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## 5.2 COMPATIBLE LAND USE

This section evaluates compatible land use impacts, with a primary focus on noise impacts. Information on other related potential impacts are discussed **Section 5.3, Surface Transportation; Section 5.4, Social Impacts; Section 5.5, Secondary (Induced) Impacts; Section 5.8, Department of Transportation Section 4(f) Lands and Land and Water Conservation Fund Section 6(f) Lands; and Section 5.21, Environmental Justice.**

### 5.2.1 Background and Methodology

This section describes the regulatory context, thresholds of significant impact for consideration of incompatible land uses, and the methodologies used to assess such impacts.

#### 5.2.1.1 Regulatory Context

FAA Order 5050.4A states that the compatibility of existing and planned land uses in the vicinity of an airport is usually related to aircraft noise impacts associated with that airport. In addition to the consideration of aircraft noise impacts, compatible land use issues may arise from acquisition or changes in surface transportation facilities associated with the proposed projects.

Specifically, FAA Order 1050.1E (Appendix A, 4.1a) states:

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Airport development actions to accommodate fleet mix changes or the number of aircraft operations, air traffic changes, or new approaches made possible by new navigational aids are examples of activities that can alter aviation-related noise impacts and affect land uses subjected to those impacts. In this context, if the noise analysis described in the noise analysis section (section 14) concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use. However, if the proposal would result in other impacts exceeding thresholds of significance which have land use ramifications, for example, disruption of communities, relocation, and induced socioeconomic impacts, the effects on land use shall be analyzed in this context and described accordingly under the appropriate impact category with any necessary cross-references to the Compatible Land Use section to avoid duplication.

The analysis of aviation noise impacts falls under the responsibility of the FAA. The following Federal statutes, FAA regulations and FAA guidance apply to the consideration of noise impacts:

- 49 U.S.C. 47501-47507, The Aviation Safety and Noise Abatement Act of 1979, as amended
- 14 CFR Part 150, Airport Noise Compatibility Planning
- FAA Advisory Circular, 150/5020, *Noise Control and Compatibility Planning for Airports*

In addition, the Airport Development Grant Program (49 USC 47101 et seq.) requires that an airport project may not be approved unless the Secretary of Transportation is satisfied that the

project is consistent with plans (existing at the time the project is approved) of public agencies for development of the area in which the airport is located (49 USC 47106(a)(1)). Additional guidance related to noise is provided in **Section 5.1, Noise**.

### **O'Hare Modernization Act**

In regards to jurisdiction over airport property, the O'Hare Modernization Act states:

**Section 25. Jurisdiction over airport property.** Airport property shall not be subject to the laws of any unit of local government except as provided by ordinance of the City. Plans of all public agencies that may affect the O'Hare Modernization Program shall be consistent with the O'Hare Modernization Program, and to the extent that any plan of any public agency or unit or division of State or local government is inconsistent with the O'Hare Modernization Program, that plan is and shall be void and of no effect.

#### **5.2.1.2 Thresholds of Significance**

Suggested guidelines for evaluating land use compatibility with noise exposure were developed by the Federal government and adopted by FAA (based on 14 CFR Part 150) and are presented in **Table 5.2-1**. The aircraft noise contours presented in **Section 5.1** indicate that implementation of the Build Alternatives would result in incompatible land uses being exposed to noise levels above DNL 65. Since compatible land use impacts are directly related to the noise impacts described in **Section 5.1**, the thresholds of significant impact presented in **Section 5.1** apply to this section.

**TABLE 5.2-1  
LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND**

Land Use	Yearly day-night average sound level ( $L_{dn}$ ) in decibels					
	< 65	65-70	70-75	75-80	80-85	> 85
<b>Residential</b>						
Residential, other than mobile homes and transient lodgings	Y	N (1)	N (1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N (1)	N (1)	N (1)	N	N
<b>Public Use</b>						
Schools	Y	N (1)	N (1)	N	N	N
Hospitals, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Cemeteries (a)	Y	Y	Y (2)	Y (3)	Y (4, 9a)	Y (9a, 10a)
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y (2)	Y (3)	Y (4)	Y (4)
Parking	Y	Y	Y (2)	Y (3)	Y (4)	N
<b>Commercial Use</b>						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail- building materials, hardware and farm equipment	Y	Y	Y (2)	Y (3)	Y (4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y (2)	Y (3)	Y (4)	N
Communication	Y	Y	25	30	N	N
<b>Manufacturing and Production</b>						
Manufacturing, general	Y	Y	Y (2)	Y (3)	Y (4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y (6)	Y (7)	Y (8)	Y (8)	Y (8)
Livestock farming and breeding	Y	Y (6)	Y (7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
<b>Recreational</b>						
Outdoor sports arenas and spectator sports	Y	Y (5)	Y (5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N
Note:	Numbers in parenthesis refer to notes; see continuation of <b>Table 5.2-1</b> on the next page for notes and key.					

**TABLE 5.2-1**  
**LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND**

The designations contained in this table do not constitute a Federal determination that any use of land covered by the proposed projects is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 5.2-1

Y (YES)	Land Use and related structures compatible without restrictions.
N (NO)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35	Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

Notes for Table 5.2-1

- (1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- (2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (5) Land use compatible provided special sound reinforcement systems are installed.
- (6) Residential buildings require an NLR of 25.
- (7) Residential buildings require an NLR of 30.
- (8) Residential buildings not permitted.
- (9a) Land use not recommended, but if community decides use is necessary, hearing protection devices should be worn by personnel.
- (10a) No buildings.
- (a) Guidelines for Considering Noise in Land Use Planning and Control, USDOT, Federal Interagency Committee on Urban Noise (FICUN), June 1980

Sources: Guidelines for Considering Noise in Land Use Planning and Control, USDOT, Federal Interagency Committee on Urban Noise (FICUN), June 1980;  
 (See also FAA Order 1050.1E, Appendix A, pg A-15, June 8, 2004.)

### 5.2.1.3 Methodologies

The study area for noise and land use compatibility impact analyses is the area that falls within the DNL 65 contours for Baseline 2002 conditions, and for any alternative in any future analysis year (see **Section 4.1, Airport Location and Study Areas, in Chapter 4, Affected Environment**). This area includes portions of the following 18 communities: Addison, Arlington Heights, Bensenville, Chicago, Des Plaines, Elk Grove Village, Elmhurst, Franklin Park, Harwood Heights, Itasca, Mount Prospect, Norridge, Northlake, Park Ridge, Rolling Meadows, Rosemont, Schiller Park, Wood Dale, and portions of unincorporated Cook and DuPage counties. The study area also includes numerous special districts and regional planning organizations. Special districts in the study area provide special services such as schools, parks, and forest preserves. Regional planning organizations and Metropolitan Planning Organizations (MPO) have jurisdiction over transportation and land use planning in portions of

the study area. **Section 4.3, Demographics and Socioeconomic Profile in Chapter 4, Affected Environment**, provides an overview of these special districts and regional organizations.

As described in **Section 4.2.2, Land Use and Future Planned Development for Communities in the Project Area in Chapter 4**, development in the study area includes residential, commercial, retail, and industrial uses. Future development in the study area will be influenced by the land use and transportation plans developed by the local jurisdictions and agencies described above. Although most municipalities surrounding the Airport are developed, some municipalities are still growing. Cities in the project area that are continuing to increase the number of residential units include Arlington Heights, Elk Grove Village, Elmhurst, and Park Ridge.

The methodology used to determine compatible land use impacts associated with aircraft noise in this area are described in **Section 5.1.1.4, Methodologies**. The methodologies used to identify land use changes associated with changes in surface transportation systems and acquisitions are described in **Section 5.3, Surface Transportation**, and **Section 5.4, Social Impacts**, respectively.

## **5.2.2 Baseline Conditions**

**Exhibit 5.1-1**, in **Section 5.1, Noise**, presents the 2002 Baseline noise exposure contours. **Table 5.1-1**, also in **Section 5.1**, presents estimates of the total area (in acres), population, housing, and other noise sensitive facilities exposed to DNL 65 and greater for 2002 Baseline conditions. As presented, a total of 20,007 people and 8,509 housing units are exposed to DNL 65 and greater. In addition, 24 public parks, 4 historic properties, 8 places of worship, 1 university, and 7 schools are exposed to DNL 65 and greater.

## **5.2.3 Alternatives Analysis**

This section presents the potential impacts to population, housing, and other noise sensitive facilities for each alternative in each development phase.

### **5.2.3.1 Construction Phase I**

Construction Phase I represents the expected conditions and impacts during the first year of operation, reflecting the first increment of the anticipated development program. As described in **Section 3.4, Description of Alternatives Retained for Detailed Consideration in Chapter 3, Alternatives**, Alternatives C, D and G would have the same physical and operational characteristics in Construction Phase I. The following presents the potential noise impacts associated with Alternatives A, C, D, and G in Construction Phase I. A comparison of potential noise sensitive facilities exposed to DNL 65 between alternatives is provided in **Table 5.2-2**.

**TABLE 5.2-2  
NOISE SENSITIVE FACILITIES EXPOSED TO DNL 65 AND GREATER  
CONSTRUCTION PHASE I**

Noise Sensitive Facilities (count)	Alternative A (No Action Alternative)	Alternatives C, D & G
Public Parks	22	19
Historic Properties	8	7
Places of Worship	8	7
Nursing Homes	1	1
Hospitals	0	0
Libraries	0	1
Universities	1	2
Schools	6	8
<i>Sound Insulated Schools (included above)</i>	5	8
<b>Total</b>	<b>46</b>	<b>45</b>
<b>Population and Housing (count)</b>		
Population	22,970	26,572
Housing Units (Total)	8,953	10,803
<i>Single-Family Housing Units (included above)</i>	5,990	7,383
<i>Multifamily Housing Units (included above)</i>	2,963	3,420
<i>Sound Insulated Housing Units (included above)</i>	3,587	3,470
Housing Units Newly Exposed to DNL 65 and Greater	NA	2,664
<i>Single-Family Housing Units (included above)</i>	NA	1,617
<i>Multifamily Housing Units (included above)</i>	NA	1,047

Sources: Housing and Population database: City of Chicago, June 2005.

Noise Sensitive Facilities, Population and Housing data: Crawford, Murphy, and Tilly, Inc. [TPC] analysis, July 2005.

### Alternative A (No Action)

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative A (No Action Alternative) in Construction Phase I are presented in **Table 5.1-3**, in **Section 5.1**, and **Table 5.2-2**. As presented, a total of 22,970 people and 8,953 housing units would be exposed to DNL 65 and greater in Construction Phase I. The total number of people exposed to DNL 65 and greater in Construction Phase I is 15 percent greater than the total number of people exposed in the 2002 Baseline conditions; the total number of housing units is 5 percent greater. The increases in people exposed to the DNL 65 come from increasing traffic at a constrained airfield, rather than from enhanced capacity resulting from any development at the airport. A total of 22 public parks, 8 historic properties, 8 places of worship, 1 nursing home, 1 university, and 6 schools would be exposed to DNL 65 and greater.

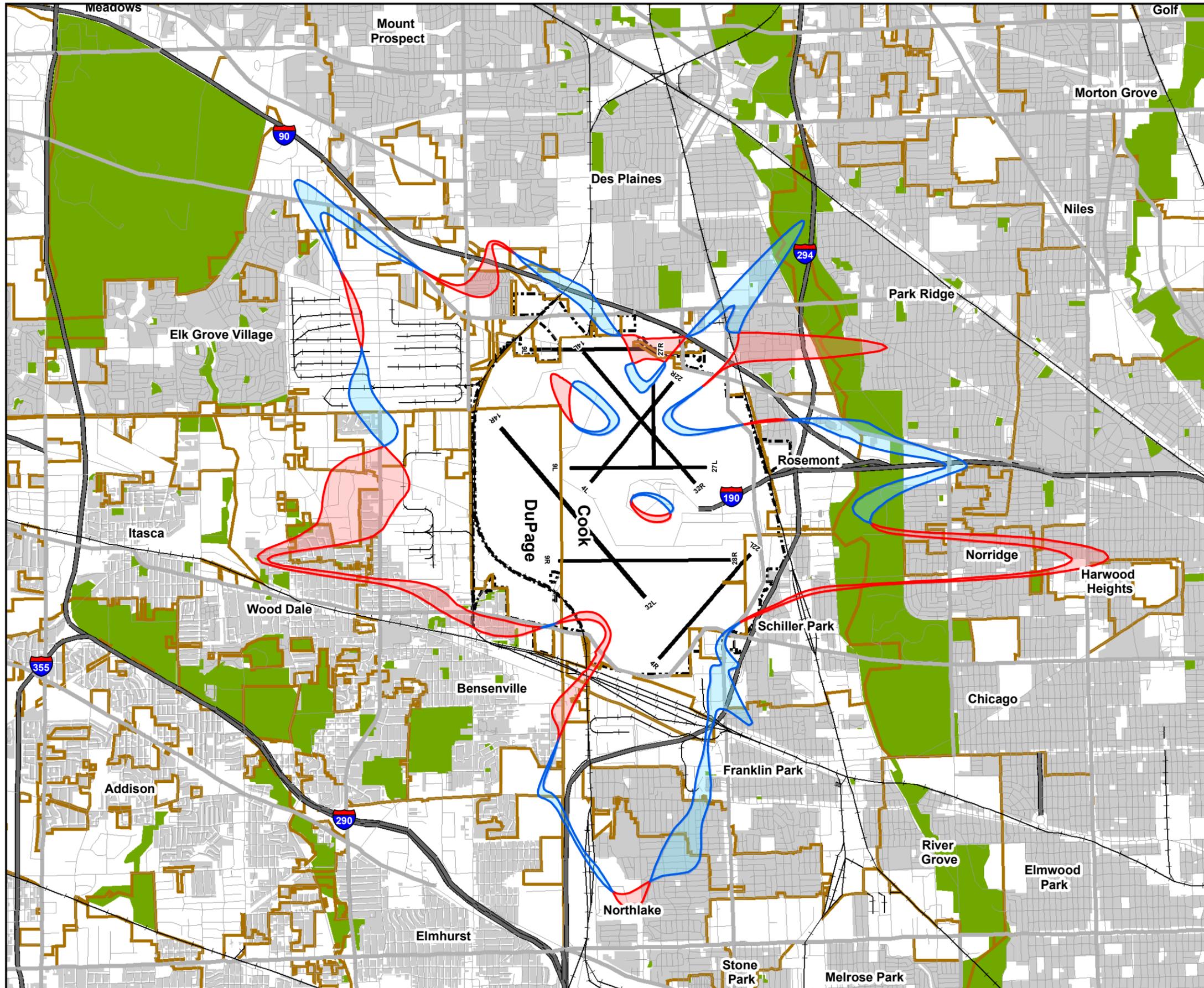
### Alternatives C, D and G

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternatives C, D, and G in Construction Phase I are presented on **Table 5.1-4** in **Section 5.1** and **Table 5.2-2**. As presented, a total of 26,572 people and 10,803 housing units

would be exposed to DNL 65 and greater in Construction Phase I. The total number of people exposed to DNL 65 and greater in Construction Phase I is 14 percent more than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 20 percent more. In addition, 19 public parks, 7 historic properties, 7 places of worship, 1 nursing home, 1 library, 2 universities, and 8 schools (all sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-1** depicts the potential change in noise exposure associated with Alternatives C, D, and G compared to Alternative A (No Action Alternative) in Construction Phase I. As presented, noise sensitive land use areas within the DNL 65 contour that will experience an increase in noise exposure are primarily located west and north of the Airport. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are primarily located in Bensenville, Wood Dale, and Elk Grove Village. Areas that would experience an increase in noise exposure over incompatible land uses north of the Airport are located in Des Plaines and Park Ridge. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located east and south of the Airport.

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Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.



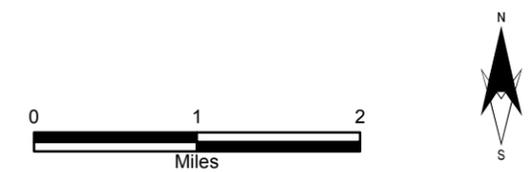
Chicago  
O'Hare  
International  
Airport

### O'Hare Modernization Environmental Impact Statement

- Rail Roads
- Freeways
- Secondary Roads
- Local Streets
- Municipal Boundary
- Airport Property
- Noise Sensitive Land Use
- Parks and Forest Preserves
- Areas Newly Exposed to 65 DNL
- Areas No Longer Exposed to 65 DNL

Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

Population	8,274	4,673
Housing Units	3,386	1,531
Single-Family Housing Units (included above)	1,617	145
Multifamily Housing Units (included above)	1,047	590
Sound Insulated Housing Units (included above)	722	796



Potential Change in Noise Exposure  
All Build Alternatives Phase I  
Compared to Alternative A (No Action)

► Exhibit 5.2-1

### 5.2.3.2 Construction Phase II

Construction Phase II represents the second increment of the Build Alternatives. As described in Section 3.4, **Description of Alternatives Retained for Detailed Consideration in Chapter 3, Alternatives**, Alternatives C, D and G would have the same physical and operational characteristics. The following presents the potential noise impacts associated with each alternative in Construction Phase II. A comparison of potential noise sensitive facilities exposed to DNL 65 between alternatives is provided in **Table 5.2-3**, below.

**TABLE 5.2-3  
NOISE SENSITIVE FACILITIES EXPOSED TO DNL 65 AND GREATER  
CONSTRUCTION PHASE II**

Noise Sensitive Facilities (count)	Alternative A (No Action Alternative)	Alternatives C, D & G
Public Parks	22	29
Historic Properties	5	5
Places of Worship	8	9
Nursing Homes	2	1
Hospitals	0	0
Libraries	0	2
Universities	1	2
Schools	6	12
<i>Sound Insulated Schools (included above)</i>	5	9
<b>Total</b>	<b>44</b>	<b>60</b>
<b>Population and Housing (count)</b>		
Population	23,624	26,829
Housing Units (Total)	9,058	10,359
<i>Single-Family Housing Units (included above)</i>	6,147	7,544
<i>Multifamily Housing Units (included above)</i>	2,911	2,815
<i>Sound Insulated Housing Units (included above)</i>	3,764	2,614
Housing Units Newly Exposed to DNL 65 and Greater	NA	5,575
<i>Single-Family Housing Units (included above)</i>	NA	4,235
<i>Multifamily Housing Units (included above)</i>	NA	1,340

Sources: Housing and Population database: City of Chicago, June 2005.

Noise Sensitive Facilities, Population and Housing data: Crawford, Murphy, and Tilly, Inc. [TPC] analysis, July 2005.

#### Alternative A (No Action)

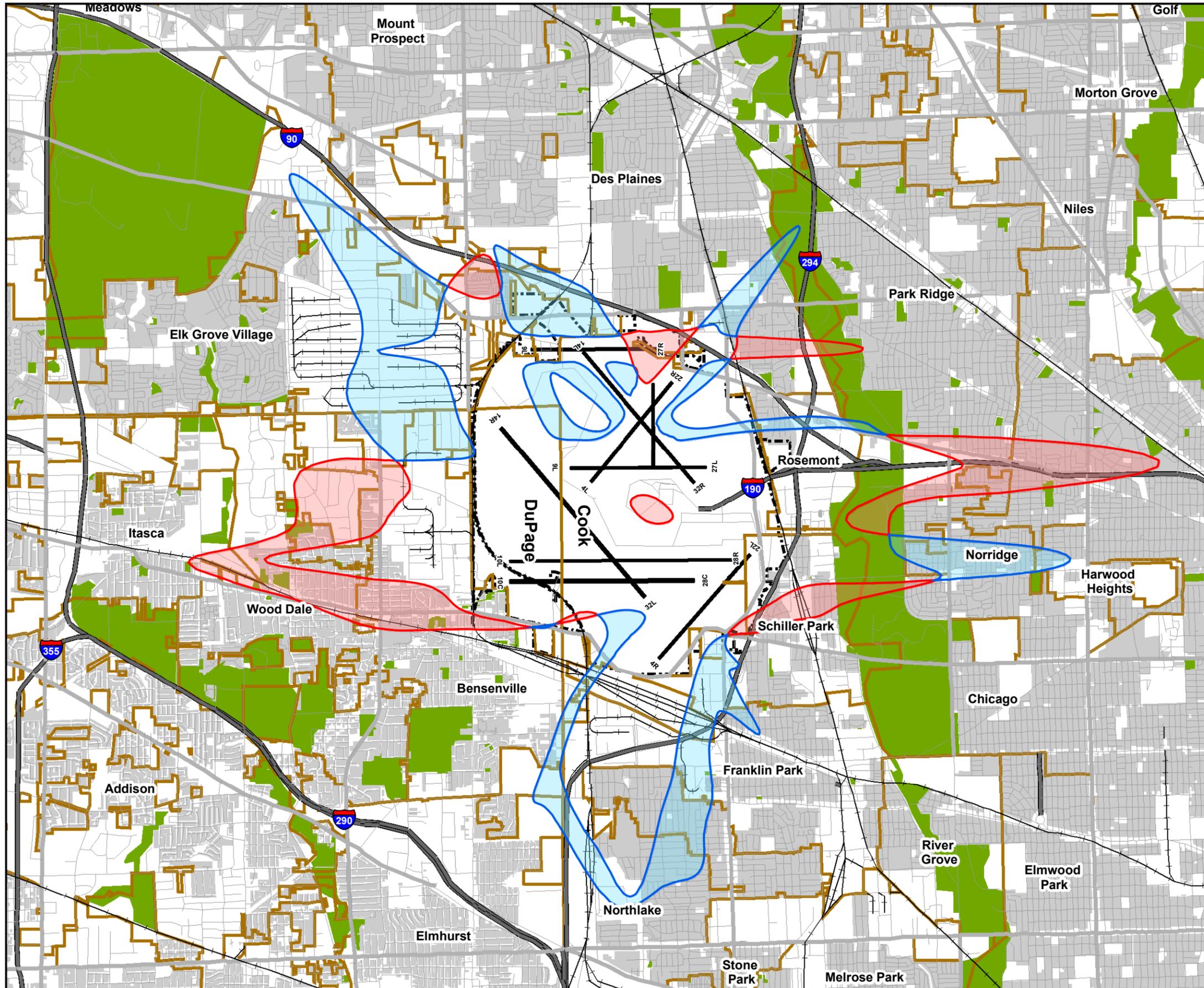
Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative A (No Action Alternative) in Construction Phase II are presented in **Table 5.1-6** in **Section 5.1** and **Table 5.2-3**. As presented, a total of 23,624 people and 9,058 housing units would be exposed to DNL 65 and greater in Construction Phase II. The total number of people exposed to DNL 65 and greater in Construction Phase II is 3 percent greater than the total number of people exposed in Construction Phase I; the total number of housing units is 1 percent greater. The increases in people exposed to the DNL 65 come from increasing

traffic at a constrained airfield rather than from enhanced capacity resulting from any development at the airport. A total of 22 public parks, 5 historic properties, 8 places of worship, 2 nursing homes, 1 university, and 6 schools (5 sound insulated) would be exposed to DNL 65 and greater.

### **Alternatives C, D and G**

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternatives C, D, and G in Construction Phase II are presented on **Table 5.1-7** in **Section 5.1** and **Table 5.2-3**. As presented, a total of 26,829 people and 10,359 housing units would be exposed to DNL 65 and greater in Construction Phase II. The total number of people exposed to DNL 65 and greater in Construction Phase II is 12 percent greater than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 13 percent greater. In addition, 29 public parks, 5 historic properties, 9 places of worship, 1 nursing home, 2 libraries, 2 universities, and 12 schools (9 sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-2** depicts the potential change in noise exposure associated with Alternatives C, D, and G compared to Alternative A (No Action Alternative) in Construction Phase II. As presented, the change in noise exposure is similar to that projected for Construction Phase I. Incompatible land use areas that will experience an increase in noise exposure are primarily located west and north of the Airport in Bensenville, Wood Dale, Elk Grove Village, Des Plaines, and Park Ridge. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located east and south of the Airport.



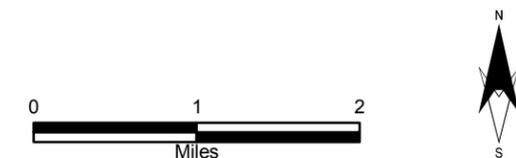
Chicago  
O'Hare  
International  
Airport

**O'Hare Modernization  
Environmental Impact Statement**

- +— Rail Roads
- Freeways
- Secondary Roads
- Local Streets
- ▭ Municipal Boundary
- ▭ Airport Property
- ▭ Noise Sensitive Land Use
- ▭ Parks and Forest Preserves
- ▭ Areas Newly Exposed to 65 DNL
- ▭ Areas No Longer Exposed to 65 DNL

Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

<b>Population</b>	<b>15,991</b>	<b>12,254</b>
<b>Housing Units</b>	<b>6,387</b>	<b>4,965</b>
<i>Single-Family Housing Units (included above)</i>	<i>4,235</i>	<i>1,594</i>
<i>Multifamily Housing Units (included above)</i>	<i>1,340</i>	<i>1,405</i>
<i>Sound Insulated Housing Units (included above)</i>	<i>812</i>	<i>1,966</i>



**Potential Change in Noise Exposure  
All Build Alternatives Phase II  
Compared to Alternative A (No Action)**

► Exhibit 5.2-2

Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.

### **5.2.3.3 Build Out**

Build Out represents the full build-out of each Build Alternative. As described in the following sections, the three Build Alternatives under consideration would differ from each other at this stage of development (a more detailed description of the Build Alternatives is provided in **Section 3.4, Description of Alternatives Retained for Detailed Consideration in Chapter 3, Alternatives**). The following sections present the potential noise impacts associated with each alternative in the Build Out phase. A comparison of potential noise sensitive facilities exposed to DNL 65 between alternatives is provided in **Table 5.2-4**.

**TABLE 5.2-4  
NOISE SENSITIVE FACILITIES EXPOSED TO DNL 65 AND GREATER  
BUILD OUT**

Noise Sensitive Facilities (count)	Alternative A			
	(No Action)	Alternative C	Alternative D	Alternative G
Public Parks	16	11	11	9
Historic Properties	4	3	3	3
Places of Worship	7	6	6	6
Nursing Homes	0	0	0	0
Hospitals	0	1	1	1
Libraries	0	2	2	2
Universities	1	1	1	1
Schools	4	8	8	8
<i>Sound Insulated Schools (included above)</i>	3	7	7	7
<b>Total</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>30</b>
<b>Population and Housing (count)</b>				
Population	14,512	19,577	21,154	19,135
Housing Units (Total)	5,199	6,754	7,392	6,572
<i>Single-Family Housing Units (included above)</i>	3,759	5,221	5,574	5,181
<i>Multifamily Housing Units (included above)</i>	1,440	1,533	1,818	1,391
<i>Sound Insulated Housing Units (included above)</i>	2,458	1,581	1,628	1,755
Housing Units Newly Exposed to DNL 65 and Greater	NA	5,619	5,766	5,240
<i>Single Family Housing Units (included above)</i>	NA	4,475	4,515	4,252
<i>Insulated</i>	NA	1,102	1,123	1,101
<i>Not Insulated</i>	NA	3,373	3,392	3,151
<i>Multifamily Housing Units (included above)</i>	NA	1,144	1,251	988
<i>Insulated</i>	NA	0	0	0
<i>Not Insulated</i>	NA	1,144	1,251	988
Housing Units Not Newly Exposed to DNL 65 and Greater, but Experience a 1.5 or Greater dB Increase	NA	1,368	1,677	1,419
<i>Single Family Housing Units (included above)</i>	NA	921	1,253	921
<i>Insulated</i>	NA	439	496	438
<i>Not Insulated</i>	NA	482	757	483
<i>Multifamily Housing Units (included above)</i>	NA	447	424	498
<i>Insulated</i>	NA	0	0	0
<i>Not Insulated</i>	NA	447	424	498

Sources: Housing and Population database: City of Chicago, June 2005.

Noise Sensitive Facilities, Population and Housing data: Crawford, Murphy, and Tilly, Inc. [TPC] analysis, July 2005.

### Alternative A (No Action)

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative A (No Action Alternative) in the Build Out phase are presented in **Tables 5.1-9** in **Section 5.1, Noise**, and **Table 5.2-4**. As presented, a total of 14,512 people and 5,199 housing units would be exposed to DNL 65 and greater in the Build Out phase. The total

number of people exposed to DNL 65 and greater in the Build Out phase is 39 percent less than the total number of people exposed in Construction Phase II; the total number of housing units is 43 percent less. The increases in people exposed to the DNL 65 come from increasing traffic at a constrained airfield rather than from enhanced capacity resulting from any development at the airport. A total of 16 public parks, 4 historic properties, 7 places of worship, 1 university, and 4 schools (3 sound insulated) would be exposed to DNL 65 and greater.

### Alternative C

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative C in the Build Out phase are presented on **Table 5.1-10** in **Section 5.1, Noise**, and **Table 5.2-4**. As presented, a total of 19,576 people and 6,754 housing units would be exposed to DNL 65 and greater in the Build Out phase. The total number of people exposed to DNL 65 and greater in the Build Out phase is 35 percent greater than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 30 percent greater. In addition, 11 public parks, 3 historic properties, 6 places of worship, 1 hospital, 2 libraries, 1 university, and 8 schools (7 sound insulated) would be exposed to DNL 65 and greater.

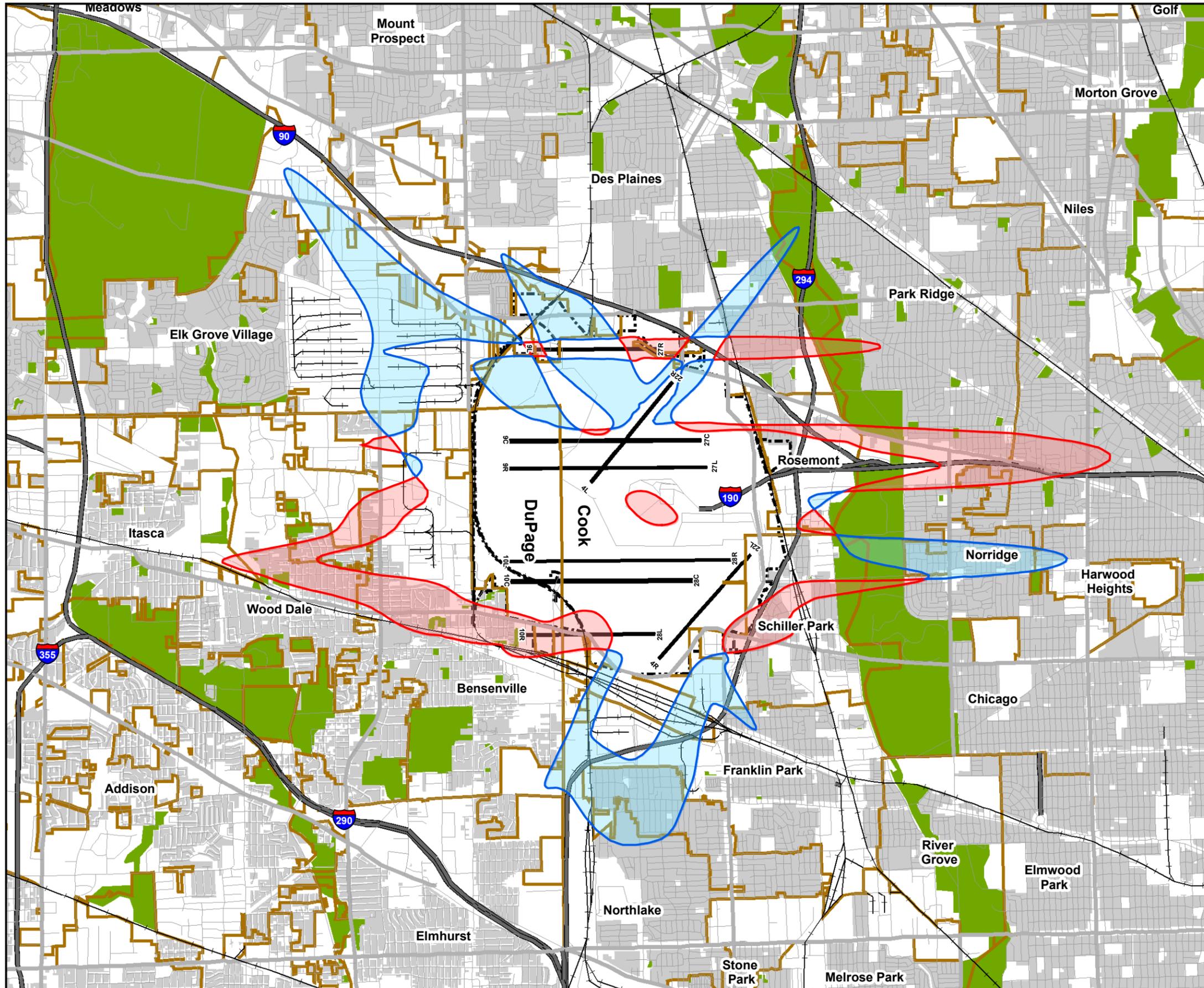
**Exhibit 5.2-3** depicts the potential change in noise exposure associated with Alternative C compared to Alternative A (No Action Alternative) in the Build Out phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located both east and west of the Airport. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are primarily located in Bensenville and Wood Dale. Areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are located in Des Plaines, Park Ridge, Rosemont, and Schiller Park. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north, east, and south of the Airport.

### Alternative D

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative D in the Build Out phase are presented on **Table 5.1-11** in **Section 5.1** and **Table 5.2-4**. As presented, a total of 21,154 people and 7,392 housing units would be exposed to DNL 65 and greater in the Build Out phase. The total number of people exposed to DNL 65 and greater in the Build Out phase is 46 percent greater than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 42 percent greater. In addition, 11 public parks, 3 historic properties, 6 places of worship, 1 hospital, 2 libraries, 1 university, and 8 schools (7 sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-4** depicts the potential change in noise exposure associated with Alternative D compared to Alternative A (No Action Alternative) in the Build Out phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located both east and west of the Airport. Areas that would experience an increase in noise exposure over

incompatible land uses west of the Airport are primarily located in Bensenville and Wood Dale. Areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are located in Des Plaines, Park Ridge, Rosemont, and Schiller Park. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north, east, and south of the Airport.



Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.



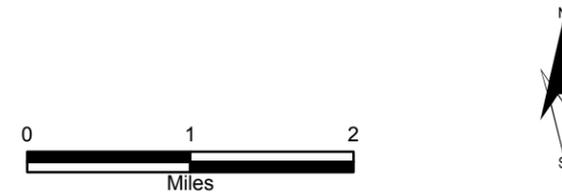
Chicago  
O'Hare  
International  
Airport

### O'Hare Modernization Environmental Impact Statement

- Rail Roads
- Freeways
- Secondary Roads
- Local Streets
- Municipal Boundary
- Airport Property
- Noise Sensitive Land Use
- Parks and Forest Preserves
- Areas Newly Exposed to 65 DNL
- Areas No Longer Exposed to 65 DNL

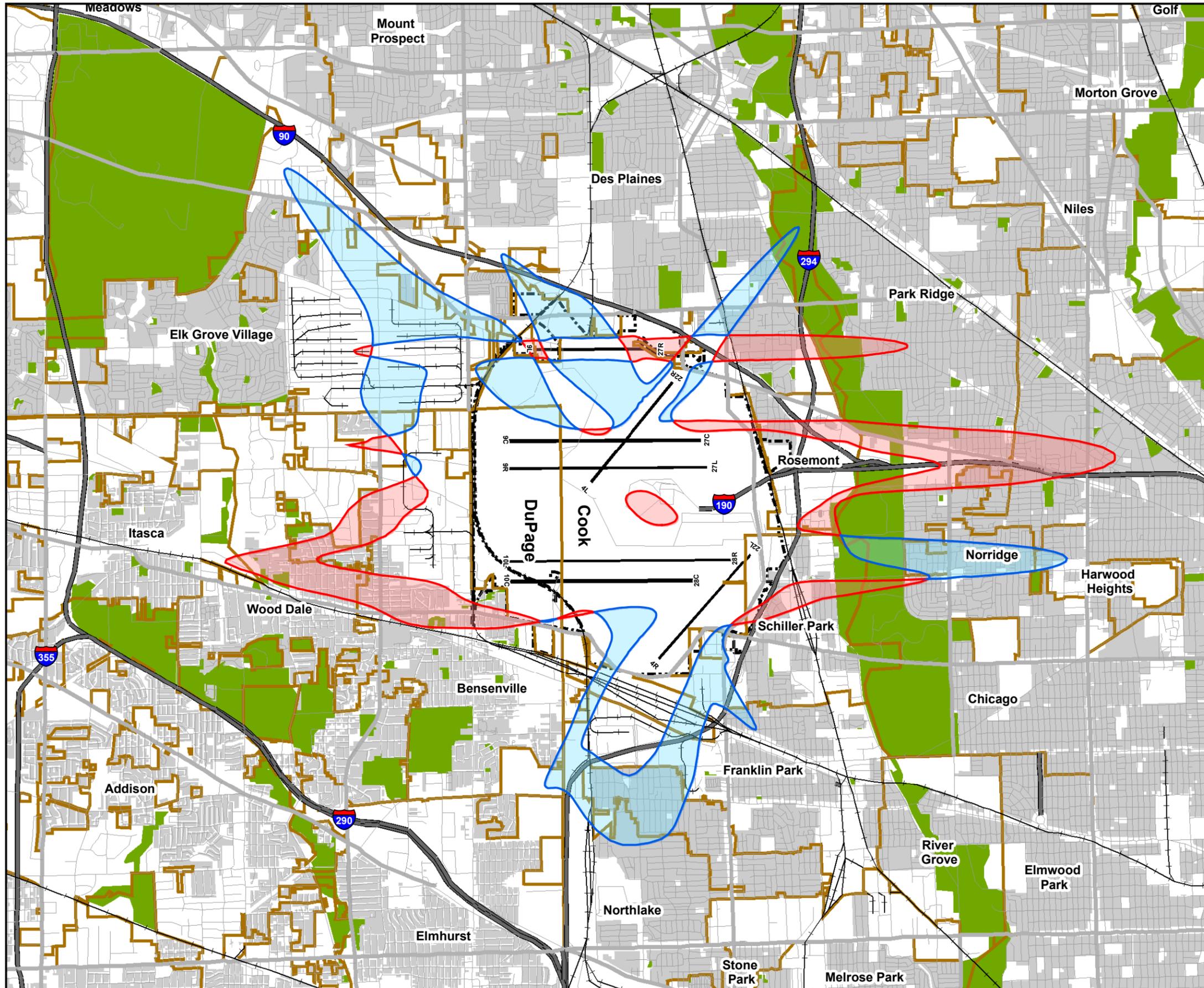
Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

<b>Population</b>	16,218	10,937
<b>Housing Units</b>	5,619	4,007
<i>Single-Family Housing Units (included above)</i>	3,373	2,076
<i>Multifamily Housing Units (included above)</i>	1,144	1,502
<i>Sound Insulated Housing Units (included above)</i>	1,102	25



**Potential Change in Noise Exposure  
Alternative C Build Out  
Compared to Alternative A (No Action)**

► Exhibit 5.2-3



Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.



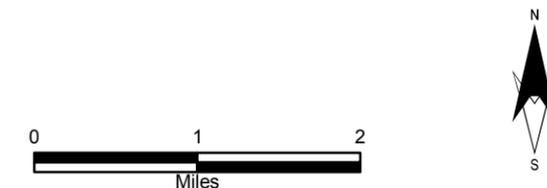
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International  
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**O'Hare Modernization  
Environmental Impact Statement**

- Rail Roads
- Freeways
- Secondary Roads
- Local Streets
- Municipal Boundary
- Airport Property
- Noise Sensitive Land Use
- Parks and Forest Preserves
- Areas Newly Exposed to 65 DNL
- Areas No Longer Exposed to 65 DNL

Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

<b>Population</b>	<b>16,299</b>	<b>10,802</b>
<b>Housing Units</b>	<b>5,766</b>	<b>3,971</b>
<i>Single-Family Housing Units (included above)</i>	<i>3,392</i>	<i>1,093</i>
<i>Multifamily Housing Units (included above)</i>	<i>1,251</i>	<i>1,500</i>
<i>Sound Insulated Housing Units (included above)</i>	<i>1,123</i>	<i>1,841</i>



**Potential Change in Noise Exposure  
Alternative D Build Out  
Compared to Alternative A (No Action)**

► Exhibit 5.2-4

## Alternative G

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative G in the Build Out phase are presented on **Table 5.1-12** in **Section 5.1, Noise**, and **Table 5.2-4**. As presented, a total of 19,135 people and 6,572 housing units would be exposed to DNL 65 and greater in the Build Out phase. The total number of people exposed to DNL 65 and greater in the Build Out phase is 32 percent greater than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 26 percent greater. In addition, 9 public parks, 3 historic properties, 6 places of worship, 1 hospital, 2 libraries, 1 university, and 8 schools (7 sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-5** depicts the potential change in noise exposure associated with Alternative G compared to Alternative A (No Action Alternative) in the Build Out phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located both east and west of the Airport. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are primarily located in Bensenville and Wood Dale. Areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are located in Des Plaines, Park Ridge, Rosemont, and Schiller Park. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north, east, and south of the Airport.

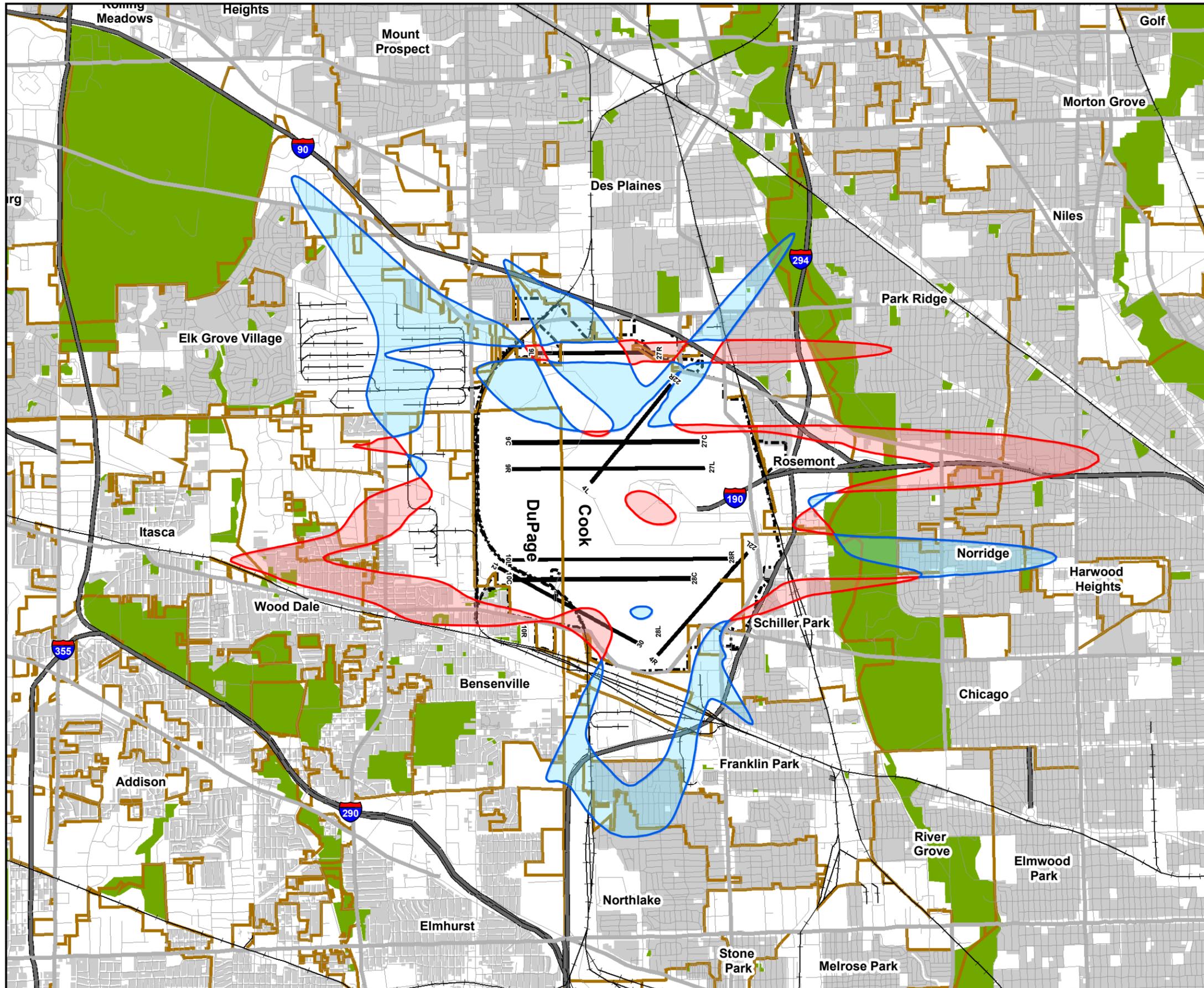
### 5.2.3.4 Build Out + 5

Build Out + 5 represents the expected conditions and impacts during the fifth year of operation following the full build-out of each Build Alternative. As in the Build Out phase, the three Build Alternatives under consideration would differ from each other at this stage of development (a more detailed description of the Build Alternatives is provided in **Section 3.4, Description of Alternatives Retained for Detailed Consideration in Chapter 3, Alternatives**). The following sections present the potential noise impacts associated with the No Action Alternative (Alternative A), and the Build Alternatives (C, D, and G) in the Build Out + 5 phase. A comparison of potential noise sensitive facilities exposed to DNL 65 between alternatives is provided in **Table 5.2-5**.

### Alternative A (No Action)

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative A (No Action Alternative) in the Build Out + 5 phase are presented in **Table 5.1-14** in **Section 5.1** and **Table 5.2-5**. As presented, a total of 17,500 people and 6,405 housing units would be exposed to DNL 65 and greater in the Build Out + 5 phase. The total number of people exposed to DNL 65 and greater in the Build Out + 5 phase is 21 percent greater than the total number of people exposed in the Build Out phase; the total number of housing units is 23 percent greater. The increases in people exposed to the DNL 65 come from increasing traffic at a constrained airfield rather than from enhanced capacity resulting from

any development at the airport. A total of 19 public parks, 4 historic properties, 7 places of worship, 1 university, and 3 schools (2 sound insulated) would be exposed to DNL 65 and greater.



Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.



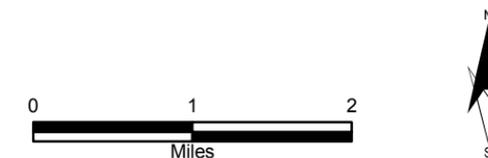
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### O'Hare Modernization Environmental Impact Statement

- Rail Roads
- Freeways
- Secondary Roads
- Local Streets
- Municipal Boundary
- Airport Property
- Noise Sensitive Land Use
- Parks and Forest Preserves
- Areas Newly Exposed to 65 DNL
- Areas No Longer Exposed to 65 DNL

Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

<b>Population</b>	15,098	10,265
<b>Housing Units</b>	5,240	3,810
<i>Single-Family Housing Units (included above)</i>	3,151	1,085
<i>Multifamily Housing Units (included above)</i>	988	1,500
<i>Sound Insulated Housing Units (included above)</i>	1,101	1,688



**Potential Change in Noise Exposure  
Alternative G Build Out  
Compared to Alternative A (No Action)**

► Exhibit 5.2-5

**TABLE 5.2-5  
NOISE SENSITIVE FACILITIES EXPOSED TO DNL 65 AND GREATER  
BUILD OUT + 5**

Noise Sensitive Facilities (count)	Alternative A			
	(No Action)	Alternative C	Alternative D	Alternative G
Public Parks	19	24	19	19
Historic Properties	4	4	3	3
Places of Worship	7	10	8	8
Nursing Homes	0	0	0	0
Hospitals	0	1	1	1
Libraries	0	2	2	2
Universities	1	1	1	1
Schools – Total	3	9	10	10
<i>Sound Insulated Schools (included above)</i>	2	8	8	8
<b>Total</b>	<b>34</b>	<b>51</b>	<b>44</b>	<b>44</b>
<b>Population and Housing (count)</b>				
Population	17,500	23,985	23,380	22,935
Housing Units (Total)	6,405	8,504	8,354	8,056
<i>Single-Family Housing Units (included above)</i>	4,417	6,356	6,183	6,100
<i>Multifamily Housing Units (included above)</i>	1,988	2,148	2,171	1,956
<i>Sound Insulated Housing Units (included above)</i>	2,596	1,751	1,807	1,884
Housing Units Newly Exposed to DNL 65 and Greater	NA	5,707	5,487	5,113
<i>Single-Family Housing Units (included above)</i>	NA	4,227	3,984	3,827
<i>Multifamily Housing Units (included above)</i>	NA	1,480	1,503	1,286
Housing Units Newly Exposed to DNL 65 and Greater (excluding units newly exposed in Build Out)	NA	1,647	1,365	1,472
<i>Single Family Housing Units (included above)</i>	NA	1,057	831	895
<i>Insulated</i>	NA	77	95	90
<i>Not Insulated</i>	NA	980	736	805
<i>Multifamily Housing Units (included above)</i>	NA	590	534	577
<i>Insulated</i>	NA	0	0	0
<i>Not Insulated</i>	NA	590	534	577

Sources: Housing and Population database: City of Chicago, June 2005.

Noise Sensitive Facilities, Population and Housing data: Crawford, Murphy, and Tilly, Inc. [TPC] analysis, July 2005.

### Alternative C

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative C in the Build Out + 5 phase are presented in **Table 5.1-15** in **Section 5.1, Noise**, and **Table 5.2-5**. As presented, a total of 23,985 people and 8,504 housing units would be exposed to DNL 65 and greater in the Build Out + 5 phase. The total number of people exposed to DNL 65 and greater in the Build Out + 5 phase is 37 percent greater than the total number of people exposed in Alternative A (No Action Alternative); the total number of housing units is 33 percent greater. In addition, 24 public parks, 4 historic properties, 10 places

of worship, 1 hospital, 2 libraries, 1 university, and 9 schools (8 sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-6** depicts the potential change in noise exposure associated with Alternative C compared to Alternative A (No Action Alternative) in the Build Out + 5 phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located east and west of the Airport. Areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are primarily located in Park Ridge, Rosemont, and Schiller Park. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are located in Wood Dale and Bensenville. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north and south of the Airport.



## Alternative D

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative D in the Build Out + 5 phase are presented in **Table 5.1-16** in **Section 5.1, Noise**, and **Table 5.2-5**. As presented, a total of 23,380 people and 8,354 housing units would be exposed to DNL 65 and greater in the Build Out + 5 phase. The total number of people exposed to DNL 65 and greater in the Build Out + 5 phase is 34 percent greater than the total number of people exposed under Alternative A (No Action Alternative); the total number of housing units is 30 percent greater. In addition, 19 public parks, 3 historic properties, 8 places of worship, 1 hospital, 2 libraries, 1 university, and 10 schools (8 sound insulated) would be exposed to DNL 65 and greater.

**Exhibit 5.2-7** depicts the potential change in noise exposure associated with Alternative D compared to Alternative A (No Action Alternative) in the Build Out + 5 phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located east and west of the Airport. Areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are primarily located in Park Ridge and Rosemont. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are located in Wood Dale and Bensenville. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north and south of the Airport.

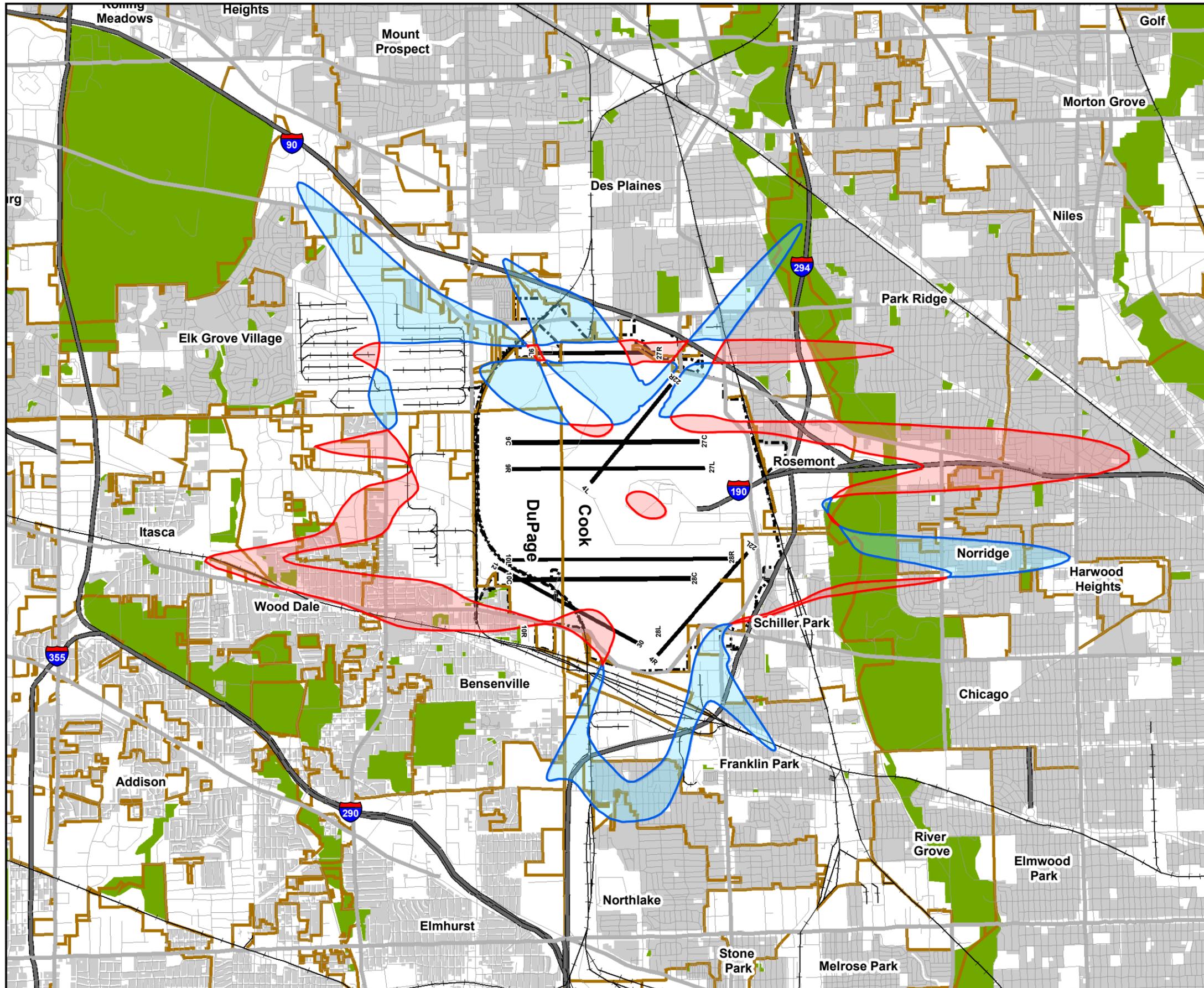
## Alternative G

Estimates of population, housing, and other noise sensitive facilities within the DNL 65 contour areas under Alternative G in the Build Out + 5 phase are presented in **Table 5.1-17** in **Section 5.1** and **Table 5.2-5**. As presented, a total of 22,935 people and 8,056 housing units would be exposed to DNL 65 and greater in the Build Out + 5 phase. The total number of people exposed to DNL 65 and greater in the Build Out + 5 phase is 31 percent greater than the total number of people exposed Alternative A (No Action Alternative); the total number of housing units is 26 percent greater. In addition, 19 public parks, 3 historic properties, 8 places of worship, 1 hospital, 2 libraries, 1 university, and 10 schools (8 sound insulated) would be exposed to DNL 65 and greater

**Exhibit 5.2-8** depicts the potential change in noise exposure associated with Alternative G compared to Alternative A (No Action Alternative) in the Build Out + 5 phase. As presented, incompatible land use areas that will experience an increase in noise exposure are located east and west of the Airport. Similar to Alternative D, areas that would experience an increase in noise exposure over incompatible land uses east of the Airport are primarily located in Park Ridge and Rosemont. Areas that would experience an increase in noise exposure over incompatible land uses west of the Airport are located in Wood Dale and Bensenville. Compared to Alternative A (No Action Alternative), areas that will experience a decrease in noise exposure are primarily located north and south of the Airport.

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Source: StreetMapUSA, ESRI 2004. Land Use, DuPage Co. 2002, City of Park Ridge, 1996, Northeastern Illinois Planning Commission, 1992. Noise Contours: INM version 6.1, Leigh Fisher Associates, 2004.



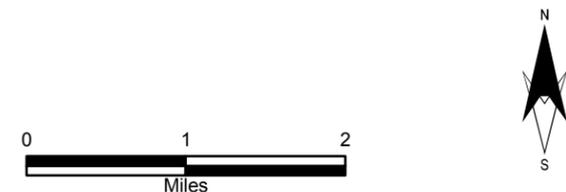
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### O'Hare Modernization Environmental Impact Statement

- Rail Roads
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- Local Streets
- Municipal Boundary
- Areas Newly Exposed to 65 DNL
- Areas No Longer Exposed to 65 DNL
- Airport Property
- Noise Sensitive Land Use
- Parks and Forest Preserves

Note: Refer to Table 5.2-1 for types of Noise Sensitive Land Uses.

<b>Population</b>	<b>16,610</b>	<b>10,926</b>
<b>Housing Units</b>	<b>5,937</b>	<b>4,219</b>
Single-Family Housing Units (included above)	3,827	1,409
Multifamily Housing Units (included above)	1,286	1,318
Sound Insulated Housing Units (included above)	824	1,492



**Potential Change in Noise Exposure  
Alternative G Build Out +5 Years  
Compared to Alternative A (No Action)**

► Exhibit 5.2-8

## 5.2.4 Existing Noise Mitigation Programs

### 5.2.4.1 School Sound Insulation Program

The School Sound Insulation Program (SSIP)<sup>1</sup> was voluntarily implemented by the City of Chicago to reduce aircraft sound levels in schools. The program provides schools with sound insulation that may include noise attenuating windows, additional roofing and ceiling insulation, improved doors, and related measures intended to reduce the transmission of aircraft noise into schools. FAA assists in SSIP with grant funding.

The City's SSIP is one of the most extensive programs of its kind in the world, with 110 O'Hare-area schools having been sound-insulated and/or funded for upcoming insulation at a cost of \$246 million as of January 2004.

There is a growing body of literature that demonstrates the effects of high noise levels on learning. The FAA, the City of Chicago, and the O'Hare Noise Compatibility Commission (ONCC) have been engaged for a long period of time in sound insulating schools within areas exposed to high aircraft noise levels around O'Hare. Through these efforts, 62 schools within the project area<sup>2</sup> have been sound insulated as of June 2005. There is one eligible school, Socrates St. Sava Academy in Chicago, which would be within the 65 DNL Build Out + 5 noise contours for Alternatives C, D, and G that is currently eligible and has also requested sound insulation, but has not been completed. Funding has been approved and this school is scheduled to be sound insulated by the end of the summer 2005.

### 5.2.4.2 Residential Sound Insulation Program

The Residential Sound Insulation Program (RSIP)<sup>3</sup> was voluntarily implemented by the City of Chicago to reduce the impact of aircraft noise in single-family homes surrounding O'Hare. The RSIP provides qualifying homes with sound insulation to reduce the transmission of outside noise into the homes. Under the current ONCC program, eligible homes for the RSIP must be single-family, owner-occupied, built before October 1, 1998,<sup>4</sup> and within the 69 DNL and greater area of the 2000 noise contour.<sup>5</sup> With the completion of the 2004 program, 5,925 homes will have been sound-insulated and/or funded for insulation at a cost of \$189 million.

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<sup>1</sup> City of Chicago School Sound Insulation Program Website:  
[http://www.ohare.com/cnrc/ohare/o\\_noise\\_school.shtm](http://www.ohare.com/cnrc/ohare/o_noise_school.shtm). (December 14, 2004).

<sup>2</sup> The project area for noise in this EIS is defined in **Chapter 4, Affected Environment, Section 4.1, Airport Location and Study Areas**.

<sup>3</sup> City of Chicago Residential Sound Insulation Program Website:  
<http://www.ohare.com/cnrc/ohare/ohareresidential.htm>. (December 14, 2004).

<sup>4</sup> Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects, Federal Aviation Administration, 14 CFR 150.

<sup>5</sup> DNL, Day Night Sound Level, is the FAA's required metric for assessing airport noise. It represents the total, cumulative noise exposure for an average day during the study year and includes an extra weight of 10 decibels for all nighttime noise (occurring after 10:00 p.m. and before 7:00 a.m. = 6:59:59 a.m.).

## **5.2.5 Potential Noise Abatement Measures**

Particularly with respect to noise impacts related to the project, NEPA and CEQ require that FAA consider mitigation of significant adverse impacts that are reasonably foreseeable. In addition, 49 USC 47106 (c)(1)(B) imposes substantive obligation upon the Agency to document appropriate mitigation in such context. Accordingly, the FAA would require the City to take steps to minimize significant noise impacts as a result of any of the Build Alternatives, if selected.

In addition to noise abatement measures, other forms of mitigation could include the voluntary continuation of the following programs:

### **5.2.5.1 Continuation of the City's School Sound Insulation Program (SSIP)**

The City could continue the existing voluntary SSIP and, in addition, provide impacted schools with noise attenuating windows, additional roofing and ceiling insulation, improved doors, and related measures to reduce the transmission of aircraft noise into schools.

### **5.2.5.2 Continuation of the City's Residential Sound Insulation Program (RSIP)**

The City could continue the existing voluntary RSIP. For example, the City could provide sound insulation for eligible residences which are subject to a significant noise impact, or which would become incompatible, as a result of selecting any of the Build Alternatives (DNL 1.5 db increase within the 65 DNL or greater contour, or newly within the 65 DNL or greater noise contour), to reduce the transmission of outside noise into the homes.

Additional potential mitigation measures are included in **Section 5.1, Noise**.