** illustrates the areas within each of the three zones. Overlay Zone 1 represents an area that receives the highest off-Airport noise exposure; Overlay Zone 2 is less affected than Overlay Zone 1 but is an area that still has significant noise exposure. Overlay Zone 3 is an area that is considered to have moderate noise exposure. Each zone would have unique requirements with the highest off-Airport noise exposure area, Overlay Zone 1, being the most restrictive and Overlay Zone 3 the least restrictive.

The recommended overlay zone requirements and the basis for the recommendations are as follows:

- **Overlay Zone 1**

  **Recommended Requirements:** No new residential uses or other new noise sensitive uses such as schools, owner occupied day care centers, places of worship, hospitals, nursing homes, libraries, or concert halls/auditoriums should be developed within Zone 1. However, transient residential uses such as hotels and motels would be allowed with adequate sound insulation incorporated into the structures.

  **Basis for Zone 1 Recommendations:** Zone 1 experiences the greatest exposure to aircraft noise around HJAIA. As indicated in **Figure 7-2** (a figure developed by the FAA), 80 percent of those who would reside within these limits (70 DNL and greater noise contour) would be annoyed with aircraft noise with 50 percent of them seriously annoyed. The area within the 70 DNL contour is the area where the DOA proposes to offer a voluntary property acquisition and relocation program for existing residential uses. It would not
Source: FAA Report EE-85-2-Aviation Noise Effects
make sense, as noise sensitive sites are being acquired within Zone 1, for new noise sensitive development to be approved. In addition, FAA compatible land use guidelines which are presented in Table 7.1, strongly discourage the development of residential uses in this area.

- **Overlay Zone 2**

  **Recommended Requirements:** Due to significant noise exposure, new residential uses and other noise sensitive uses are discouraged in Zone 2. However, if new sensitive uses are developed, then an avigation easement should be required from the developer and be recorded (remain with the property). In addition, sound insulation that achieves an interior level of 45 DNL (with windows and doors closed) should be required. Since most mobile homes and other manufactured housing would be unable to attain the 45 DNL interior level within the 65-70 DNL limits, these uses should not be allowed in Zone 2.

  **Basis for Zone 2 Recommendations:** Zone 2 experiences significant levels of aircraft noise exposure. As indicated in Figure 7-2, between the 65 and 70 DNL contour limits, 70 percent of those who would reside within these limits would be annoyed with aircraft noise with 40 percent seriously annoyed. The area between the 65 and 70 DNL contours is the area where the DOA proposes to offer a voluntary sound insulation program for existing noise sensitive uses. It would not make sense, as noise sensitive sites are being sound insulated by the DOA’s program within Zone 2, for new noise sensitive development to be approved without comparable sound insulation being provided. In addition, FAA compatible land use guidelines, shown in Table 7.1, discourage the development of residential uses in this area without sound insulation.

- **Overlay Zone 3**

  **Recommended Requirements:** No restrictions on the type of development are proposed within Zone 3. However, for all new residential (non-transient) development and other noise sensitive uses, a written notification should be required to indicate that the area is subject to aircraft overflight and noise. This written notification would be signed by the buyer and would be recorded (remain with the property).

  **Basis for Zone 3 Recommendations:** Zone 3 experiences moderate levels of aircraft noise exposure. As indicated in Figure 7-2, between the 60 and 65 DNL contour limits, approximately 50 percent of the people who would reside within these limits would be annoyed by aircraft noise while about 15 percent would be seriously annoyed. The written notification would remain with the property to assure that future buyers are aware of the noise exposure and that this notification is signed by them during future sale transactions.
## Table 7.1
### Federal Aviation Administration Compatible Land Use Guidelines

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Yearly Day-Night Average in Decibels</th>
<th>Below</th>
<th>65</th>
<th>65-70</th>
<th>70-75</th>
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<tr>
<td>Residential, other than mobile homes and transient lodgings</td>
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<td>Y</td>
<td>N</td>
<td>N_1</td>
<td>N</td>
<td>N</td>
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<tr>
<td>Household units, (11)</td>
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<td>Single units - attached row (11.13)</td>
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<td>Two units - side-by-side (11.21)</td>
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<td>Two units - one above the other (11.22)</td>
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<td>Apartments - walk up (11.31)</td>
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<td>Apartments - elevator (11.32)</td>
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<td>Other residential (14)</td>
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<td>Transient lodgings (15)</td>
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<td>Hospitals and nursing homes</td>
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<td>Hospitals, nursing homes (65.13, 65.16)</td>
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<td>Church, auditoriums and concert halls</td>
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<td>Y</td>
<td>25</td>
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<td>N</td>
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<td>Cultural activities (including church) (71)</td>
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<td>Railroads, rapid transit/street railway</td>
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### Land Use Compatibility

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<th>Land Use</th>
<th>Yearly Day-Night Average in Decibels</th>
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<tr>
<td>MANUFACTURING AND PRODUCTION</td>
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<td>Manufacturing, general</td>
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<tr>
<td>Apparel and other finished products</td>
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<td>Textile mill products (21)</td>
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<td>Lumber and wood (except furniture) (24)</td>
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<td>Printing/publishing/ allied industries (27)</td>
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<td>Chemicals and allied products (28)</td>
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<td>Petroleum refining/related industries (29)</td>
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<td>Rubber and miscellaneous plastic products (31)</td>
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<td>Stone, clay, and glass products (32)</td>
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<td>Primary metal industries (33)</td>
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<td>Fabricated metal products (34)</td>
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<td>Photographic and optical goods, watches, clocks (35)</td>
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<td>25</td>
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<td>Professional/ scientific/ controlling instruments</td>
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### RECREATIONAL USE

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<th>65-70</th>
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<td>Outdoor sports arenas and spectator sports (72.2)</td>
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<tr>
<td>Amusements, parks, and camps</td>
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<td>N</td>
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<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Amusements (73)</td>
<td></td>
<td></td>
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<tr>
<td>Parks (76)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Public assembly (72)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resorts and group camps (75)</td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

### Source

Source: FAR Part 150 Guidance
7.4 Relationship of Noise Overlay Zones by Political Jurisdiction

Figure 7-3 shows the limits of the overlay zones in relation to political jurisdiction boundaries. As discussed previously, the overlay zone limits have been established based on noise contours. For the purpose of this Study the exact limits of the noise contours are used for the analysis. However, it should be noted that the boundaries of the overlay zone could be modified slightly by using easily identifiable local features to define the limits. These could be geographical features such as roadways, streams, political boundaries, section boundaries, and half/quarter section boundaries. Establishing zone limits in this way can make the overlay zone more easily identifiable and easier for residents, developers, and others to know whether or not a piece of property lies within or outside of a zone. Each political jurisdiction should determine the best way to delineate Overlay Zones 1, 2, and 3.

As shown in Figure 7-3, Overlay Zone 1 lies substantially within the City of College Park west of the Airport and in Clayton County to the east. Small portions of Zone 1 also exist in Forest Park, Atlanta, and Hapeville. Existing and planned land uses for most of the areas within Zone 1 indicate a predominance of compatible uses. Following the acquisition of existing residential uses in Zone 1 associated with DOA’s proposed voluntary residential acquisition program, the Zone will become more noise compatible. The importance of the communities’ role within Zone 1 will be to maintain that improved compatibility by not allowing future noise sensitive uses to be established in this area.

Overlay Zone 2 overlies portions of eight political jurisdictions. Substantial portions of Zone 2 occur in College Park; southwest portions of East Point; eastern areas of Fulton County (where it abuts with College Park); southeastern Atlanta; southeastern Hapeville; western portions of Forest Park and northern Clayton County. A very small portion of Zone 2 is also in extreme southwestern DeKalb County. Most of the residential areas located within Zone 2 have been sound insulated in previous programs sponsored by the DOA. The continuation of the DOA’s voluntary sound insulation program for the remaining eligible noise sensitive properties in Zone 2 would complete the sound insulation for existing noise sensitive buildings. The importance of the communities’ role within Zone 2 will be to maintain improved compatibility by not allowing future noise sensitive uses to be established without sound insulation being incorporated and avigation easements applied.

Overlay Zone 3, which encompasses the largest area of all of the zones, is located in portions of eight political jurisdictions. The largest portion of Zone 3 falls within Fulton County. Other political jurisdictions located within Zone 3 include DeKalb County, Clayton County, College Park, East Point, Hapeville, Atlanta, and Forest Park. The intent for Zone 3 is not to limit any forms of land use nor require sound insulation or avigation easements. The only proposed control in Zone 3 is to require (when new residential areas are approved) a notification to be applied to the property to assure that new residents are aware of the flight corridors and moderate levels of noise exposure that occur.

7.5 Implementation of Overlay Zones

Several strategies were used in the development of the proposed overlay zones to enhance local governments’ ability to implement the zones. These strategies primarily focused on ways to gain
land use compatibility without either adversely affecting current residents located within the zones or modifying the zoning that property owners/developers currently have. A key strategy was that Overlay Zones 1 and 2 would apply only when there is a request to rezone a property to a less noise-compatible use (e.g., industrial to residential or an increase in the density of residential currently allowed on the property).

This basically means that all currently developed property (including all existing residences) within Overlay Zones 1 and 2 would be grandfathered and, thus, not required to adhere to any of the overlay zone requirements. In addition, all current zoning would be grandfathered, meaning that as long as the zoning was established prior to the effective date of the new overlay zoning ordinance then Overlay Zones 1 and 2 would not apply.

The strategy for grandfathering currently-developed property (including existing residences) was also applied to those properties located in Zone 3. This means that the notification requirement included in Zone 3 would not apply to properties currently located in the Zone. It is proposed however that the notification requirement would apply to any new noise sensitive development that would be constructed following the approval of the zones by local government.

Implementation of noise overlay zones has been successful at numerous airports throughout the country. However, the ultimate success of the zones within the areas around HJAIA will be the desire of local jurisdictions to implement and maintain the zones. In addition, the more consistently the overlay zone is applied within all jurisdictions, the more effective the overall noise compatibility plan will be. The following discussion highlights the various guidelines and regulations where noise overlay zones are typically incorporated into the land use planning and zoning framework of local governments.

Comprehensive Plans

Comprehensive Plans are policy guides for future development of a particular jurisdiction. The incorporation of the overlay zone concept into a Comprehensive Plan would be the logical first step in the implementation of the Zones. All communities periodically update their Comprehensive Plans consistent with the requirements of the State of Georgia. It is encouraged that the provision for overlay zones in the applicable Comprehensive Plans be initiated as soon as possible.

Land Development Codes/Zoning Ordinances

Land development codes/zoning ordinances are normally the mechanisms for implementing development approvals consistent with the policies included in the Comprehensive Plan. The regulatory authority associated with codes and ordinances establishes the means by which the applicability of, and requirements within, each overlay zone would be defined.

Since the overlay zone does not change the underlying basis for the land development code or zoning ordinance, a code revision is not required. However, a reference to the overlay zone in a section of the code and an associated map describing the zone limits is needed.
Building Codes

Overlay Zone 2 requires that sound insulation be provided for new noise sensitive development proposed for the zone. The building code is a typical location to describe the requirements and specifications necessary to meet the noise reduction limits. It would be ideal if the sound-attenuation requirements are uniformly applied across all jurisdictions that are included within Zone 2. A uniform building code could address all noise-sensitive buildings or structures including such structures as residences, nursing homes, hospitals, libraries, churches, schools, and other public use buildings.
SECTION 8
Summary of Actions and Recommendations

8.1 Introduction
The overall objective of the HJAIA noise mitigation program is to achieve and maintain land use compatibility with aircraft noise through the establishment of operational procedures and land use related measures. Through the analysis of existing and future noise conditions and direct input from the wide variety of interests involved during the development of the Study, a series of measures has been identified and recommended. The following presents a summary of these recommended noise abatement measures as well as those measures evaluated during the Study but not recommended.

8.2 Operational Controls
Existing Noise Abatement Measures to Continue
Noise abatement procedures have been established in the past at HJAIA that will continue. These include:

- Continuing non-emergency engine maintenance run-up restrictions during nighttime hours and designated locations for maintenance run-ups.
- Continuing current noise abatement departure profiles.
- Continuing use of the Noise and Operations Monitoring System (NOMS) to monitor aircraft activity.
- Continuing coordination between DOA staff and the Atlanta Tower on noise abatement procedures.
- Continuing the practice of preferential runway use.

Recommended Additional Noise Abatement Operational Measures
During the development of the Study, a number of operational procedures were established by the FAA at HJAIA. New flight departure headings were instituted, new arrival and departure procedures were established after Runway 10-28 opened, and RNAV departure procedures were implemented. Each of these was incorporated as existing procedures into this FAR Part 150
Study. No new noise abatement operational measures have been recommended as part of the Study.

8.3 Property Acquisition and Sound Insulation

It is estimated that 14,350 people are located within the 2007 NEM 65 DNL. Thus, the next portion of the Study evaluated ways in which noise exposure could be reduced for those remaining within the noise contour limits. The recommendation is for noise reduction through acquisition or sound insulation of noise sensitive sites within the 65 DNL limits of the 2007 NEM contours. The property acquisition and sound insulation eligibility limits were discussed previously in Section 6.

Property Acquisition

- **Residential property acquisition and relocation**: The Study recommends a voluntary acquisition program for residential development located within the 70 DNL and greater noise contours. To be eligible for acquisition, residences must have been constructed or have been under construction prior to April 10, 1985. This is the date the previous NEMs for the Airport were approved. The FAA will not participate in funding noise mitigation programs where noise sensitive structures were constructed within the limits of a previously approved NEM. Since virtually all areas currently within the 70 DNL for the 2007 NEM were within the 65 DNL or greater contour for the previously approved 1985 NEM, this directive will apply in virtually all situations.

  A review of residential uses within the 70 DNL of the 2007 NEM indicates that approximately 876 residences (three single-family homes and 873 rental units) would potentially be eligible for acquisition and resident relocation. These residences are located within the City of College Park.

  **Recommendation 1**: A voluntary property acquisition for eligible residential uses is recommended for residential uses within the 70 DNL of the 2007 NEM.

- **Redevelopment of land purchased by DOA**: Following the acquisition of residential sites within the 70 DNL contour, the opportunity exists for redevelopment of these lands for noise compatible development.

  **Recommendation 2**: It is recommended that the DOA and local political jurisdictions coordinate regarding redevelopment of lands that are purchased under the residential acquisition program. It is recognized that neither the FAA nor the DOA has control over land use and zoning decisions outside of the City of Atlanta. Land use planning and zoning are responsibilities of local governments.

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1 A residential property is defined as a single- or multi-family dwelling (including apartments).
Residential Sound Insulation

- **Residential sound insulation:** The Study recommends a voluntary sound insulation program for residential development located within the 65-70 DNL based on the 2007 NEM contours. As was the case for the voluntary property acquisition program, to be eligible the residential properties must have been constructed or have been under construction prior to April 10, 1985. In addition, the structures must be capable of being sound insulated, must not have received sound insulation during a previous DOA sound insulation program, and the property owner must provide an avigation easement in return for the insulation.

The analysis indicates approximately 3,372 residences (61 single-family homes and 3,311 multi-family units) would be potentially eligible for sound insulation.

*Recommendation 3: A voluntary sound insulation program is recommended for eligible residential and other noise sensitive uses within the 65-70 DNL of the 2007 NEM.*

Sound Insulation for Schools

- **Insulation of Schools:** The analysis completed for this Study indicated that four schools are located within the 65 DNL noise contour of the 2007 NEM. These schools are the Hendrix Drive Elementary, Atlanta Police Academy, Brookview Elementary, and Atlanta Montessori Academy.

*Recommendation 4: A voluntary sound insulation program is recommended for four potentially eligible schools within the 65 to 70 DNL of the 2007 NEM.*

Sound Insulation for Other Noise Sensitive Sites

- **Insulation of other noise sensitive sites:** In addition to residential structures and schools, other noise sensitive sites are also being recommended for the mitigation program. Approximately three day care centers, 16 churches, and one retirement/health care center are located within the 2007 NEM 65 DNL contour.

*Recommendation 5: A voluntary sound insulation program is recommended for other noise sensitive uses within the 2007 NEM 65 DNL and greater contour range including approximately three day care centers, 16 churches, and one retirement center.*

8.4 Off-Airport Land Use Compatibility

Existing operational controls and recommendations associated with sound insulation, and property acquisition will mitigate noise impacts for those currently located in close proximity to the Airport. Off-Airport land use compatibility planning involves land use controls for future development within high and moderate noise exposure areas that could be instituted by local governments in the form of overlay zoning. The intent is to minimize the number of noise sensitive developments that would be built in the future within the 2012 65 DNL and greater
contour and to provide notification of the existence of aircraft overflight and noise to residents located in the 2012 60 DNL and greater.

**Overlay Zoning**

The FAR Part 150 Study has evaluated various measures that could enhance noise compatibility through the establishment of land use control measures by local governments. Since neither the FAA nor the DOA have control over land use decisions made by local jurisdictions, the following are recommendations to local jurisdictions that would improve long-term compatibility with aircraft overflight and noise.

- **Overlay zones:** This Study recommends that Noise Overlay Zones (Overlay Zones) be established by the political jurisdictions that surround the Airport. The Overlay Zones would include special requirements intended to supplement the underlying jurisdictional zoning regulations. Three zones are proposed based on the 2012 NEM noise contour. As shown previously in Figure 7-1, the zones are Zone 1 - the area between the 70 DNL contour and the Airport property limits, Zone 2 - the area between the 65 and 70 DNL contours and Zone 3 - the area between the 60 and 65 DNL contours.

The recommended Overlay Zones would establish certain controls on new development or redevelopment. Overlay Zone 1 would restrict development of new residential areas and noise sensitive sites; Zone 2 would require sound insulation and the provision for an avigation easement for any new noise sensitive development; and, Zone 3 would require a written notification that the area is subject to aircraft overflight and noise when new noise sensitive development is to be developed.

The Overlay Zones would only apply to new development and redevelopment. Typically, the overlay zone requirements would be triggered when rezoning is requested that, if approved, would reduce the compatibility of the property with aircraft noise. To avoid potential land use taking issues, all current development and current zoning within the Overlay Zones would be grandfathered and unaffected by the Overlay Zone requirements.

*Recommendation 6:* It is recommended that an overlay zoning plan (and controls recommended within each zone) be considered for implementation by all affected political jurisdictions for property located within the 60 DNL of the 2012 NEM.

**8.5 Community Outreach Following Completion of the FAR Part 150 Study**

Continued use of the existing operational procedures and implementation of the sound insulation and property acquisition program, as well as implementation of overlay zoning, will be key to the long term success of the NCP. It is important that community outreach continue during the implementation of the program in order to maintain the program’s momentum and to continue to receive community input.

- **Future Community Outreach:** Following the completion of the FAR Part 150 Study, the continued use of the existing operational noise abatement procedures will be the
responsibility of the FAA, the DOA, and aircraft operators. Implementation of the property acquisition and sound insulation programs will be the responsibility of the DOA and implementation of overlay zoning measures will be the responsibility of the local political jurisdictions. Since representatives from all of the responsible entities are members of the NMAC, it is recommended that the NMAC continue through the implementation process.

Recommendation 7: It is recommended that the NMAC continue to meet during the implementation of the noise compatibility program and that the DOA provide technical support to the NMAC and their respective jurisdictions during the implementation phase.

8.6 Noise Abatement Measures Considered But Not Recommended

Two of the issues raised through the scoping process and evaluated during the Study involved the possible construction of noise barriers and consideration of use restrictions. These measures were considered but are not recommended as discussed in the following.

Noise Barriers

- For a noise barrier to be effective, the location of the barrier must either be located in very close proximity to the noise source (aircraft) or the receiver (residence). Ground noise is experienced primarily in areas where engine maintenance runups occur. Areas have been established at HJAIA so that the maintenance runups are not in close proximity to noise sensitive areas. In addition, maintenance runups at HJAIA have been limited mostly to daytime hours (7:00 a.m. to 10:00 p.m.). With the exception of areas where engine maintenance runups occur, the arrival and departure noise of aircraft mask most taxiing and other ground noise sources. In addition, due to the altitude of aircraft in flight, aircraft arrival and departure noise would not be mitigated by noise barriers. Thus, it was determined that the addition of noise barriers would not be effective in reducing off-Airport noise exposure at HJAIA and were not recommended.

Use Restrictions

- Use restrictions cannot be established through the FAR Part 150 Study. For an airport sponsor to consider restricting an airport’s use, the FAA requires that a FAR Part 161 Study be prepared. This type of study, if prepared, would need to show that several criteria could be met. Two of these criteria are especially important at HJAIA. The first criterion is that the restriction must not interfere with interstate commerce. The second criterion is that the restriction must not have an adverse impact on the national air transportation system. These two criteria have a greater impact at air carrier airports, and the busier the airport, the more critical these restrictions would be. HJAIA is the busiest airport in the world.

Therefore, this FAR Part 150 Study did not recommend any airport-use restrictions and, due to the commercial nature of the airport and significant amount of activity at HJAIA,
did not recommend that a FAR Part 161 Study be prepared. It should be noted that no use restriction has been imposed on any air carrier airport in the United States over the past 15 years.
SECTION 9
Benefits and Implementation of Recommended Program, Review, and Update

9.1 Benefits of the Recommended Program

The FAR Part 150 Study focused on the review of the existing noise mitigation measures, the evaluation of enhancements to these measures, and the identification of new noise mitigation opportunities to reduce noise exposure around HJAIA. Table 9.1 summarizes the existing operational measures that would continue and Table 9.2 summarizes the benefits of acquisition, sound insulation, and land use mitigation measures that have been recommended in this Study. These recommended measures were previously described in detail in Sections 5, 6, 7 and 8.

9.2 Program Implementation

The recommendations made in this Study fall into three major categories: property acquisition, sound insulation, and overlay zoning. For the NCP to be fully effective, each of these categories of recommendations must be implemented. The property acquisition and sound insulation programs would benefit those currently located within the 2007 NEM 65 DNL by providing the opportunity for voluntary acquisition or sound insulation of eligible properties. The overlay zoning recommendations would benefit those who move into new residential areas within the 65 DNL because the developer would be required to provide the same sound insulation benefits that the DOA would provide to current residents. For those considering to move into new housing within the 60-65 DNL, the notification associated with the overlay zone would benefit them by advising them of the existence of aircraft overflight and moderate noise exposure prior to their decision to move.

Implementation of the Acquisition and Sound Insulation Programs

It is proposed that the property acquisition program be implemented concurrently with the sound insulation program. For the sound insulation program, two priority systems have been considered. The first is by noise exposure level (DNL level) with the highest noise exposure areas offered the insulation program first (regardless of use). A second method of prioritization could be based on the amount of time people spend in the structures on a daily basis as shown in the list below.

1. Owner occupied residences and low-income family rental units;
2. Schools;
3. Health facilities;
### TABLE 9.1
SUMMARY OF EXISTING OPERATIONAL NOISE ABATEMENT ACTIONS THAT WILL CONTINUE

<table>
<thead>
<tr>
<th>Mitigation Measure</th>
<th>Benefits</th>
<th>Implementation Responsibility</th>
<th>Implementation Timing</th>
<th>Qualitative Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue the current procedures regarding restrictions of non-emergency nighttime maintenance run-ups and locations for run-ups to occur.</td>
<td>These procedures benefit those residents that live in close proximity to the airfield by minimizing nighttime noise exposure and reducing daytime impacts.</td>
<td>The City of Atlanta/Department of Aviation (DOA) will continue to enforce the restrictions and procedures.</td>
<td>Currently being used.</td>
<td>Existing Procedure - No increased cost.</td>
</tr>
<tr>
<td>Continuation of the current noise abatement departure climb profile that results in a cutback of takeoff power by jet aircraft at approximately 1,000 feet.</td>
<td>Reduces departure noise on the closest noise sensitive areas to HJAAA.</td>
<td>The airlines will be responsible for continuing the use of their existing noise abatement departure procedures.</td>
<td>Currently being used.</td>
<td>Existing Procedure - No increased cost.</td>
</tr>
<tr>
<td>Continuation of the use of the Noise and Operations Monitoring System (NOMS) to monitor flight procedures.</td>
<td>This measure provides data critical to the effective monitoring and modeling of noise exposure and abatement.</td>
<td>DOA staff will be responsible for continuing to monitor the NOMS and summarizing data.</td>
<td>Currently being used.</td>
<td>Existing Procedure - No increased cost.</td>
</tr>
<tr>
<td>Continuation of noise complaint coordination through the DOA.</td>
<td>Communications with Airport neighbors is vital to a successful noise mitigation program and would benefit those exposed to aircraft noise.</td>
<td>The continuing operation of the Airport noise complaint line would be the responsibility of the DOA.</td>
<td>Currently being used.</td>
<td>Existing Procedure - No increased cost.</td>
</tr>
</tbody>
</table>

Source: ESA Airports
## TABLE 9.2
SUMMARY OF MITIGATION MEASURES RECOMMENDED FOR IMPLEMENTATION
RECOMMENDED ACQUISITION, SOUND INSULATION, LAND USE, AND COMMUNITY COORDINATION ACTIONS

<table>
<thead>
<tr>
<th>Recommended Mitigation Measure</th>
<th>Benefits</th>
<th>Implementation Responsibility</th>
<th>Implementation Timing</th>
<th>Qualitative Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Voluntary property acquisition program for eligible single-family residences and multi-family complexes within the 70 DNL contour.</td>
<td>This voluntary measure would provide the opportunity for owners and residents of residentially developed property within the high noise areas (2007 NEM 70 DNL and greater) to receive fair market value for their property and relocation assistance.</td>
<td>The acquisition of property within the 2007 NEM 70 DNL contour would involve financial support from the FAA and the DOA. It would also require coordination of the acquisition program by the DOA.</td>
<td>The timing for actual acquisition of property would be based on the approval of the NEMs and NCP, as well as the availability of federal and HJAIA funds.</td>
<td>Estimated to be approximately $42 million dollars.</td>
</tr>
<tr>
<td>2. DOA and political jurisdictions coordinating regarding redevelopment of lands purchased under the residential acquisition program.</td>
<td>The acquisition of residential properties within the 2007 NEM 70 DNL contour would remove properties from the tax rolls. The benefit of this recommendation is to have local political jurisdictions involved in redevelopment of acquired properties not needed for aviation use.</td>
<td>The DOA would incorporate this recommendation into its noise-related property acquisition program.</td>
<td>Coordination with local political jurisdictions would occur following the voluntary acquisition of the properties.</td>
<td>Costs of DOA coordination with local entities would be part of the overall property acquisition costs.</td>
</tr>
<tr>
<td>3. Voluntary sound insulation program for eligible residential buildings in the 65-70 DNL contours.</td>
<td>This voluntary measure will benefit those eligible residences located between the 2007 NEM 65 and 70 DNL contour by providing them the option to be included in the sound insulation program. The benefit would be in gaining a minimum of 5 dB reduction in interior noise. In return for the sound insulation, property owners would be required to sign a &quot;right of flight&quot; easement.</td>
<td>The insulation of residences within the 2007 NEM 65-70 DNL contours would involve financial support from the FAA and the DOA. It would also require coordination of the program by the DOA.</td>
<td>The timing for actual insulation of properties would be based on the approval of the NEMs and NCP, as well as the availability of federal and HJAIA funds.</td>
<td>Estimated to be approximately $62 million dollars.</td>
</tr>
<tr>
<td>4. Voluntary sound insulation program for eligible schools within the 65-70 DNL contours.</td>
<td>This program will benefit the schools located between the 2007 NEM 65 and 70 DNL noise contour by providing them the option to be included in the sound insulation program. The benefit would be in gaining a minimum of 5 dB reduction in interior noise. It is estimated that four schools would be eligible.</td>
<td>The insulation of schools within the 2007 NEM 65-70 DNL contours would involve financial support from the FAA and the DOA. It would also require coordination of the program by the DOA.</td>
<td>The timing for actual insulation of properties would be based on the approval of the NEMs and NCP, as well as the availability of federal and HJAIA funds.</td>
<td>Estimated to be approximately $10.0 million dollars.</td>
</tr>
<tr>
<td>5. Voluntary sound insulation program for other eligible noise sensitive uses within the 65 DNL and greater contours.</td>
<td>This program will benefit other noise sensitive sites located within the 2007 NEM 65 DNL and greater noise contour by providing them the option to be included in the sound insulation program. The benefit would be in gaining a minimum of 5 dB reduction in interior noise. It is estimated that approximately 20 additional sites would be eligible.</td>
<td>The insulation of property within the 2007 NEM 65 DNL and greater contour would involve financial support from the FAA and the DOA. It would also require coordination of the program by the DOA.</td>
<td>The timing for actual insulation of properties would be based on the approval of the NEMs and NCP, as well as the availability of federal and HJAIA funds.</td>
<td>Estimated to be approximately $6.0 million dollars.</td>
</tr>
<tr>
<td>6. Establish Overlay Zones within the 60 DNL and greater.</td>
<td>Overlay Zones will protect owners of future residential and other future noise sensitive site development in high noise contour areas. It would provide the same protection afforded existing property owners in terms of sound insulation. It would also notify those acquiring new homes within the moderate noise exposure limits (2012 60-65 DNL) of the existence of overflight and noise exposure prior to the new property being acquired.</td>
<td>Implementation would be the responsibility of local political jurisdictions through modifications of comprehensive plans, land development codes and building codes. The DOA would coordinate with and provide technical assistance to political jurisdictions as needed.</td>
<td>Since the FAA has no control over local land use decisions, the implementation of the overlay zones can begin immediately. No specific costs are associated with the overlay zoning as it would be included as part of local government's periodic updates of their Comprehensive Plans, Development Codes, and Building Codes.</td>
<td>No specific costs are associated with the overlay zoning as it would be included as part of local government's periodic updates of their Comprehensive Plans, Development Codes, and Building Codes.</td>
</tr>
<tr>
<td>7. Continuation of the Noise Mitigation Advisory Council (NMAC) during the implementation process</td>
<td>Members of the NMAC include aviation and political jurisdictions. The members of the NMAC have been involved throughout the FAR Part 150 Study and it would be beneficial for them to continue to be involved in the implementation of the recommended noise mitigation measures.</td>
<td>The DOA would continue to organize meetings of the NMAC as the implementation phase proceeds.</td>
<td>The NMAC is currently in existence and would continue to meet on a periodic basis.</td>
<td>Costs would involve time of the NMAC members to meet and costs associated with support personnel provided through the DOA.</td>
</tr>
</tbody>
</table>

Source: ESA Airports
4. Owner occupied day care centers;
5. Other rental residential units; and
6. Churches.

The final priority system would be established prior to implementation.

The timing of the mitigation programs depends largely on the availability of federal and local matching funds. The City of Atlanta has secured some federal and local matching monies to fund portions of the property acquisition and sound insulation programs. Once the approval of the NEM portion of the study is received from the FAA, DOA staff will work with the property owners, local political jurisdictions, and school districts to develop an implementation plan for the acquisition, reuse, or insulation of these properties. Every effort will be made by the DOA to accelerate the program to the greatest extent possible.

Implementation of Overlay Zoning

The ultimate effectiveness of the overlay zones will be the desire of local jurisdictions to implement them. A number of measures can be taken by local governments to incorporate the proposed overlay zones into the land use planning and zoning framework of each political entity. These include the incorporation of the overlay zones into comprehensive plans; land development codes/zoning ordinances; and building codes.

9.3 Review and Update

The existing operational-related noise abatement measures will be continually reviewed by the DOA through the use of the NOMS. The DOA will temporarily increase the size of its Airport Noise Mitigation Program sound insulation and property acquisition office (through staff and/or outside consultants) to implement the expanded program. The DOA will also provide support to local jurisdictions regarding the development of overlay zones and will schedule periodic meetings with the NMAC. Through the NMAC, the DOA will provide periodic updates of the status of the program implementation.
Appendices
Noise Compatibility Program
Appendix A
FAA’s Noise Mitigation Policy -
Effective February 4, 1994
July 6, 1994

Dear Property Owner:

On February 4, 1994, the Atlanta Hartsfield International Airport received a letter from the Federal Aviation Administration amending their previous ruling that properties built after April 10, 1985, were not eligible for inclusion in the Airport Noise Abatement Program (ANAP). The Federal Aviation Administration has now directed us that "if the property was under construction on that date or if the property owner had made a financial or construction commitment prior to or by April 10, 1985", the property would be eligible for federal participation under the ANAP.

Based on this new directive, the ANAP will be requesting additional information from those property owners for which the new criteria established by the Federal Aviation Administration may fit.

To be considered for inclusion in the ANAP, please submit all documentation which shows you had made a construction or financial commitment by April 10, 1985. This documentation will be reviewed and a determination made as to your eligibility for inclusion in the ANAP. Thereafter, you will be advised in writing of the status of your property.

If you should have any questions regarding this new directive, please do not hesitate to give our Program Information Coordinator, Ms. Angelyn Cobb a call at (404) 991-9664.

Sincerely,

Betty Hollaway, Project Manager
Airport Noise Abatement Program

BH/jpl
Dear Property Owner:

Please find enclosed information regarding the Airport Noise Abatement Program.

Our office is requesting you to return the completed Property Information Survey form. Please attach a copy of the Warranty or Security Deed and information that would indicate the age of your property.

If your property was built after April 10, 1985, our office will need a copy of the builder's permit and data verifying a financial or construction commitment prior to or by April 10, 1985 for proof of eligibility for inclusion in the Airport Noise Abatement Program.

The information survey, deeds, builders permits and related property data are requested by the Airport Noise Abatement Program for planning purposes only and will be kept as part of your confidential file.

If you have any questions, please contact me at 404-991-9664.

Sincerely,

Angelyn Cobb
Planning & Information Coordinator

City of Atlanta • Airport Noise Abatement Program
1000 Riverside Road, Suite 400 • College Park, Georgia 30337 • Tel: (404) 991-9664 • Fax: (404) 994-1592