

APPENDIX A

Notice of Preparation and NOP Comments



ENVISION
Pittsburg

Notice of Preparation

2040 General Plan Update

Draft Program Environmental Impact Report

Date: April 20, 2022

To: State Clearinghouse, Agencies, Organizations and Interested Parties

From: City of Pittsburg Community and Economic Development Department

Subject: Notice of Preparation and Scoping Meeting for the Envision Pittsburg 2040 General Plan Update Environmental Impact Report

Scoping Meeting: May 5, 2022 11:00 a.m. (via Zoom – see pg.2 for information)

Comment Period: April 20, 2022 to May 20, 2022

The City of Pittsburg (City) will serve as Lead Agency in the preparation of a programmatic Environmental Impact Report (EIR) for the adoption and implementation of the Envision Pittsburg 2040 General Plan Update (2040 General Plan).

The purpose of this notice is (1) to serve as a Notice of Preparation (NOP) of an EIR pursuant to the State CEQA Guidelines Section 15082, (2) to advise and solicit comments and suggestions regarding the scope and content of the EIR to be prepared for the proposed project, and (3) to notice the public scoping meeting. The proposed project is a long-term General Plan consisting of policies that will guide future development activities and City actions. Information regarding the project description, project location, and topics to be addressed in the Draft EIR is provided below. Additional project documents and information are available at the City of Pittsburg, Community Development Department located at 65 Civic Avenue and on-line at:

<https://pittsburg.generalplan.org/>.

For questions regarding this notice, please contact John Funderburg, Assistant Director of Planning at (925)252-4043, or by email jfunderburg@pittsburgca.gov.

Notice of Preparation 30-Day Comment Period

The City, as Lead Agency, requests that responsible and trustee agencies, and the Office of Planning and Research, respond in a manner consistent with Section 15082(b) of the CEQA Guidelines. Pursuant to Public Resources Code Section 21080.4, responsible agencies, trustee agencies and the Office of Planning and Research must submit any comments in response to this notice no later than 30 days after receipt. In accordance with the time limits established by CEQA, the NOP public review period will begin on April 20, 2022 and end on May 20, 2022.



In the event that the City does not receive a response from any Responsible or Trustee Agency by the end of the review period, the City may presume that the Responsible Agency or Trustee Agency has no response to make (State CEQA Guidelines Section 15082(b)(2)). All comments in response to this notice must be submitted in writing at the address below, or via email, by the close of the 30-day NOP review period, which is 5:00 PM on May 20, 2022:

John Funderburg, Assistant Director of Planning
City of Pittsburg Community and Economic Development Department
65 Civic Avenue
Pittsburg, CA 94565
jfunderburg@pittsburgca.gov

Scoping Meeting

The City will hold a scoping meeting to provide an opportunity for agency representatives and the public to assist the City in determining the scope and content of the EIR.

The scoping meeting will be held on May 5, 2022, at 11:00 a.m. via Zoom.

The Zoom meeting link is provided below.

Envision Pittsburg General Plan Draft EIR Scoping Meeting

May 5, 2022 at 11:00 AM

Planning Division is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting

<https://us02web.zoom.us/j/6032260951>

Meeting ID: 603 226 0951

One tap mobile

+16699009128,,6032260951# US (San Jose)

+13462487799,,6032260951# US (Houston)

Dial by your location

+1 669 900 9128 US (San Jose)

+1 346 248 7799 US (Houston)

+1 253 215 8782 US (Tacoma)

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

Meeting ID: 603 226 0951

Find your local number: <https://us02web.zoom.us/u/kdeF11i4AR>

For comments before or after the meeting or additional information, please contact John Funderburg, Assistant Director of Planning at (925) 252-4043, or by email jfunderburg@pittsburgca.gov.

Project Location and Setting

Pittsburg is a city in eastern Contra Costa County and is bordered by Suisun Bay to the north and Solano County to the north, the City of Antioch and unincorporated Contra Costa County to the east, the City of Concord to the west, and unincorporated Contra Costa County to the south. See Figure 1, Regional Location Map.

Pittsburg is well-connected within the Bay Area region with access to all modes of transportation from regional rail services, airports, state routes and more, including Pittsburg/Bay Point BART and the extension of eBART services to eastern Contra Costa County. State Route 4 (SR-4) provides the regional motor vehicle access to the other major cities and towns in the Bay Area. This part of the region is characterized by rolling hills and proximity to the San Francisco Bay and Sacramento River Delta.

Pittsburg's early growth centered around industrial development. The growth of the Bay Area has brought many changes to the Pittsburg region, including residential, commercial development and marina development. Pittsburg has grown outward from the downtown area since the 1990s. Residential development continues in the southwestern portion of the City, generally south of Leland Road. Infill commercial development continues to occur along Highway 4. The expansion of BART to serve Pittsburg, with the Bay Point station opening in 1996 and the Pittsburg Center station opening in 2018, has encouraged transit-oriented development, including new retail, commercial offices, restaurants, and residential uses around the stations.

Planning Area

In addition to the lands within the City boundaries, state law requires that a municipality adopt a General Plan that addresses "any land outside its boundaries which in the planning agency's judgment bears relation to its planning (California Government Code §65300)." The City's Planning Area is the extent of the area addressed by the General Plan. The Planning Area includes lands within the City, the City's Sphere of Influence (SOI), and lands outside of the SOI. The Planning Area includes the unincorporated community of Bay Point to the northwest, west and a much larger area south of the City that predominantly includes open space uses. See Figure 2, Draft Land Use Map.

Project Description

State law requires the City to adopt a comprehensive, long-term general plan for the physical development of its planning area. The Plan must include land use, circulation, housing, conservation, open space, noise, and safety elements, and address environmental justice and climate adaptation, as specified in Government Code Section 65302, to the extent that the issues identified by State law exist in the City's planning area. Additional elements that relate to the physical development of the city may also be addressed in the Plan. The degree of specificity and level of detail of the discussion of each Plan Element need only reflect local conditions and circumstances.

Upon adoption, the 2040 General Plan will replace the City's existing 2020 General Plan, which was adopted in 2001 with subsequent updates to various elements.

The City is also updating the Housing Element, which will address the City's Regional Housing Needs Allocation and the 2023-2031 planning period, in a process separate from the General Plan Update.

The City will implement the General Plan by requiring development, infrastructure improvements, and other projects to be consistent with its policies and by implementing the actions included in the Plan, including subsequent project-level environmental review, as required under CEQA.

Other project information and related General Plan documentation is available at the City's General Plan Update website: <https://pittsburg.generalplan.org/>.

Project Objectives

The Envision Pittsburgh General Plan Update addresses issues of concern identified through the visioning and community outreach efforts, including but not limited to:

- maintaining and enhancing Pittsburg's character;
- managing the location, type, and amount of growth and ensuring that the community's infrastructures and services are planned to keep pace with growth;
- providing for high-quality employment opportunities;
- providing recreation, entertainment, shopping, restaurants, and services for the City's households, with an emphasis on increasing opportunities for the City's youth;
- addressing environmental justice, including identifying and reducing any adverse effects to disadvantaged communities and identifying opportunities to improve equity and access to resources and amenities necessary for a high quality of life; and
- conserving natural resources; and addressing environmental effects, including methods to adapt to the effects of a changing climate and sea level rise.

Envision Pittsburgh General Plan Contents

The Envision Pittsburgh General Plan will include a comprehensive set of goals, policies, and implementation measures, as well as a revised Land Use Map (Figure 2).

- A goal is a description of the general desired result that the City seeks to create through the implementation of the General Plan.
- A policy is a specific statement that guides decision-making as the City works to achieve its goals. Once adopted, policies represent statements of City regulations. The General Plan's policies set out the standards that will be used by City staff, the Planning Commission, and the City Council in their review of land development projects, resource protection activities, infrastructure improvements, and other City actions. Policies are on-going and don't necessarily require specific action on behalf of the City.
- An implementation measure is an action, procedure, technique, or specific program to be undertaken by the City to help achieve a specified goal or implement an adopted policy. The City must take additional steps to implement each action in the General Plan. An action is something that can and will be completed.

A General Plan covers a wide range of social, economic, infrastructure, and natural resource issues. The Envision Pittsburgh General Plan will include goals, policies and implementation programs to address the state-mandated topics and will continue to have components that address optional topics, including growth management, urban design, downtown, education, economic development, youth and recreation, and public facilities.

Land Use Element

The Land Use Element establishes the framework for the goals, policies, and implementation Programs that will shape the physical form of Pittsburgh. The Land Use Element addresses the intensity and distribution of land uses and identifies areas of the City where change will be encouraged and those areas where the existing land use patterns will be maintained and enhanced.

The Land Use Element establishes the land use designations, including the allowed uses, intensities, and densities of development, established by the Land Use Map, shown in Figure 2. Table 1 shows the total acreages for each land use designation shown on the proposed Land Use Map.

Table 1: Envision Pittsburgh General Plan Land Use Designations by Acreage

Land Use Designation	City	SOI	Planning Area	Total
Residential Designations				
Hillside Low Density Residential	146.1	66.2	0	212.3
Low Density Residential	2,842.6	1,054.0	0	3,896.6
Medium Density Residential	511.9	45.3	0	557.2
High Density Residential	214.6	159.5	0	374.1
Very High Density Residential	18.7	0	0	18.7
Downtown Low Density Residential	50.6	0	0	50.6
Downtown Medium Density Res.	111.3	0	0	111.3
Downtown High Density Residential	14.1	0	0	14.1
<i>Subtotal Residential</i>	<i>3,909.8</i>	<i>1,325</i>	<i>0</i>	<i>5,234.9</i>
Mixed Use Designations				
Mixed Use (Community Commercial)	21.3	0	0	21.3
Mixed Use (Downtown)	18.5	0	0	18.5
Mixed Use (General)	30.2	0	0	30.2
Mixed Use (P/BP BART)	52.7	0	0	52.7
Mixed Use (Railroad Ave SPA)	110.1	0	0	110.1
<i>Subtotal Mixed Use</i>	<i>232.8</i>	<i>0</i>	<i>0</i>	<i>232.8</i>
Commercial and Industrial Designations				
Community Commercial	181.1	56.0	0	237.1
Downtown Commercial	8.9	0	0	8.9
Employment Center Industrial	691.7	16.9	0	708.6
Industrial	981.6	382.9	0	1,364.5
Marina Commercial	89.8	51.5	0	141.3
Regional Commercial	174.9	0	0	174.9
Service Commercial	115.8	0	0	115.8
<i>Subtotal Commercial and Industrial</i>	<i>2,243.8</i>	<i>507.3</i>	<i>0</i>	<i>2,751.1</i>

Land Use Designation	City	SOI	Planning Area	Total
Other Designations				
Landfill	0	0	195.7	195.7
Public/Institutional	457.3	725.0	0	1,182.3
Park	1,258.1	176.2	1,431.8	2,866.1
Open Space	1,521.6	1,771.3	5,354.1	8,647.0
Roadway	62.1	6.0	0	68.1
Utility/ROW	161.9	109.5	387.8	659.2
Water	221.7	351.0	0	572.7
<i>Subtotal Other</i>	<i>3,682.7</i>	<i>3,139.0</i>	<i>7,369.4</i>	<i>14,191.1</i>
TOTAL	10,069.9	4,971.3	7,369.4	22,409.9

Source: Contra Costa County GIS/Assessor Data, City of Pittsburg, De Novo Planning Group, 2022

Table 2 lists each land use designation and overlay and provides the density and FAR requirements for each designation, including any modifications associated with each land use alternative.

Table 2: Envision Pittsburg General Plan Land Use Designations by Acreage

General Plan Land Use Designation or Overlay	Proposed Envision Pittsburg General Plan Density and FAR
Residential Designations	
Hillside Low Density Residential Allows single-family (attached or detached) residential development in the southern hills. Maximum densities should be allowed only in flatter, natural slope areas or non-environmentally sensitive level areas. An open, natural character is encouraged by clustering homes and minimizing cut-and-fill of natural hillsides.	Density: Less than 5 units per gross acre FAR: -
Low Density Residential Allows detached single-family dwellings, but attached single-family units in selected or all areas may be permitted, provided that each unit has ground-floor living area, and private or common outdoor open space.	Density: 1-7 units per gross acre FAR: -
Medium Density Residential Allowed housing types may include one- or two-story garden apartments, townhouses, and attached or detached single-family residences. The Zoning Ordinance may permit zero lot-line or small-lot detached residential units in some or all areas.	Density: 8-16 units per gross acre FAR: -
High Density Residential Allows a wide range of housing types, from single-family attached units to multi-family complexes are permitted. Subject to design review by the Planning Commission, additional discretionary density increases, up to a maximum project	Density: 17-30 units per gross acre; up to 40 units per acre for projects that fulfill community objectives FAR: -

General Plan Land Use Designation or Overlay	Proposed Envision Pittsburgh General Plan Density and FAR
density of 40 units per gross acre, may be granted to projects that fulfill community objectives.	
Very High Density Residential Allows multi-family housing and attached single family housing types, such as apartments and condominiums.	31-40 units per acre 0.15 FAR for neighborhood-serving commercial, services, and office uses
Downtown Low Density Housing types may include attached or detached single-family housing.	Density: 4-12 units per gross acre FAR: -
Downtown Medium Density Residential Housing types may include attached or detached single family townhouses, garden apartments, and other forms of multi-family housing.	Density: 12-18 units per gross acre FAR: -
Downtown High Density Residential Housing types may include attached single family townhouses, apartments, and other forms of multi-family housing. New high-density projects within Downtown should have transit-oriented amenities (such as covered bus stops at project entrance, where appropriate) and reduced parking requirements to encourage use of alternative modes of transportation. Subject to design review by the Planning Commission, additional discretionary density increases, up to a maximum project density of 40 units per gross acre, may be granted to projects that fulfill community objectives.	Density: 18-30 units per gross acre FAR: -
Mixed Use Designations	
Mixed Use (P/BP BART) Applied to the approximately 54-acre area west of the Oak Hills Shopping Center, including the Pittsburg/Bay Point BART station parking lot. Allows for residential and non-residential uses up to the maximum permitted density and FAR.	Density: 15-65 units per gross acre FAR: Non-residential: 1.0
Mixed Use (Railroad Ave) Applied to the approximately 97-acre area located within approximately ½-mile of the Railroad Avenue/State Route 4 intersection. Allows for residential and non-residential uses up to the maximum permitted density and FAR.	Density: 15-65 units per acre Non-residential: 0.25 to 1.0
Mixed Use (Downtown) Encompasses approximately 20 acres located in and near the Downtown. Allows for residential and non-residential uses up to the maximum permitted density and FAR.	Density: 12-30 units per acre FAR: Non-residential: W. 10th St - 0.6 Railroad Ave - 1.0 Maximum Residential and Non-Residential Total FAR: 2.0
Mixed Use (General)	Density: 6-16 units per acre Maximum Residential and Non-Residential Total FAR: 1.0

General Plan Land Use Designation or Overlay	Proposed Envision Pittsburgh General Plan Density and FAR
Accommodates mixed uses with a focus on providing community-serving retail, dining, office, and other uses in conjunction with residential development.	
Mixed Use (Community Commercial) Accommodates mixed uses with a focus on providing community-serving retail, dining, office, and other uses in conjunction with residential development.	Density: 6-16 units per acre Maximum Residential and Non-Residential Total FAR:1.0
Commercial and Industrial Designations	
Regional Commercial Provides commercial acreage for large-scale retailers and big-box retail centers and auto dealerships, designed to attract shoppers from a wide market area.	FAR: Non-residential ¹ : 0.5 Residential ¹ : 0.25
Community Commercial Intended to provide sites for retail shopping areas (primarily in shopping centers) containing a wide variety of businesses, including retail stores, eating and drinking establishments, commercial recreation, service stations, automobile sales and repair services, financial, business and personal services, motels, educational and social services. The Zoning Ordinance may limit certain commercial areas to neighborhood stores or non-automotive establishments	Density: Not specified FAR: Non-residential ¹ : 0.5 Residential ¹ : 0.25
Downtown Commercial Accommodates specialty retail, personal services, restaurants, offices, financial organizations, institutions, and other businesses serving the daily needs of Downtown residents. Upper-story residential and mixed commercial/residential ground-floor uses are permitted, subject to appropriate design standards. Limitations on the size and location of parking, coupled with building orientation and design standards, will ensure that a pedestrian-oriented environment is created.	Density: Not specified FAR: Non-residential: Minimum 1.0 Non-residential and residential: 2.0
Marina Commercial Recreational and visitor-oriented uses, including privately operated recreation complexes (sports complexes, aquatic centers, etc.), and experience-oriented entertainment or recreation, business and professional services, offices, convenience sales, restaurants, public marketplaces, repair services, specialty retail (such as boat sales and repair), hotel/motel with a coastal orientation, recreational facilities, research and development, custom manufacturing, and marinas are all accommodated.	Density: 8-20 FAR: 0.5 for retail, recreation, and restaurant uses; 1.0 for offices; 1.5 for hotels; no separate FAR for residential
Service Commercial	Density: No residential FAR:

General Plan Land Use Designation or Overlay	Proposed Envision Pittsburgh General Plan Density and FAR
Intended to provide sites for commercial business not appropriate in other commercial areas because of high volumes of vehicle traffic and potential adverse impacts on other uses. Also, residential uses may be permitted above ground floor commercial uses (such as office and retail). Allowable uses include automobile sales and services, building materials, nurseries, equipment rentals, contractors, wholesaling, warehousing, storage, and similar uses. Offices, retail uses, restaurants, and convenience stores should be allowed as ancillary uses.	Non-residential: 0.5
Employment Center Industrial Intended to provide sites for administrative, financial, business, professional, medical, and public offices, business incubators, research and development, custom and light manufacturing, limited assembly, warehousing and distribution, technology and innovation, energy, hospitals and large-scale medical facilities, services, and supporting commercial uses. Development standards and buffering requirements will prevent significant adverse effects on adjacent residential uses. Performance standards in the Draft General Plan will minimize potential environmental impacts, particularly in relation to ECI development proximate to residential, schools, other uses with sensitive receptors, and disadvantaged communities.	Density: No residential 1.5 FAR; accommodate professional, office, medical, research/technology, business park, service commercial, and warehousing uses; industrial uses allowed subject to performance standards
Industrial Manufacturing, wholesale, warehousing and distribution, commercial and business services, research and development, and storage uses are permitted, in addition to agricultural, food and drug, and industrial processing. Only small restaurant and ancillary commercial uses would be appropriate, subject to appropriate design standards. Performance standards in the Zoning Ordinance will minimize potential environmental impacts.	Density: - FAR: Non-residential: 0.5, except 1.0 allowed for low-employment-intensity uses
Other Designations	
Public/Institutional Intended to provide for schools, government offices, transit sites, public utilities, other facilities that have a unique public or quasi-public character, such as cultural facilities, religious institutions, fraternal organizations, and similar uses.	Total residential and non-residential FAR: 0.6
Parks/Recreation Provides for parks, recreation complexes, community fields, public golf courses, stadiums, greenways, and local and regional trails.	Density: - FAR: None specified
Open Space	Density: 1 unit per 20-acre or larger parcel on agricultural and

General Plan Land Use Designation or Overlay	Proposed Envision Pittsburg General Plan Density and FAR
<p>Accommodates existing and future greenbelts and/or urban buffer areas that may be designated in the future. Greenbelts are open space, parkland, and agricultural areas located outside urban areas, as opposed to urban parks located within developed areas. Generally, there are two primary criteria that identify lands as open space:</p> <p><u>Resource Conservation</u>. Includes sites with environmental and/or safety constraints, such as riparian corridors, sensitive habitats, and wetlands. Development is limited to one housing unit per existing legal parcel, and no construction is allowed on land within the parcel that is unsuitable for development.</p> <p><u>Agriculture and Resource Management</u>. Includes orchards and cropland, grasslands, incidental agricultural or related sales, and very low-density rural residential areas. One housing unit may be built on each existing parcel of 20 or more acres, and agriculture is allowed with fewer restrictions on keeping animals than in the residential classifications. Permitted residential development may be clustered in locations with little or no environmental constraints.</p>	<p>resource management land FAR: None specified</p>
<p>Utility/ROW Intended to designate land area dedicated to utilities, infrastructure, or road right-of-way.</p>	<p>Density: - FAR: None specified</p>
Overlays	
<p>BART TOD New overlay designation applied to Bay Area Rapid Transit (BART)-owned parcels to implement minimum density and maximum FAR standards required by State law (Assembly Bill 2923).</p>	<p>Minimum 75 units/acre; Maximum residential and non-residential FAR - 3.0</p>
<p>PG&E Conversion Corridor New overlay designation applied to the PG&E transmission line corridor extending from the Pittsburg PG&E Power Plant through the City to the Contra Costa Canal. This overlay designation is intended to provide for the relocation of the power plant and the conversion of the transmission line corridor to urban and recreation uses.</p>	<p>Based on underlying land use designation</p>

Note: 1 Density and/or FAR based on implementing zoning district(s)

Source: City of Pittsburg, De Novo Planning Group, 2021

Growth Management Element

The Growth Management Element will continue to establish goals, policies and implementation programs that will be used to manage and mitigate the impacts of future growth and development within Pittsburg upon local streets and services, particularly local, regional and countywide transportation systems.

Urban Design Element

The Urban Design Element will continue to provide hillside and ridgeline preservation policies, identify local views and city edges, outline improvement strategies for key corridors within the City, and provide policies relating to design and development of residential neighborhoods.

Downtown Element

The Downtown Element will continue to describe the development strategy, streetscape design, waterfront access, historical resources, and off-street parking for the City's Downtown.

Economic Development Element

The Economic Development Element will continue to provide a policy framework for ensuring Pittsburg's long-term economic competitiveness in the region. This element reflects business trends and available resources, and outlines the City's economic development objectives to ensure that economic decision-making is integrated with other aspects of the City's development.

Housing Element

The Housing Element will continue to provide and develop local housing programs to meet its fair share of existing and future housing needs for all income groups. The Housing Element is being prepared separately from the General Plan Update and is anticipated to be completed following the 2040 General Plan.

Circulation Element

The Circulation Element will continue to address the City's long-term transportation system, primarily through policies and standards to encourage active transportation, complete streets, adequate capacity, and linkages to further an integrated multi-modal transportation system, including walking, cycling, transit, and ferry access.

Environmental Justice Element

The Environmental Justice Element will address environmental justice and disadvantaged communities' concerns, including reducing pollution exposure, promoting public facilities in disadvantaged communities, promoting food access, promoting safe and sanitary homes in disadvantaged communities, promoting opportunities for physical activity, reducing unique and compounded health risks, and encouraging resident engagement in the City's decision-making process.

Recreation and Youth

The Recreation and Youth Element will provide the policy approach to developing parks, active open spaces, and trails, in addition to supporting recreational, cultural, and educational programs and facilities.

Resource Conservation Element

The Resource Conservation Element will establish the policy approach to resource- and energy-conscious growth, addressing biological resources and habitat conservation, drainage and erosion, water quality, air quality, greenhouse gas emissions, and historical resources conservation.

Health, Safety, and Noise Element

The Health, Safety, and Noise Element will continue to address risks posed by geologic and seismic conditions, prevent man-made risks stemming from use and transport of hazardous materials, and ensure that local emergency response agencies are prepared for potential disaster relief. This element will also include new policies and implementation measures to address climate adaptation; and take proactive steps to prepare for vulnerabilities and risks associated with climate change impacts.

Public Facilities Element

The Public Facilities Element will continue to address the provision of public services and facilities, including water supply and distribution, wastewater collection and treatment, solid waste collection and disposal, fire protection in urban and wildland areas, and public utility corridors.

Growth and Development

The General Plan will accommodate future growth in Pittsburg, including new businesses, expansion of existing businesses, and new residential uses consistent with the Land Use Designations (Table 1) and Land Use Map (Figure 2). Table 3 summarizes projects in the City's development project pipeline and additional new development potential under the proposed Envision Pittsburg General Plan.

The actual amount of development that will occur throughout the planning horizon of the General Plan is based on many factors outside of the City's control. Actual future development would depend on future real estate and labor market conditions, property owner preferences and decisions, site-specific constraints, and other factors. New development and growth are largely dictated by existing development conditions, market conditions, and land turnover rates. Very few communities in California actually develop to the full potential allowed in their respective General Plans during the planning horizon.

As shown in Table 3, approximately 15,576 new residential units and 26,089,499 square feet of non-residential uses would be accommodated under General Plan buildout conditions. This new growth would result in a population increase of approximately 20,470 persons, assuming 3.34 persons per household based on U.S. Census 2016-2020 American Community Survey household size data, and approximately 24,659 new jobs, based on U.S. Energy Information Administration 2012 Commercial Buildings Energy Consumption Survey data released March 18, 2016.

Table 3: Envision Pittsburg General Plan New Development Potential

Residential Units or Nonresidential Square Footage	Project Pipeline	New Development Potential	Total Growth
Residential Units			
Single-Family Residential	4,190	2,255	6,445
Multiple-Family Residential	1,883	7,228	9,111
Live Work Units	20	-	20

Residential Units or Nonresidential Square Footage	Project Pipeline	New Development Potential	Total Growth
TOTAL	6,093	9,483	15,576
Nonresidential Square Footage			
Retail	195,515	1,470,217	1,665,732
Service	159,200	3,125,937	3,285,137
Office	-	1,819,034	1,819,034
Commercial Recreation	41,486	310,872	352,358
Hotel	109,071	339,699	448,770
Institutional	8,320	43,070	51,390
Heavy Industrial	733,723	5,691,166	6,424,889
Light Industrial	4,734,100	5,377,187	10,111,287
Public/Quasi-Public	6,632	1,924,270	1,930,902
TOTAL	5,988,047	20,101,452	26,089,499

Source: Contra Costa County GIS/Assessor Data, City of Pittsburg, De Novo Planning Group, 2022

Program EIR Analysis

The City, as the Lead Agency under the California Environmental Quality Act (CEQA), will prepare a Program EIR for the Envision Pittsburg 2040 General Plan Update. The EIR will be prepared in accordance with CEQA, the CEQA Guidelines (Guidelines), relevant case law, and City procedures. No Initial Study will be prepared pursuant to Section 15063(a) of the CEQA Guidelines.

The EIR will analyze potentially significant impacts associated with adoption and implementation of the General Plan. In particular, the EIR will focus on areas that have development potential. The EIR will evaluate the full range of environmental issues contemplated under CEQA and the CEQA Guidelines as set forth in CEQA Guidelines Appendix G, except for specific topics identified below as having no impact. Where potentially significant or significant impacts are identified, the EIR will discuss mitigation measures to address the impact. At this time, the City anticipates that EIR sections will be organized in the following topical areas:

- **Aesthetic Resources** - The Program EIR will describe the aesthetic implications of 2040 General Plan implementation, including visual relationships to the surrounding vicinity and potential impacts on scenic vistas and resources, such as rolling grassy hills to the south and Suisun Bay/Sacramento River Delta to the north, potential to conflict with regulations governing scenic quality, and light or glare impacts.
- **Agriculture Resources** - The Program EIR will describe the potential of the 2040 General Plan implementation on agricultural resources.

- **Air Quality** - The Program EIR will describe the potential short- and long-term impacts of 2040 General Plan implementation on local and regional air quality and air quality plans based on methodologies issued by the Bay Area Air Quality Management District (BAAQMD).
- **Biological Resources** - The Program EIR will identify any potential impacts of 2040 General Plan implementation on biological resources, including special-status plant and animal species, riparian habitats, wetlands, other sensitive natural communities, migratory movement, and protected trees.
- **Historic, Cultural and Tribal Cultural Resources** - The Program EIR will describe any potential 2040 General Plan implementation impacts and mitigation associated with historic, archaeological, and tribal cultural resources.
- **Geology, Soils, and Mineral Resources** - The Program EIR will describe the potential geotechnical implications of 2040 General Plan implementation, including adverse effects associated with seismic activity, substantial soil erosion or loss of topsoil, stable, potentially unstable geologic units, and destruction of unique paleontologic resources or unique geological features. The Program EIR will identify the effects of 2040 General Plan implementation on any known valuable or important mineral resources.
- **Greenhouse Gases, Climate Change, and Energy** - The Program EIR will include a greenhouse gas emissions analysis using the BAAQMD's methodology and thresholds for evaluating a project's greenhouse gas emissions and will address the potential for the 2040 General Plan to conflict with an adopted plan or other regulations adopted for the purpose of reducing greenhouse gases. This section will also address anticipated energy consumption associated with buildout of the 2040 General Plan, as well as proposed and or potential energy conservation measures.
- **Hazards and Hazardous Materials** - The Program EIR will describe any existing and anticipated hazardous material activities and releases and any associated impacts of 2040 General Plan implementation. Potential hazards impacts resulting from future construction will also be described.
- **Hydrology and Water Quality** - The Program EIR will describe the effects of 2040 General Plan implementation on storm drainage, water quality, groundwater resources, and the potential for flooding.
- **Land Use and Planning** - The Program EIR will describe the potential impacts of 2040 General Plan implementation related to land use and planning, including impacts due to conflict with land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect.
- **Noise** - The Program EIR will describe noise impacts and related mitigation needs associated with short-term construction and long-term operation (i.e., traffic, mechanical systems, etc.) associated with buildout of the 2040 General Plan.
- **Population and Housing** - The Program EIR will describe the anticipated effects of 2040 General Plan implementation inducing unplanned population growth or displacing existing people or housing.

- Public Services and Recreation - The Program EIR will describe the potential for 2040 General Plan implementation to result in substantial adverse physical impacts on public services, including police, fire, and emergency medical services, schools, parks and recreation facilities, and other public facilities.
- Transportation - The Program EIR will describe the transportation and circulation implications of 2040 General Plan implementation, including impacts on the circulation system including transit, roadways, pedestrian and bicycle facilities, potential effects related to vehicle miles travelled, design or incompatible use hazards, and adequate emergency access.
- Utilities/Service Systems - The Program EIR will describe the 2040 General Plan implementation effects related to new or expanded water supply, sewer and wastewater treatment, storm drainage, solid waste and recycling, electric, natural gas, and telecommunication infrastructure.
- In addition to the potential environmental impacts noted above, the Program EIR will evaluate potential cumulative impacts and potential growth-inducing effects associated with 2040 General Plan implementation. The Program EIR will also compare the impacts of the proposed 2040 General Plan to a range of reasonable alternatives, including a No Project alternative, and will identify an environmentally superior alternative. The Program EIR will analyze the Land Use Map, Circulation Diagrams, goals, policies, and implementation programs for the proposed 2040 General Plan and alternatives to the proposed 2040 General Plan.

Environmental Topics Scoped from Further Analysis

There is no designated forest or timber land in the City and Planning Area. Therefore, the 2040 General Plan would have no impact related to forestry resources, as identified by CEQA Guidelines Appendix G, Section II, paragraphs c) and d) and this issue will not be analyzed further in the EIR.

The Planning Area does not have lands classified as very high fire hazard severity zones by Cal Fire and is not adjacent to such lands. Therefore, no impact related to Wildfire, as identified by CEQA Guidelines Appendix G, Section XX, Wildfire, is anticipated and this topic will not be analyzed further in the EIR.

Figure 1:

REGIONAL LOCATION MAP

Legend

- City of Pittsburg
- Other Incorporated Areas
- County Boundary

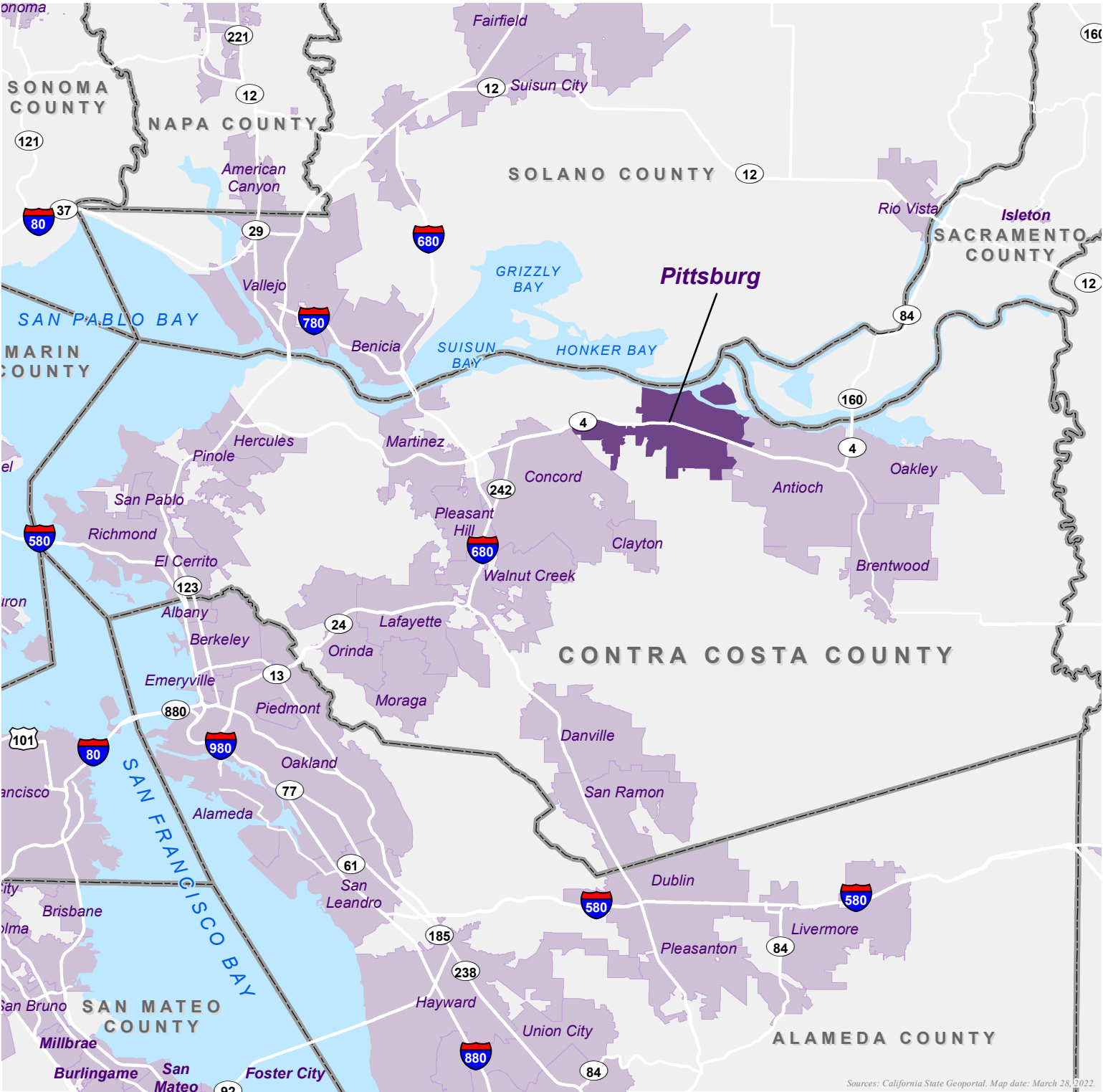
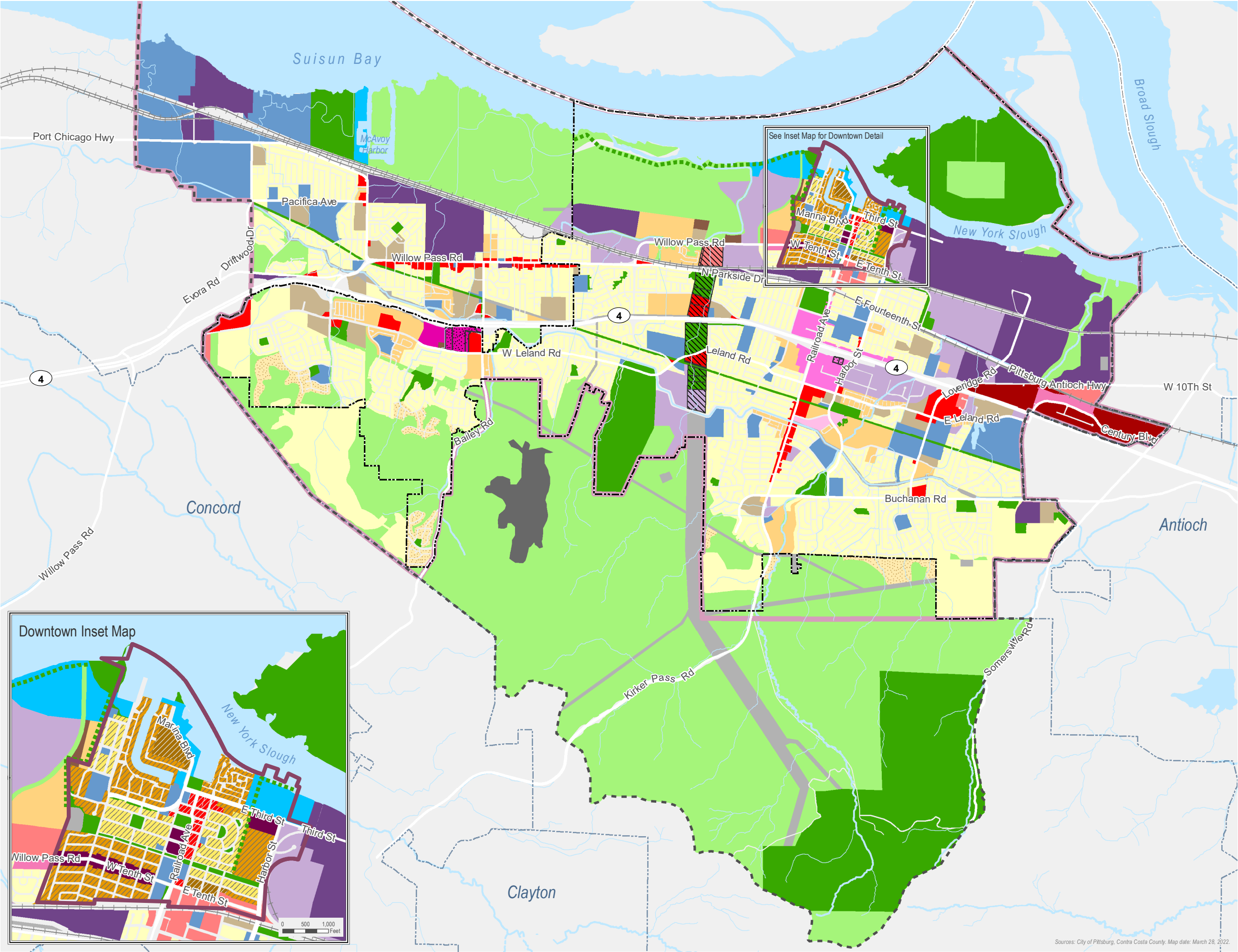


Figure 2:

ENVISION PITTSBURG DRAFT LAND USE MAP

- Legend**
- Pittsburg City Limits
 - Pittsburg Sphere of Influence
 - Downtown Sub-Area
 - Planning Area
 - Neighboring City
- General Plan Land Use Designation**
- Hillside Low Density Residential
 - Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Very High Density Residential
 - Regional Commercial
 - Service Commercial
 - Community Commercial
 - Mixed Use (General)
 - Mixed Use (Community Commercial)
 - Mixed Use (Downtown)
 - Mixed Use (P/BP BART)
 - Mixed Use (Railroad Ave SPA)
 - Marina Commercial
 - Employment Center Industrial
 - Industrial
 - Landfill
 - Open Space
 - Park
 - Public/Institutional
 - Utility/ROW
 - Downtown Low Density Residential
 - Downtown Medium Density Residential
 - Downtown High Density Residential
 - Downtown Commercial
 - Water
 - PG&E Corridor Conversion Overlay
 - BART TOD Overlay
 - Park/Greenway
 - Future Park





ENVISION
Pittsburg

PITTSBURG 2040 GENERAL PLAN UPDATE

CITY OF PITTSBURG

Draft Program EIR Scoping Meeting

May 5, 2022, 11:00 AM to 12:00 PM

ATTENDEES:

1. John Funderberg (City of Pittsburg)
2. Jordan Davis (City of Pittsburg)
3. Celina Palmer (City of Pittsburg)
4. Kelsey Gunter (City of Pittsburg)
5. Beth Thompson (De Novo Planning Group)
6. Elise Carroll (De Novo Planning Group)
7. Kamala Parks (BART)
8. John Holder (EBRPD)
9. Andrew
10. Alison Hodgkin

PUBLIC COMMENTS:

Kamala Parks (BART): The website says comments can be submitted by May 22 (not May 20). Parking often gets left out; are there any thoughts about addressing bike and vehicle parking in the EIR or General Plan itself? Acknowledges that parking isn't really an EIR thing.

- Beth Thompson (De Novo) responds: The General Plan includes policies related to parking, while the EIR will analyze the physical footprint of future development.

Kamala Parks (BART): Are the EIR and General Plan being drafted concurrently?

- Beth Thompson (De Novo) responds: Yes, but the General Plan is nearly complete and will be revised as needed depending on the EIR results. When the draft General Plan goes out for review, it will include policies related to parking. Comments on those policies can be submitted when the draft General Plan is available for review.

Kamala Parks (BART): When will that be?

- Beth Thompson (De Novo) responds: This summer.

Kamala Parks (BART): The Housing Element has different schedule – what's that like?

- Beth Thompson (De Novo) responds: The document will be released late summer.

John Holder (EBRPD): Will there be any consideration in the EIR of sea level rise impacts on open space areas, and will the EIR consider the Great Public Trail Master Plan alignment through Pittsburg? The EBRPD will also submit a comment letter with similar details.

- Beth Thompson (De Novo) responds: The EIR will address flooding as it relates to CEQA, and the General Plan does address sea level rise; see the Existing Conditions Report for climate change

and sea level rise predictions. The General Plan will include policies and programs to address, accommodate, and adapt to sea level rise and other effects of climate change.

Kamala Parks (BART): How will transit – surface and BART – be analyzed in the EIR?

- Beth Thompson (De Novo) responds: The EIR looks at whether the project would conflict with policies and programs which relate to transit.

Kamala Parks (BART): Will the EIR include analyses of conflicts with adopted documents in Pittsburg, or also those adopted by transit agencies?

- Beth Thompson (De Novo) responds: The adopted documents that have authority in Pittsburg, and the adopted thresholds by those transit agencies, will be considered.

Kamala Parks (BART): How do we get notified about the General Plan and Housing Element?

- John Funderberg (City) responds: Fill in your information on the General Plan Update website; also notes that BART is already on the notification list.
- Jordan Davis (City) responds: Shows attendees how to get notified via the city website – “How do I” button. For the Housing Element, if you sign up for General Plan Update notifications, you’ll get notified of Housing Element updates as well.



**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

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Sergio Lopez
Rob Rennie

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Teresa Barrett
Lynda Hopkins

Alexander Crockett
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EXECUTIVE OFFICER/APCO**

Connect with the
Bay Area Air District:



May 16, 2022

Mr. John Funderburg, Assistant Director of Planning
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

RE: City of Pittsburg Envision Pittsburg 2040 General Plan Update Draft
Environmental Impact Report - Notice of Preparation

Dear Mr. Funderburg,

Bay Area Air Quality Management District (Air District) staff has reviewed the Notice of Preparation (NOP) for the City of Pittsburg (City) Envision Pittsburg 2040 General Plan Update Draft Environmental Impact Report (DEIR). As we understand, the City intends to prepare a programmatic DEIR to update the land use map and policy document consisting of goals, policies, and implementation measures in the General Plan (Plan) that will guide future development activities and City actions. The City is located in eastern Contra Costa County and is bordered by Suisun Bay to the north and Solano County to the north, the City of Antioch and unincorporated Contra Costa County to the east, the City of Concord to the west, and unincorporated Contra Costa County to the south. No specific development projects are proposed as part of the General Plan Update. Upon adoption, the 2040 Plan will replace the City's existing 2020 Plan, which was adopted in 2001 with subsequent updates to various elements. The City will implement the Plan by requiring development, infrastructure improvements, and other projects to be consistent with its policies and by implementing the actions included in the Plan, including subsequent project-level environmental review, as required under CEQA.

Air District staff recommends the DEIR include the following information and analysis:

- As identified by the Air District's CARE Program and Assembly Bill (AB) 617 Community Health Protection Program, the Pittsburg community census tracts that are in the top 30 percent of pollution burden statewide, as identified in CalEnviroscreen 4.0, are currently cumulatively impacted with very high risk due to toxic releases, ground water threats, and other sources of pollution, as well as a highly vulnerable population. Increases in air pollution exposure in areas that are already overburdened would be of concern; therefore, the City should fully evaluate potential significant impacts and implement all feasible measures to minimize air quality impacts to the greatest extent possible.
- The DEIR should provide a detailed analysis of the Plan's potential effects on local and regional air quality. The DEIR should include a discussion of the Air District's attainment status for all criteria pollutants and the implications for the region if these standards are not attained or maintained by statutory deadlines. The Air District's CEQA Guidelines, which provide guidance on how to evaluate a Plan's construction, operational, and

cumulative air quality impacts can be found on the Air District's website: <https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines>.

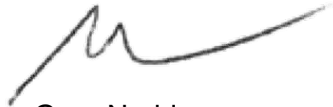
- The DEIR should evaluate the Plan's consistency with the Air District's 2017 Clean Air Plan (2017 CAP) and should discuss 2017 CAP measures relevant to the Plan. The 2017 CAP can be found on the Air District's website: <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>.
- The greenhouse gas (GHG) impact analysis should include an evaluation of the Plan's consistency with the State's 2030 and 2045 climate targets. The Air District's current plan-level thresholds of significance for climate impacts, adopted April 20, 2022 by the Board of Directors, are based on the State's climate targets of reducing GHG emissions 40 percent below 1990 levels by 2030 and achieving carbon neutrality by 2045 (see Justification Report here: <https://www.baaqmd.gov/ceqa-guidelines>). The Air District recommends that cities and counties evaluate their plans based on whether they would be consistent with these long-term climate goals. To be consistent with the 2030 goal, plans should document specific strategies and implementation measures and quantify the associated GHG emission reductions to reduce the community's GHG emissions to 40 percent below the 1990 emission levels by 2030, without the use of offsets. Plans should also demonstrate that they will achieve as ambitious emission reductions as technologically and financially feasible by 2045 through a preponderance of enforceable, mandatory measures, minimizing the remaining (residual) amount of emissions needed to close the gap to carbon neutrality. Plans should include a strong implementation and monitoring strategy that shows how the remaining emissions gap will diminish over time, that commits to re-evaluation and adjustments as additional technologies become feasible and new statewide policies and programs emerge to close the gap to carbon neutrality as much as possible. The Air District strongly recommends that GHG reduction targets be achieved from GHG emission reductions and sequestration occurring within the community to the greatest extent feasible. For additional guidance on developing robust local plans that are consistent with State CEQA guidance, please contact Alesia Hsiao, Senior Environmental Planner, (415) 745-8419, ahsiao@baaqmd.gov.
- The Program DEIR should evaluate all feasible measures to minimize air pollutant emissions and exposure and should prioritize onsite measures within the Plan area, followed by offsite measures. Examples of potential emission reduction measures that should be evaluated and considered include, but are not limited to:
 - Requiring construction vehicles to operate with the highest tier engines commercially available,
 - Prohibiting or minimizing the use of diesel fuel, consistent with the Air District's Diesel Free by '33 initiative (<http://dieselfree33.baaqmd.gov/>),
 - Implementing parking strategies to discourage vehicle travel, such as parking cash-out, reduced parking requirements, shared parking, paid parking, and related strategies,
 - Providing funding for zero-emission transportation projects, including a neighborhood electric vehicle program, community shuttle/van services and car sharing, and enhancement of active transportation initiatives, among others,

-
- Providing comprehensive, safe, and convenient bicycle and pedestrian facilities throughout the city, linking residential areas and activity centers, and connecting to regional networks where appropriate,
 - Installing outdoor electrical receptacles for charging or powering of electric landscape equipment,
 - Implementing electric infrastructure and fossil fuel alternatives in the development and operation of the Plan, such as solar photovoltaic (PV) panels, renewable diesel, electric heat pump water heaters, and solar PV back-up generators with battery storage capacity,
 - Meeting the vehicles miles traveled (VMT) requirement under SB 743,
 - Including a building decarbonization goal or policy in the Plan (<https://www.buildingdecarb.org/compass.html>) and requiring no natural gas use in proposed structures,
 - Including air filtration for new and existing buildings that may be exposed to elevated air pollution, such as MERV 13 filters, as well as vegetative buffers between new and existing buildings, and sources of pollution. For more emissions and exposure reduction best practices, see the Air District's Planning Healthy Places guidance, Appendices A and B, here: https://www.baaqmd.gov/~media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf, and
 - Implementing a zero-waste program consistent with SB 1383 organic waste disposal reduction targets.
- Discuss how the Plan addresses Senate Bill 1000 (SB 1000), the Planning for Healthy Communities Act. SB 1000, which became effective January 1, 2018, requires all California jurisdictions to consider environmental justice issues in their General Plans. Environmental justice (EJ), as defined by the State, focuses on disproportionate and adverse human health impacts that affect low-income and minority communities already suffering from cumulative and legacy environmental and health impacts.
 - The Air District's CEQA website contains several tools and resources to assist lead agencies in analyzing air quality and GHG impacts. These tools include guidance on quantifying local emissions and exposure impacts. The tools can be found on the Air District's website: <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools>.
 - Certain aspects of the Plan may require a permit from the Air District (for example, back-up diesel generators). Please contact Barry Young, Senior Advanced Projects Advisor, at (415) 749-4721 or byoung@baaqmd.gov to discuss permit requirements. Any applicable permit requirements should be discussed in the DEIR.

May 16, 2022

We encourage the City to contact Air District staff with any questions and/or to request assistance during the environmental review process. If you have questions regarding these comments, please contact Alesia Hsiao, Senior Environmental Planner, (415) 745-8419, ahsiao@baaqmd.gov.

Sincerely,



Greg Nudd
Deputy Air Pollution Control Officer

cc: BAAQMD Director John Gioia
BAAQMD Director David Hudson
BAAQMD Director Karen Mitchoff
BAAQMD Director Mark Ross



SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

2150 Webster Street, P.O. Box 12688
Oakland, CA 94604-2688
(510) 464-6000

May 20, 2022

2022

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7TH DISTRICT

Janice Li
8TH DISTRICT

Bevan Duffy
9TH DISTRICT

John Funderburg
Assistant Director of Planning
City of Pittsburg Community and Economic Development Department
65 Civic Avenue
Pittsburg, CA 94565
jfunderburg@pittsburgca.gov

RE: Comments to the Notice of Preparation for the 2040 General Plan Update Draft Program
Environmental Impact Report

Dear Mr. Funderburg,

Thank you for the opportunity to provide comments to the NOP as you prepare an EIR for your
General Plan update.

We are writing to provide comments on your proposed zoning in relation to AB 2923.
Specifically, the zoning that is proposed for BART land is not in conformance with AB 2923
baseline zoning standards. This applies to BART-owned land at Pittsburg-Bay Point and Pittsburg
Center station. In particular:

Mixed Use Designations	General Plan Update	AB 2923 Baseline Zoning Standards
Residential density	15-65 units per gross acre	75 dwelling units/acre allowed on all BART land
Floor area ratio	1.0 non-residential	3.0 allowed for all uses on all BART land

We encourage you to review [A Technical Guide to Zoning for AB 2923 Conformance](#) and make
changes to your zoning so that residential density, building height, FAR, and parking standards
align with AB 2923 baseline zoning standards.

If you have further questions, please contact Kamala Parks, Station Planner for the Pittsburg
stations. She can be reached by email (kparks2@bart.gov) or phone (510-817-5901).

We appreciate your attention to this matter.

Sincerely,

Tim Chan
Group Manager – Station Area Planning

cc: Val Joseph Menotti, BART, Chief Planning and Development Officer
Abigail Thorne-Lyman, BART, Director of Real Estate and Property Development
Kamala Parks, BART, Senior Station Planner
Stephen Muzio, BART, Office of the General Counsel

California Department of Transportation

DISTRICT 4
OFFICE OF TRANSIT AND COMMUNITY PLANNING
P.O. BOX 23660, MS-10D | OAKLAND, CA 94623-0660
www.dot.ca.gov



May 17, 2022

SCH #: 2022040427
GTS #: 04-CC-2022-00545
GTS ID: 26270
Co/Rt/Pm: CC/4/22.7

John Funderburg, Assistant Director of Planning
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

Re: Envision Pittsburg 2040 General Plan Update Notice of Preparation (NOP) for Draft Environmental Impact Report (DEIR)

Dear John Funderburg:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Envision Pittsburg 2040 General Plan Update. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system. The following comments are based on our review of the April 2021 NOP.

Project Understanding

The proposed Project is a programmatic General Plan planning document consisting of, among others, an updated land use map and policy document consisting of goals, policies, and implementation measures that will guide future development activities and City actions. No specific development projects are proposed as part of the General Plan Update. Upon adoption, the 2040 General Plan will replace the City's existing 2020 General Plan, which was adopted in 2001 with subsequent updates to various elements. The City is also updating the Housing Element, which will address the City's Regional Housing Needs Allocation and the 2023-2031 planning period, in a process separate from the General Plan Update.

Travel Demand Analysis

With the enactment of Senate Bill (SB) 743, Caltrans is focused on maximizing efficient development patterns, innovative travel demand reduction strategies, and multimodal improvements. For more information on how Caltrans assesses Transportation Impact Studies, please review Caltrans' Transportation Impact Study

Guide ([link](#)). Please note that current and future land use projects proposed near and adjacent to the State Transportation Network (STN) shall be assessed, in part, through the TISG.

Additionally, Caltrans requests that the City of Pittsburg General Plan Update is consistent with California Government Code Section 65088-65089.10 Congestion Management.

As well, the City is requested to gain a determination of conformity from the Contra Costa Transportation Authority to determine that the City of Pittsburg General Plan Update is consistent with and conforms to the Regional Transportation Plan Consistency Requirements of the County's Congestion Management Plan (CMP).

Transportation Impact Fees

We encourage a sufficient allocation of fair share contributions toward multi-modal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We also strongly support measures to increase sustainable mode shares, thereby reducing VMT. Caltrans welcomes the opportunity to work with the City and local partners to secure the funding for needed mitigation. Traffic-mitigation or cooperative agreements are examples of such measures.

Equitable Access

If any Caltrans facilities are impacted by the project, those facilities must meet American Disabilities Act (ADA) Standards after project completion. As well, the project must maintain bicycle and pedestrian access during construction. These access considerations support Caltrans' equity mission to provide a safe, sustainable, and equitable transportation network for all users.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, or for future notifications and requests for review of new projects, please email LDR-D4@dot.ca.gov.

Sincerely,



MARK LEONG
District Branch Chief
Local Development Review

c: State Clearinghouse



Elise Carroll <ecarroll@denovoplanning.com>

FW: Envision Pittsburg 2040 General Plan Update

John Funderburg <JFunderburg@pittsburgca.gov>

Thu, May 12, 2022 at 3:22 PM

To: Beth Thompson <bthompson@denovoplanning.com>, Elise Carroll <ecarroll@denovoplanning.com>

FYI...see comments below...

From: Joe Smithonic <Joe.Smithonic@pw.cccounty.us>**Sent:** Thursday, May 12, 2022 3:18 PM**To:** John Funderburg <JFunderburg@pittsburgca.gov>**Cc:** Gus Amirzehni <Gus.Amirzehni@pw.cccounty.us>**Subject:** Envision Pittsburg 2040 General Plan Update****External Sender: Use caution before opening links or attachments****

Hello Mr. Funderburg,

The Contra Costa County Flood Control and Water Conservation District (FC District) has reviewed the Notice of Preparation (NOP) dated April 20, 2022 for a Draft Environmental Impact Report (DEIR) for the City of Pittsburg (City) 2040 General Plan Update (GPU). We submit the following comments:

1. We request that the DEIR provide a map of the watersheds within the GPU area, especially where the land use designation changes will be located. The map should include the watershed boundaries, show all existing watercourses, tributaries, and man-made drainage facilities within the project site that could be impacted by the City's GPU and also identify the FC District's right of way.
2. The DEIR should discuss any proposed changes in density from the City's 2020 General Plan, and its corresponding increases in impervious surface, and discuss its effect on the existing storm drain systems and any mitigations that are necessary, such as upgrading the existing storm drain systems or constructing detention basins. Furthermore, the City's GPU land use designations should be compared to Contra Costa County's 2040 General Plan for any areas that overlap between the jurisdictions, if applicable. The Contra Costa County's 2040 General Plan Land Use Area Map is available at the following link:

<https://ca-contracostacounty3.civicplus.com/DocumentCenter/View/30949/Land-Use-Element-Map-PDF?bidId=>

3. We recommend that the DEIR stipulate that future developments should design and construct storm drain facilities to adequately collect and convey stormwater runoff, without diversion of the watershed, entering or originating within the development to the nearest natural watercourse or adequate man-made drainage facility.
4. We recommend that the adequacy and stability of the drainage facilities within the GPU area be studied to determine if local drainage design criteria are met, as well as FEMA National Floodplain Insurance requirements. If those criteria are not met or if there are potential capacity or erosion concerns attributable to the GPU land use changes, the DEIR should discuss the potential impacts and propose mitigation measures to address those impacts.
5. According to current FEMA floodplain maps, the area surrounding Kirker Creek is in a special flood hazard area (SFHA) that includes a 100-year floodplain. The DEIR should discuss how new construction or substantial upgrades within SFHAs will conform to the City's floodplain management ordinance.
6. The DEIR should discuss the payment of drainage area fees for development within formed drainage areas as a mitigation measure. The FC District charges drainage area fees for any new impervious surfaces created within Drainage Area 48B (DA 48B) and Drainage Area 55 (DA 55) in accordance with Flood Control Ordinance Numbers 2002-28 and 2002-23, respectively. By ordinance, all building permits or subdivision maps filed in this area are subject to the provisions of the drainage fee ordinance.
7. The FC District's 50-year plan encourages local communities to plan for modifying flood control channels to incorporate natural features. There may be opportunities to implement creek restoration and environmental enhancements within the City. The City should consider developing policies to incorporate natural features into creeks and channels, such as Kirker Creek and its tributaries. For reference, the FC District's 50-year plan is linked below:

<https://www.contracosta.ca.gov/DocumentCenter/View/6853/50---Year-Plan-3-20-09-BOS-compressed-PDF?bidId=>

8. We recommend that the DEIR identify the appropriate environmental regulatory agencies, such as the U.S. Army Corps of Engineers, the State Department of Fish and Wildlife, and the State Regional Water Quality Control Board, and explore regulatory permits, special conditions, and mitigation that may be necessary for this project.
9. The DEIR should discuss how the GPU will comply with the current National Pollutant Discharge Elimination System (NPDES) requirements under the City's Stormwater Management and Discharge Control Ordinances and the C.3 Guidebook.

10. The FC District should be included in the review of all drainage facilities that have a region-wide benefit, that impact region-wide facilities, or that impact FC District-owned facilities. The FC District is available to provide technical assistance to the City in their update efforts under our Fee-for-Service program.

We appreciate the opportunity to comment on the NOP for the 2040 General Plan Update and look forward to reviewing the DEIR. If you have any questions, please contact me at your earliest convenience.

Thank you,

Joe Smithonic | Staff Engineer

Contra Costa County Flood Control & Water Conservation District

255 Glacier Drive, Martinez, CA 94553

p: 925.313.2348 | f: 925.313.2333

e: joe.smithonic@pw.cccounty.us | cccpublicworks.org

image001.png

1K



Cox, Castle & Nicholson LLP
50 California Street, Suite 3200
San Francisco, California 94111-4710
P: 415.262.5100 F: 415.262.5199

Linda C. Klein
415.262.5130
lklein@coxcastle.com

File No. 080440

May 20, 2022

VIA E-MAIL

Mr. John Funderburg
Assistant Director of Planning
City of Pittsburg Community and Economic Development Department
65 Civic Avenue
Pittsburg, CA 94565
jfunderburg@pittsburgca.gov

Re: Envision Pittsburg 2040 General Plan Update

Dear Mr. Funderburg:

We write on behalf of our client, Making Waves Academy (“Making Waves”), who owns property in the City of Pittsburg (“City”). We have reviewed the Notice of Preparation (“NOP”) for the Envision Pittsburg 2040 General Plan Update (“GPU” or “Project”) and offer the following comments.

1. Project Objectives

The NOP includes a list of Project objectives that is not necessarily inclusive of all the project objectives. In case housing and education are not part of the Project objectives, we recommend adding them. Objectives could include statements such as (1) providing a range of housing types for all income levels, and (2) maintaining and supporting institutional uses, including schools, that provide educational and growth opportunities for all City residents. Housing and education are important components of the City and should be supported by the Project objectives. In particular, the Bay Area has an acute housing crisis and the GPU should provide goals and policies that support housing, helping address this crisis.

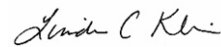
2. Project Description

According to the NOP, the Marina Commercial land use designation includes a permitted residential density of 8 to 20 dwelling units per acre. But the description of the designation makes no mention of residential uses. We recommend clarifying that housing and mixed residential/commercial development is allowed on land designated Marina Commercial. Specifically, we recommend the following text edits:

Recreational and visitor-oriented uses, including privately operated recreation complexes (sports complexes, aquatic centers, etc.), and experience-oriented entertainment or recreation, business and professional services, offices, convenience sales, restaurants, public marketplaces, repair services, specialty retail (such as boat sales and repair), hotel/motel with a coastal orientation, recreational facilities, research and development, custom manufacturing, and marinas are all accommodated. In addition, this land use designation accommodates residential development and mixed commercial/residential uses.

The City needs to accommodate over 2,000 units in its next Housing Element update and according to HCD's website is not on track to meet its 5th Housing Cycle Regional Housing Needs Assessment. Accordingly, it is important to note the land use designations that support housing, which will help the City achieve its housing needs.

Sincerely,


Linda C. Klein

cc: Mr. Doug Giffin, Campus, LLC
Mr. Jerold Ligons, Making Waves Foundation



**Delta
Stewardship
Council**

A CALIFORNIA STATE AGENCY

May 23, 2022

John Funderburg
City of Pittsburg
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jfunderburg@pittsburgca.gov

715 P Street, 15-300
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Christy Smith
Maria Mehranian
Don Nottoli
Daniel Zingale
Julie Lee

EXECUTIVE OFFICER
Jessica R. Pearson

**RE: Comments on Notice of Preparation of an Environmental Impact
Report for the City of Pittsburg General Plan 2040, SCH#2022040427**

Dear John Funderburg:

Thank you for the opportunity to review and comment on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the City of Pittsburg (City) General Plan 2040. The Delta Stewardship Council (Council) understands the objective of General Plan 2040, as described in the NOP, is to create an updated General Plan to guide the City through 2040 using a comprehensive set of goals, policies and implementation measures, as well as a revised Land Use Map.

The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, codified in Division 35 of the California Water Code, sections 85000-85350 (Delta Reform Act). The Delta Reform Act charges the Council with furthering California's coequal goals of providing a more reliable water supply and protecting, restoring, and enhancing the Sacramento-San Joaquin River Delta (Delta) ecosystem. (Water Code, § 85054.) The Delta Reform Act further states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Council is charged with furthering California's

coequal goals for the Delta through the adoption and implementation of the Delta Plan. (Wat. Code, § 85300.)

Pursuant to the Delta Reform Act, the Council has adopted the Delta Plan, a comprehensive long-term management plan for the Delta and Suisun Marsh that furthers the coequal goals. The Delta Plan contains regulatory policies, which are set forth in California Code of Regulations, Title 23, sections 5001-5015. Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions of State or local public agencies that take place in whole or in part in the Delta. (Wat. Code, §§ 85210, 85225.30.) A state or local agency that proposes to undertake a covered action is required to prepare a written Certification of Consistency with detailed findings as to whether the covered action is consistent with the Delta Plan and submit that certification to the Council prior to implementation of the project. (Wat. Code, § 85225.)

Through the Delta Reform Act, the Council was also directed to review and provide timely advice to local and regional planning agencies regarding the consistency of local and regional planning documents with the Delta Plan. The Council's input includes, but is not limited to, reviewing the consistency of local and regional planning documents with the ecosystem restoration needs of the Delta and reviewing whether the lands set aside for natural resource protection are sufficient to meet the Delta's ecosystem needs. (Wat. Code, § 85212.)

COVERED ACTION DETERMINATION AND CERTIFICATION OF CONSISTENCY WITH THE DELTA PLAN

Based on the location and scope of General Plan 2040, as provided in the NOP, the Plan may meet the definition of a covered action. Water Code section 85057.5(a) states that a covered action is a plan, program, or project, as defined pursuant to Section 21065 of the Public Resources Code that meets all of the following conditions:

(1) Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh. The planning area includes lands within and surrounding the City of Pittsburg. Portions of the planning area are located in part within the Delta.

(2) Will be carried out, approved, or funded by a State or a local public agency. General Plan 2040 will be approved by the City of Pittsburg, a local public agency.

(3) Is covered by one of the provisions of the Delta Plan. See discussion below. City and Council staff should determine the potential applicability of Delta Plan regulatory policies that may apply to General Plan 2040 through early consultation.

and

(4) Will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and State interests in the Delta. General Plan 2040 would have a significant impact on both coequal goals and on a government-sponsored flood control program to reduce risks to people, property, and State interests in the Delta.

The State or local agency approving, funding, or carrying out the project must determine if that project is a covered action and, if so, file a Certification of Consistency with the Council prior to project implementation. (Wat. Code, § 85225; Cal. Code Regs., tit. 23, § 5001(j)(3).)

COMMENTS ON GENERAL PLAN LAND USE MAP ALTERNATIVE D AND EXISTING CONDITIONS REPORT

It should also be noted that certain Delta Plan regulatory policies establish specific criteria and categories that would exempt actions from portions of the Council's regulatory authority. One such exemption is for actions occurring within Contra Costa County's 2006 voter approved urban limit line. Such proposed actions are exempted from Delta Plan Policy **DP P1**, which places geographic restrictions on new urban development (Cal. Code Regs., tit.23, § 5010) and Delta Plan Policy **RR P2**, which requires a minimum level of flood protection for residential development in rural areas (Cal. Code Regs., tit. 23, § 5013).

Based on our review, Council staff has not identified any specific inconsistency between the Plan and the Delta Plan, pursuant to Water Code section 85212 at this time. Notwithstanding the exemptions identified above, proposed General Plan 2040 policies appear to support provisions of **DP P1** and **RR P2**. For example, Land Use Element goals such as 2-G-1 to maintain compact urban development and ensure that lands not environmentally suitable for development remain open space

and 2-G-6 to provide incentives for development using infill, reuse and revitalization of land advance achievement of **DP P1** and **RR P2**. Similarly, the General Plan 2040 Existing Conditions Report thoroughly considers climate change scenarios and effects in Chapter 6. This report and the Council's *Climate Change Vulnerability Assessment and Adaptation Strategy for the Sacramento – San Joaquin Delta* will provide a solid foundation for a climate wise update of the General Plan.

CLOSING COMMENTS

As the City proceeds with design, development, and environmental impact analysis of General Plan 2040, the Council invites the City to engage Council staff in early consultation to discuss potential applicability of Delta Plan regulatory policies to the General Plan 2040 and to discuss consistency between General Plan 2040 and the Delta Plan, so that the two plans are complementary and best serve to protect the Delta. Please contact Eva Bush at (916) 284-1619 or eva.bush@deltacouncil.ca.gov with any questions.

Sincerely,



Jeff Henderson, AICP
Deputy Executive Officer
Delta Stewardship Council

May 20, 2022

City of Pittsburg
Community and Economic Development- Planning Division
65 Civic Avenue, Pittsburg, CA 94565

RE: Comments - NOP for Envision Pittsburg 2040 General Plan Update Environmental Impact Report

Dear John Funderburg,

East Bay Regional Park District (Park District) appreciates the opportunity to comment on the Notice of Preparation (NOP) for the City of Pittsburg General Plan Environmental Impact Report (General Plan EIR). The Park District looks forward to collaborating with the City of Pittsburg in this effort. In preparation of the Envision Pittsburg 2040 General Plan EIR, the Park District would like to recommend that the EIR analysis consider potentially significant impacts associated with the adoption and implementation of the General Plan related to recreational assets, natural resources, and consider areas of the City not only limited to those with development potential, as mentioned in the NOP, but also important public recreational and natural assets as well. Particularly, the Park District would like to ensure that the following impacts are considered in the General Plan EIR:

- Ensure that any potentially significant impacts to active transportation opportunities in Pittsburg are considered, especially involving advancement of the Great California Delta Trail (GCDT) alignment. The Park District requests that impacts to future alignments of the GCDT are considered in the GP EIR and specifically that the analysis include priority alignments of the GCDT. This may include the trail alignment through the former GenOn power plant property to Riverfront Park and into Downtown Pittsburg as proposed by the *Great California Delta Trail: Bay Point Wetlands to Pittsburg Marina Park Preliminary Engineering Study*. Long-term planning for and analysis of potential impacts to this recreational asset would ensure Pittsburg residents the opportunity to connect from any future development of that property to the shoreline and into Downtown Pittsburg for the long-term. Highlighting this segment in this General Plan EIR sets the stage for a successful connection and sustainability of this important recreational resource.
- The Park District is pleased the General Plan Existing Conditions Report (Chapter 6) document has a preliminary review of climate change considerations and sea level rise projections. The Park District would like to request that the General Plan EIR consider sea level rise related flood impacts and appropriate mitigation to natural areas, including the Pittsburg wetlands and additional natural areas in the City's jurisdiction. The Park District looks forward to working with the City of Pittsburg to plan for and adapt natural areas to rising sea levels.

Thank you for the opportunity to comment on the NOP for the City of Pittsburg General Plan Environmental Impact Report, and the Park District looks forward to next steps in the project. If you have any questions or comments, please contact John Holder, Senior Planner, at (510)-544-2323 or jholder@ebparks.org.

Sincerely,

Board of Directors

Dee Rosario
President
Ward 2

Colin Coffey
Vice-President
Ward 7

Beverly Lane
Treasurer
Ward 6

Dennis Waespi
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Brian Holt
Chief – Planning, Trails and GIS Division

cc: Kristina Kelchner - Assistant General Manager - Acquisition | Stewardship | Development
Sean Dougan - Trails Program Manager - Planning, Trails and GIS Division



U.S. Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
San Francisco Airports District Office

1000 Marina Blvd., Suite 220
Brisbane, CA 94005-1835

June 22, 2022

John Funderburg
Assistant Director of Planning
City of Pittsburg
Planning Division
65 Civic Avenue
Pittsburg, CA 94563

Subject: City of Pittsburg, Notice of Preparation for the Envision Pittsburg 2040 General Plan Update – Draft Environmental Impact Report (EIR)

Dear Mr. Funderburg:

On April 20, 2022, the Federal Aviation Administration (FAA) received the City of Pittsburg's Notice of Preparation for the 2040 General Plan Update Draft Environmental Impact Report (EIR). The notice indicated that the City Council generally preferred Alternative B but later created the preferred Alternative D (based on modifications of Alternative B) which includes 5,518,668 square feet of planned development and 20,326,007 square feet of potential build-out development for a total of 25,844,675 square feet. The proposed land use designation under Alternative D includes 5,295 acres of Residential, 233 acres of Mixed Use, 2,751 acres of Commercial and Industrial, 196 acres of Landfill, 1182 acres of Public/Institutional, 2,806 acres of Park, 8,647 acres of Open Space, 659 acres of Utility/ROW, and 573 acres of water.

The proposed Planning Area boundary is located less than five miles northeast of the Buchanan Field Airport (CCR), Concord, California and less than 16 miles northwest of the Byron Airport (C83), Byron, California. Buchanan Field Airport, is an active Commercial Service (Primary) airport and Byron Airport is an active local Reliever airport within the National Plan of Integrated Airport System (NPIAS). Both airports are owned and operated by Contra Costa County.

The FAA advises that the City of Pittsburg coordinate its proposals for the updated 2040 General Plan with the Contra Costa County Airports Division, Director of Airports, Mr. Greg Baer and Ms. Beth Lee, Assistant Director of Airports. Both may be contacted as follows:

Greg Baer, Director of Airports
Contra Costa County Airports Division
550 Sally Ride Drive
Concord, CA 94520
Email: greg.baer@airport.cccounty.us
Phone: 844-359-8687

Beth Lee, Assistant Director of Airports
Contra Costa County Airports Division
550 Sally Ride Drive
Concord, CA 94520

Email: beth.lee@airport.cccounty.us
Phone: 844-359-8687

Noise: Due to the proximity of the Plan Area to the two airports, the City of Pittsburg should anticipate that airport and aircraft noise will be experienced in the area. It is advisable to incorporate an early notification process to inform future occupants and users of the Planning Area about the presence of the existing airports and the potential to hear noise from operations and aircraft overflight. Proposals for zoned areas or other areas which would be sensitive to noise, should be coordinated with the Contra Costa County Airports Division (i.e., residential areas, hospitals, schools, and Section 4(f) properties including publicly-owned public parks, recreational areas of national, state or local significance, wildlife or waterfowl refuges; or lands from a historic site of national, state or local significance). The FAA recommends that the City of Pittsburg utilize the guidance provided in Advisory Circular (AC) 150/5020-1, *Noise Control and Compatibility Planning for Airports*, enclosed, to ensure land use compatibility between designations/zoning in the updated General Plan and aircraft noise levels.

Wildlife Attractants: The FAA also recommends that the City of Pittsburg utilize the guidance provided in Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, enclosed, to ensure that the updated General Plan elements do not introduce wildlife hazards to the aviation operations in the area. As explained in the AC, certain land use practices have the potential to attract wildlife that can be a threat to aviation safety. The land uses that individually, or in combination with each other, have the potential to attract hazardous wildlife include landfills, restored wetlands/hunting areas, parks, ponds/lakes, taxi cab and rental car pickup areas, golf courses/turf grass, aquaculture facilities, and landscaped areas with forage, among others.

The FAA, notes that there is a proposed landfill relocation as well as park and open space/water developments within five miles of Buchanan Field Airport operations. Given this relatively close proximity to airport runways and flight paths, the FAA advises that the City coordinate closely with the Contra Costa County Airports Division to discuss avoiding and/or minimizing any potential wildlife attractants.

Navigable Airspace: The FAA noted that the proposed alternatives include solar and wind power facilities as well as the construction of a new power plant, transmission lines, and multi-storied buildings. The FAA advises coordinating with the Contra Costa County Airports Division to discuss compatibility of any developments that could potentially affect airport operations and/or navigable airspace (i.e., potential for glare and/or obstruction). Projects that have the potential to affect navigable airspace as defined in 14 Code of Federal Regulations Part 77.9 must file a Notice of Proposed Construction or Alteration, Form 7460-1 with the FAA. The 7460-1 should be filed at least 45 days prior to the start of construction. Information about the Obstruction Evaluation/Airport Airspace Analysis and the Form 7460-1 are available at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

Your attention to these comments is appreciated. If you have any questions, I am available via cell phone at (307) 461-2884.

Sincerely,

/s/ Christopher D. Jones

Enclosures:

Advisory Circular (AC) 150/5020-1

Advisory Circular (AC) 150/5200-33B

cc:

Greg Baer, Contra Costa County Airports Division

Beth Lee, Contra Costa County Airports Division



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Noise Control and Compatibility
Planning for Airports

Date: DRAFT
Initiated by: APP-400

AC No: 150/5020-1A
Change:

Purpose.

a. This advisory circular (AC) provides guidance on conducting an Airport Noise and Land Use Compatibility Planning Study in accordance with the Title 14 Code of Federal Regulations (CFR) Part 150 regulations. Commonly referred to as a Part 150 study, these studies consist of a combined Noise Exposure Map (NEM) and Noise Compatibility Program (NCP) with noise mitigation and abatement measures.

b. Part 150 is the primary means for the FAA to provide Airport Improvement Program (AIP) grants for noise abatement or mitigation measures outside of a specific development project, and to assess the effectiveness of an airport sponsor's proposed noise abatement measures. Participation in the Part 150 process is voluntary for airport sponsors. However, once an airport chooses to participate, it must comply with the applicable statutory, regulatory, and Airport Improvement Program (AIP) grant assurances. The benefits to this participation are a structured and effective process to evaluate noise impacts and mitigation measures, and the potential for AIP funding. Airport sponsors determine whether to conduct a Part 150 study to evaluate noise abatement and land use compatibility issues surrounding their airports, or to achieve these ends outside of the Part 150 process.

c. FAA approval of Part 150 measures in an NCP does not constitute final approval to implement or provide federal funding for those measures. For instance, sponsors must have a favorable Safety Risk Management (SRM) finding before operational noise abatement flight tracks are implemented. Similarly, AIP eligibility for sound insulation funding is not determined until interior acoustical testing is completed for a structure within an impacted land use. An airport sponsor may also have to fulfill other statutory or regulatory requirements, such as National Environmental Policy Act requirements, before implementation.

2 Application.

- a. This AC is intended for anyone responsible for preparing, updating, and reviewing Part 150 studies, and implementing approved NCP measures. This includes airport sponsors, consultants, local and state land use planners, FAA personnel, government officials, aircraft operators at the airport including airline and cargo operators, and members of the public that may participate in the Part 150 process.
- b. This AC does not modify or supersede the Part 150 regulations. It implements those regulations by explaining the requirements and by providing guidance on how to conduct the tasks and prepare the materials required by Part 150.
- c. The Federal Aviation Administration recommends the guidance in this publication for the Noise Control and Compatibility Planning Program. This AC does not constitute a regulation and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except for the projects described in bullets below:
 - The standards contained in this AC are specifications the FAA considers essential for evaluation of noise impacts and mitigation measures on and around airports.
 - Use of these standards and guidelines is mandatory for projects funded under Federal grant assistance programs, including the AIP. See Grant Assurance #34.
 - This AC is mandatory, as required by regulation, for projects funded by the Passenger Facility Charge (PFC) program. See PFC Assurance #9.
- d. Referring to or using this AC does not establish eligibility or justification for AIP funding or PFC. For information on AIP or PFC eligibility and justification, refer to [FAA Order 5100.38, Airport Improvement Program Handbook](#), and [FAA Order 5500.1, Passenger Facility Charge Handbook](#).

3 Cancellation.

This AC replaces AC 150/5020-1, *Noise Control and Compatibility Planning for Airports*, dated August 5, 1983.

4 Principal Changes.

This AC:

- a. Updates AC 150/5020-1, *Noise Control and Compatibility Planning for Airports*.
- b. Includes updated information on preparing NEMs and NCPs since the previous version of this AC

64 5 **Distribution.**

65 This AC is available on the [FAA Office of Airports website](#).

66 6 **Feedback on this AC.**

67 If you have suggestions for improving this AC, please use the Advisory Circular
68 Feedback form at the end of the document.

69 Robert Craven
70 Director, Office of Airport Planning and Programming

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CHAPTER 1. GENERAL INFORMATION

1.1 Background.

1.1.1 The aviation industry has made major strides in lessening the environmental effects of aviation. For example, air travel has grown from 200 million to over 815 million annual passengers since 1975. However, the total area of land use that is not compatible with exposure to aircraft noise has declined more than 90 percent.¹ A large part of the improvement resulted from the phase-out of noisier aircraft models (Stage 1 and 2 aircraft) through the 1990s and 2000s.

1.1.2 Despite this progress, aircraft noise remains one of the issues that most concerns airports and communities,² and can affect efforts to increase airport capacity. Reaction to noise levels are expressed in terms of levels of annoyance. Part 150 processes offer a means to undertake noise abatement planning and implementation while considering the needs of the local communities. To be effective, the Part 150 study process should include these elements:

- An approach producing realistic and practical solutions, considering both aviation and community interests.
- FAA technical guidance and support from the Office of Airports (ARP) and Air Traffic Organization (ATO) personnel.
- Federal guidelines on land use standards showing uses that are normally compatible with various noise levels.
- Consultation and interaction with the airport sponsor, airport users, airport neighbors, local land use control jurisdictions, and the FAA. This consultation process is designed to openly communicate the program's abilities and limitations. It seeks from all these parties an understanding of the program and the support essential for its implementation over the long term.
- Recognition of factors beyond an airport sponsor's control, who may not have the authority to control local land uses. Some of these factors will strongly influence local land use decisions and the feasibility of measures that can be included in the program. Cooperation with the local land use authority is key to carrying out many Part 150 Study measures.

¹ Aviation Environmental and Energy Policy Statement, July 2012, available at: https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/FAA_EE_Policy_Statement.pdf. The FAA uses the Average Day-Night Sound Level (DNL) 65 decibels (dB) and above in defining land use compatibility. DNL is a 24-hour, time-weighted, energy average noise level based on A-weighted dBs. A-weighted decibels, abbreviated dBA, dBa, or dB(a), express the relative loudness of sounds in air as perceived by the human ear.

² Government Accounting Office, Aviation and the Environment: Airport Operations and Future Growth Present Environmental Challenges, GAO/RCED00-153 (Washington, DC; Aug. 30, 2000).

- Community and airport sponsor decisions that are chosen from a fully informed range of options, which consider their costs and benefits.
- A viable framework for conducting efficient and constructive land use compatibility programs.

1.1.3 No two airport situations are alike. The airport sponsor's Part 150 Study will likely require a unique combination of noise abatement and mitigation measures to achieve an acceptable solution for communities, and to accommodate changes in aviation demand. At any given airport, a full range of possible measures, described in the Aviation Safety and Noise Abatement Act (ASNA) and Part 150, should be explored within the public participation process. The best combination of measures should be selected for detailed evaluation and carefully weighed before settling upon a final plan. The objective of this process is to reduce or prevent noncompatible land uses in the most efficient way. This objective is then balanced against the possible non-aviation (land use) solutions. Airports often seek a balance between realistic environmental goals and costs to the aviation system. Numerous options can address noise concerns, but restrictions on airport access should be proposed only as a last resort.³

1.1.4 The Aviation Safety and Noise Abatement Act of 1979.⁴

Recognizing national aviation noise issues, Congress enacted ASNA, which mandated the FAA to establish a single system of measuring noise⁵ in consultation with the Environmental Protection Agency. This system must have a highly reliable relationship between projected noise exposure and surveyed reactions of individuals to noise. It also must be applied uniformly in measuring noise at airports and the surrounding area. ASNA also established procedures for developing NEMs and NCPs, and authorized the FAA to provide grants to eligible airport sponsors to fund noise compatibility planning. In response to this mandate, the FAA adopted the day-night average sound level (DNL) noise metric in the early 1980s. DNL was reaffirmed in the 1990s as the system that meets this Congressional mandate.

1.1.5 Title 14 CFR Part 150, *Airport Noise Compatibility Planning*.

- 1.1.5.1 The FAA implements the ASNA requirements via Title 14 Part 150. The FAA enacted Part 150 as an interim regulation in 1981 and a final regulation in 1985. The FAA has amended the regulation four times, starting in 1988, to accommodate these changes:
- Including free-standing heliports.
 - Making ARP's Regional Airports Divisions the contacts for submitting Part 150 maps and programs.
 - Addressing ANSA recodification.

³ See Title 14 CFR Part 161

⁴ ASNA, recodified at 49 United States Code (U.S.C.) Section 47501 et seq.

⁵ See 49 U.S.C. Section 47502

- Incorporating changes to ASNA, including ASNA’s public hearing requirement, noise exposure forecast map timeframes, map scale, and methods for addressing significant increases or decreases in noise exposure over sensitive land uses.

1.1.5.2 The scope and purpose of Part 150 comprises these considerations:

- Prescribe the procedures, standards, and methodology governing the voluntary development, submission, and review of NEMs and NCPs, including the process for evaluating and approving or disapproving NCP measures.
- Prescribe a single system for:
- Measuring noise at airports and surrounding areas that generally provides a highly reliable relationship between projected noise exposure and surveyed reaction of people to noise.
- Determining exposure of individuals to noise from airport operations.
- Provide for the use of the FAA’s approved model, currently Aviation Environmental Design Tool (AEDT) or an FAA-approved equivalent, for developing standardized NEMs and predicting noise impacts. Airport sponsors may use noise monitoring for data acquisition and data refinement, but monitoring is not required for developing NEMs or NCPs.
- Identify those land uses that are normally compatible with various levels of exposure to airport noise.
- Provide technical assistance to airport sponsors and to other local, state, and federal authorities in preparing and executing appropriate noise compatibility planning and implementation programs.

1.2 **Related Materials.**

This AC should be used with current versions of the documents listed throughout this AC. These include FAA Regulations, Orders, ACs, Policy Statements, Program Guidance Letters, and Reports summarized in the following paragraphs.

1.2.1 FAA Regulations.

Two FAA regulations are relevant to Part 150 studies:

1.2.1.1 **Title 14 CFR Part 150.**

Prescribes the procedures, standards, and methodology governing the development, submission, and review of NEMs and airport NCPs. It includes the FAA’s process for evaluating and approving or disapproving those programs.

- 103 1.2.1.2 **Title 14 CFR Part 161, *Notice and Approval of Airport Noise and***
 104 ***Access Restrictions.***
 105 Establishes a process for notice, analysis, and review of mandatory airport
 106 noise and access restrictions on the operations of Stage 2 and Stage 3
 107 aircraft and FAA approval of restrictions impacting Stage 3 aircraft. This
 108 regulation is in response to provisions in the 1990 Airport Noise and
 109 Capacity Act and is a major element of the national aviation noise policy
 110 required by that statute.
- 111 1.2.2 FAA Orders.
 112 Several FAA Orders are relevant to Part 150 studies:
- 113 1.2.2.1 **Order 1050.1, *Environmental Impacts: Policies and Procedures.***
 114 This Order outlines FAA’s policies and procedures for compliance with
 115 the National Environmental Policy Act (NEPA) and Council on
 116 Environmental Quality (CEQ) regulations.⁶
- 117 1.2.2.2 **Order 5050.4, National Environmental Policy Act (NEPA)**
 118 **Implementing Instructions for Airport Actions.**
 119 This Order outlines FAA’s policies and procedures for NEPA compliance
 120 for airport actions, including certain actions that may result from an NCP.
 121 These include airport layout plan (ALP) changes and sound insulation
 122 affecting historic structures.
- 123 1.2.2.3 **Order 5100.37, *Land Acquisition and Relocation Assistance for Airport***
 124 ***Projects.***
 125 This Order outlines the procedures FAA personnel and airport sponsors
 126 must follow for NCP measures that involve the acquisition of land or the
 127 displacement of persons, farm operations, or businesses. The Order
 128 describes how to address applicable procedures of the Uniform Relocation
 129 Assistance and Real Property Acquisition Policies Act (Uniform Act)
 130 under FAA and Department of Transportation regulations for airport
 131 projects receiving federal financial assistance.
- 132 1.2.2.4 **Order 5100.38, *Airport Improvement Program Handbook.***
 133 This Order outlines policy and procedures to be used when administering
 134 the AIP. FAA personnel, airport sponsors, and their consultants should
 135 refer to Order 5100.38 when determining whether recommended NCP
 136 measures comply with the requirements for AIP funding.

⁶ A final rule was issued in July of 2020 by CEQ amending various portions of the NEPA regulations, so to the extent any provisions in FAA’s orders are inconsistent with the new rule, the rule controls.

- 137 1.2.2.5 **Order 5500.1, *Passenger Facility Charge.***
138 This Order provides guidance and procedures for ARP personnel
139 administering the PFC program. It includes guidance on the application of
140 PFCs to noise compatibility planning.
- 141 1.2.2.6 **Order 8400.9, *National Safety and Operational Criteria for Runway Use***
142 ***Programs.***
143 This Order provides safety and operational criteria for runway use
144 programs and parameters that must be used in the evaluation and approval
145 of informal and formal runway use programs.
- 146 1.2.2.7 **Order 1050.11, *Noise Control Planning.***
147 This order contains FAA policies and procedures and assigns internal
148 FAA responsibilities for the review of airport noise control plans and
149 programs, including noise abatement procedures and compatible land use
150 controls around airports in accordance with 14 CFR Part 150, Airport
151 Noise Compatibility Planning. It provides direction to FAA personnel in
152 their responsibilities to review and, where appropriate, assist in the
153 development of local aviation noise abatement procedures.
- 154 1.2.2.8 **Order 8000.369, *Safety Management System.***
155 This order establishes the SMS policy and requirements for FAA
156 organizations and the basic management principles to guide the FAA in
157 safety management and safety oversight activities.
- 158 1.2.2.9 **Order 5200.11, *FAA Office of Airports Safety Management System.***
159 This order defines ARP's SMS requirements. Safety Risk Management
160 (SRM) requirements apply to a number of FAA actions, including FAA
161 approval of Part 150 noise compatibility programs and program changes
162 that may affect aviation safety.
- 163 1.2.2.10 **Order 8260.43, *Flight Procedures Management Program.***
164 This order defines the process for publishing new instrument and visual
165 charted procedures in the Terminal Procedures Publication (TPP).
- 166 1.2.2.11 **Order 8260.3, *United States Standard for Terminal Instrument***
167 ***Procedures (TERPS).***
168 This order defines the criteria used to develop safe and flyable charted
169 procedures.
- 170 1.2.2.12 **Order 8260.61, *Charted Visual Flight Procedures.***
171 This order defines the criteria and guidance for developing charted visual
172 flight procedures (CVFPs). CVFPs are used by aircraft on IFR clearances
173 and may be developed where PBN instrument procedures do not
174 accommodate operational needs.

- 175 1.2.2.13 **Order 7100.41, PBN Implementation Process.**
176 This order defines the process for developing SIDs, STARs, or RNP (AR)
177 procedures.
- 178 1.2.3 FAA Advisory Circulars.
179 Several ACs may be useful for Part 150 studies. Some deal with land use planning and
180 others with operational matters. For example, those listed below relate to noise
181 abatement and mitigation, which are useful in the development and implementation of
182 NCPs. Periodic searches of the FAA’s website are recommended to determine the latest
183 FAA guidance from new ACs that may have been issued.
- 184 1.2.3.1 **AC 91-36, Visual Flight Rules (VFR) Flight Near Noise Sensitive**
185 **Areas.**
186 This AC addresses VFR flight altitudes and routes near noise-sensitive
187 areas. It encourages pilots making VFR flights near noise-sensitive areas
188 to fly at altitudes higher than the minimum permitted by regulation and on
189 flight paths that will reduce aircraft noise in such areas.
- 190 1.2.3.2 **AC 91-53, Noise Abatement Departure Profiles.**
191 This AC describes noise abatement departure profiles for turbo-jet aircraft
192 weighing more than 75,000 pounds.
- 193 1.2.3.3 **AC 91-66, Noise Abatement for Helicopters.**
194 This AC presents guidelines for effective noise reduction when operating
195 helicopters.
- 196 1.2.3.4 **AC 150/5100-17, Land Acquisition and Relocation Assistance for**
197 **Airport Improvement Program Assisted Projects.**
198 This AC provides guidance to meet the requirements of the Uniform
199 Relocation Assistance and Real Property Acquisition Act of 1970.
- 200 1.2.3.5 **AC 150/5050, Community Involvement in Airport Planning.**
201 This AC provides guidance on the appropriate level of public participation
202 in a planning study, along with successful community involvement tools
203 and techniques.
- 204 1.2.3.6 **AC 150/5000-9, Guidelines for Sound Insulation of Residences**
205 **Exposed to Aircraft Operations.**
206 This AC provides the guidance for conducting sound insulation programs
207 that are either mitigation commitments as a result of NEPA studies or are
208 sound insulation programs associated with a Part 150 program.
- 209 1.2.3.7 **AC 150/5190-4, Airport Land Use Compatibility Planning.**
210 This AC provides guidance to help a broad understand the effects of
211 incompatible land use on the safety and utility of airport operations, and

212 identify compatible land use development tools, resources and techniques
213 to protect surrounding communities from adverse effects associated with
214 airport operations.

215 1.2.4 FAA Policy Statements.

216 The following FAA policy statements relate to Part 150 and compatible land use.
217 Periodically search the FAA website to see if new relevant policy statements have been
218 issued on the subject.

219 1.2.4.1 **Policy on Funding of Combined Part 150 and Part 161 Studies and**
220 **Analyses (September 6, 1996).**

221 This policy addresses funding eligibility for conducting a Part 161 analysis
222 when combined with a Part 150 Study. Part 161 addresses the need for and
223 requirements of implementing airport noise and access restrictions.

224 1.2.4.2 **Final Policy on Part 150 Approval of Noise Mitigation Measures:**
225 **Effect on the Use of Federal Grants for Noise Mitigation Projects**
226 **(April 3, 1998).**

227 This policy⁷ establishes guidance for FAA personnel who are responsible
228 for making funding decisions related to implementation of the Part 150
229 program. The policy emphasizes the distinction between remedial and
230 preventive noise mitigation measures and states FAA policy on approval
231 of actions with respect to “new” versus “existing” noncompatible
232 development as of October 1, 1998. The policy also defines the conditions
233 under which minor development on vacant or bypassed lots could be
234 considered for noise mitigation.

235 1.2.4.3 **Community Involvement Policy Statement (April 17, 1995).**

236 The FAA Community Involvement Policy Statement emphasizes the
237 importance of providing the public with the appropriate opportunities to
238 participate in the FAA decision-making process. It communicates the
239 FAA’s commitment to public participation in agency decisions that impact
240 the community with an emphasis on early, effective communications.⁸

241 1.2.4.4 **Aviation Noise Abatement Policy of 1976.**

242 This policy has been a foundational document for the present day 14 CFR
243 Part 150 program. Since its issuance, the FAA published a draft revised
244 policy in 2000 (65 *Federal Register* 43802-43824). Although it was never

⁷ *Federal Register*, Volume 63, No. 4, Friday April 3, 1998, Rules and Regulations. As of October 1, 1998, the FAA will approve under 14 CFR Part 150 only remedial noncompatible development and only preventive noise mitigation measures in areas of potential new noncompatible development. The FAA will not approve remedial noise mitigation measures for new noncompatible development that occurs in the vicinity of airports after the effective date of this final policy.

⁸ This policy statement is currently published as appendix 10 of Order 7100.2K, and can be accessed at:
http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentnumber/7400.2

formally adopted, these draft land use compatibility concepts are being carried out informally in an effort to continue to improve the nation's civil aviation noise environment.

1.2.5 FAA Program Guidance Letters (PGLs).

The FAA publishes PGLs that provide instructions about how the FAA intends to apply or interpret provisions authorizing legislation. The subjects may include changes to existing policy and program guidance according to the provisions of new legislation. The FAA has issued several program guidance letters about noise compatibility planning, the latest version is accessible on the FAA website.

1.2.6 Other Guidance Material—Reports.

Several other reports provide guidance about the Part 150 Process and, unless another website is indicated, are on the FAA website.

1.2.6.1 Community Involvement Manual, February 2016.

This manual provides advice on how to plan and carry out an effective community involvement program. It recognizes community involvement as an essential part of FAA programs and decisions Available at:
<https://www.faa.gov/about/plansreports/community-involvement-manual>

1.2.6.2 Land Use Compatibility and Airports: A Guide for Effective Land Use Planning, September 1999.

The report is published by the FAA Airports Division Southern Region and provides guidance for effective land use planning Available at:
https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/III.B.pdf

1.2.6.3 FAA Airport Noise Compatibility Planning Toolkit.

This toolkit provides airport sponsors, land use jurisdictional agencies, and FAA staff with guidance on improving airport land use compatibility and planning. Available at:
https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/planning_toolkit/

1.2.6.4 NoiseQuest.

This website summarizes the effects of aviation noise in many areas such as annoyance, speech interference, sleep interference, real estate values, and hearing loss. It also contains findings of literature on several related topics. This website was developed to provide educational information on aviation noise. The initial site development was supported by the FAA through the PARTNER Center of Excellence under grants to researchers at Pennsylvania State University and Purdue University.⁹ The ongoing development and enhancement of NoiseQuest is supported by the FAA

⁹ See Noisequest site at: <http://www.noisequest.psu.edu/noiseeffects-structures.html>

through the ASCENT Center of Excellence under grants to researchers at Pennsylvania State University. Opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the FAA or NASA.

1.2.6.5 Airport Cooperative Research Program (ACRP) Synthesis 9: Effects of Aircraft Noise: Research Update on Select Topics.

This document updates airport sponsors, stakeholders, and policy makers on information about aviation noise effects. Since FAA Report No. FAA-EE-85-2, Aviation Noise Effects, was first published in 1985, much has changed in the understanding of the effects of aviation noise on local communities. Research continues in the areas of health effects, annoyance, sleep disturbance, and potential effects on children's learning abilities in schools. This document, available along with other noise-related research on the Transportation Research Board's (TRB) website,¹⁰ synthesizes research since 1985 to update and complement the original FAA report.

1.2.6.6 ACRP Report 15, *Aircraft Noise: A Toolkit for Managing Community Expectations*.

This report explores ways to improve communications with the public about issues related to aircraft noise exposure. The report examines practices that characterize an effective communications program and provides basic information about noise and its abatement to assist in responding to public inquiries. Available at:

<http://www.trb.org/Publications/Blurbs/162800.aspx>

1.2.6.7 State Guidance.

Many state Departments of Transportation (DOT) provide guidance material, especially in the area of compatible land use planning around airports. Sponsors should consult their local DOT website to determine if their state provides such guidance. Another source to consider is the National Association of State Aviation Officials (NASAO) at:

<http://www.nasao.org>.

¹⁰ See TRB site at: <https://www.trb.org/ACRP/Blurbs/160286.aspx>.

Note: ACRP publications are not FAA guidance and they cannot establish FAA policy. They can be used as a reference.

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CHAPTER 2. OVERVIEW OF THE PART 150 PROCESS

2.1 Process Flow.

2.1.1 Title 14 CFR Part 150 has a specific process for defining and addressing aircraft noise, and land use compatibility at airports. Figure 2-1 shows the most basic elements of the voluntary Part 150 process, beginning with an airport's decision to initiate or update a Part 150 study, which includes defining the study area and determining the funding opportunities. This step is followed by preparation of the two primary elements of the Part 150 study: the NEMs and NCP. Once prepared, the sponsor and FAA analyze the NEMs to identify noncompatible land uses and noise impacts, and prepare the NCP that proposes solutions to mitigate those uses and impacts.

2.1.2 The Part 150 Process concludes with an FAA Record of Approval (ROA) and airport sponsor implementation of FAA-approved NCP measures. Section 150.23(e)(9) of Part 150 requires sponsors to evaluate whether to revise the NCP if NEMs change as part of NCP implementation.

2.1.3 Public participation is included through the process. Soliciting public input is an important and required aspect of a successful Part 150 study.

2.2 Study Definition, Funding, and Initiation.

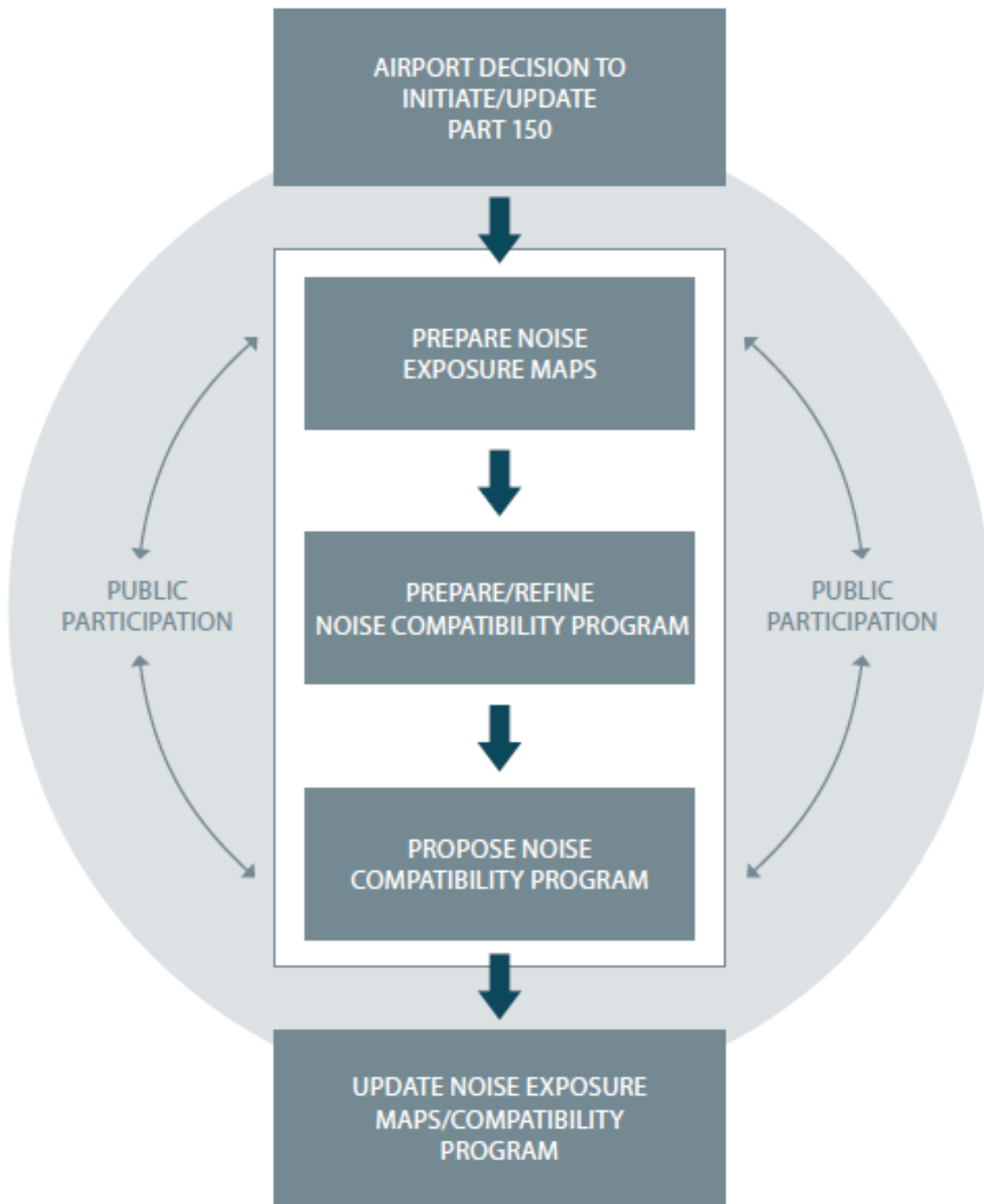
As shown in Figure 2-1, the Part 150 process begins with the airport sponsor responding to the need to address existing or anticipated new noise impacts or a desire for proactive land use compatibility planning. Once sponsors decide to undertake a Part 150 study, they can start identifying resources to fund it.¹¹

2.2.1 Study Definition.

When an airport sponsor determines that a Part 150 Study would provide noise abatement or land use compatibility benefits, the next step should be coordinated with the FAA at the Airports District Office (ADO) level. This coordination should entail the status of any previous Part 150 studies conducted at the airport, the reasoning for deciding to conduct a Part 150 Study, and the expected benefits. The ADO makes the justification determination based on this information. The airport sponsor should then prepare a detailed scope of work and cost estimate for the study. The scope of work must be based on the Part 150 guidance provided and referenced in this AC. The FAA must approve the scope of work and provide a reasonableness determination on the cost estimate before work on the study begins.

¹¹ Funding eligibility decisions are not part of the Part 150 development process.

346

Figure 2-1. General Part 150 Process Flow

347

348 2.2.2 Funding.

349 Funding for Part 150 Studies is usually derived from one of two sources: the Airport
350 Improvement Program (AIP) or Passenger Facility Charges (PFCs). Airport sponsors

can also fund studies through other sources, including airport or local government revenues.

2.2.2.1 **AIP Funding.**

2.2.2.1.1 AIP funding is authorized by Title 49 U.S.C. Chapter 471. The AIP provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS). It can also fund noise compatibility planning and carrying out NCPs (Title 49 U.S.C. Sections 47501-47507).¹²

2.2.2.1.2 Title 49 U.S.C. Section 47103 requires the Secretary of Transportation to publish a national plan for the development of public-use airports in the U.S. The NPIAS identifies those airports that are considered important to the National Airspace System and outlines development during the planning period that is necessary to maintain a safe, secure, efficient, and integrated airport system that meets the needs of civil aviation, national defense, and the U.S. Postal Service. An airport must be included in this plan to be eligible to receive a grant under the AIP. The most current version of FAA Order 5100.38 contains a complete discussion of eligibility requirements. It is on the FAA website at:
<http://www.faa.gov/airports/aip/>.

2.2.2.2 **Passenger Facility Charge Funding.**

The PFC program is authorized by 49 U.S.C. Section 40117. The PFC program provides a local source of funds to airport sponsors by authorizing airlines to impose a charge on each enplaned passenger. The airlines then provide those collections to the airport sponsor. The PFC program is implemented by 14 CFR Part 158, which was adopted on May 22, 1991 and amended on May 30, 2000. Part 150 studies are eligible for PFC funding. PFC funds can also be used instead of or along with AIP to fund the airport sponsor's share of a Part 150 study that is primarily funded by the AIP. PFCs are considered local funds, not federal revenues. For specific guidance and procedures, airport sponsors interested in funding noise compatibility planning through PFCs should refer to FAA Order 5500.1, *Passenger Facility Charges*, on the FAA website at:
<http://www.faa.gov/airports/pfc/>.

2.2.3 Initiation.

The airport sponsor usually prepares a scope of services and establishes a schedule to conduct the Part 150 Study. Though the FAA does not require a consultant to conduct the study, airport sponsors often seek these technical and staff resources. Consultants should be selected in accordance with the guidance provided in AC 150/5100-14,

¹² This was initially set forth in ASNA, Public Law 96-143. Public Law 103-272 (July 5, 1994), Codification of Certain U.S. Transportation Laws at Title 49 U.S.C., repealed ASNA, as amended, and recodified it without substantive change at Title 49 U.S.C. Sections 47501-47507.

389 *Architectural, Engineering, and Planning Consultant Services for Airport Grant*
390 *Projects.*

391 2.3 **Preparing Noise Exposure Maps.**

392 The Part 150 process requires airport sponsors to prepare two NEMs. The first NEM
393 shows existing noise exposure. The second NEM is the estimated noise exposure at
394 least 5 years in the future. As shown in the NEM process flow chart (Figure 2-2), NEM
395 preparation begins with three major tasks that are usually undertaken at the same time:
396 collecting and analyzing aircraft and airport operational data, collecting and mapping
397 land use data, and establishing a public participation program. These three tasks, briefly
398 summarized here, set the stage for preparing the NEMs and completing the required
399 consultations. Later chapters of this AC explain these activities in detail.

400 2.3.1 Collecting Aircraft and Airport Operational Data.

401 This task focuses on data needed to determine existing noise. It includes items such as
402 the number and type of aircraft operations for the preceding 12-month period or
403 preceding full calendar year, the percentage of daytime versus nighttime operations,
404 runway use percentages, flight track configurations, and flight track use. Section 5.5
405 describes the activity to consider, data needed, and data sources.

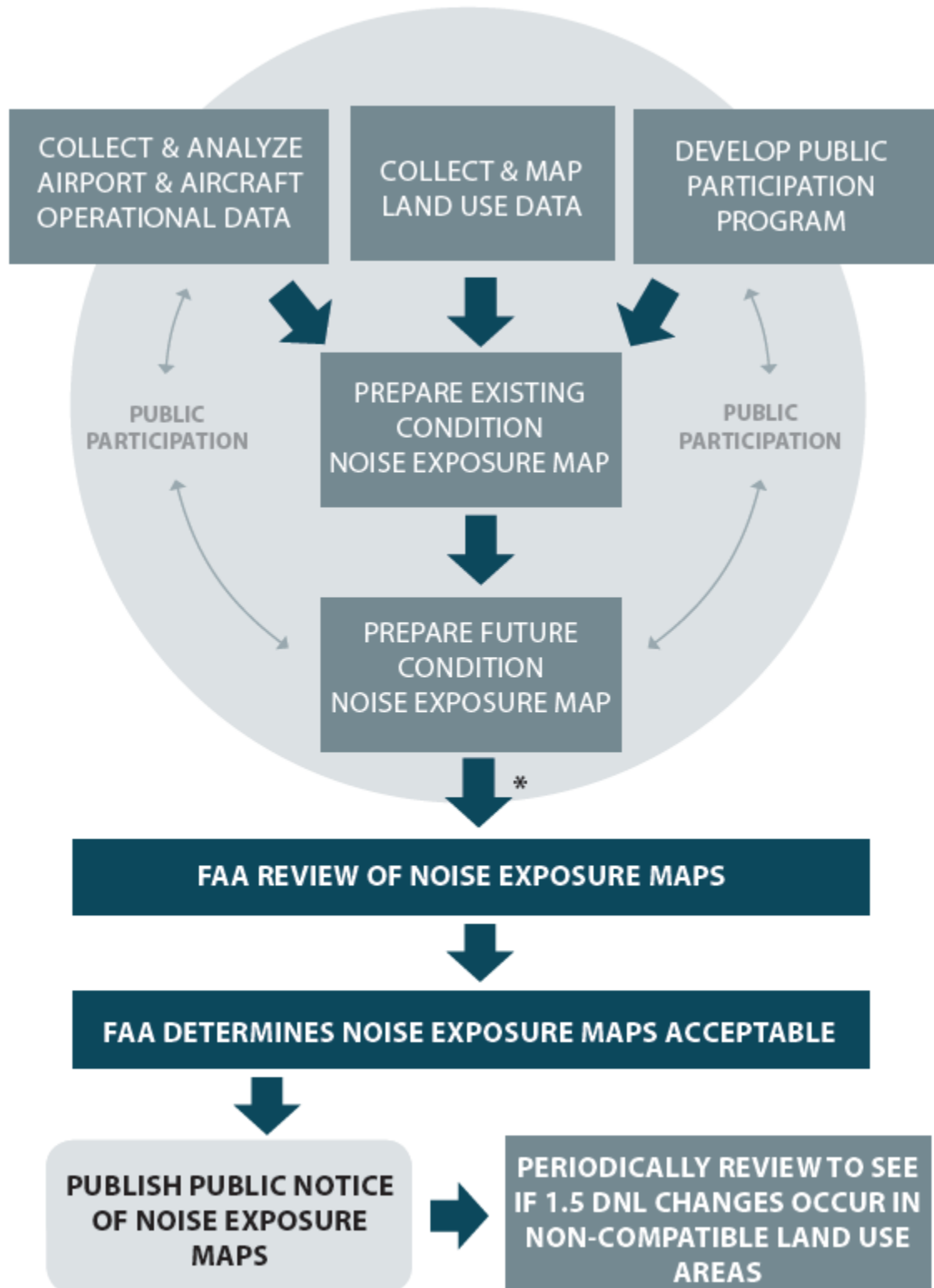
406 2.3.2 Collecting and Mapping Land Use Data.

407 This task typically consists of identifying land by parcel and use and then confirming
408 the information through windshield surveys (direct observations made from driving by
409 the sites) or review of aerial photography. If high quality Geographic Information
410 System (GIS) data are available, windshield surveys may not be needed. Other land use
411 planning data such as identifying noise sensitive sites, zoning, and demographics
412 (census data) are also typically collected. Land use data and the location of noise
413 sensitive sites within a defined study area are then placed on base maps for plotting
414 noise contours. Projected land use data are also collected for the Future Condition
415 NEM. Section 5.2 provides more detail about collecting and mapping land use data.

416 2.3.3 Developing the Consultation and Public Participation Program.

417 2.3.3.1 Establishing a consultation and public participation program begins by
418 identifying the participants in the planning phase and the desired methods
419 of involving them in the study. A combination of committee meetings and
420 public meetings usually accomplishes this task. The public participation
421 program is usually launched with an initial round of consultation to
422 introduce the various parties to the Part 150 process. Chapter 4 provides
423 detailed guidance on public participation and consultation.

424

Figure 2-2. Noise Exposure Maps Process Flow Chart

425

*The airport sponsor may elect to submit the NEMs at the same time as the NCP documentation

426 2.3.3.2 The public's participation is an important and required aspect of any Part
427 150 study, so devoting sufficient time and effort is needed to define the
428 public consultation requirements of the Part 150. Chapter 5 of this AC
429 discussed the specific elements of a public participation program.

430 2.3.4 Preparing Existing and Future Condition NEMs.

431 2.3.4.1 As shown in the NEM process flow chart (Figure 2-2), the preparation of
432 the Existing Condition and Future Condition NEMs follows the three steps
433 described in the previous paragraphs. These tasks consist of defining the
434 existing and future noise contours on existing and future land use base
435 maps and identifying jurisdictions and planning agencies within the DNL
436 65 dB contour that must be consulted. The 65 DNL dB contour is the
437 threshold above which the FAA considers aircraft noise to be incompatible
438 with residential areas. With the contours established, then the impacts to
439 residences, people, and other noise sensitive sites can be calculated and
440 the documentation of the impacts reviewed by study participants. Another
441 round of public outreach provides the parties with the opportunity to
442 review and comment on the NEMs.

443 2.3.4.2 Once airport sponsors receive the input from the study participants and the
444 general public, they have two options: prepare the NEM documentation
445 and submit it to the FAA for review or wait to submit the NEM
446 documentation until the NCP is prepared. (Chapter 6 discusses the
447 advantages and disadvantages of each approach.)

448 2.3.4.3 After reviewing the NEMs, the FAA issues a determination indicating
449 whether the NEMs comply with Part 150 requirements. If they do, the
450 FAA publishes its acceptance as a Federal Register Notice. Airport
451 sponsors can then advertise that the maps are available to the public. More
452 information on the procedure for public notice of the NEMs and the
453 benefits of map publication is in Part 150 Section 150.21(f) and Section
454 4.2 of this AC.

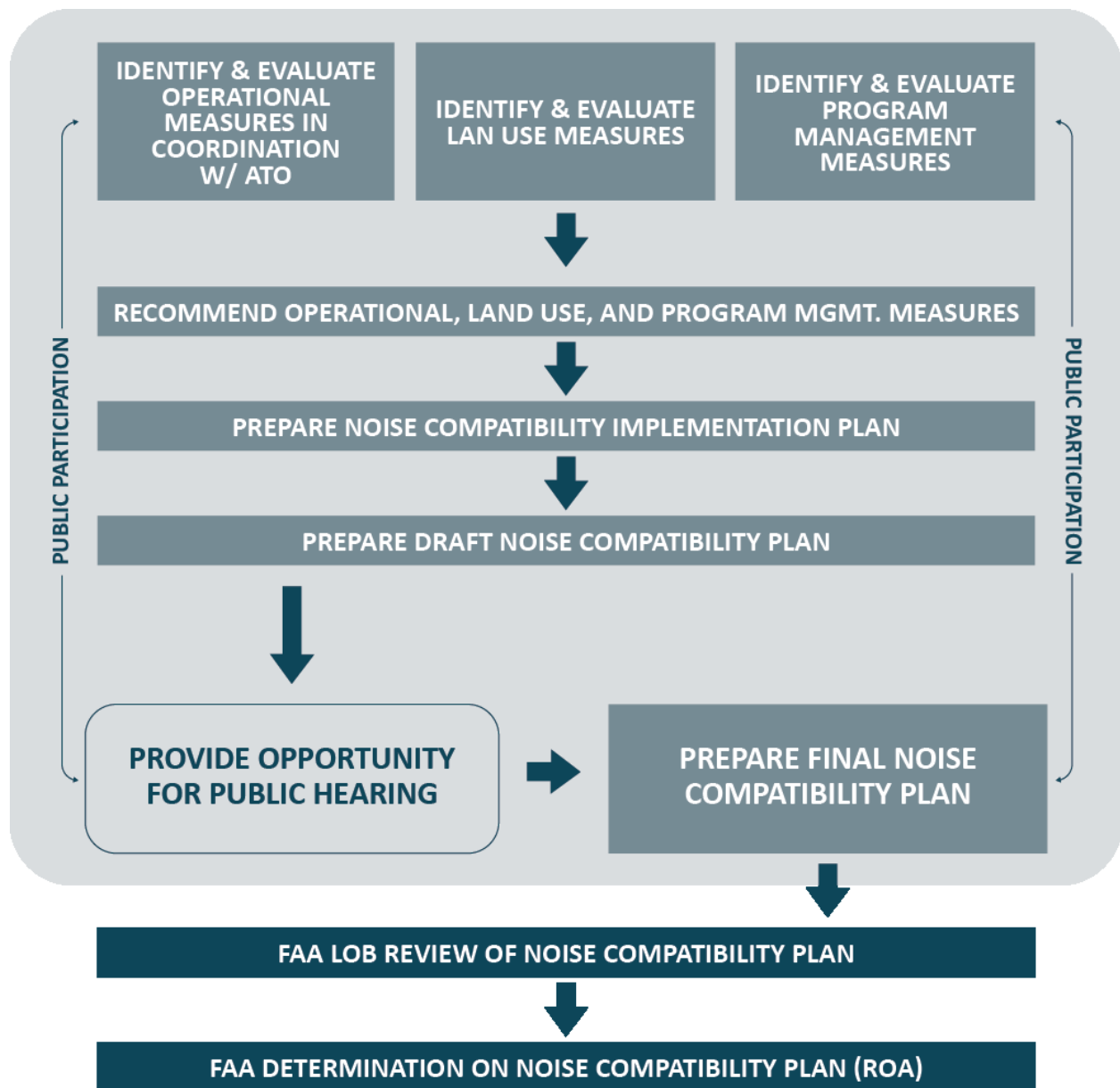
455 2.3.4.4 If during the forecast period of the NEMs or during implementation of the
456 NCP operation of the airport results in a substantial new noncompatible
457 land use or significant reduction of noise over existing noncompatible
458 uses, sponsors must prepare and submit a revised NEM, per Part 150
459 Sections 150.21(d)(1) and (2). See Section 7.25 of this AC for further
460 discussion on periodically reviewing the effectiveness of the NCP given
461 changes in the NEM.

462 2.4 **Preparing the Noise Compatibility Program.**

463 2.4.1 The flow chart in Figure 2-3 shows the NCP process. Preparing the NCP typically
464 begins by identifying and evaluating operational, land use, and program management

measures that might most effectively reduce impacts within the 65 DNL and the noncompatible land uses identified by the NEMs. Study of both operational and land use measures can start simultaneously, although it is sometimes necessary to evaluate land use after the operational measures. Operational measures, such as changes in flight tracks and arrival and departure tracks, have the potential to change the area impacted by noise and so the appropriateness of a related land use measure. Identification of program management measures, typically follows operational and land use measures. Part 150 Section B150.7 describes the types of operational and land use measures that sponsors must consider. Chapter 7, of this AC explains these further.

Figure 2-3. Noise Compatibility Program Process Flow Chart



476 2.4.2 Public participation is again required at this point in the process to receive input on the
477 measures being considered and to identify any other appropriate ones. From the list of
478 recommended measures, the sponsor can begin to prepare a draft NCP implementation
479 plan, which will also need to describe anticipated cost, funding source, and schedule,
480 and identify the entities responsible for implementing each recommended measure.

481 2.4.3 The draft NCP is then made available for review and comment by all interested parties
482 and sponsors must provide an opportunity for a public hearing even if one is not
483 requested. The final NCP takes into account relevant input received during the
484 consultation, public review of the draft NCP, and public hearings. It must include a
485 summary of comments received at the hearing as well as a copy of all written material
486 received during the preparation of the NCP. Written materials can include public
487 comments, study committee meeting summaries, and notes of consultation meetings.
488 The final NCP must include the sponsor's responses to, and disposition of, public
489 comments received during the Part 150 process on the formulation and adequacy of the
490 NCP. Chapter 5 of this AC discusses public involvement in more detail.

491 2.4.4 Sponsors send the final NCP to the FAA for its preliminary review to determine its
492 conformance to Part 150 requirements. If the NCP conforms, the FAA begins a final
493 review that is limited to 180 days. Review of changes to flight procedures (i.e., IFPs and
494 CVFPs charted in the FAA's Terminal Procedures Publication, or included in the ATCT
495 Standard Operating Procedures (SOP)) are exempt from the 180-day period and so may
496 be longer than 180 days. The review evaluates the NCP measures against Part 150
497 approval criteria, and the FAA issues a determination in the form of a ROA, that either
498 approves or disapproves the individual recommended elements of the NCP.

499 2.5 **NEM or NCP Submittals.**

500 Airport sponsors should submit NEMs and NCPs to the FAA with a cover letter that
501 indicates whether the NEM or NCP is being submitted for a formal FAA determination
502 or for informal review and advice. The submittals should also clearly indicate whether it
503 is an NEM, NCP, combined NEM and NCP, or an update and that it is the airport
504 sponsor's proposed program, not its consultant or other entity's.

505 2.6 **NEM or NCP Withdrawal or Revision.**

506 An airport sponsor that wishes to withdraw or revise the NEMs or NCP after submitting
507 it to the FAA for final review but before the FAA has issued a Federal Register Notice
508 must provide written notification to the FAA. Consultants or third parties cannot
509 provide this notice. Withdrawal of the NEMs will halt FAA review. For sponsors that
510 withdraw or revise the NCP, the FAA will stop its 180-day review. A new 180-day
511 period normally will begin with the submittal of the revised NCP.

2.7 **FAA Review and Determinations.**

2.7.1 The airport sponsor submits NEMs, an NCP, or both to the delegated ARP point of contact (POC) at the Regional Airports Division or the local ADO.

2.7.2 For NEM submittals, the FAA sends a letter acknowledging the receipt of the NEMs. The letter will also indicate whether the maps comply with Part 150 and if not, will identify the NEM deficiencies and required changes for resubmittal. For submittals that meet Part 150 requirements, the Regional Airports Division or ADO Manager will publish a notice of acceptance in the Federal Register along with information on where the public may review the maps and their associated documentation. These locations usually include the FAA Regional or ADO and the airport sponsor's offices.

2.7.3 For NCP submittals, the FAA's letter acknowledging receipt of the documentation and the start of its preliminary review to determine whether the NCP complies with Part 150 requirements. For NCPs that do not meet the requirements, sponsors are notified of the deficiencies and the revisions required. For the NCPs that meet the requirements, the FAA publishes a notice acknowledging this in the Federal Register and the start of the FAA's 180-day NCP review period. The notice announces the NCP's availability and invites the public to review and comment directly to the FAA at the beginning of the FAA's review period. This public review period lasts for 60 days. The FAA considers all comments from the Federal Register before issuing a final decision on the NCP.

2.7.4 The 180-day review evaluates whether the NCP meets the regulatory goal of reducing existing noncompatible land uses or preventing future land use noncompatibility. The Part 150 regulations require each recommended program measure to meet specific approval criteria (explained in Chapter 7 of this AC). Approved NCP items meet these goals and other Part 150 requirements. Sometimes, the approval is for parts, rather than the entire NCP measure.

2.7.5 The FAA issues its determination approving or disapproving each element of the NCP. If the FAA does not take action on the NCP within 180 days, it is automatically approved by law. The one exception is for decisions related to the use of flight procedures (i.e., IFPs and CVFPs charted in the FAA's TPP, or included in the ATCT SOP) for noise-control purposes, which may exceed the 180-day review. Part 150 Section 150.35 describes the FAA approval process. Chapter 8 of this AC explains in detail all of these activities in the review process.

2.8 **Implementation.**

2.8.1 Implementation should proceed in accordance with the schedule specified in the NCP implementation plan. For NCP items that anticipate AIP funding, sponsors should incorporate them into the airport's capital improvement program (CIP) and then submit

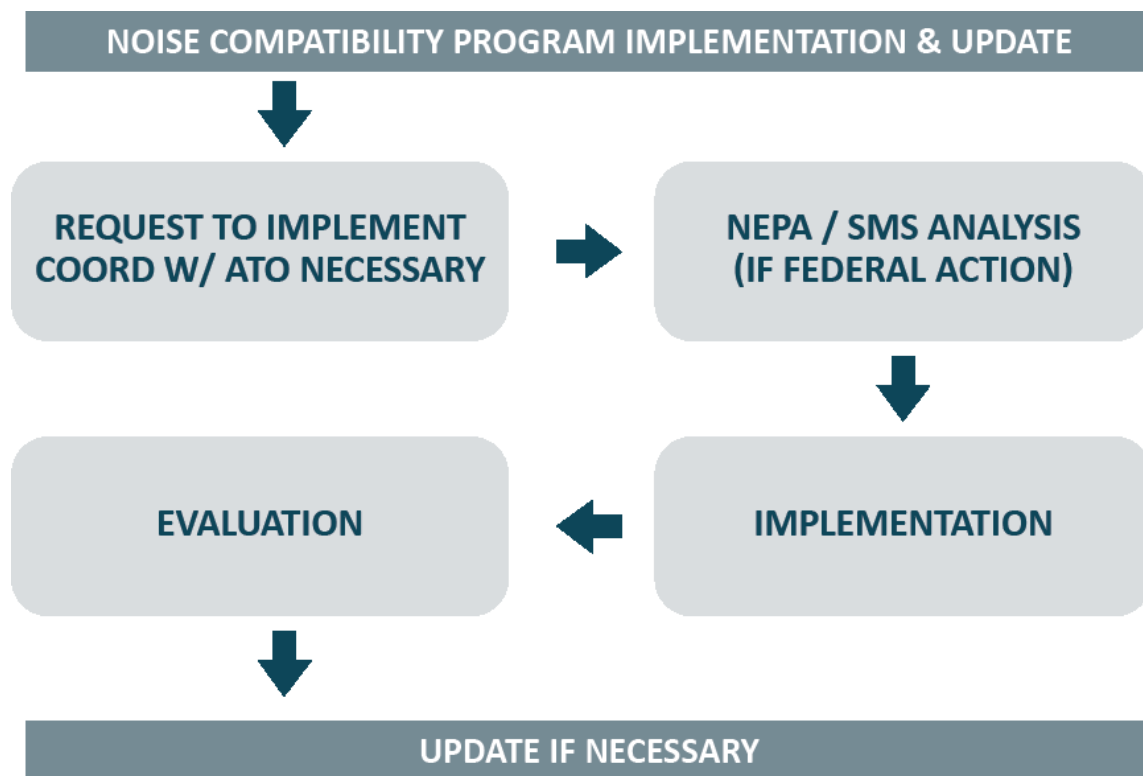
a grant application to the FAA for funding. Figure 2-4 presents the general process for implementation and update of noise compatibility programs.

2.8.2 The process of meeting necessary local government requirements to implement recommended land use changes should begin as soon as possible. These actions can require long lead times, and if land use controls such as zoning or overlay restrictions are not in place, additional noncompatible land uses can occur at any time.

2.8.3 Some recommended NCP measures may require a NEPA review and separate FAA actions before they can be implemented, such as approval of a change to the Airport Layout Plan (ALP), ATO charting of an IFP, and/or a new Letter of Agreement between the Airport and ATCT/TRACON and amending the ATC SOP. The NEPA process should be coordinated with the airport's ARP POC. The CIP and NCP implementation schedules and budgets should reflect any required NEPA processes.

2.8.4 Sponsors need to consider the staffing required to implement the NCP, assessing whether existing airport staff has the expertise and time to implement applicable parts of the NCP and if consultant assistance is needed. Airports often consider consultant assistance for NCPs that propose large sound insulation programs or complex noise monitoring systems. Airport management may find other NCP measures easy to implement. Chapter 9 of this AC explains in detail all these implementation activities.

Figure 2-4. Noise Compatibility Program Plan Implementation and Update



569 CHAPTER 3. RELATIONSHIP TO OTHER PLANNING

570 3.1 Introduction.

571 3.1.1 Part 150 studies represent one aspect of planning for the airport environment. Other
572 planning studies can influence a Part 150 study and vice versa. Furthermore, elements
573 of an NCP may generate a need for a NEPA analysis to implement some proposed
574 measures.

575 3.1.2 This chapter describes other studies to consider for integration with a Part 150 study
576 along with other ongoing planning efforts, including planning studies by other local,
577 state, and federal agencies.

578 3.2 Airport Master Plans.

579 Airport master plans are comprehensive studies of an airport's development needs for
580 three periods: short- (1-5 year), medium- (5-10 year), and long-term (10+ year). The
581 development needs are based on local, regional, and national economic factors,
582 including demographics, to derive operational forecasts for analyzing future demand. A
583 master plan identifies the cost and schedule of a wide range of capital improvements
584 needed to meet the anticipated demand for airport facilities. The environmental impacts
585 of these capital improvements, which includes noise, are assessed to varying degrees in
586 a master plan depending upon the study's complexity and budget and implementation
587 timeframes.

588 3.2.1 Conducting a Part 150 Study and a Master Plan Update Concurrently.

589 Some airport sponsors choose to conduct a Part 150 Study concurrently with a master
590 plan or master plan update. This enables a more comprehensive evaluation of the noise
591 impacts of proposed capital improvements. For example, if the master plan proposes a
592 near-term runway extension to meet aeronautical needs, the Part 150 Study might
593 include the proposed longer runway in the Future Condition NEM, determine its
594 associated noise contours, identify and quantify potential noncompatible land uses, and
595 possibly recommend operational noise abatement measures to include in the NCP.¹³
596 Whether an airport sponsor conducts a Part 150 study concurrently or within a close
597 timeframe with a master plan or update, it is important that the forecasts used are
598 consistent.

599 3.2.1.1 Benefits of Conducting a Part 150 Study and Master Plan 600 Concurrently.

601 Conducting a Part 150 study and a master plan concurrently provides
602 certain efficiencies when preparing baseline existing and forecast data. For

¹³ Concurrent preparation could provide the opportunity to analyze measures in the NCP to mitigate the projected noise impacts for the proposed airport layout plan (ALP) changes. Should the proposed ALP changes not receive NEPA approval in the form of a Finding of No Significant Impact (FONSI) or Record of Decision (ROD), the NCP measures could not be implemented in the Part 150.

example, up-to-date forecasts of aircraft operations, aircraft fleet mix, and daily aircraft operations are needed for both studies. Conducting the studies concurrently can avoid the cost of generating this type of data separately for each study. Both studies can also use a common set of forecast data, thereby avoiding the potential for conflicts and inconsistencies between the level of detail necessary for forecasts of the master plan and forecasts of the Part 150 Study.

3.2.1.2 **Scheduling Considerations.**

Conducting Part 150 studies and master plan concurrently can realize substantial benefits, but timelines for the studies can vary. NEM approval and NCP approval, as well as the additional steps required to implement some noise abatement or mitigation measures, require review periods that might not work with the schedule for the master plan/update or may not have the same forecast timeframes. The airport sponsor needs to consider whether these differences in review and approval timeframes are acceptable before undertaking the studies concurrently.

3.3 **Comprehensive Local Planning.**

Many counties, cities, and other municipalities prepare and regularly update comprehensive plans that provide a basis for long-range decision-making on issues such as land use, zoning, residential densities, and economic development. Comprehensive plans specify community goals and objectives for managing future growth and promoting desired outcomes.

3.3.1 Coordinating a Part 150 Study and Comprehensive Planning.

The Part 150 regulation requires airport sponsors to consult with public agencies and planning agencies if their area of jurisdiction is wholly or partially within the DNL 65 dB noise contour depicted on the NEMs. Airport sponsors who wish to adopt a noise level of less than DNL 65 dB as the basis of land use compatibility planning must work with local municipal jurisdictions with land use authority within that contour, since they are the ones ultimately responsible for making changes to their ordinances.¹⁴ Local comprehensive plans can be a key source of data for future land use plans, future zoning, and planned residential densities when analyzing the Future Condition NEM. Conversely, data produced by the Part 150 Study, such as the size, shape, and degree of noise generation, can be extremely useful to the development of a comprehensive plan or a noise overlay district (see Section 7.18 for a discussion of zoning restrictions).

¹⁴ Land use compatibility determinations contained in [Table 1 of the Part 150 regulations](#) “do not constitute a Federal determination that any use of land covered by the program 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.”

Therefore, close coordination of information from each effort is important to the success of the other.

3.3.1.1 Consultation with Local Planning Agencies.

Airport sponsors are required to consult with local land use planning agencies with jurisdiction over the land use within the DNL 65 and higher dB noise contour (or a lower standard if adopted). Consultation may involve multiple jurisdictions. This helps ensure that the recommendations of the Part 150 Study are consistent with the local agencies' comprehensive plans, goals, and objectives. This consultation should take place at the start of the Part 150 Study during data collection and continue during the Part 150 Study's development. Chapter 4 of this AC describes study committees and other consultation venues.

3.3.1.2 Following Up with Local Planning Agencies.

Once the FAA approves the Part 150 Study, airport sponsors should follow up on a regular basis with local planning agencies to make sure the measures affecting local comprehensive plans recommended by the Part 150 Study are incorporated into the next local land use plan update. This is especially important for elements of the Part 150 Study related to land use and zoning, which require approvals from one or more political jurisdictions.

3.4 Part 161 Studies.

3.4.1 Airport Noise and Capacity Act.

In November 1990, the U.S. Congress enacted the Airport Noise and Capacity Act (ANCA) (recodified in 1993 at 49 U.S.C. Sections 47521-47533). ANCA directed the FAA to establish a national program to review noise and access restrictions on aircraft operations that are proposed by airport sponsors. The law also mandated phasing out after December 31, 1999, the operation of Stage 2 aircraft weighing more than 75,000 pounds, and after December 31, 2015, operation of Stage 2 aircraft less than 75,000 pounds.

3.4.2 Title 14 CFR Part 161.

In carrying out ANCA's directive, the FAA published Title 14 CFR Part 161 (Part 161), Notice and Approval of Airport Noise and Access Restrictions. Part 161 implements the law's requirements for any newly proposed or modified airport noise or access restrictions that affect the operation of Stage 2 or Stage 3 aircraft, regardless of aircraft weight. For a Stage 2 restriction, Part 161 requires airport sponsors to provide notice of the proposed restriction and provide an analysis before implementing it. For a Stage 3 restriction, Part 161 requires sponsors to provide notice of the proposed restriction and provide an analysis, as well as seek FAA approval before implementation. The FAA will review and comment on appropriate elements of the analyses, including whether the proposal may impact the airport sponsor's grant assurances, and will determine

whether the airport sponsor has met Part 161 requirements for restriction proposals. For Stage 2 and Stage 3 restriction proposals, the required analyses must include noise contours prepared in accordance with Part 150 map analysis criteria (see Part 161 Sections 161.9 and 161.11).¹⁵ Studies of Stage 2 and Stage 3 restriction proposals must include analysis of nonrestrictive and restrictive alternatives the airport sponsor considered and provide a broad notice and consultation process.

3.4.3 Incorporating the Part 161 Analysis in a Part 150 Study.

The Part 161 regulation allows airport sponsors considering a noise or access restriction to incorporate their Part 161 analysis as an element of a Part 150 study (see Part 161 Sections 161.211 and 161.321). This gives the FAA the opportunity to review the proposal for compliance with grant assurances and other federal laws. The Part 150 regulations recommend including a discussion about possible Stage 3 noise restrictions in the Part 150 NCP. NCP approval is not the same as a Part 161 approval, and therefore needs additional FAA analysis to complete the Part 161 process.

3.4.4 Part 161 Studies and Federal Funding.

3.4.4.1 Part 161 studies can be eligible for federal funding through the AIP or with PFCs if they are conducted as part of a Part 150 study. A Part 161 analysis can be eligible as a Part 150 study measure if it meets these three conditions:

- The airport sponsor's NCP recommends further study of a noise compatibility problem through the Part 161 Study that the Airport Sponsor cannot address in the Part 150 Study.
- The measure meets Part 150 approval criteria and is approved under Part 150 for further study.
- The Part 161 analysis is incorporated into a Part 150 Study update under either of these two conditions.
- After the airport sponsor completes all of the applicable Part 161 requirements (including FAA approval for a Stage 3 restriction proposal).

¹⁵ All Stage 2 airplanes have been banned from the U.S. fleet as of December 31, 2015. ANCA mandated that after Dec. 31, 1999, no person may operate a civil subsonic turbojet airplane certificated at more than 75,000 pounds in the contiguous U.S. unless it meets Stage 3 noise levels. The 2012 FAA Reauthorization, which phased out Stage 2 airplanes of 75,000 lbs or less, used the same language. Airplane means an engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings (see 14 CFR 1.1). Section 172 of the 2018 FAA reauthorization allowed for limited use of Stage 2 aircraft under certain circumstances but no qualified applicants have expressed interest in this to date. The phase out did not apply to helicopters, because they do not meet the regulatory definition of an airplane. Aircraft means a device that is used or intended to be used for flight in the air (see 14 CFR Section 1.1) and thus helicopters are aircraft. ANCA/Part 161 applies to restrictions on Stage 2 or Stage 3 aircraft. Although there were separate processes for adopting certification standards for helicopters and fixed-wing airplanes, both include classifications for Stage 2 or Stage 3.

- By following the same public notice and comment opportunity procedures required for an initial study in Part 161 Section 161.211 for a Stage 2 restriction proposal, or Part 161 Section 161.321 for a Stage 3 restriction proposal.

3.4.4.2 A Part 150 study does not have to be conducted before a Part 161 analysis, nor is federal funding required to conduct a Part 161 analysis. Airport sponsors should be aware, however, of the stringent requirements of Part 161 and should consider the assistance of consultants and legal counsel before undertaking one, whether as an independent Part 161 analysis or as part of a Part 150 study.

3.5 NEPA Environmental Analysis.

Some proposed noise abatement measures require compliance with NEPA before they can be implemented. Examples include changes to flight procedures or certain changes to an airport layout plan. When direct federal action or federal approvals are implicated, the noise abatement measure may not be implemented until after the FAA has complied with NEPA.

3.5.1 NEPA Requirements.

NEPA requires an environmental analysis and supporting documentation to determine whether a federal action has the potential to significantly impact the human or natural environment. FAA Order 1050.1, *Environmental Impacts: Policies and Procedures*, implements the provisions of NEPA for FAA actions. FAA Order 5050.4, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, provides specific guidance for FAA actions pertaining to airports. Depending on the scale of the project or operational action and its potential for causing significant environmental impacts, NEPA environmental documentation may involve a Categorical Exclusion (CatEx), an Environmental Assessment (EA) and subsequent Finding of No Significant Impact (FONSI), or an Environmental Impact Statement (EIS) and its Record of Decision (ROD).

3.5.2 Environmental Documentation.

3.5.2.1 Approval of an NCP measure under Part 150 means that the measure meets Part 150 criteria, including reducing and/or preventing noncompatible land uses (see Part 150 Section 150.35 for a detailed description of Part 150 approval criteria). The approved NCP is considered an airport land use compatibility planning document. All measures implemented using federal financial assistance (i.e. AIP grants or PFC) will require compliance with NEPA. Approved NCP measures may require environmental evaluation before implementation. For example, if constructing a noise barrier requires a change to the ALP, and that change to the ALP is one over which the FAA has approval authority, the NEPA process must be completed and the change to the ALP approved (which is a federal action) before implementing or receiving a federal

grant for the measure. Any change to IFPs, visual flight tracks at towered airports and other air traffic management (i.e., ATC) practices, including those designed to reduce noise, requires environmental evaluation. The ROA from FAA that approves or disapproves measures will indicate what measures require additional analysis before implementation. FAA Order 1050.1 describes the policies and procedures for environmental actions, while FAA Joint Order 7400.2, *Procedures for Handling Airspace Matters*, provides guidance on the ATO actions requiring environmental assessment or documentation.

3.5.2.2 Combining an EIS or EA with a concurrent Part 150 update can be challenging because these studies look at different factors. Part 150 asks whether there is a noncompatible land use, while NEPA documents look at whether a particular project will result in a significant noise impact. For NEPA, a significant impact is a 1.5 DNL increase inside the 65 DNL noise contour. The Part 150 study concerns when the noncompatible land use is located inside the 65DNL dB or higher noise contour.

3.5.2.2.1 Incorporating a Part 150 Study Data into Associated Environmental Documents.

Information from a Part 150 study, such as noise contours and land use data, can be used to supplement the noise section of environmental documents¹⁶ if operational assumptions, baseline data, and forecasts remain valid. Since this shared use can reduce the complexity and cost of environmental documentation, it is encouraged whenever possible. For sharing forecasts, however, airport sponsor's forecasts for a Part 150 Study need to be reasonably consistent with the Terminal Area Forecast (TAF) in accordance with FAA Advisory Circular 150/5070-6, *Airport Master Plans*, before they can be used for NEPA studies. To be certain about what information can be shared across different studies, it is best to consult with the ARP POC.

3.5.2.2.2 Part 150 Study Mitigation and NEPA Projects.

- Airport development NEPA documents will include appropriate mitigation for a proposed project's environmental impacts. For noise

¹⁶ Be cautious when combining an EIS or EA with a Part 150 update. There are essentially two different standards/thresholds for noise. The FAA's significant noise threshold under NEPA is a 1.5DNL increase inside the 65 DNL noise contour. The Part 150 regulations consider land use compatibility related to the DNL 65 dB noise contour, not significance of noise impacts. In addition to these basic differences, the timeframe of existing and future years differ in the NEPA and Part 150 contexts. The existing condition is not a concept used in the NEPA context, but is generally incorporated into the concept of the "affected environment" as defined in the NEPA regulations. FAA's practice for NEPA purposes is to define the affected environment based on the last 12 consecutive months of available data, while the future condition under FAA's NEPA implementing instructions is the year in which the proposed action is in place and operational. In the NEPA context, another future year, generally 5 to 10 years beyond the project's first year of operation may also be assessed. In Part 150, the existing condition is generally based on the last 12 consecutive months of data, while the future condition is at least five years from the existing condition year.

impacts, the NEPA document should include commitments to mitigate significant noise impacts. In addition to mitigation to reduce noise impacts the NEPA document can commit to examining noise mitigation options beyond those included in the NEPA document and FONSI/ROD or EIS/ROD. If a NEPA document for an airport development project identifies specific noise mitigation measures to address impacts of the airport development project, implementation of those specific noise mitigation measures can be included as a condition of approval in the EIS/ROD or FONSI/ROD for the airport development project. If the airport development NEPA document identifies a commitment to examining additional noise mitigation through a Part 150 study or study update, the ROD or FONSI/ROD for the airport development project can commit to such a study, but cannot commit to specific Part 150-related noise control measures that have not yet been identified or evaluated in a Part 150 study. Without this evaluation, it is not known whether the measures are feasible or would meet Part 150 program approval criteria. See Section 3.2 for information on preparing concurrent Part 150 and master planning studies.

- After a Part 150 study is completed, NEPA and special purpose laws such as the National Historic Preservation Act may require the FAA and/or airport sponsor to take additional actions to comply with these statutes prior to implementation of noise mitigation measures approved through the Part 150 process. This may include coordination with other agencies, such as a state historic preservation office, preparation of further studies, additional public outreach, or other statutory compliance requirements.

3.6 State Land Use Planning Processes.

3.6.1 Specific State Requirements.

Airport sponsors and their consultants should refer to the land use planning processes that can be obtained from their state's Department of Transportation websites. These websites often discuss the authorizing legislation and associated regulations and provide guidance on the planning processes. Certain states, such as California, have specific requirements for land use planning around airports. The goal of these planning processes is to improve and maximize the compatibility of surrounding land uses with airport operations. Consult and coordinate data from these state planning processes when undertaking or updating a Part 150 study. Note that a land use measure not approved under Part 150 may be implemented outside the Part 150 requirements.

3.6.2 Local Political Jurisdiction's Action.

The Part 150 Study process requires sponsors to consult with the jurisdictions and land use authorities within the appropriate NEM contour area. Working with these entities ensures that land use recommendations resulting from a Part 150 study are considered

821 for incorporation into local land use plans and implemented if possible. The reluctance
822 of local jurisdictions to implement recommended land use measures is a major cause of
823 continuing airport noise compatibility issues. Inadequate state and local measures could
824 allow noncompatible development within the noise contour and render the new
825 development ineligible for federal funding for sound insulation. See Section 7.6 for
826 further discussion.

CHAPTER 4. PUBLIC PARTICIPATION AND CONSULTATION PROGRAM

4.1 Introduction.

4.1.1 An important part of a successful Part 150 study is adequate and meaningful participation by a wide range of potentially affected parties, as required by 14 CFR Part 150 Sections 150.21(b) and 150.23(c)-(d). Public participation helps educate the interested and potentially affected parties about technical and policy issues. These issues may include the FAA's role in the Part 150 process and approval requirements, national transportation policy, air traffic control, existing and forecast noise, changes in airport operations and aircraft types, local land uses, individual property rights, personal annoyance, and regional economic activity. A successful public participation program will promote sharing information among the airport sponsor, airport users and tenants, local land use jurisdictions, potentially affected property owners, elected and appointed public officials, and the general public. The public participation program should include these elements:

- A clear set of goals and objectives.
- An understanding of the “public” to be reached—its characteristics (culture, language and other demographics) and any information on how airport operations may affect its interests.
- A description of the program's general strategies and techniques.
- Clear responsibilities that identify the authority of consulted parties during the Part 150 Process.
- Explanations of how the public participation program will aid the decision-making process.
- Mechanisms for review and feedback from the public as the Part 150 Study proceeds (see Figures 2-1 through 2-3).

4.1.2 Section 150.21(b) of Part 150 requires that the airport sponsor afford state and local agencies, aeronautical users, and the public with an opportunity to submit their views, data, and comments about the correctness and adequacy of the draft NEMs, descriptions of forecast aircraft operations, and formulation and adequacy of the NCP. Part 150, Section 150.23(d), specifically requires notice and an opportunity for a public hearing on the NCP.

4.1.3 To demonstrate compliance with the regulatory requirements, participation program must be visible. That is, the focus of public participation would be on exploring options and respectfully responding to public concerns rather than focusing on a particular measure or implying that decisions have already been made about mitigation measures. A successful program is essential to public acceptance of technically correct and generally acceptable solutions to airport-specific noise compatibility issues. This involvement must be documented, and it must start early in the Part 150 process. Advisory Circular 150/5050-4, *Community Involvement in Airport Planning*, provides

guidance for community involvement during airport planning. The following sections discuss public participation for standard Part 150 studies. The Community Involvement AC, however, will likely be the main resource to refer to when planning the process.

4.2 **Consultation and Public Participation.**

An effective public participation program provides interested parties with an early opportunity to review draft products and provide comments before major decisions are made. The Part 150 Study development should identify a comprehensive public participation program as an early priority, and begin consultation with the required parties during the development and preparation of the NEMs and NCP.

4.2.1 NEM Consultation.

NEM consultation involves government agencies and airport users, whereas public participation involves the public. This involvement comprises creating real opportunity for the public's timely and meaningful review of, and input on, the correctness and adequacy of the NEM and descriptions of forecast aircraft operations at the development stage, as required by Part 150 Section 150.21(b). Documentation of the public participation efforts is required, as the FAA cannot accept an NEM without this opportunity for the public to review and comment on it.

4.2.2 NCP Public Involvement.

4.2.2.1 The public also needs the opportunity to review and provide input on the formulation and adequacy of the NCP. Part 150 Section 150.23(d) requires providing the public the opportunity to actively and directly share its views, data, and comments on the formulation and adequacy of the program, as well as response to comments. Although a public hearing is not required unless specifically requested after notifying the public of this opportunity to participate in the process, it often makes sense to conduct a public hearing before completing and sending an NCP to the FAA.

4.2.2.2 When the potentially affected parties become involved before major decisions or commitments are made, the study team can better address issues of community concern. Failure to involve all appropriate interested parties at an early stage in the study can lead to misunderstanding, mistrust, and potentially jeopardize FAA's ability to review and approve materials.

4.3 **Identification of Interested Parties.**

Part 150 Sections 150.21(b) and 150.23(c) and (d) require that sponsors to consult with the following parties during the Part 150 process:

4.3.1 FAA Officials.

Examples of FAA officials to include in the Part 150 process are FAA Regional Airports Division Offices, FAA Airports District Offices, Airport Traffic Control

904 Towers, Terminal Radar Approach Control Facilities (TRACONs), FAA Service
 905 Centers, and Flight Standards and ATO Flight Procedures Offices. FAA participation
 906 from the outset will help ensure proposed operational noise abatement measures are
 907 operationally feasible and consistent with current laws, regulations, and policies. FAA
 908 tower staff as well as FAA Airports Regional and District Offices should be actively
 909 engaged on a regular basis.

910 4.3.2 State Officials.

911 Examples of state officials to involve in the Part 150 process include state DOTs or
 912 aviation offices.

913 4.3.3 Public Agencies and Planning Agencies.

914 This group specifically includes those agencies that have jurisdiction over any area
 915 depicted on the NEM that is within the DNL 65 dB and greater contours.¹⁷ City
 916 Planning Departments, County Planning Departments, and Metropolitan Planning
 917 Organizations are typically involved.

918 4.3.4 Other Federal Officials.

919 This group includes those officials having local responsibility for land uses depicted on
 920 the NEMs. For example, Part 150 studies have involved the National Park Service,
 921 Bureau of Land Management, U.S. Forest Service, and branches of the U.S. military.

922 4.3.5 Regular Aeronautical Users of the Airport.

923 This group may include fixed base operators (FBOs), airlines, airport businesses,
 924 corporate aviation interests, general aviation pilots, cargo operators, and other affected
 925 airport tenants. For all airports, to the extent needed, consult with aircraft operators and
 926 air carriers at the airport. The most efficient method for contacting air carriers during
 927 the study process is to contact the airline's airport affairs committee at the airport. If one
 928 does not exist, contact the airport affairs, properties, or corporate real estate manager for
 929 each carrier.

930 4.3.6 The General Public.

931 4.3.6.1 This group includes those that have indicated their interest or are located
 932 within the NEM contours and may be affected by the outcome of the Part
 933 150 Study.

934 4.3.6.2 Identifying potentially affected property owners can be accomplished
 935 through a review of local tax maps or similar ownership documents.
 936 Identifying others interested and potentially affected often requires
 937 publishing notices and newspaper advertisements, establishing a study
 938 web-page, and conducting an initial orientation meeting to present the
 939 purpose and nature of the study as well as the supporting public

¹⁷ If the local jurisdiction identifies noncompatible land uses in areas exposed to less than DNL 65 dB, consult with parties within the expanded DNL contour.

940 participation program. The meeting can explain how members of the
941 interested public can take part in the study.

942 4.3.6.3 Potential participants can generally be identified through consulting with
943 airport staff, reviewing local, state, and federal agency records to identify
944 the parties with jurisdiction, and reviewing lists of airport tenants and
945 users groups such as FBOs and airlines.

946 4.3.6.4 The FAA does not consider the Part 150 consultation flawed if parties
947 decline to participate, as long as there is evidence in the NEM and NCP
948 documentation they were extended adequate opportunity to participate.
949 Unanimity of opinion is also not required, as long as there was adequate
950 opportunity for meaningful participation to all interested parties.

951 4.3.6.5 The airport sponsor is responsible for selecting the final NCP measures
952 submitted to the FAA for consideration and is not required to include
953 measures proposed during the consultation or public participation
954 processes. When measures are not included, however, failing to
955 adequately explain and document to the public why these were not
956 included may cause public dissatisfaction with the process and outcome.

957 4.4 **Types of Public Participation.**

958 Rather than specify any type of public participation programs, Part 150 allows sponsors
959 the flexibility with how to meet general consultation/public participation requirements.
960 Depending on the location and size of the study area and the complexity of the issues
961 involved, a public participation program can feature one or more of the following
962 methods.

963 4.4.1 Large Group Public Meetings.

964 Two types of large group meetings are commonly used for public participation.

965 4.4.1.1 **Formal Meetings (Hearings).**

966 4.4.1.1.1 Sponsors must hold a formal public hearing before submitting the NCP to
967 the FAA if they received a request for one after publishing the required
968 notice and opportunity for a public hearing (Part 150 Section 150.23(d), as
969 amended September 24, 2004). FAA recommends holding the meeting at
970 least 30 days after the date the notice is advertised. The traditional public
971 hearing setting provides individual speakers an opportunity to present their
972 comments.

973 4.4.1.1.2 This approach is generally not a good forum for a debate or continuing
974 discussion of issues and alternatives due to the somewhat inflexible
975 format. It is best held after informal meetings have taken place and many
976 preliminary issues have already been resolved. One advantage of formal
977 hearings is that they are normally recorded verbatim or transcribed by a

978 stenographer, and the information presented is documented in the NCP.
979 This allows participants to contribute opinions to the official record of the
980 project, which is considered in the FAA’s review.

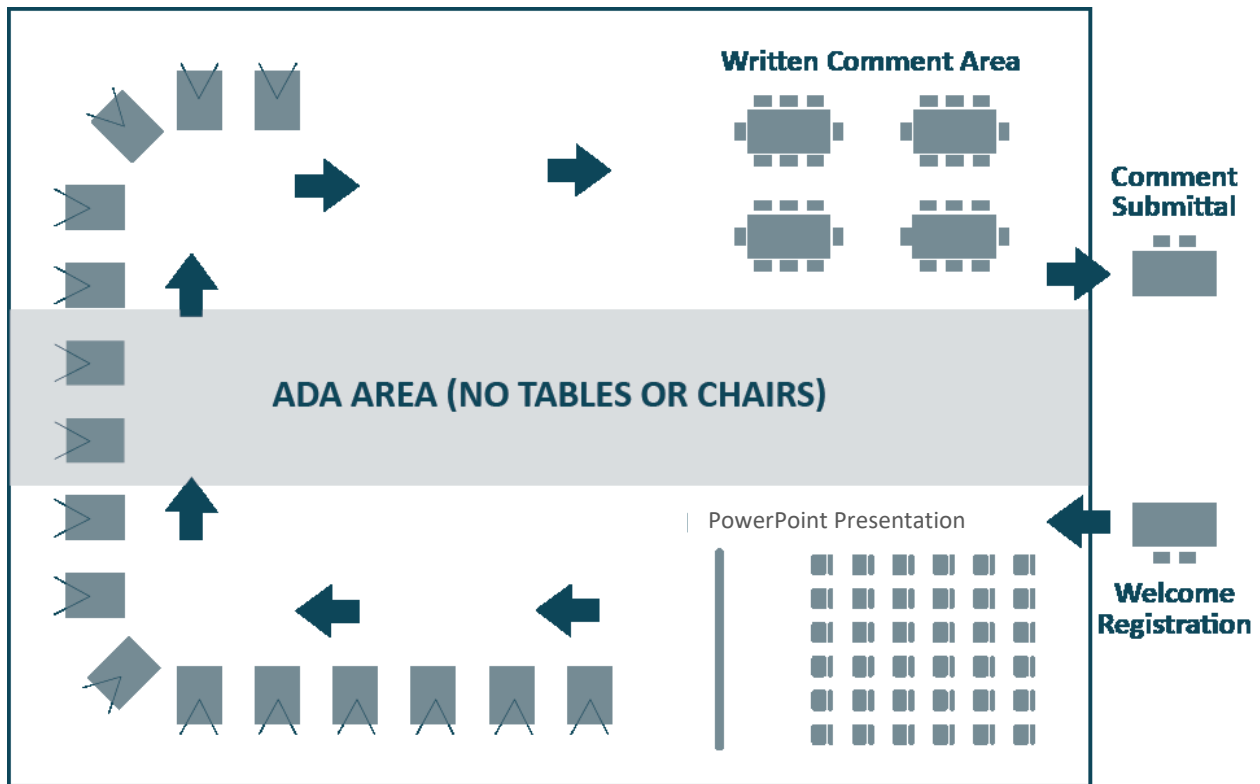
981 4.4.1.1.3 Regularly scheduled local government meetings that have an agenda item
982 for the Part 150 Study do not meet the requirements for a public hearing.
983 More details on Public Hearings are in Section 4.6.

984 4.4.1.2 **Informal Meetings.**

985 4.4.1.2.1 An open house format often works best for a public information meeting.
986 A useful strategy is to offer a combined public meeting and hearing, in
987 which the hearing area is held in a different room from, but in the same
988 location as, the information meeting area, and both run concurrently.
989 Specific room arrangements vary depending on the meeting’s goals, but
990 all must accommodate the needs of persons with disabilities.

991 4.4.1.2.2 Figure 4-1 shows a typical layout for an open house meeting. In this
992 format, “information stations” arranged throughout a room or building
993 provide poster boards or handouts with information on specific topics of
994 interest. Part 150 Study team members stationed around the information
995 boards listen to attendees’ concerns and answer questions. This is a very
996 effective method to engage interested parties, provide specific
997 information, solicit public opinions, and identify additional alternatives.

998 4.4.1.2.3 A key component of this approach is careful documentation of individual
999 discussions so that their results are not lost as the workshop proceeds. It is
1000 usually helpful to use a team of more than one staff person at key
1001 information sessions so one person stays engaged with members of the
1002 public while the documents key points discussed. Another effective place
1003 to collect information is a “sign in” station where people can also leave
1004 written comments. Sign-in sheets and comments received are subject to
1005 release under the Freedom of Information Act.

Figure 4-1. Example of Public Information Meeting Room Layout

Note: ADA indicates Americans with Disabilities Act.

4.4.1.2.4 The number of public information meetings to hold during the Part 150 process can vary depending on the complexity of the Part 150 study and public interest. Public meetings are typically scheduled in the evening to provide the best opportunity for people to attend and maximize potential attendance. Public meetings should avoid conflicts with events that may engage a large part of the public, such as holidays or other significant local government meetings. In some cases, such as when a significantly large elderly population is involved, it may be necessary to schedule meetings in locations and at times that accommodate special needs. In other cases, minority and/or low income communities in the impact area required special outreach considerations such as translation services (see AC 150 5050-4A, *Community Involvement in Airport Planning*). Or, it may be necessary to hold meetings in more than one location to provide adequate geographic coverage and easy access.

4.4.1.3 **Committees or Task Forces.**

Consultation and review by the interested public are often accomplished through Part 150 Study committees or task forces. Examples of committees or task forces that sponsor should consider to facilitate the public participation program include a Technical Committee (TC) and a Citizen's Committee (CC). These are not necessarily a substitute for the

1029 consultation or public participation requirements, but another way of
1030 focusing on key concerns. Often a TC or CC is established before an NEM
1031 development starts, such as for a master plan (see AC 150/5070-6B,
1032 *Airport Master Plans*). In developing committees sponsors should be
1033 aware of potential bias, and consider committee representation that
1034 balances interests.

1035 4.4.1.4 **Technical Committee (TC).**

1036 The TC generally provides input and insight on technical issues. TC
1037 members typically have a high level of experience with some aspect of
1038 aviation or airport operations and are often major stakeholders in the
1039 airport's operation. The TC may include FAA experts from the Airports
1040 Program Office, Air Traffic Organization (ATO), airlines chief pilots, and
1041 aviation trade groups.

1042 4.4.1.5 **Citizen's Committee (CC).**

1043 The CC serves as an information exchange forum for a representative
1044 portion of the interested and potentially affected public. It acts as a conduit
1045 for information between the study team and the public at large. The CC
1046 often reviews the Part 150 study team's plans and proposals, interacts with
1047 and makes recommendations to the study team during the review, and
1048 provides its recommendations on the finished plan to the airport sponsor.
1049 As much as possible, CC membership should reflect all interested and
1050 affected parties.

1051 4.4.2 For Committees or Task Forces.

1052 4.4.3 When establishing a TC, CC, or other citizen participation committee, adequate
1053 representation from community and aviation groups should be afforded to the extent
1054 possible. In the interest of group efficiency and progress, however, it is not necessary
1055 that every citizen or aviation user that has expressed an interest in the study be a
1056 member of the committee(s). The size of both the TC and CC should be kept
1057 manageable.

1058 4.4.4 Both the TC and the CC are for informational purposes, they have no decision-making
1059 power of their own, and are not substitutes for providing notice/information to the
1060 general public. In establishing these committees, an airport sponsor does not delegate its
1061 authority and responsibilities to them. The specific roles of such committees should be
1062 clearly defined at the outset and carefully explained at the initial meetings to prevent
1063 later misunderstandings. For some issues, such as discussions of land use compatibility
1064 with respect to local zoning, it may be appropriate to combine the committees into a
1065 single group.

1066 4.4.5 Small Group Meetings or Briefings.

1067 Throughout the Part 150 study, small group meetings—with community boards, elected
1068 officials, civic organizations, and other interested organizations—can supplement large

1069 group public information meetings. These meetings provide opportunities for detailed
1070 discussions of both the Part 150 regulation and the specific airport Part 150 Study. They
1071 also allow study team members to learn about the range of public concerns.

1072 4.4.6 Public Awareness Information Programs.

1073 4.4.6.1 Many other communication channels can communicate information with
1074 the public about the Part 150 study, depending on the geographic area to
1075 be covered, the numbers of parties to be reached, the timeframe of the
1076 projected study, and the complexity or sensitivity of the issues involved:

- 1077 • Study mailing lists
- 1078 • Press releases
- 1079 • Fact sheets or flyers
- 1080 • Newsletters
- 1081 • Websites
- 1082 • Surveys
- 1083 • Telephone hotlines
- 1084 • Social media

1085 4.4.6.2 Whatever the communication, these public programs should clearly
1086 present information with a minimum use of technical jargon so that the
1087 targeted audience, usually the general public, can easily understand the
1088 information and the issues involved. A continuing component of the
1089 programs should be informing the public how they can become involved
1090 in the study.

1091 4.5 **Preparation of Public Participation Materials.**

1092 Before preparing materials to present to the public, it may be necessary to consider
1093 producing them in more than one language, just as an interpreter may be necessary to
1094 for public meetings and hearings. Census data for the area should be reviewed to
1095 understand the area's ethnic composition and whether a need exists for bi-lingual or
1096 multi-lingual materials. The language of the public participation materials often
1097 determines the overall layout and design of the materials. More important, identifying
1098 the language requirement of the study area reduces the potential for language problems
1099 or barriers and engenders respect and trust for the intended audience.

1100 4.5.1 Mailing Lists.

1101 Many Part 150 study teams develop a comprehensive mailing list and continually
1102 update it over the course of the Part 150 Study to ensure that all appropriate parties
1103 receive notices and other written materials. It is important to make the purpose and
1104 existence of the mailing known at the beginning of the Part 150 Study and throughout
1105 the process so that all parties who wish to participate can do so. Simply being on a

1106 mailing list and receiving periodic updates will satisfy many in the community. It is
1107 important that mailing lists be kept updated and accurate, and that the public understand
1108 the need to contact the study team when their information changes.

1109 4.5.2 Press Releases, Flyers, Fact Sheets, and Newsletters.

1110 Press releases, fact sheets, flyers, or newsletters should be concise and efficiently
1111 organized. They should use clear, simple language so as to be understood by a wide,
1112 diverse audience. It should provide the reader with a brief background on the Part 150
1113 Study, the process, and how far the study has progressed. Key issues should be clearly
1114 identified, using simple graphics to illustrate study areas, flight paths, noise contours,
1115 and other central elements. Written materials should consistently provide the reader
1116 with information on how to further participate in the Part 150 process. In general,
1117 newsletters and flyers should not exceed four pages; the longer it is, the less likely the
1118 public will read them.

1119 4.5.3 Poster Boards.

1120 Poster boards for public meetings should focus on individual key issues and clearly
1121 identify the topics. Multiple, simple posters are more effective than a single poster
1122 crowded with too much information. Titles should be large enough to be read from
1123 across the room, and text should be large enough to be read from five feet away. The
1124 suite of posters at any meeting should include one that describes the “Role of the FAA”
1125 in the Part 150 Study, and another that shows a timeline indicating the current status of
1126 the Part 150 Study and its relation to the overall schedule for developing the NEM and
1127 NCP documents.

1128 4.5.4 Websites.

1129 Project websites make information about Part 150 studies continuously available to the
1130 public. They can also help reduce the number of questions received by email and phone.
1131 As with other forms of presentation, websites should be kept simple, with the text
1132 focused on key issues, the graphics clear, and the site easy to navigate for finding
1133 information. The more detailed information can be provided with linked pages or
1134 downloadable documents, so that the basic website does not become overly crowded,
1135 which discourages use by the public. If a document will be posted on an FAA website,
1136 it must be meet the requirements of Section 508 of the Americans with Disabilities
1137 Act.¹⁸ States often have similar requirements.

1138 4.5.5 Surveys.

1139 Airport sponsors can use surveys to identify public attitudes and perceptions about
1140 issues associated with the Part 150 Process. They can be conducted by phone or mail,
1141 online, or through individual interviews or small group meetings. A well-designed
1142 airport survey can capture reliable and meaningful data to indicate the opinions of a
1143 broad component of the community. Surveys conducted by federal agencies or

¹⁸ More information is available at: <https://www.access-board.gov/ict/>.

1144 supported with federal funds require the Office of Management and Budget's approval.
1145 These surveys should be coordinated with the airport's ARP POC before pursuing it.

1146 4.5.6 Telephone Hotlines.

1147 Some airport sponsors have used telephone hotlines to provide information about Part
1148 150 Study progress, collect comments, and handle noise complaints. Comments
1149 received over a hotline can be incorporated into the Part 150's public participation
1150 program as part of the comment documentation. The effectiveness of a hotline highly
1151 depends on the communications skills of the staff operating it, and staffing it can
1152 require a substantial amount of time. However, hotlines can be a convenient way for
1153 citizens to participate in the Part 150 Study and an effective method to provide
1154 information about meetings and other public participation activities.

1155 4.6 **Public Hearing.**

1156 Part 150 Section 150.23(d) requires that NCP documentation include evidence that the
1157 airport sponsor provided notice and an opportunity for a public hearing before
1158 submitting the NCP to the FAA for approval.

1159 4.6.1 Overview.

1160 The public hearing process helps ensure the active and direct participation of the
1161 general public and of the parties identified in Part 150 Sections 150.21(b) (public
1162 consultation for NEMs) and 150.23(c) and (d) (public consultation as well as
1163 opportunity for public hearing for NCPs). Although Part 150 does not specify the timing
1164 of the public hearing, it does require that public consultation take place before
1165 submitting an NEM or NCP to the FAA. Some sponsors schedule a public hearing
1166 without waiting for someone to request one. It is best to conduct the public hearing
1167 when the NCP is in draft form and contains all the recommended measures for noise
1168 abatement (relating to aircraft operations), land use, and program management
1169 (administrative actions). This enables the public to comment on the plan in its entirety,
1170 avoiding potential confusion as to the proposed NCP measures.

1171 4.6.2 Notice of Opportunity for a Public Hearing.

1172 4.6.2.1 In order to demonstrate compliance with the requirement for a *Notice of*
1173 *Opportunity for a Public Hearing* the notice should appear in an area-wide
1174 or local newspaper(s) having general circulation in the communities
1175 surrounding the airport. The notice should contain the following
1176 information:

- 1177 • A statement that a Part 150 Airport Noise and Land Use Compatibility
1178 Planning Study is being conducted for [name the airport].
- 1179 • A concise statement that the hearing's purpose is to accept public
1180 comments about the NCP.
- 1181 • The locations and times where the draft NCP document will be
1182 available for public review before the hearing.

- 1183 • A web-site link if the NCP is posted on the airport sponsor’s website
1184 or on one developed specifically for the study.
- 1185 • A statement of procedures to request a public hearing.
- 1186 4.6.2.2 If no one requests a hearing, the airport sponsor must certify that the
1187 *Notice of Opportunity for a Public Hearing* was published and provide the
1188 documentation verifying this in the NCP.
- 1189 4.6.3 Notice of Public Hearing.
- 1190 4.6.3.1 If a public hearing is requested, or scheduled without a request, the airport
1191 sponsor should publish a “Notice of Public Hearing” containing the
1192 information listed in Section 4.6.2. This notice informs the public that a
1193 hearing will occur. The public notice should be advertised so it meets the
1194 state law or local ordinance for publishing legal notices. An affidavit of
1195 publication of the notice should be obtained from the newspaper(s) in
1196 which it was published and included in the final NCP.
- 1197 4.6.3.2 The airport sponsor should place copies of the draft NCP document in
1198 local libraries and/or other publicly accessible locations so that the public
1199 has a meaningful opportunity to review the document before the public
1200 hearing.
- 1201 4.6.4 Conducting the Public Hearing.
- 1202 A Presiding or Hearing Officer normally conducts the public hearing. There are no
1203 specific requirements for serving in this capacity. The Presiding or Hearing Officer for
1204 the hearing is responsible for the orderly conduct of the public hearing. A stenographer
1205 normally records or transcribes public hearings so an accurate record exists of all
1206 presentations and comments made during the hearing. Any person may submit oral or
1207 written statements and data about the Part 150 Study during the public hearing.
1208 Reasonable limits may be set on the time allowed for oral statements, and the
1209 submission of statements in writing may be required. The public comment period is
1210 typically extended after the public hearing (usually two weeks) to allow comments to be
1211 submitted to the airport sponsor.
- 1212 4.7 **Public Participation Documentation.**
- 1213 Accurate documentation of the public participation process is essential. Even though it
1214 is a required component of the final study, the public is more likely to accept the Part
1215 150 Study results when they see that community input and concerns were considered in
1216 the study process. The best practice for this ongoing task is to maintain a good record of
1217 public involvement and update the documentation regularly over the course of the Part
1218 150 Study rather than prepare it at the end of the process.

1219 4.7.1 Public Participation Program Report Appendix.

1220 4.7.1.1 Part 150 Section 150.21(b) requires the study's report to include a
1221 narrative description of the public consultation accomplished on the NEM
1222 and of the opportunities afforded the public to review and comment during
1223 the development of the NEMs. Similarly, Part 150 Section 150.23(e)(4)
1224 requires the study's report to include a narrative description of the key
1225 issues, public participation, and the consultation carried out for the NCP.

1226 4.7.1.2 These support items that should be included in the appendix:

- 1227 • Committee rosters
- 1228 • Committee meeting sign-in sheets and minutes
- 1229 • Legal notices and other advertisements
- 1230 • Newsletters
- 1231 • Presentations, handouts, and data from poster boards used at public
1232 information meetings or committee meetings
- 1233 • Sign-in sheets from public information meetings
- 1234 • Sign-in sheets and speaker registration cards from the public hearing
- 1235 • A transcript of the public hearing

1236 4.7.2 Summary of NEM Comments.

1237 There is no requirement in the Part 150 regulation for the sponsor to prepare responses
1238 to comments received from the public during the NEM preparation. FAA reviews the
1239 NEM documentation that must include a description of the sponsor's process to gather
1240 public input. The regulation requires that the written comments must be filed with the
1241 "Regional Airports Division Manager," since the ADO office has the responsibility for
1242 acceptance of the NEMs. The Federal Register Notice announcing FAA acceptance of
1243 the NEMs does not include a public comment period. In some cases, however, the FAA
1244 or the sponsor may receive comments. The sponsor should forward comments to the
1245 FAA, and the FAA will advise the sponsor to consider these comments in preparing the
1246 NCP (if an NCP is being prepared).

1247 4.7.3 Summary of NCP Comments.

1248 4.7.3.1 The sponsor is required to afford adequate opportunity for the active and
1249 direct participation of the public prior to, and during the development of
1250 the NCP. Part 150 Section 150.23(e)(7) requires that the documentation
1251 of the Part 150 Study include a summary of the comments received at its
1252 public hearing. A transcript, if prepared, should be included in the
1253 document. If verbal comments are transcribed at informal meetings, these
1254 should also be included along with all comments submitted to the airport
1255 sponsor and the airport sponsor's responses to and treatment of those
1256 comments, demonstrating the program is feasible, reasonable, and

1257 consistent with achieving the objectives of airport noise compatibility.
1258 There is, however, no requirement to respond directly to the
1259 commenter(s). This information must be filed with the FAA Regional or
1260 Airports District Office, usually as an appendix to the study. This
1261 requirement ensures that all parties are made aware of the information.

1262 4.7.3.2 The FAA publishes a federal register notice after it determines the NEM
1263 and NCP (if submitted together) conform to Part 150 requirements. The
1264 notice specifies a 180-day FAA review period for the NCP, which
1265 includes a 60-day public comment period within this review period. Under
1266 150.23(e)(7)), the airport sponsor is required to respond to all comments
1267 submitted by the public during this period and to provide all comments
1268 and the draft responses to the FAA. The FAA will review all comments
1269 and draft responses.

1270 4.7.3.3 Based on this review, the sponsor, in coordination with FAA, will
1271 determine if a revision to the NCP is required. If it does, the comments
1272 and associated responses should be included as an appendix in the final
1273 NCP. If the NCP does not require revisions, the sponsor shall respond to
1274 each comment and make the comments and responses available to the
1275 public on its website. A summary of the public input and a response can
1276 also be included in the FAA's ROA.

1277 4.7.3.4 The FAA publishes a federal register notice that announces the availability
1278 of the ROA. If public comments were received during the 60-day
1279 comment period and a revised NCP with the comments enclosed was not
1280 prepared, the ROA should briefly summarize the public comments
1281 received and appropriate responses to those comments. It is not
1282 recommended to include an attachment to the ROA with the comments
1283 and responses without first consulting with the airport sponsor.

1284 4.7.3.4.1 The notice of availability of the ROA does not include a public comment
1285 period for its review. However, in rare instances, the sponsor or the FAA
1286 may receive comments on the ROA. If this occurs, the FAA, or sponsor
1287 should respond to the commenter to discuss their comments and consider
1288 this input during implementation.

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1290 CHAPTER 5. PREPARING NOISE EXPOSURE MAPS

1291 5.1 Introduction.

1292 5.1.1 Noise exposure maps (NEMs) are a primary component of the Part 150 Study. Title 14
1293 Part 150 Section 150.21 and Appendix A describe the requirements for NEMs.

1294 5.1.2 The Noise Exposure Map comprises a set of scaled maps that show the airport, its noise
1295 contours (existing and forecast), and the surrounding area. The following supporting
1296 documentation must be included:

- 1297 • Existing condition aircraft operations as of the date of submission, based on the
1298 preceding 12-month period or preceding full calendar year.
- 1299 • Forecast aircraft operations at the airport, based on reasonable assumptions. The
1300 forecast year must be at least 5 years after the date the current conditions map is
1301 submitted.
- 1302 • Descriptions of each noncompatible land use as of the date the map submitted to the
1303 FAA.
- 1304 • An analysis of how forecast operations will affect compatibility and land uses
1305 depicted.

1306 5.1.3 Part 150 (Section 150.1) prescribes the procedures, standards, and methodology
1307 governing the development, submission, and review of NEMs. It prescribes single
1308 systems for completing the three central tasks required to develop NEMs:

- 1309 • Measuring noise at airports and surrounding areas. This measurement generally
1310 provides a highly reliable relationship between projected noise exposure and
1311 surveyed reactions of people to noise.
- 1312 • Determining exposure of individuals to noise resulting from operations at an
1313 airport.
- 1314 • Identifying the land uses that are normally compatible with various levels of
1315 exposure to noise.

1316 5.1.4 Appendix A of this AC provides information on the physics of sound, the effects of
1317 noise on people, and noise metrics.

1318 5.2 Creating Base Maps and Databases.

1319 5.2.1 Requirements.

1320 5.2.1.1 Part 150 Section A150.103(b)(1) requires NEMs to graphically depict the
1321 airport and its environs. The graphics must be of sufficient quality to
1322 display the information required on the NEMs so it is clear and easy to
1323 read. The maps must have an arrow indicating north, and they should be

- 1324 scaled no smaller than 1 inch to 2,000 feet (see Section 5.6.5), with the
1325 scale used indicated on the face of the maps.
- 1326 5.2.1.2 The following data and features must be graphically depicted to scale on
1327 the NEMs
- 1328 • Airport boundaries.
 - 1329 • Runway configurations and runway end numbers.
 - 1330 • Off-airport streets and other identifiable features.
 - 1331 • Land uses within DNL 65 dB and higher contours (it may be valuable
1332 to show surrounding areas outside the noise contours as well).
 - 1333 • Geographic boundaries and names of the surrounding cities, counties,
1334 and other jurisdictions that have the authority to plan and control land
1335 uses within the depicted noise contours (see Part 150 Section
1336 A150.105).
- 1337 5.2.1.3 Section A150.101 of Part 150 provides full descriptions of the information
1338 required to be on the NEM graphics.
- 1339 5.2.2 Geographic Information Systems (GIS).
- 1340 5.2.2.1 GIS mapping technology has greatly facilitated NEM development,
1341 making it easy to display data and geographic features. GIS technology is
1342 a useful tool for developing base mapping and delineating current land
1343 use, future land use, jurisdictions, zoning, population, housing, noise
1344 sensitive sites, historic buildings/sites, airport-related easements, and
1345 airport facilities/property.
- 1346 5.2.2.2 With a properly configured GIS database, the results of the analysis will
1347 be consistent and repeatable. Many sources of for GIS data are readily
1348 available online; for example, some counties may provide property zoning
1349 records as a public service. There are also many commercial GIS software
1350 packages of various levels of complexity that could be used for the Part
1351 150 Study.
- 1352 5.2.2.2.1 Estimating Population.
- 1353 The Aviation Environmental Design Tool (AEDT), the software system
1354 used for modeling aircraft noise, can import geographic data directly from
1355 the U.S. Census Bureau's TIGER/Line® Shapefiles along with population
1356 data, and then export the results for GIS.¹⁹ The Census Bureau organizes
1357 its data into geographic units called census blocks. The census block maps

¹⁹ After each census, the U.S. Census Bureau releases public “redistricting” data, referred to as Public Law 94-171 data, which is displayed in maps. Based on census data contributed by each state, these thematic maps show population changes, and may show voting districts, counties, cities, census tracts, and blocks. Participation varies by state.

1358 have the highest spatial resolution with which the Census Bureau
 1359 summarizes information. Often, several different land uses are contained
 1360 within the area that makes up a census block. However, even though the
 1361 population and household numbers are also summarized for each census
 1362 block, the maps do not show how the population is distributed across the
 1363 land uses. Caution is needed, therefore, when allocating the population to
 1364 different land uses within the census block.

1365 5.2.2.2.2 Identifying Jurisdictions.
 1366 The NEMs must clearly identify the jurisdictions within the noise
 1367 contours. If there are multiple jurisdictions or complex jurisdictional
 1368 boundaries, it may be beneficial to provide a supplemental graphic
 1369 illustrating the geographic boundaries and names of the jurisdictions
 1370 within the DNL 65 dB and higher contours that the airport sponsor must
 1371 consult.

1372 5.2.2.2.3 Presenting Results.
 1373 It is likely that analyses will be presented in both spatial (map) format, as
 1374 well as in tables. The NEM is a set of maps that visualize base map
 1375 geographic features (such as roads, runways, and rivers) and the census
 1376 data in question (such as population, land uses, and number of houses).
 1377 The mapped data are usually accompanied by tables that provide key
 1378 results in a readable format.

1379 5.3 **Identifying and Classifying Existing Land Uses.**

1380 5.3.1 Part 150 Section 150.11 requires that determination of land use must be based on
 1381 professional planning criteria and procedures utilizing the best practices in
 1382 comprehensive planning, master land use planning, zoning, and building and site
 1383 designing. Many systems are used in classifying land use. Part 150 does not require a
 1384 particular system; however, using the classifications in [Table 1 of the Part 150](#)
 1385 regulations will help align the final document with requirements needed for approval.
 1386 The FAA's land use compatibility guidelines contained in [Part 150 Table 1](#) are based on
 1387 Standard Land Use Coding Manual standards. Part 150 points out, however, that land
 1388 use designations by local authorities take precedent over federal determinations:

1389 [D]esignations contained in the table do not constitute a Federal
 1390 determination that any use of land covered by the program is acceptable or
 1391 unacceptable under Federal, State, or local law. The responsibility for
 1392 determining the acceptable and permissible land uses and the relationship
 1393 between specific properties and specific noise contours rests with the local
 1394 authorities. FAA determinations under Part 150 are not intended to
 1395 substitute federally determined land uses for those determined to be
 1396 appropriate by local authorities in response to locally determined needs
 1397 and values in achieving noise compatible land uses.

1398 5.3.2 The documents should identify noise-sensitive land uses in greater detail than non-
1399 noise-sensitive land uses. The NEM should distinguish noise-sensitive locations outside
1400 the 65 DNL noise contour from those that are within the contour and subject to noise
1401 exposure greater than 65 DNL.

1402 5.4 **Identifying Anticipated Changes to Existing Land Uses.**

1403 Many sources should be reviewed to determine potential future changes in land use that
1404 could cause conflicts between the airport and the surrounding communities—
1405 comprehensive plans, existing and future land use plans and maps, zoning maps and
1406 regulations, land development regulations, transportation plans, and development plans
1407 from jurisdictions near the airport. Information gained from this review will be used to
1408 develop the land use base map for the Future Condition NEM.

1409 5.5 **Collecting Historical Aviation Activity Data.**

1410 A minimum of 12 consecutive months of historical air traffic activity records is needed
1411 to accurately model existing noise exposure. This should be the most recent 12-month
1412 period before the study started. If there are exceptional circumstances, such as runway
1413 closure during this time, supplemental data can be used to create a representation of
1414 normal aircraft operations at the airport. See 5.5.3 Data Sources for examples of these
1415 alternate sources). If all the necessary data are not from the same source, it is important
1416 to ensure the data are consistent and presents an accurate picture of the aircraft
1417 operations at the airport over the 12-month period.

1418 5.5.1 Aviation Activity to Consider.

1419 The following types of aviation activity, for both fixed-wing and rotary-wing aircraft,
1420 should be included:

- 1421 • Passenger air carriers
- 1422 • Cargo air carriers
- 1423 • Air taxi
- 1424 • Charters
- 1425 • Helicopters
- 1426 • General aviation
- 1427 • Military aircraft.

1428 5.5.2 Data to Collect.

1429 Data to collect and analyze for the NEM:

- 1430 • Fleet mix (aircraft airframe and engine type).
- 1431 • Number and type of operations (e.g., departure, arrival, touch-and-go, and run-up).
- 1432 • Day/night runway utilization.

- 1433 • Origin/destination information to determine trip/stage lengths and estimated aircraft
1434 takeoff weights to determine profile stages.
- 1435 • Flight tracks and usage relevant to VFR and IFR usage, including approach and
1436 departure IFPs or CVFPs in the Terminal Procedures Publication. Also, identify any
1437 IFPs or CVFPs expected to be published or amended within the study interval.
- 1438 • Existing aircraft flight noise abatement operational measures.
- 1439 • Ground run-up and maintenance activities.
- 1440 • Relevant weather metrics.
- 1441 5.5.3 Data Sources.
- 1442 These sources can be consulted to obtain historical aviation operations data:
- 1443 • FAA Operations Network (OPSNET) is the official source of FAA air traffic
1444 operations counts at towered airports. Where the tower operates less than 24 hours
1445 daily, other sources are needed to supplement the tower counts.
- 1446 • Data from an airport or commercially operated flight tracking system, such as an
1447 Airport Noise and Flight Track Monitoring System or credible web-based services.
- 1448 • Reliable aircraft logs (such as landing fee reports or fuel sales records) kept by the
1449 airport sponsor, aircraft operators, or FBOs. To be useful, these logs need to record
1450 the aircraft make and model. Alternatively, the logs could record the aircraft
1451 registration number, which can be cross-referenced with the FAA aircraft registry
1452 database to determine aircraft make and model.²⁰
- 1453 • Completed IFR flight plan data, as made available through the FAA Traffic Flow
1454 Management System Counts (TFMSC) database on the [FAA's Aviation System
1455 Performance Metrics web site](#). IFR flight count, aircraft type data, time of day, and
1456 stage length (city pair) data are available for most airports, even if there is no air
1457 traffic control tower.²¹ IFR counts of jet and turboprop operations, once
1458 normalized, can represent the total operations of these aircraft types which normally
1459 operate on IFR flight plans.²² However, the IFR data will need to have estimates of
1460 VFR activity added to more accurately represent the full count of operations. For
1461 example, the IFR counts of piston aircraft will often be missing substantial
1462 operations, since these aircraft types often operate under VFR rules and so are not
1463 counted by the Traffic Flow Management System.
- 1464 • Observed activity (either in person or via recorded media) that logs aircraft make
1465 and model. Observed short-term activity can be converted into an annual count
1466 using a statistical sampling method (e.g., two weeks of observations in each of the

²⁰ Airline flight schedules are not normally an acceptable record of actual activity, since operations can vary substantially from the planned flight schedule due to airline network decisions.

²¹ Airport or consultant may request City Pair data from the ADO, or seek the requisite permissions on ASPM.

²² To normalize the jet and turboprop IFR count data, use the higher of the arrival or departure count by aircraft type and multiply by two. This accounts for IFR flights that are not included in the count, due to IFR flight plan cancellation to fly a VFR approach, or for aircraft that depart VFR and file a flight plan once airborne.

four seasons). This method is outlined in FAA Report FAA-APO-85-7, Statistical Sampling of Aircraft Operations at Non-Towered Airports.²³ Automated activity counters can be used if attached to visual systems that also capture aircraft registration numbers to provide sufficient information on aircraft make and model.

- Bureau of Transportation Statistics, Form 41, Schedules T-100 and T-100(f) databases are reliable indicators of airline activity. Alternatively, aircraft operator letters (e.g., passenger or cargo airline or charter operator) or written survey results that document existing levels of use by aircraft type can be used.

- Other recent studies accomplished specifically for, or relevant to, the airport with credible data sources.

- See Section 5.6.4 regarding release of flight track data, from which runway use is calculated.

5.5.4 Data Verification.

Data verification with ATC is recommended throughout the NEM development process to ensure the accuracy of NEM inputs at the time they are submitted to the FAA for a compliance determination.

5.6 **Developing and Depicting Existing Modeled Aircraft Flight Tracks.**

5.6.1 Flight tracks depict the paths of aircraft as projected on the ground for aircraft arrivals, departures, and touch-and-go operations. Calculating the annual average noise exposure, requires identifying the predominant arrival, departure, and training pattern flight tracks for each runway along with the number of each type of aircraft that used each runway and flight track. The dispersion around the predominant tracks can also be analyzed. These factors help determine the extent and shape of the noise contours and noise levels at noise-sensitive land uses.

5.6.2 How often aircraft use individual flight tracks depends on a variety of factors, including the use of IFPs, ATC instructions, the aircraft's origin or destination, aircraft performance, wind direction and other weather conditions, and any operational noise abatement measures.

5.6.3 Using Flight Track Data.

The use of flight track data, as collected by radar, multilateration, or ADS-B systems, for developing the modeled flight tracks is recommended as data is commonly available. An airport sponsor may obtain radar data from its own flight tracking system, FAA surveillance sources (see 5.6.2), or commercial sources. The resources needed to obtain flight track data and process it are factored into the study's schedule/scope.

²³ See also ACRP Report 129, Evaluating Methods for Counting Aircraft Operations at Non-Towered Airports, 2015, at: <https://www.trb.org/Publications/Blurbs/172335.aspx>.

1501 5.6.4 Release of FAA Surveillance Data.

1502 The release of FAA radar data,(also known as recorded National Airspace System
1503 (NAS) Data, is governed by FAA Order 1200.22, *External Requests for National*
1504 *Airspace System (NAS) Data*, which is outlined in the Office of Airport Planning and
1505 Environment (APP-400) memorandum “Requests for Release of FAA Recorded,
1506 Historical National Airspace System Data for Airport Planning and Environmental
1507 Studies” (January 16, 2015, or any later updates). The memorandum describes the
1508 process for airports to use in working with the Office of Airports to obtain recorded
1509 NAS data. FAA can only release surveillance data for civil operations, as Department of
1510 Defense (DOD) requirements restrict the release of surveillance data for military flights.

1511 5.6.5 Depicting Flight Tracks.

1512 5.6.5.1 Part 150 Section A150.101(e)(2) requires flight tracks for existing
1513 conditions be graphically depicted. Separate flight track graphics must be
1514 depicted for the forecast timeframe if they are different than the existing
1515 conditions. In the interest of NEM legibility, an acceptable option is to
1516 depict flight tracks on a separate map instead of on the Existing Condition
1517 and Future Condition NEMs. If there are numerous flight tracks, several
1518 runways, or both, the depiction of flight tracks may be produced on more
1519 than one graphic (for example, one for arrivals and another for
1520 departures).

1521 5.6.5.2 The regulation requires the documentation to show flight tracks out to at
1522 least 30,000 feet from the end of each runway or otherwise identify them
1523 on the maps to correspond to accompanying narrative and/or tabular
1524 descriptions. For example, identify flight tracks by arrival or departure,
1525 existing or proposed, and indicate any “bundled” tracks that represent a
1526 compilation of multiple tracks. Flight track maps must use the same land
1527 use base maps used for the Existing Condition and the Future Condition
1528 NEMs and must use the same scale. The maps should be scaled no smaller
1529 than 1 inch to 2,000 feet. At most airports, this scale will require a paper
1530 size that does not easily fit into the published document. This requirement
1531 may be met by including the large graphic in a pocket within the published
1532 document.²⁴ A smaller-scale version (with the scale shown) that fits on an
1533 11” x 17” or 8.5” x 11” page may be included as a supplemental graphic.
1534 Other graphics that are not required by regulation but are used to
1535 supplement your NEM documentation may use a smaller scale.

1536 5.6.5.3 Use of non-standard profile, stage lengths, or aircraft not included in the
1537 currently approved FAA model must be approved by FAA’s Office of

²⁴ An electronic copy may be submitted if it meets scale requirements and can be readily reviewed on a personal computer by interested parties; however, a full size hard copy is still required to be in the document.

1538 Environment and Energy and coordinated through the Office of Airport
1539 Planning and Programming (APP-420).

1540 5.7 **Forecasting Future Aviation Activity.**

1541 5.7.1 The forecast of airport and aircraft activity should be for a year that is at least 5 years
1542 from the year representing the Existing Condition NEM and be based on reasonable
1543 assumptions.

1544 5.7.2 The starting points for all towered airport forecasts is the latest published FAA TAF for
1545 the airport and forecasts from the most recent master plan. Regional planning bodies
1546 and state aviation agencies may also have conducted airport system planning studies
1547 that included forecasts of demand for the airport.

1548 5.7.3 Using FAA's TAF.

1549 The TAF is a detailed airport forecast that is published annually by that the FAA's
1550 Office of Aviation Policy and Plans. The TAF is the official FAA forecast of aviation
1551 activity for US airports. It currently covers all FAA and Federal Contract towered
1552 airports included in the National Plan of Integrated Airport Systems (NPIAS).
1553 Information on the TAF's methodology, which can vary by airport size, is published on
1554 the [FAA's website](#). The TAF summary report for each airport includes, as appropriate
1555 aircraft operations (total, air carrier, commuter/air taxi, local and itinerant general
1556 aviation, and local and itinerant military), enplanements (total, air carrier, and
1557 commuter). At most airports the TAF assumes an unconstrained demand for aviation
1558 services. Data in the TAF are presented for a U.S. governmental fiscal year (October
1559 through September), and generally cover the past 20 years historic activity and the next
1560 25 years of predicated activity [FAA TAF](#).

1561 5.7.4 Developing a Local Forecast.

1562 5.7.4.1 If sponsors at towered airports have credible information that supports
1563 aircraft operations that differ from the TAF, the ARP POC requires written
1564 justification and supporting documentation for its approval before it can be
1565 used to develop NEMs. At nontowered airports, development of a local
1566 forecast is necessary since the TAF does not actively predict future
1567 operations at nontowered facilities. The general requirement for FAA
1568 approval of the Part 150 Study's forecasts is that they are based on
1569 reasonable assumptions, supported by an acceptable forecasting analysis,
1570 and are consistent with the TAF. Refer to AC 150/5070 Airport Master
1571 Plans on forecast evaluations for TAF consistency and the forecast review

- 1572 process. The forecast should be approved by the ADO planner and this
1573 formal approval included in the NEM documentation.
- 1574 5.7.4.2 Two FAA publications can also help prepare local forecasts for
1575 developing the Future Condition NEM:
- 1576 • [Forecasting Aviation Activity by Airport, dated July 2001](#), prepared by
1577 the FAA's Office of Aviation Policy and Plans, Statistics and Forecast
1578 Branch.
 - 1579 • AC 150/5070-6, *Airport Master Plans*, Chapter 7, Aviation Forecasts.
- 1580 5.7.4.3 The ARP POC can provide additional guidance on using forecasting tools,
1581 techniques, and methods. Whether the aviation forecasts are being
1582 prepared by the airport planning staff or by consultants, early consultation
1583 and frequent discussions with FAA staff are encouraged.
- 1584 5.7.4.4 Written approval to use the local forecast in the Part 150 Study from the
1585 FAA ADO or Regional Office is required before developing the future
1586 condition contours.
- 1587 5.7.5 Future Fleet Mix.
- 1588 Compile and analyze the aircraft and airport operations forecast to determine the
1589 operational characteristics for the average annual day of the forecast period. A key
1590 variable for future conditions is the fleet mix. Since newer aircraft tend to be quieter
1591 than older aircraft, selection of appropriate aircraft types for the future condition is
1592 important because and can have a significant effect on the size of the noise contours.
1593 Sources to determine the future fleet mix include new aircraft orders that may replace
1594 certain existing aircraft include Securities and Exchange Commission (SEC) filings and
1595 annual reports of airlines, and order backlogs of aircraft manufacturers, and third-party
1596 vendor data on aircraft fleets and orders.
- 1597 5.8 **Running the Noise Model.**
- 1598 Only a computer-based mathematical model is capable of predicting the noise exposure
1599 associated with the complex operation of an airport and projecting that exposure to
1600 some future period.
- 1601 5.8.1 Using the Most Current Noise Model.
- 1602 5.8.1.1 Part 150 Sections A150.1(b) and A150.103(a) require that noise contours
1603 be developed using an FAA-approved methodology or computer program.
1604 The following model is approved for use in Part 150 Studies:
- 1605 • AEDT is the FAA-approved tool for modeling noise. Information on
1606 ordering AEDT and guidance on its use are available on the FAA

website.²⁵ Use the AEDT for modeling noise exposure unless unusual circumstances dictate using another model. Use the most current version of the model at the time data are ready for input to generate noise contours. If FAA issues a new version of a model after the noise analysis for a Part 150 Study has begun, there is no requirement to use the newer version of the model or to redevelop the analysis. However, the project sponsor has the discretion to update project methodology at any time to the newest model version if this would substantially improve or change the analysis and provide a stronger basis for informing decision-makers and the public. In the case where a project is reconstructed with a new base year and forecast years, use the most recent version of the model. If use of another model is desired, it must be approved by AEE).²⁶

- Helicopter noise has been fully integrated into AEDT. Therefore, it is not necessary to use supplemental models to model rotary wing aircraft operations as well as new heliports.

5.8.1.2

The FAA noise models are maintained to stay current with evolving best practices in acoustic and flight performance modeling. However, the FAA recognizes that some noise analyses may require additional modeling methods to supplement the current FAA modeling capability. Some noise analyses may also require non-standard inputs and methods to properly model the unique circumstances at a given airport. In these cases, the FAA requires modelers to submit requests to use all non-standard modeling inputs and methods, such as aircraft substitutions, to the FAA for approval by AEE before use in any noise analysis. To expedite approval, the requests must first be coordinated with the airport's FAA Office of Airports (ADO or Region) POC. The ADO or Region will coordinate the request through APP-400. An approval letter must be obtained from AEE before using the inputs in the Part 150 Study. The approval letter must be included in the NEM submission.

5.8.1.3

Requests to use non-standard input/methods should include documentation that demonstrates the reasons and the inputs/methods are more appropriate than the FAA-approved model. Before approving, AEE may request additional information. Previous approvals for similar studies will not

²⁵ Available at: https://aedt.faa.gov/2c_information.aspx.

²⁶ Helicopter noise has been fully integrated into AEDT. Therefore, it is no longer necessary to use supplemental models to model rotary wing aircraft operations as well as new heliports.

1641 guarantee approval for the new study since the FAA reviews each new
1642 study as a separate case.

1643 5.8.1.4 For models other than AEDT, data input requirements may differ from
1644 those specified in the following subsections.

1645 5.8.2 Using the Required Noise Metric.

1646 5.8.2.1 For aviation noise analysis, the FAA has determined the yearly DNL, the
1647 day-night average sound level, as the primary metric for expressing the
1648 cumulative noise level individuals are exposed to resulting from aviation
1649 activities. The FAA also recognizes the Community Noise Equivalent
1650 Level (CNEL) for analyses at airports in California, the metric this state
1651 requires and applies to evening operations between 7:00 p.m. and 9:59
1652 p.m. with a 5dB penalty per operation.

1653 5.8.2.2 The cumulative metric, whether DNL or CNEL in California, must be
1654 used to analyze and characterize multiple aircraft noise events as well as to
1655 determine the cumulative noise exposure that individuals experience. Part
1656 150 Section A150.205(c) defines DNL as the 365-day average day-night
1657 sound level in decibels. The symbol used to represent the DNL calculation
1658 is L_{dn} . It is computed with following formula:

$$1659 \quad L_{dn} = 10 \log_{10} \frac{1}{365} \sum_{i=1}^{365} 10^{L_{dni}/10}$$

1660 Where L_{dni} is the day-night average sound level for the i^{th} day out of one
1661 year, and the summation is from $i=1$ to 365.

1662 5.8.2.3 AEDT estimates existing and future year average effects using average
1663 annual input conditions. Using this definition to model noise would
1664 require running 365 cases of the model and averaging the results. To avoid
1665 excessive computation, AEDT uses the concept of an “average annual
1666 day.” An average annual day is a reasonable representation of the average
1667 daily conditions at the airport in a typical existing and future year.²⁷ These
1668 average conditions include the number and type of operations, routing
1669 structure, runway configuration, aircraft weight, temperature, and wind.

1670 5.8.2.4 Supplemental noise analyses can be used to assist in the public's
1671 understanding of noise impact. Supplemental analyses are most often used
1672 to describe aircraft noise impacts for specific noise-sensitive locations, and

²⁷ The repetitive cycle of events in most environments leads to the natural choice of a 24-hour day as the base period for evaluation of environmental noise since most airport operations are stable in their day-to-day schedules. However, at many airports, seasonal variations in schedules will change the frequency of aircraft operations during various months. Thus, in assessing the environmental effect of an airport, the daily average noise level, averaged over an annual period, should be considered. This would be expressed as a yearly average of daytime/nighttime average sound level.

should be reported in an appendix. Use of supplemental metrics should fit the circumstances. Appendix A provides more detail about supplemental metrics and Table A-3 describes conditions under which supplemental metrics could be considered. Such supplemental noise analysis is not, by itself, a measure of adverse or significant aircraft noise or impact. AEE approval for supplemental metrics is not required if the metrics to be reported are listed in FAA Order 1050.1 or the *Desk Reference for Airport Actions* that accompanies FAA Order 5050.4. This so-called blanket approval of the metrics listed in the *Desk Reference* applies with the following caveat: “Some general discussion of potential secondary effects (e.g., sleep disturbance, disruptions of classroom learning, low-frequency impacts) may be appropriate. However, this discussion must not draw any specific conclusions about impacts or suggest that the findings are significant in any way if there are no approved FAA criteria and standards. Conversely, the discussion must include effective language about existing scientific uncertainties and the lack of FAA assessment methodology, impact criteria, and policy guidance in the area examined by supplemental metrics.”

5.8.3 Required Input Data.

For calculating noise contours, AEDT requires this input:

- Airport parameters, such as latitude, longitude, and average temperatures.
- Runway and helipad identifiers.
- Runway end and/or helipad data such as coordinates, width, and elevation.
- Flight track identifiers and geometry out to at least 30,000 feet laterally from the end of each runway.
- The number and type of aircraft that use each flight track and the local time each operation occurred. For calculating DNL/CNEL, the time of each operation must be sufficient to determine whether it falls during:
 - Daytime hours from 7:00:00 a.m. until 6:59:59 p.m. local time.
 - Evening hours from 7:00:00 p.m. until 9:59:59 p.m. local time (for CNEL only; otherwise counted as daytime hours).
 - Nighttime hours from 10:00:00 p.m. until 6:59:59 a.m. local time.
- Average local weather conditions: The AEDT database contains a 10-year average of weather conditions for each airport. Supplemental sources of average weather data including the National Oceanic and Atmospheric Administration National Climatic Data Center (NCDC) should therefore be used where AEDT requires the definitions for temperature, air pressure, relative humidity and dew point.

5.8.4 Optional Input Data.

Optional input information that may be used in some situations includes the following:

- 1712 • U.S. Census Bureau TIGER® street files, American Community Survey Data,
1713 and/or Public Law 94-171 population data.
- 1714 • Location of navigational aids (NAVAIDs) and fixes.
- 1715 5.8.5 Noise-Power-Distance Curves.
1716 Part 150 Section A150.103(b)(6) requires the use of government-furnished data
1717 depicting aircraft noise generation and performance characteristics if these data are not
1718 already part of the noise model's database. These basic acoustical data are defined as
1719 Noise-Power-Distance (NPD) curves. Airport sponsors and consultants are not allowed
1720 to modify the noise model by altering the model's basic acoustic data (i.e., the NPD
1721 curves) or spectral classes. However, users can still create a user-defined aircraft with a
1722 user-defined NPD, but this requires AEE review and approval.
- 1723 5.8.6 Aircraft Substitutions.
1724 The FAA has provided [information on its protocol for submitting AEDT non-standard](#)
1725 [modeling requests on the FAA website](#). Approval should be coordinated through the
1726 ARP POC. One aircraft type may be substituted for another when noise and/or
1727 performance data are not readily available. AEDT includes approved aircraft
1728 substitutions that do not require AEE approval. Any other aircraft substitution must be
1729 coordinated with AEE to determine acceptability for use.
- 1730 5.8.7 User-Defined Aircraft Types and Profiles.
 - 1731 5.8.7.1 AEDT standard database aircraft and departure and approach profiles
1732 should be used to model existing and forecast aircraft operations, unless
1733 the need for custom aircraft and/or departure and approach profiles is
1734 deemed necessary because these data may not realistically represent the
1735 airport's flight operations. Collection of actual on-site or operator specific
1736 profile information is needed only if necessary to adjust for known, unique
1737 operating conditions. User-specified modifications to standard AEDT
1738 profiles affect both the estimated thrust of the engine, and the distance
1739 from source to receiver, as well as critical parameters in the final
1740 computation of noise for contours and grid point analysis.
 - 1741 5.8.7.2 If non-standard profiles are necessary for the project, AEE approval is
1742 required before using them. The process to follow for gaining this
1743 approval are in [Guidance on Using the Aviation Environmental Design](#)
1744 [Tool \(AEDT\) to Conduct Environmental Modeling for FAA Actions](#)
1745 [Subject to NEPA](#). The process includes going through the ARP POC,
1746 submitting the request for approval to use non-standard aircraft and/or
1747 profiles, and obtaining an approval letter from AEE, which must be
1748 included in the NEM submission.
 - 1749 5.8.7.3 **Noise Abatement Departure Profiles (NADPs).**
1750 AEDT contains ICAO-A and ICAO-B profiles, which align with the
1751 Close-In and Distant profiles in Advisory Circular 91-53A NADPs.

1752 However, most airline operators will have specific Close-In and Distant
1753 profiles specific to aircraft type. The airlines develop standardized profiles
1754 that align with AC 91-53A for repeated, safe use by pilots. They are
1755 similar to the ICAO-A and -B profiles in AEDT, but can vary. If
1756 development of user-defined profiles is necessary to more closely
1757 incorporate airline specific profiles into AEDT, airport sponsors or their
1758 consultants must submit the profiles to AEE through the ARP POC for
1759 review and approval using the format outlined in [*Guidance on Using the*](#)
1760 [*Aviation Environmental Design Tool \(AEDT\) to Conduct Environmental*](#)
1761 [*Modeling for FAA Actions Subject to NEPA.*](#)

1762 5.8.7.4 **Ground Noise.**
1763 Although not specifically supported in AEDT, taxi noise can be modeled
1764 by creating an overflight track and a fixed-point overflight profile. The
1765 [*AEDT Supplemental User Manual*](#)²⁸ provides instructions for modeling
1766 fixed-wing aircraft taxi noise, including an example overflight taxi profile.
1767 For modeling long duration, stationary ground noise, the AEDT aircraft
1768 run-up function should be used. As these are non-standard profiles, the
1769 profiles and their supporting documentation should be submitted to AEE
1770 through the ARP POC for approval.

1771 5.8.7.5 **Military Aircraft.**
1772 The aircraft and noise data in the AEDT database are from the U.S. Air
1773 Force NOISEMAP model. For some military aircraft, the AEDT aircraft
1774 database does not specify departure and approach profiles. In such cases,
1775 fixed-point profiles for these military aircraft need to be created and their
1776 justification (with supporting documentation) provided to AEE through
1777 the ARP POC. For these newly created profiles, however, AEE does not
1778 have a basis for evaluating their correctness given the lack of data. Their
1779 role is limited, therefore, to reviewing the supporting data, the
1780 methodology for determining the profiles, and the justification.

1781 5.8.7.6 **Touch-and-Go (TGO) and Circuit Flight (CIR) Profiles.**

1782 5.8.7.6.1 The AEDT database contains TGO and CIR profiles for almost all
1783 airplanes that have approach and departure performance coefficients.
1784 These TGO and CIR database profiles are not considered standard.
1785 Instead, they are generic profiles that require modifying to reflect their
1786 specific airport operational conditions. The steps for modifying the
1787 profiles are outlined in the AEDT User's Guide.

²⁸ AEDT is regularly updated. It is recommended that all AEDT users check the FAA's website (<https://aedt.faa.gov/>) for updates.

- 1788 5.8.7.6.2 Adjustments to level segment altitudes do not require AEE approval.
1789 Working through the ARP POC, airport sponsors, or through their
1790 consultants, must provide AEE with justification and documentation on
1791 the adjustments made to the standard TGO and CIR profiles if the steps
1792 taken on the profiles are different from those outlined in the AEDT User's
1793 Guide.
- 1794 5.8.7.7 **Helicopter Profiles.**
1795 Helicopter profiles are included in the AEDT database for several
1796 common helicopter types. These profiles should be reviewed to ensure
1797 they are appropriate for the airport's operational conditions. Working
1798 through the ARP POC, sponsors or their consultants must provide AEE
1799 with justification and documentation when creating user-defined
1800 helicopter profiles or substitutions when no profiles exist in AEDT. For
1801 newly created profiles, AEE does not have a basis for evaluating their
1802 correctness of user-defined profiles, so their role is limited to reviewing
1803 the supporting data, methodology to determine the user-defined profiles,
1804 and their justification.
- 1805 5.8.7.8 **Profile Stage or Trip Distance.**
- 1806 5.8.7.8.1 Profile stage identifies the stage lengths for departure profiles. Stage
1807 length is a range of trip distances, or the distance between the aircraft
1808 departure and arrival points. Stage length is important because the longer
1809 the trip, the heavier the average takeoff weight due to increased fuel
1810 requirements, and the greater the noise potential. Historically, it has been
1811 easier to obtain trip length than average aircraft weight data, so stage
1812 length has been used as a surrogate for aircraft takeoff weight. However,
1813 given that aircraft weight directly affects the departure profile, it is best to
1814 obtain average takeoff weight if feasible from aircraft operators or using
1815 [BTS](#) T-100 segment data. AEE review and approval is not required if trip
1816 length or estimated takeoff weight is used as the basis for determining
1817 stage length.
- 1818 5.8.7.8.2 Other approaches to determine stage length require AEE review and
1819 approval, the request routed through the FAA ADO or Region point of
1820 contact and supported with justification and documentation.
- 1821 5.8.8 Noise Model Questions and Documentation.
1822 Questions or uncertainties about the correct use of noise models should be directed to
1823 the airport's ARP POC for resolution or verification. Sponsors and their consultants
1824 should be prepared on request to provide AEDT and other noise model files to the FAA
1825 electronically.

1826 5.9 **Generating Existing Condition Noise Contours.**

1827 5.9.1 Determining the operational characteristics for the average annual day requires
1828 compiling and analyzing airport and aircraft operations data for the most recent full
1829 calendar year or the most recent 12 consecutive months. This information should be
1830 formatted for input into the AEDT (or other FAA-approved model). The noise modeling
1831 should account for any operational noise abatement measures in use during the selected
1832 12-month period.

1833 5.9.2 Closed, continuous noise contours must be generated for at least DNL 65, 70, and 75
1834 dB. According to Part 150 Section A150.101(a), additional noise contours below DNL
1835 65 dB are optional. If the local jurisdictions have adopted a land use compatibility
1836 standard that identifies noncompatible uses in areas exposed to less than DNL 65 dB,
1837 the NEM should show contours corresponding to those levels. The NEM documentation
1838 should explain all local reasons for establishing noise sensitivity/compatibility below
1839 DNL 65 dB and include evidence of the jurisdiction adopting the standard. With a
1840 locally adopted standard, the FAA may approve noise abatement or mitigation measures
1841 in areas below DNL 65 dB (discussed in Chapter 7 of this AC). These approved noise
1842 measures may be eligible for federal funding but are considered a lower priority. If a
1843 contour other than 65, 70, or 75 dB is modeled for reasons other than a local standard,
1844 the information should go in an appendix.

1845 5.9.3 Noise contours should be digitally superimposed over the land use base map that
1846 depicts the required information (described in Section 5.13). Field reviews should be
1847 used to verify the locations of noise sensitive areas, specific noise sensitive sites, and
1848 current land uses within the noise contours that are DNL 65 dB and above. This is
1849 particularly important if there has been an extended period between initial data
1850 collection and completion of the NEMs. The DNL 65, 70 and 75 dB noise contours (and
1851 locally significant contours, if applicable), then, should be incorporated into the GIS or
1852 other mapping program in order to quantify noise exposure in terms of population,
1853 households, and land use.

1854 5.9.4 Although not required by Part 150, additional locations for AEDT receptors can be
1855 defined in a grid point analysis to calculate DNL values at specific noise-sensitive sites.
1856 The airport sponsor may choose to report these results in tables in the document to
1857 provide additional information to the public.

1858 5.9.5 Timeframe Considerations and Requirements for Existing Condition NEM Submission.
1859 The Existing Condition NEM must identify each noncompatible land use with the year
1860 the NEM is submitted to the FAA ADO or Regional Office. Developing the NEMs
1861 frequently takes 6 to 12 months. There may be difficulty obtaining all the data
1862 necessary for generating noise contours or developing land use base maps. Delays can
1863 be encountered in obtaining approvals for user-specified noise model modifications or
1864 forecasts, and local controversy can delay the NEM process. By the time the NEMs
1865 reach the FAA, the data used to develop the NEMs may not be current and
1866 noncompatible land uses may not be accurately identified.

1867 5.9.6 When the Timeframe for the Existing Condition NEM Differs from the Year of
1868 Submission.

1869 If the Existing Condition NEM is based on data for a timeframe other than the year of
1870 submission, the transmittal letter to the FAA must certify that the data nonetheless
1871 represent current conditions. Specifically, the NEM submission must verify that the
1872 airport layout, runway use percentages, flight tracks, general aircraft mix, operational
1873 data, and noncompatible land uses are equivalent and that changes in total numbers of
1874 operations do not alter the accuracy on identified noncompatible land uses (usually
1875 indicated by change of DNL 1.5 dB or greater). If there are questions about this, the
1876 local FAA ADO or Regional Office is the best point of contact.

1877 5.9.7 When Changes in Operational Data Occur Before Submission.

1878 If changes have occurred that could alter the noise contour over noncompatible land
1879 uses, the assessment using an AEDT computer model should nonetheless proceed. The
1880 ARP POC should be able to handle questions on this matter.

1881 5.9.8 When the Existing Condition NEM Data Are Not Current.

1882 If the Existing Condition NEM does not represent current noncompatible land use
1883 conditions, the airport sponsor cannot certify that the Noise Exposure Map is correct
1884 (Part 150 Section 150.21(b)), and the Existing Condition NEM must be updated.

1885 5.10 **Noise Monitoring.**

1886 5.10.1 Part 150 does not require noise monitoring. Noise monitoring may be used for data
1887 acquisition and refinement and to enhance public acceptance, but not to calibrate the
1888 noise model or for enforcement purposes.

1889 5.10.2 If noise monitoring is used, it should be accomplished in accordance with Part 150
1890 Section A150.5, measuring and analyzing sound levels using the “A” frequency
1891 weighting filter and slow response setting. For computation of the DNL, measurements
1892 of individual aircraft events must be reported in sound exposure level (SEL), as defined
1893 in Part 150 Section A150.205. Average sound level may be calculated from the SELs of
1894 the individual events. The Society of Automotive Engineers Aerospace Recommended
1895 Practice ARP4721, *Monitoring Aircraft Noise and Operations in the Vicinity of*
1896 *Airports*, provides additional guidance. The narrative should indicate that the noise
1897 monitoring followed Part 150 guidelines.

1898 5.10.3 The FAA does not endorse the use of noise monitor data to calibrate noise models.
1899 Noise monitor installations can vary greatly from airport to airport and data
1900 measurement and collection methods are not yet fully standardized. In addition, noise
1901 models such as AEDT compute average conditions over the course of a year. Variations

1902 in parameters—such as weather, aircraft payload, tracks, pilot techniques, ambient
1903 noise—make it difficult to compare monitor data to model output.

1904 5.10.4 Depicting Aircraft Noise Monitoring Sites on the NEMs.

1905 If noise monitoring is used in the study, the locations of the aircraft noise monitoring
1906 sites must be graphically depicted, as required by Part 150 Section A150.101(e)(7).

1907 Noise monitoring sites may be depicted on a supplemental land use base map, instead of
1908 the NEMs, in the interest of avoiding too much clutter. The same rules apply here as for
1909 supplemental graphics depicting flight tracks (see Section 5.6 of this AC).

1910 5.11 **Generating Future Condition Noise Contours.**

1911 5.11.1 The airport sponsor can only designate one future condition map as the Future
1912 Condition NEM for a finding under Part 150. The NEM forecast map must be based on
1913 reasonable forecast aircraft operations at the airport and on other reasonable planning
1914 assumptions beginning five years after the year the NEMs are submitted to the FAA.
1915 The submission can also include additional maps for supporting information, analytical
1916 purposes, or longer-range planning.

1917 5.11.2 The forecast aircraft and airport operations should be compiled and analyzed to
1918 determine the operational characteristics for the average annual day for the forecast
1919 period. As discussed in 5.7.1, a key variable for the forecast is the fleet mix. Newer
1920 aircraft tend to be quieter than older aircraft. Part 150 Section 150.21(a)(1) requires that
1921 the forecast map be based on reasonable planning assumptions, including any planned
1922 airport development. Therefore, the Future Condition NEM may show a different
1923 airfield configuration or airport layout than the Existing Condition NEM. The narrative
1924 accompanying the NEMs must adequately explain all assumptions.

1925 5.11.3 The Future Condition NEM should be superimposed over a future land use map, if
1926 available. The future land use map should depict land use changes anticipated by the
1927 year of the Future Condition NEM, and the accompanying text explain the assumptions
1928 regarding those future land use changes.

1929 5.11.4 Timeframe Considerations for Future Condition NEM Submission.

1930 5.11.4.1 Developing the NCP frequently takes 12 to 18 months following
1931 completion of the NEMs. Consultation requirements, local issues,
1932 complex environmental analysis, and local controversy can delay the NCP
1933 process. For these reasons, airport sponsors should consider submitting the
1934 NEMs and NCP separately. The year selected for the Future Condition
1935 NEM should take into consideration the anticipated timeline for
1936 completing the NCP, if one is going to be prepared.

1937 5.11.4.2 The FAA encourages airport sponsors to take a long-range look at land use
1938 and forecast noise impacts around the airport. The long-range plans can
1939 assist the decision making of land use planning agencies. They often do

1940 not provide a solid basis on which to base federal funding decisions for
 1941 proposed noise measures. Federal participation is determined using an
 1942 accepted NEM, and the FAA has discretion to use either the Existing or
 1943 Future NEM depending on which is more appropriate. Questions about the
 1944 use of either Existing or Future NEMs as the basis of federal funding
 1945 decisions should be coordinated with the FAA ADO or Regional point of
 1946 contact, including discussing how selection of either NEM may affect the
 1947 NCP implementation and timeframe for updating the NEMs and NCP.

1948 5.11.5 The “Future Condition NEM, without NCP Implementation”.

1949 This NEM should factor in existing operational noise abatement measures that are
 1950 expected to still be in effect in the forecast year and include planned changes in airport
 1951 layout expected to be in place by the forecast year. It would not include new or
 1952 modified measures recommended for implementation in the NCP.

1953 5.11.6 The “Future Condition NEM, with NCP Implementation”.

1954 This NEM should include existing operational noise abatement measures expected to
 1955 still be in effect in the forecast year as well as planned changes in airport layout
 1956 expected to be in place by the forecast year. It would also include new or modified
 1957 measures recommended for implementation in the NCP.²⁹

1958 5.12 **Determining Compatible and Noncompatible Land Uses.**

1959 Different uses of land have different sensitivities to noise. Land use compatibility is
 1960 primarily determined by whether the level of noise interferes with noise-sensitive
 1961 human activities. The effects of noise may include sleep disruption; speech interference;
 1962 inability to concentrate, study, or performing critical tasks; reduced enjoyment of
 1963 performing arts, religious observances, and outdoor activities; and failure to hear
 1964 warning sounds. Individuals may have different perceptions of acceptable or
 1965 unacceptable levels of noise for any given activity. ASNA requires the FAA to identify
 1966 land uses that are normally compatible with various levels of exposure to noise
 1967 regardless of the diversity of individual perceptions. See [Part 150 Table 1](#) for land use
 1968 compatibility guidelines.

1969 5.12.1 General Guidelines for Determining Noise-Sensitive Land Uses.

1970 5.12.1.1 **Residential Facilities.**

1971 [Part 150 Table 1](#) shows structures designed for residential use that are
 1972 considered noise sensitive. NEM land use classifications should
 1973 differentiate single-family, multi-family, mobile homes, transient, and
 1974 institutional residential structures from each other unless local planning
 1975 and zoning data does not allow this distinction. Residential facilities may
 1976 include the following:

²⁹ Not all of the NCP procedures may be approved, however.

- 1977 • Single family homes
- 1978 • Multi-family residential structures
- 1979 • Mobile homes, manufactured homes, and trailer houses
- 1980 • Retirement homes and assisted-living facilities
- 1981 • Fraternity and sorority houses
- 1982 • Residence halls and dormitories
- 1983 • Orphanages
- 1984 • Convents, monasteries, and rectories
- 1985 • Hotels, motels, and bed and breakfast inns
- 1986 • Rooming and boarding houses
- 1987 • Campgrounds, recreational vehicle parks, and trailer parks

1988 5.12.2 Noise-sensitive Settings.

1989 [Table 1 of Part 150](#) does not reference national, state, and local parks, wilderness areas,
 1990 and wildlife refuges where other noise is very low and a quiet setting is a generally
 1991 recognized purpose and attribute. Consulting with the ARP POC will help determine if
 1992 these “quiet setting resources” are located in the noise contour so the FAA can
 1993 determine what particular land uses are appropriate for certain measured or calculated
 1994 noise exposure levels.

1995 5.12.3 Compatible versus Noncompatible Land Uses.

1996 5.12.3.1 ASNA required the FAA to identify land uses that are “normally
 1997 compatible” or “noncompatible” with various aircraft-generated noise
 1998 levels. Land use guidelines, however, even those adopted by regulation,
 1999 are planning tools that provide general indications, not absolutes, as to
 2000 whether particular land uses are appropriate for certain measured or
 2001 calculated noise exposure levels.

2002 5.12.3.2 According to Part 150 Section A150.101, Table 1, “the responsibility for
 2003 determining the acceptable and permissible land uses rests with the local
 2004 authorities. FAA determinations under Part 150 are not intended to
 2005 substitute federally determined land uses for those determined to be
 2006 appropriate by local authorities in response to locally determined needs
 2007 and values in achieving noise compatible land uses.” Locally adopted
 2008 standards take precedence over federal guidelines. However, these
 2009 standards must be applied consistently. For example, designations of
 2010 noncompatible land uses within the locally adopted contours should apply
 2011 to all noise generating sources, not just airports. In addition, some states

- 2012 such as California may have factors that render certain land uses
2013 compatible.
- 2014 5.12.3.3 **Identifying Compatible versus Noncompatible Land Uses on NEMs.**
- 2015 5.12.3.3.1 For NEMs, land uses are identified as either compatible or noncompatible,
2016 without footnotes, caveats, qualifications, stipulations, or conditions. Each
2017 parcel within the DNL 65 dB and higher contours has a yes/no
2018 determination.
- 2019 5.12.3.3.2 There may be situations where land uses that might normally be identified
2020 as noncompatible under Part 150 are considered compatible, for example,
2021 land uses that have been acoustically treated (sound insulated) or have an
2022 aviation easement and so been rendered compatible for purposes of Part
2023 150. Instances such as these should be identified as compatible if the
2024 airport sponsor already mitigated the land uses under a previously
2025 approved Part 150 Study.
- 2026 5.12.3.3.3 In accordance with Part 150 Section A150.101(e)(5), a land use is not
2027 identified as noncompatible if it self-generates noise or the ambient noise
2028 from other non-aircraft and non-airport uses (such as highways and
2029 railroads) is equal to or greater than the noise from aircraft and airport
2030 sources.
- 2031 5.13 **NEM Requirements.**
- 2032 The map portion of the NEM submission package must include at least Existing
2033 Condition and Future Condition NEMs with the following information.
- 2034 5.13.1 Indicate the Year the Map Represents.
- 2035 The year that the Existing Condition and Future Condition NEMs represent must be
2036 indicated on the face of each map. The future condition must be at least 5 years beyond
2037 the year shown on the Existing Condition NEM. If the year the map represents is not the
2038 year of submittal and at least 5 years in the future, the airport sponsor must certify that
2039 the Existing Condition NEM is still valid and the forecast year would nonetheless
2040 represent a year at least five years from the Existing Condition NEM (see Section 5.9).
- 2041 5.13.2 Depict the Airport and Its Environs.
- 2042 Airport boundaries, runway configurations including runway end numbers, and streets
2043 and other identifiable features in the airport environs must be identified.
- 2044 5.13.3 Depict Noise Contours.
- 2045 Continuous noise contours of at least DNL 65, 70, and 75 dB must be graphically
2046 depicted.

- 2047 5.13.4 Identify Noise-Sensitive Public Buildings and Historic Properties.
2048 Part 150 Section A150.101 (e) requires that the locations of noise-sensitive public
2049 buildings including schools, hospitals, nursing homes and other health care facilities,
2050 and properties eligible for listing or listed in the National Register of Historic Places be
2051 depicted. These structures and historic properties must be clearly depicted on the map in
2052 a manner that allows them to be readily identified, such as by using special symbols.
2053 There must be a legend on the face of each map that relates the selected markings to the
2054 specific types of structures and historic properties that have been identified. If there are
2055 no noise sensitive structures within the contour, the NEM narrative should state this.
- 2056 5.13.5 Identify Noncompatible Land Uses.
2057 NEMs must identify noncompatible land uses within the noise contours. These
2058 noncompatible land uses should be clearly identified on the map in a manner that allows
2059 them to be readily identified, such as, by colors, shading, and cross-hatching. There
2060 must be a legend on the face of each map that relates the selected markings to the
2061 specific noncompatible land uses that have been identified.
- 2062 5.13.6 Identify Jurisdictions.
2063 Geographic boundaries and names of the jurisdictions with authority to plan and control
2064 land uses within the noise contours must be depicted and identified.
- 2065 5.13.7 Use a Sufficient Scale.
2066 The NEMs must be of sufficient scale to be clear and readable, and the scale should be
2067 indicated on the face of the map. Part 150 Section A150.103 (b) (1) requires the scale of
2068 a map to be no smaller than 1 inch to 2,000 feet. Depending on the size of the noise
2069 contours, this scale may require a paper size that does not easily fit into the published
2070 document. Therefore, this requirement may be met by including the large graphic in a
2071 pocket within the published document. A smaller-scale version (with the scale shown)
2072 that fits on an 11" x 17" or 8.5" x 11" page may be included as a supplemental graphic.
2073 See Section 5.6.5 for further details.
- 2074 5.14 **NEM Submittal.**
- 2075 5.14.1 The NEMs are more than just two graphics depicting the existing and forecast year
2076 noise contours and noncompatible land uses. The Noise Exposure Maps *and* supporting
2077 documentation (listed below) constitute the NEM submission.
- 2078 5.14.2 Part 150 submittals can consist of NEMs without an NCP or NEMs and an NCP
2079 together. NEMs may be submitted immediately upon completion or at the end of the
2080 study process. See Sections 5.9 and 5.13 for a discussion on the need for current
2081 information at the time of submittal of NEMs—either separately or in combination with
2082 the NCP.
- 2083 5.14.3 The airport sponsor should retain all study files, including the electronic AEDT input
2084 files used to generate the NEMs. The FAA may from time to time request these files for
2085 review. Because there is a requirement to update the NEMs if there is a significant

2086 change in the noise environment over noncompatible land uses, having the data files in
2087 electronic form makes this task much less costly or tedious.

2088 5.14.4 First-time map submissions do not need to be specifically identified as such, but
2089 revisions to NEMs previously in compliance with Part 150 do need this identification
2090 and it would help for reader reference to include the date of the previous NEMs.

2091 5.14.5 Including Supporting Documentation.

2092 The NEM submittals should comprise documentation to support the current and forecast
2093 years:

- 2094 • Type and frequency of aircraft operations
- 2095 • Number and type of aircraft operations during daytime and nighttime periods
- 2096 • Runway use percentages
- 2097 • Flight tracks and flight track use percentages
- 2098 • Operational noise abatement measures that were modeled
- 2099 • Location of any aircraft noise monitoring sites
- 2100 • Existing land uses and demographic data
- 2101 • Planned land use changes
- 2102 • Anticipated demographic changes in the surrounding areas
- 2103 • Estimated number of housing units and people residing within each noise contour
- 2104 • The land use compatibility table used to determine noncompatible land uses
- 2105 • A description of how forecast operations will affect the compatibility of land uses
- 2106 • A listing of consulted parties
- 2107 • A copy of all written comments received during consultation or verification that
2108 none were received
- 2109 • A narrative description supported by documentation of the consultation
2110 accomplished on the NEMs and of the opportunities afforded the public to review
2111 and comment during the development of the NEM documentation

2112 5.14.6 Including the Airport Name and Airport Sponsor's Name on the NEM Submission.

2113 The NEM submission will identify the airport name and the airport sponsor. It is
2114 desirable to have this information on a cover page of the submission. However, Part 150
2115 does not specify a particular format, as long as this information is included and clearly
2116 understandable.

2117 5.14.7 Submitting the NEMs for Preliminary Review.

2118 The FAA encourages airport sponsors to submit the NEMs and supporting
2119 documentation for preliminary review before the formal submission so the FAA can
2120 determine whether the NEMs comply with Part 150 requirements. The sponsor may

2121 request the FAA’s informal advice, policy review, or technical guidance at any time
 2122 during the development of the NEMs. Depending on comments from the FAA,
 2123 revisions to the NEMs and supporting documentation may be needed before formally
 2124 submitting them to the FAA.

2125 5.14.8 Formally Submitting NEMs.

2126 Formal submission requirements for NEMs and supporting documentation are outlined
 2127 below and examples of two of them—the cover letter and airport sponsor
 2128 certifications—are provided in Appendix D. It is recommended, but not required, that
 2129 the submission include the checklist that is in Appendix B to show up front the
 2130 requirements of Part 150 for NEMs have been met.

2131 5.14.8.1 **Cover Letter.**

2132 The formal submission of the NEMs should be accompanied by a signed
 2133 and dated cover letter from the airport sponsor. The letter should indicate
 2134 that the sponsor, not its consultant or other party, is submitting the NEMs.
 2135 The cover letter should state that the NEMs and supporting documentation
 2136 are being submitted under the provisions of Title 1 of the ASNA
 2137 (recodified at 49 U.S.C. Section 47503) and Part 150, for appropriate FAA
 2138 determination.

2139 5.14.8.2 **Sponsor’s Certification.**

2140 The NEMs and supporting documentation must include the “sponsor’s
 2141 certification,” preferably on a page at the beginning of the document.
 2142 However, the regulation requires no specific format. The following
 2143 considerations apply to the certification.

- 2144 • The Airport Sponsor is required to certify that it has afforded
 2145 interested persons adequate opportunity to submit their views, data,
 2146 and comments about the correctness and adequacy of the draft NEMs
 2147 and descriptions of forecast aircraft operations (Part 150 Section
 2148 150.21(b)).
- 2149 • Part 150 Section 150.21(e) requires the airport sponsor to certify that
 2150 each map (or revised map) and description of consultation and
 2151 opportunity for public comment are true and complete under penalty of
 2152 18 U.S.C. Section 1001.
- 2153 • The Airport Sponsor must attest to the accuracy of map data by stating
 2154 that the Existing Condition NEM accurately identifies noncompatible
 2155 land uses as of the date of submittal.³⁰ See Section 5.9 of this AC for a
 2156 discussion on the timeframe considerations for Existing Condition
 2157 NEM submissions.

2158 The same verification and certification must be provided for the map
 2159 developed for the existing and forecast years. For delayed

³⁰ See Part 150 Section 150.21(e)

2160 submissions, the verification should explain why the underlying
2161 assumptions are still reasonable and the forecast NEM continues to
2162 represent conditions at least 5 years from the year of submission.

2163 5.14.8.3 **Supporting Documentation.**

2164 5.14.8.3.1 Accompanying information needs to document the reasonable
2165 assumptions about future type and frequency of aircraft operations,
2166 number of nighttime operations, flight patterns, airport layout and planned
2167 airport development, planned land use changes, and demographic changes
2168 in the surrounding areas. This information also needs to explain how the
2169 forecast operations will affect the compatibility and land uses depicted on
2170 the map.

2171 5.14.8.3.2 In addition, the airport is requested to include the geospatial map file of
2172 the existing and future contours in the final submission.

2173 5.14.8.4 **Required Number of Copies Submitted.**

2174 Five hardcopies and one electronic file (including geospatial file of
2175 existing and future contours) of the NEMs and supporting documentation
2176 should be submitted to the FAA ADO or Region point of contact unless
2177 informed otherwise. The local FAA office may request fewer, or
2178 additional, copies to expedite their review and response time.

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2180 CHAPTER 6. REVIEW AND UPDATING EXISTING PART 150 STUDIES

2181 6.1 Overview.

2182 6.1.1 Airport sponsors should periodically review the airport’s existing Part 150 Study to
 2183 determine whether the NEMs still accurately reflect current operational conditions and
 2184 land use patterns and that the NCP measures are being implemented according to their
 2185 schedule. The review should examine the NCP and decide if it is time to reevaluate
 2186 approved noise abatement and mitigation measures or to add new ones. For example,
 2187 the review could raise these questions:

- 2188 • Are changes to previously approved measures warranted? Or could new measures
 2189 be proposed to reduce impacts further?
- 2190 • Have all the land use measures been completed? For example, are previously
 2191 approved measures still appropriate, especially operational noise abatement
 2192 measures?
- 2193 • Should the noise measures portion of the NCP be expanded?
- 2194 • Has there been a change in fleet mix, number of operations, runway usage, IFPs, or
 2195 nighttime operations that would change the noise contour to the degree that NEMs
 2196 must be revised according to the statute and thereby change the existing NCP (see
 2197 Section 6.2.3).
- 2198 • Quantifying changes and their effect on noise contours becomes very important
 2199 when sponsors are seeking funding for sound insulation programs.
- 2200 • How successfully are the local land use jurisdictions carrying out measures within
 2201 their authority?

2202 6.1.2 Part 150.23(e)(8) requires airport sponsors to identify the period covered by the NCP
 2203 program and schedule for implementation. At the end of this period is an opportune
 2204 time to review the Part 150 Study to assess the NCP’s progress, seeking assistance on
 2205 updating the NEM or NCP from the ARP POC.

2206 6.2 Updating NEMs.

2207 ASNA and Part 150.21(d)(1) require, in general, that airport sponsors update their
 2208 NEMs when the DNL³¹ increases or decreases at least 1.5 dB over noise-sensitive land
 2209 uses. Such a revision is *required* only if the relevant change in the operation of the
 2210 airport occurs during the forecast period of the applicable noise exposure map submitted
 2211 by an airport operator; or the implementation period of the airport operator’s noise
 2212 compatibility program.³² The definition of “substantial new noncompatible use” in Part
 2213 150 Section 21(d)(1) should not be interpreted to apply only to areas that experience a
 2214 1.5 dB increase or newly noncompatible land uses experiencing less than 1.5 dB

³¹ FAA recognizes CNEL for California projects.

³² See Section 174 of FAA Reauthorization Act 2018.

2215 increase. Also of concern are land uses becoming noncompatible because the noise
2216 level increases from 64 dB to 65 dB. If numbers of aircraft operations significantly
2217 increase or decline or the fleet mix changes to substantially louder or quieter aircraft,
2218 NEM updates might be needed if these changes alter the airport's noise contours.³³
2219 This, in turn, can have ramifications for the NCP and the funding considerations of
2220 previously approved NCP measures. FAA noise-related funding decisions are based on
2221 accurate NEMs. Some techniques for determining whether NEMs need to be updated
2222 are described in the next subsections.

2223 6.2.1 Timing of Updates.

2224 Some airports may prefer to update their NEMs on a regular basis. The schedule could
2225 match forecast conditions or be on a specific schedule, such as 5 years. An update is
2226 particularly important if the airport receives or intends to request federal funds to carry
2227 out noise measures. If an NEM update is included as an FAA-approved NCP measure, it
2228 is potentially eligible for federal funding provided it also meets the AIP justification
2229 requirements.³⁴ Periodic updates might be necessary because of local commitments to
2230 report this information, or state requirements. ASNA and Part 150 require that, if the
2231 NEM is updated and shows a change in compatible land use, the airport sponsor update
2232 the NCP. This should be listed as an Administrative Measure within the NCP.³⁵

2233 6.2.2 State Requirements.

2234 Some states require airports to develop NEMs similar to the Part 150 Study, so sponsors
2235 should check whether their states have such regulations. Although these state
2236 requirements do not supersede the Part 150 regulations, the results of those other studies
2237 can be used as a gauge to determine whether NEMs must be updated under 14 CFR Part
2238 150 Section 21(d).

2239 6.2.3 Assessing Changes to Noise Contours.

2240 Although changes to land use within an airport's NEM are relatively easy to determine
2241 through a windshield survey, such as by driving through the communities or by
2242 reviewing recent aerial photography, it is often difficult to know whether an increase or
2243 decrease of DNL 1.5 dB has occurred over noncompatible land use without running the
2244 AEDT. Unforeseeable impacts associated with IFPs, air traffic management, or air
2245 commerce may have occurred since the time the NCP was approved. Therefore, a
2246 variety of factors need to be considered and professional judgment applied when
2247 assessing potential changes to noise contours resulting from changes to aircraft
2248 operations.

2249 6.2.3.1 **Assessing the Nature of Operational Changes.**

2250 Airport sponsors should have an electronic set of the study files, including
2251 all those used to develop the NEMs, so adjustments to determine whether

³³ For example, day night split change, significant change in fleet mix, quieter aircraft, nighttime cargo operations, and changes in operational procedures.

³⁴ See AIP Handbook at: https://www.faa.gov/airports/aip/aip_handbook/.

³⁵ See Part 150 Section 23(e)(9).

2252 there is a DNL 1.5 dB increase or decrease over noncompatible land uses
 2253 will not be too burdensome. When operational noise abatement measures
 2254 can no longer be used in accordance with the approved measure or when
 2255 there are other changes to air traffic management, the new traffic flows
 2256 need to be evaluated. If the operational changes include changes to runway
 2257 utilization, flight tracks, or flight track utilization, then AEDT should be
 2258 used to assess these changes.

2259 6.2.3.2 **Using the FAA Approved Computer Program.**

2260 Since AEDT is the current FAA-approved computer model for assessing
 2261 operational changes, updating AEDT files to assess operational changes
 2262 should not involve extensive resources. AEDT accepts older Integrated
 2263 Noise Model (INM) input files. Questions about modeling should be
 2264 directed to the FAA along with documentation of the types of changes that
 2265 have occurred at the airport. This documentation could briefly describe the
 2266 change(s) and include supporting statistical data or graphical depictions of
 2267 operational changes.

2268 6.2.3.3 **Screening.**

2269 6.2.3.3.1 In very limited circumstances, using the [Area Equivalent Method \(AEM\)](#)
 2270 may help determine whether the overall area within the noise contour has
 2271 increased by 17 percent or more (this would indicate a potential 1.5 dB
 2272 increase requiring an NEM update).³⁶ The AEM provides an indication of
 2273 the overall percent of change to the noise contour area in tabular form.
 2274 Assessments using the FAA's AEM computer model are appropriate
 2275 under the following types of changes to airport operations:

- 2276 • Non-locational in nature (involving changes in flight tracks) and only
 2277 affect the number of aircraft operations
- 2278 • Aircraft fleet mix adds noisier aircraft
- 2279 • Day/night split of aircraft operations adding more nighttime,
 2280 operations or changes runway use percentages

2281 6.2.3.3.2 If operational changes include helicopter operations, AEM cannot be used.
 2282 The AEM algorithms that relate aircraft Landing-Takeoff cycles to
 2283 contour area were not designed to include helicopter operations.
 2284 Consequently, given degree of uncertainty when trying to model
 2285 helicopter operations in AEM, AEDT is the most appropriate.

2286 6.2.3.3.3 The AEM provides extremely limited information as a Part 150 screening
 2287 tool because of the specificity required for all Part 150 assessments. As a

³⁶ The AEM can only be used to evaluate changes to fleet mix or numbers of operations because the model assumes a single runway and single direction operations. It cannot determine if the shape of the noise contour has changed.

2288 result, the FAA must approve use of AEM for Part 150 Studies ahead of
2289 time. AEM cannot be used to certify that an outdated NEM is valid.

2290 6.3 **Revising NCPs.**

2291 Revising an NCP is not always required when NEMs are updated. Part 150 states that
2292 NCPs should include a provision for revising the program if made necessary by revision
2293 of the NEMs. If the NEMs are revised and the new maps reveal that land uses
2294 previously designated noncompatible are now compatible or vice versa, then NCP
2295 elements based on the previous NEMs may no longer be applicable or new elements
2296 may be needed. In this case, NCP measures affected by changes in the noise contour
2297 need to be updated, especially to remain eligible for AIP funding. The FAA will
2298 consider whether ongoing noise measures that are near completion will remain eligible
2299 and justified.

2300 6.3.1 Determining When an NCP Update is Necessary.

2301 Although Part 150 Section 23(e)(8) requires identifying the period covered by NCPs,
2302 Part 150 does not specifically state when an NCP update is or is not required. FAA
2303 policy on funding noise projects has practical implications to seriously consider when
2304 deciding whether to update an NCP. For example, if revised NEMs reveal a significant
2305 increase or decrease in the size of the noise contours over noncompatible land uses, the
2306 relationship needs to be examined between the updated NEMs and the geographical
2307 extent of previous FAA-approved NCP noise abatement measures such as property
2308 acquisition /or sound insulation. Operational noise abatement measures may no longer
2309 be effective due to land use encroachment or changes in air traffic flow patterns and the
2310 airport and other airports in the vicinity. Sometimes the NCP may need to be updated
2311 after an airport infrastructure development project.

2312 6.3.1.1 **Cases Where NEMs Reveal Additional Noncompatible Land Uses.**

2313 When revised NEMs reveal additional noncompatible land uses within the
2314 DNL 65 dB contour, the number of additional properties that would be
2315 potentially eligible for mitigation according to approved measures in the
2316 NCP need to be determined and included in an NCP revision.

2317 6.3.1.2 **Cases Where the NEMs Reveal a Reduction in Noncompatible Land**
2318 **Uses.**

2319 If revised NEMs reveal a reduction in the number of noncompatible land
2320 uses inside the DNL 65 dB or greater noise contours, then properties
2321 previously considered to be eligible for mitigation using FAA funding
2322 may lose their eligibility. Noncompatible land uses that shift from being
2323 inside a higher noise contour to a contour of lesser noise would also not be
2324 eligible for previously approved mitigation (such as acquisition) unless
2325 that same type of mitigation was included in the previously approved NCP
2326 for the lower noise contour area. Reduction in noncompatible land uses
2327 need to be included in a revised NCP.

2328 6.3.2 AIP Priority Rating.

2329 FAA program guidance provides that noise mitigation projects will receive an AIP
2330 priority rating based upon the noise contour in which they are located. Projects inside
2331 higher-level noise contours receive a higher priority rating than projects inside lower-
2332 level noise contours. Because of the competition for AIP funding with other airports'
2333 noise mitigation projects, the goal of the priority rating system is to ensure that federal
2334 funding of noise mitigation projects is directed first to the more highly noise-impacted
2335 projects. See FAA Order 5100.38.

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2337 CHAPTER 7. PREPARING NOISE COMPATIBILITY PROGRAMS

2338 7.1 Introduction.

2339 An NCP contains the measures airport sponsors propose to implement for reducing
2340 existing noncompatible land uses and preventing the introduction of new noncompatible
2341 land uses within the area covered by the sponsor's NEMs. The NCP may also consider
2342 actions proposed by other responsible agencies.

2343 7.1.1 Purposes of the NCP.

2344 The purposes of the NCP are fourfold:

- 2345 • Promote a planning process in which airport sponsors can study airport noise
2346 impacts as well as the costs and benefits of alternative noise reduction techniques.
- 2347 • Encourage land use jurisdictions through the planning process to examine existing
2348 and forecast noncompatible land uses and consider actions to reduce them.
- 2349 • Use public participation and agency coordination to facilitate creating a noise
2350 abatement plan that all interested parties (to the best of their ability) can agree on,
2351 that is suited to a particular airport, and will not unduly affect the national air
2352 transportation system.
- 2353 • Develop noise reduction techniques and land use control that, to the extent they can:
- 2354 • Confine aircraft DNL values of 75 dB or greater to areas within the airport
2355 boundary.³⁷
- 2356 • Establish and maintain compatible land uses in the areas between the DNL 65 and
2357 75 dB contours.

2358 7.2 NCP Standards for Analysis and Approval.

2359 Based on the airport noise exposure and the noncompatible land use identified in the
2360 NEM documentation, the NCP's final measures³⁸ must meet these requirements:

- 2361 • Reduce existing noncompatible uses.
- 2362 • Prevent or reduce the probability of additional noncompatible uses being
2363 established.
- 2364 • Does not impose an undue burden on interstate or foreign commerce.
- 2365 • Can be revised if changes in the NEM show NCP revision is necessary.
- 2366 • Is not unjustly discriminatory.
- 2367 • Does not reduce safety or adversely affect the safe and efficient use of airspace.

³⁷ For California, the FAA accepts the CNEL, which is similar to the DNL metric, but adds an evening weighting.

³⁸ Title 14 CFR Part 150 Appendix B150.5.

- 2368 • Meets local needs and national air transportation system needs, considering
- 2369 tradeoffs between the airport's economic benefits and the airport's noise impact.
- 2370 • Can be implemented in a manner consistent with the powers and duties of the FAA
- 2371 Administrator (e.g. the NCP should not include measures that conflict with the
- 2372 FAA's authority over airspace).

2373 7.3 **Consideration of Program Alternatives.**

2374 The FAA examines NCP recommendations using all of the 14 CFR Part 150 approval
 2375 criteria. Under Part 150 Section B150.7(b), each NCP must at a minimum consider
 2376 whether the following noise compatibility program alternatives apply at the airport. The
 2377 consideration of additional measures is optional, and can be recommended during the
 2378 consultation process by any consulting party. Table 7-1 list possible actions that could
 2379 be considered for airport-specific noise problems. These measures come directly from
 2380 ASNA (recodified at 49 U.S.C. Section 47504) and are also found in Part 150 Section
 2381 B150.7(b).

2382 7.3.1 Program Alternatives That Must Be Considered.

2383 These minimum measures must be considered for applicability and feasibility at airports
 2384 developing an NCP,

2385 7.3.1.1 **Acquisition.**

2386 Acquisition of land and interests therein, including but not limited to air
 2387 rights (e.g., over flight rights), easements, and development rights to
 2388 ensure property use is for purposes which are compatible with airport
 2389 operations.

2390 7.3.1.2 **Construction and Shielding.**

2391 Construction of noise barriers and acoustical shielding including the sound
 2392 insulation³⁹ of public buildings.

2393 7.3.1.3 **Runway Use.**

2394 Implementation of a preferential runway use plan.

³⁹ The term "sound insulation" is also called "sound attenuation," "noise insulation," or "sound proofing."

2395

Table 7-1. Matrix of Possible Noise Control Alternatives⁴⁰

IF YOU HAVE NOISE FROM:										CONSIDER THESE ACTIONS:
NOISE FROM TAXIING	DEPARTURE	APPROACH	LANDING ROLL	TOUCH AND GO FLIGHTS	ENGINE RUN-UPS	GROUND EQUIPMENT	MILITARY OPERATION	NIGHTTIME OPERATION		
AIRPORT LAYOUT CHANGES										
●	●	●	●	●			●	●		Changes in Runway Location or Length
●					●	●	●	●		Isolating Maintenance Run-ups or Use of Noise Barriers and Acoustical Shielding
AIRPORT & AIRSPACE USE AND AIRCRAFT OPERATION										
●	●	●	●	●				●		Preferential or Rotational Runway Use
	●	●		●				●		Preferential Flight Track Use
	●	●		●				●		Modification to Approach and Departure Procedures
●										Restrictions on Ground Movement of Aircraft
					●	●	●	●		Restrictions on Engine Run-ups or Use of Ground Equipment
●	●	●	●	●	●	●	●	●		Use Restrictions
LAND USE										
●	●	●	●	●	●	●	●	●		Comprehensive Planning
●	●	●	●	●	●	●	●	●		Compatible Use Zoning/Zoning Regulations
●	●	●	●	●	●	●	●	●		Building Code Provisions
	●	●	●	●	●	●	●	●		Subdivision Regulations
	●	●	●	●	●	●	●	●		Real Estate Disclosure
●	●	●	●	●	●	●	●	●		Land Acquisition and Relocation
●	●	●	●	●	●	●	●	●		Acquisition of Vacant Land
●	●	●	●	●	●	●	●	●		Noise Insulation
●	●	●	●	●	●	●	●	●		Acquisition of Easements or Development Rights
	●	●	●	●	●	●	●	●		Purchase Assurance/Sales Assurance/Transaction Assistance
NOISE PROGRAM MANAGEMENT										
●	●	●	●	●	●	●	●	●		Pilot Awareness Program
●	●	●	●	●						Periodic Program Monitoring
●	●	●	●	●	●	●	●	●		Establish a Noise Abatement Contact/Noise Complaint Hotline
	●	●		●	●		●	●		Noise Monitoring
●	●	●	●	●	●	●	●	●		Establish Community Participation Program

2396

⁴⁰These measures come directly from the ASNA (recodified at 49 United States Code (U.S.C.) 47504) and are also found in Part 150 Section B150.7(b).

- 2397 7.3.1.4 **Flight Tracks and Procedures.**
2398 Use of flight visual and instrument flight tracks, including the
2399 modification of charted IFPs and CVFPs, to control the operation of
2400 aircraft to reduce noise exposure to individuals or specific noise-sensitive
2401 areas around the airport.
- 2402 7.3.1.5 **Restrictions.**
2403 Restrictions that affect Stage 2 and Stage 3 aircraft must comply with 14
2404 CFR Part 161 requirements. Title 14 CFR Part 161 implements relevant
2405 portions of ANCA that relate to restrictions on flight operations. Many of
2406 the restrictions specified in ASNA may be superseded by technological
2407 advances or procedures and are no longer appropriate. Part 161 restrictions
2408 on the use of the airport by any type or class of aircraft based on their
2409 noise characteristics can include any of the following:
- 2410 • Denial of use of the airport to aircraft types or classes that do not meet
2411 federal noise standards.
 - 2412 • Capacity limitation based on the relative noisiness of different types of
2413 aircraft.
 - 2414 • Mandatory requirements for aircraft using the airport to use noise
2415 abatement takeoff or approach procedures previously approved as safe
2416 by the FAA.⁴¹
 - 2417 • Landing fees based on FAA certificated or estimated noise emission
2418 levels, or on time of arrival.
 - 2419 • Partial or complete curfews.
- 2420 7.3.1.6 **Other Alternatives or Combinations of Measures.**
2421 Other actions or combinations of actions which would realize noise
2422 control or abatement benefits for the public within the noise-impacted
2423 area, such as refined aircraft departure profiles.
- 2424 7.3.1.7 **FAA-Recommended Alternatives.**
2425 Under Part 150 Section B150.7(b)(7), airport sponsors must consider
2426 “other actions recommended for analysis by the FAA for the specific
2427 airport.” Although it is expected that FAA recommendations would
2428 usually be offered during the consultation process, the FAA may also
2429 provide them after the NCP has been submitted. The FAA may
2430 recommend a new alternative not previously considered or a variation of
2431 an alternative that was considered and rejected.

- 2432 7.3.2 Implementation Authority.
- 2433 7.3.2.1 In accordance with Part 150 Section B150.7(c), the NCP must indicate for
2434 each considered measure the category of the entity or combination of
2435 entities that has authority to implement the measures. Entities with this
2436 authority might include:
- 2437 • Airport operators or sponsors
 - 2438 • State agencies or political subdivisions of a governing body
 - 2439 • The FAA
 - 2440 • Other federal agencies
- 2441 7.3.2.2 The NCP should also indicate the willingness of the entity or entities to
2442 implement the alternatives.
- 2443 7.3.3 Alternatives Description and Analysis.
- 2444 7.3.3.1 Part 150 Section 150.23(e)(2) requires a description and analysis of the
2445 considered noise abatement alternatives and a discussion of why specific
2446 measures were rejected for inclusion in an airport sponsor's final NCP.
2447 The description should be sufficiently detailed to be clearly understood.
2448 The amount of analysis will vary with each alternative and with the
2449 amount of interest in pursuing particular requirements.
- 2450 7.3.3.2 Generally, Part 150 does not specify the analytical detail required to
2451 justify rejected alternatives. The rationale presented in the documentation
2452 for rejecting alternatives should be reasonable and not arbitrary or
2453 capricious. The analysis should ensure measures are not rejected because
2454 of faulty technical analysis or flawed conclusions (for example, by
2455 claiming a particular measure is illegal when it is not).
- 2456 7.3.3.3 Requirements for analyzing alternatives that are recommended for the
2457 NCP are detailed in the next section.
- 2458 7.4 **Alternatives Recommended for Implementation.**
- 2459 7.4.1 The NCP documentation must clearly indicate which noise abatement alternatives are
2460 recommended for FAA approval/implementation. These must be recommended by
2461 airport sponsors, not their consultants or other parties; however, sponsors may
2462 recommend measures proposed by other parties. NCP alternatives are premised on
2463 existing and projected noise levels. They should be reexamined when there are changes
2464 in operations or layout at the airport that would result in an increase or decrease of

2465 1.5 dB in noise exposure over noncompatible land uses, or changes in land uses around
2466 the airport.

2467 7.4.2 Even though the Part 150 regulation, FAA staff, the public, and other consulted parties
2468 may recommend the consideration of specific alternatives, airport sponsors have the
2469 final decision on which alternatives to reject and which to recommend in the NCP.

2470 7.4.3 Analytical Requirements and Program Standards.

2471 There are no exceptions to the analytical requirements and the program standards
2472 imposed by Part 150 Section B150.5. Insufficient analysis in NCP documents could
2473 lead to disapproval of an otherwise perfectly reasonable recommendation.

2474 7.4.3.1 **Requirements for Continuation of Past Practices.**

2475 Recommendations of measures that are continuations of past practices but
2476 not previously approved in an NCP (for example, noise practices that were
2477 put in place locally outside of the formal Part 150 Process), must meet the
2478 same analytical requirements and program standards as new measures if
2479 they are submitted for FAA approval. If sponsors do not desire formal
2480 FAA approval for noise abatement and mitigation practices already in
2481 place at the airport, the NCP document must describe them in its
2482 introduction existing conditions section as part of baseline conditions.
2483 These practices also must be described in the narrative as practices that
2484 were modeled for developing the Existing Condition NEM. These
2485 modeled and described practices must accurately reflect what is occurring
2486 at the airport. For instance, if an FAA-approved IFP in a previously
2487 approved NCP is no longer used, actual flight tracks must be modeled as
2488 the NEM baseline and described in the narrative.

2489 7.4.3.2 **Re-Approval of Previously Approved Alternatives.**

2490 7.4.3.2.1 No FAA action is required to implement measures that have been
2491 approved in a previous NCP. However, if an approved alternative is not
2492 implemented within five years of the date of approval, it is considered
2493 expired and not part of the baseline conditions, and needs to be
2494 re-analyzed in an NCP update. Modified measures the FAA approved in
2495 an earlier NCP which are submitted for reapproval must meet the
2496 analytical requirements and program standards as if they were a first-time
2497 request for approval. Updated NCPs replace the most recent, previously
2498 approved NCP.

2499 7.4.3.2.2 Upon re-evaluation, a previously approved alternative may need to be
2500 modified to improve noise-reduction benefits or removed because it is no
2501 longer applicable due to changes in land uses. A measure may no longer
2502 be feasible or effective due to safety, efficiency, air traffic management, or
2503 other airspace constraints in the vicinity. Only the re-evaluated alternatives
2504 that are shown to be feasible and noise beneficial for FAA re-approval
2505 should be submitted in the NCP update.

- 2506 7.4.3.3 **Previously Approved but Unchanged Operational Measures.**
2507 Previously approved operational measures successfully in place at the
2508 airport and depicted on the NEMs do not normally have to be reevaluated
2509 when updating an NCP—as long as no changes have been made to the
2510 measures. These measures are reported as part of the baseline conditions at
2511 the airport, with no request for an FAA re-approval. A sponsor needs to
2512 produce a table summarizing all previously proposed measures (from
2513 previous NCPs), FAA approval status, implementation status, and action
2514 required/requested by FAA. Questions that arise concerning these
2515 measures should be discussed with the ARP POC.
- 2516 7.4.4 Implementation Responsibilities.
2517 Part 150 Sections 150.23(e)(8) and B150.7(c) require the study to identify the agency or
2518 agencies responsible for implementing each recommended alternative. Part 150 Section
2519 B150.7(c) further requires an indication of whether those agencies have agreed to
2520 implement measures within their authority. Do not include measures as
2521 recommendations in NCPs if there is no indication the responsible authority plans to
2522 take action toward carrying it out. Part 150 Section 150.23(e)(8) requires the NCP
2523 documentation to include any essential government actions that will be necessary to
2524 implement specific alternatives such as zoning changes or amending comprehensive
2525 plans.
- 2526 7.4.5 Implementation Schedule.
2527 Part 150 Sections 150.23(e)(8) and B150.7(c) require NCPs to include an estimated
2528 schedule for implementing its alternatives. This information should be written to
2529 sufficiently address the requirement in Part 150 Section 150.23(e)(8) for indicating the
2530 period the NCP covers. If an approved alternative is not implemented within five years
2531 of the date of approval, it will need to be reevaluated with respect to any updated NEM.
2532 This is particularly true for an ongoing sound insulation or land acquisition program
2533 carried out under Part 150. Schedules should be updated as necessary.
- 2534 7.4.6 Implementation Costs.
2535 Part 150 Section 150.23(e)(8) requires the NCP documentation to include an indication
2536 of the anticipated costs of the recommended measures and the anticipated funding
2537 sources.
- 2538 7.4.7 Changes to Previous Plans.
2539 Under Part 150 Section 150.23(e)(6), the NCP documentation must indicate how, if at
2540 all, the recommended measures may change any independently undertaken noise
2541 control plan or actions or an approved and implemented Part 150 land use compatibility
2542 program.

2543 7.5 **Categories of Program Alternatives.**

2544 7.5.1 Given the program alternatives that must be evaluated in an NCP, most airport sponsors
 2545 typically propose program alternatives in three general categories: noise abatement
 2546 (aircraft operations/airport layout), land use, and program management (administrative
 2547 actions). Individual recipients (such as a homeowner or school) of noise compatibility
 2548 projects may be entitled to more than one program alternative if the measures are
 2549 approved in the sponsor's NCP, enhance land use compatibility, provide additional
 2550 protection for the airport, and the total cost of the measures is reasonable in relation to
 2551 the property value. For example, sound insulation may be combined with acquisition of
 2552 an easement, or a sponsor may acquire residential property and install sound insulation
 2553 with an easement, before offering it for resale.

2554 7.5.2 The three general categories of noise measures are explained below.

2555 7.5.3 Noise Abatement Measures.

2556 7.5.3.1 Noise abatement measures may include either operational or infrastructure
 2557 components:

- 2558 • Operational, such as implementing a preferential runway system or
 2559 using charted instrument flight procedures to direct aircraft to fly
 2560 specified tracks.
- 2561 • Airport infrastructure development such as noise barriers or engine run
 2562 up enclosures.

2563 7.5.3.2 Airport sponsors must comply with title 14 CFR Part 161 (see Sections
 2564 1.2.1, 3.4, and 7.3.1.5 of this AC) before implementing any mandatory
 2565 airport noise or access restriction affecting Stage 2 or Stage 3 aircraft,
 2566 regardless of aircraft weight. A mandatory airport noise or access
 2567 restriction that affects any aircraft type (any stage or non-staged aircraft)
 2568 must comply with the grant assurances.

2569 7.5.3.3 In addition to showing that the operational measures would reduce
 2570 existing noncompatible land uses (provide a net reduction) or prevent
 2571 future noncompatible land uses, Part 150 Section 150.33 requires the FAA
 2572 to conduct a separate evaluation of the operation to determine their
 2573 potential impacts on aviation safety and efficiency. Before operational
 2574 noise abatement measures that may affect aviation safety are implemented,
 2575 they must have a favorable SRM finding per FAA Order 5200.11.

2576 7.5.3.4 The objective in choosing specific aircraft operational measures is to
 2577 achieve the best combination of noise abatement strategies and compatible
 2578 land use measures that work best for the airport and the surrounding

2579 environment, consistent with the FAA Administrator’s other obligations
2580 such as safety and efficiency.

2581 7.5.4 Land Use Measures.

2582 Land use noise measures comprise two types:

2583 7.5.4.1 **Remedial Measures.**

2584 These measures are intended to reduce existing noncompatible land uses.
2585 The four most commonly used remedial noise mitigation measures:

- 2586 • Land acquisition (Section 7.13)
- 2587 • Sound insulation (Section 7.14)
- 2588 • Easement acquisition (Section 7.15)
- 2589 • Purchase assurance / sales assurance / transaction assistance (Section
2590 7.16)

2591 7.5.4.2 **Preventive Measures.**

2592 7.5.4.2.1 Preventative measures are normally within the sole authority of the local
2593 land use jurisdictions and are intended to prevent the introduction of
2594 additional noncompatible land uses. These are the most commonly used
2595 preventive land use noise measures:

- 2596 • Comprehensive planning
- 2597 • Zoning regulations
- 2598 • Subdivision regulations
- 2599 • Acquisition of easements or development rights
- 2600 • Revised building codes for sound insulation
- 2601 • Real estate disclosure
- 2602 • Acquisition of vacant land

2603 7.5.4.2.2 The FAA believes that preventing additional residential land uses within
2604 the DNL 65 dB noise contour and creating non-noise sensitive land uses
2605 (such as industrial) is highly preferred over allowing residential uses, even
2606 with sound attenuation or avigation easements.

2607 7.5.4.2.3 [Table 1 of Part 150](#) notes that the FAA does not substitute federally
2608 determined land uses for those determined to be appropriate by local
2609 authorities in response to locally determined needs and values in achieving
2610 noise compatible land uses. Airport sponsors and local land use
2611 jurisdictions are urged to pursue all possible avenues to discourage new
2612 residential development within the levels of noise exposure designated as
2613 “significant” in Part 150. If local needs dictate permitting noncompatible

2614 developments inconsistent with [Table 1 of Part 150](#), any noncompatible
 2615 land use structures (such as residences) constructed after October 1, 1998,
 2616 are not eligible for remedial mitigation using federal financial assistance
 2617 (see Section 7.6 of this AC for more information).

2618 7.5.5 Program Management Measures.

2619 7.5.5.1 Part 150 does not require sponsors to quantify benefits for program
 2620 management measures in an NCP if they do not lend themselves to
 2621 quantification. For example, it may be difficult to quantify the
 2622 effectiveness and benefits of an awareness program for pilots. The NCP
 2623 description of program management measures, however, should include
 2624 evidence they are related to successful implementation of your NCP. As
 2625 an example of a program management measure, Part 150 Section 150.35
 2626 requires revising the NCP if the NEMs are significantly revised. Many
 2627 airport sponsors schedule automatic revisions or reviews of the NCP and
 2628 NEMs within a specified timeframe, which encourages long-term
 2629 successful implementation.

2630 7.5.5.2 Other program management measures:

- 2631 • Periodic program monitoring
- 2632 • Establishing committees to keep the public informed of NCP progress
- 2633 • Establishing a noise abatement contact at the airport
- 2634 • Establishing a noise complaint hotline

2635 7.5.6 Approval of Land Use Mitigation Measures after October 1, 1998.

2636 7.5.6.1 The FAA published a policy in April of 1998 advising land use
 2637 jurisdictions across the country that it will no longer approve remedial
 2638 (after-the-fact) noise mitigation measures for new noncompatible
 2639 development that occurs in the vicinity of airports that had a noise contour
 2640 map distributed to the public after October 1, 1998.⁴² Noncompatible land
 2641 uses must be in existence on that date.

2642 7.5.6.2 The FAA recognizes that there will be gray areas which will have to be
 2643 addressed on a case-by-case basis within these policy guidelines. For
 2644 example, minor development on vacant lots within an existing residential
 2645 neighborhood that is clearly not extensive would not be considered new
 2646 noncompatible development. It may, for practical purposes, need to be

⁴² FAA's policy was published in the Federal Register on April 3, 1998 (63 FR 16409-16414).

2647 treated with the same remedial measures applied to the rest of the
2648 neighborhood.

2649 7.5.6.3 Airport sponsors must provide adequate justification in the NCP
2650 documentation for such exceptions to the policy guidelines.

2651 7.6 **Approval of Land Use Mitigation Measures in Areas Less Than DNL 65 dB.**

2652 7.6.1 Land use mitigation measures are usually recommended in areas where aircraft noise
2653 exposure exceeds DNL 65 dB. For determining funding, the FAA gives priority to the
2654 areas with the highest noise levels.⁴³ However, land use mitigation measures may be
2655 approved and potentially eligible for federal financial assistance for areas exposed to
2656 noise levels less than DNL 65 dB.

2657 Mitigation for areas below the federal noncompatibility criteria in [Part 150, Table 1](#),
2658 may be approved if three criteria are met:

- 2659 • The local land use authority and the airport sponsor have adopted a designation of
2660 noncompatibility different from Table 1 in its NCP.⁴⁴
- 2661 • NEM contours and the NEM and NCP narrative identify the areas as noncompatible
2662 and propose to mitigate in that area.
- 2663 • The airport sponsor's proposal to mitigate otherwise meets the Part 150 approval
2664 standards, including the requirement to reduce or prevent noncompatible land uses.

2665 7.6.2 For remedial land use mitigation measures (such as residential sound insulation) in
2666 areas below DNL 65 dB that are proposed in the NCP, airports sponsors must support
2667 their grant applications with appropriate documentation so the FAA can determine
2668 whether they are justified for federal financial assistance for the year of the grant
2669 application. For example, projects within DNL 65 dB contour may be expanded beyond
2670 the DNL 65 dB contour to include a reasonable additional number of otherwise
2671 ineligible parcels contiguous to a sound insulation project area. This is called "Block
2672 Rounding."⁴⁵ Where a high percentage of a neighborhood is within the noise contour,
2673 neighborhood or street boundary lines rather than the actual noise contour may be used

⁴³ The competition for federal dollars is high, and areas with higher noise impacts receive higher priority.

⁴⁴ The Airport Sponsor may not unilaterally include a local standard in the Part 150 Study if it is not acting as the land use control authority or acting in cooperation with the land use control authority. Jurisdictions with land use control authority must have formalized "locally determined needs and values" ([Table 1 of Part 150](#)) by adopting local standards before they can be included in the Part 150 Study document. Those local standards must not be limited to aviation-related noise, but applicable to all noise sources.

⁴⁵ See the complete discussion of eligibility of Block Rounding in the most current edition of FAA Order 5100.38, *Airport Improvement Program Handbook*.

2674 to determine the boundaries to establish a “contiguous block rounding” area if one or
2675 two homes are impacted⁴⁶.

2676 7.6.3 For questions about establishing a “block rounding” boundary, the sponsor must consult
2677 with their ARP POC.

2678 7.7 **Use of Supplemental Noise Analyses.**

2679 In some instances, such as when responding to input from the public, special land use
2680 agreements (leases, for example), or other specific reasons, supplemental metrics may
2681 be used in a Part 150 study. Appendix A of this AC provides more detail on
2682 supplemental noise metrics and analyses. Noise mitigation benefits have to be
2683 demonstrated within the NEM contours DNL 65 or higher dB. Supplemental noise
2684 metrics may not be used as a measure of significant aircraft noise impacts under NEPA,
2685 noncompatible land use under Part 150, or to demonstrate a noise benefit.

2686 7.7.1 Supplementing DNL Analysis on a Case-by-Case Basis.

2687 DNL analysis may be supplemented on a case-by-case basis. Because of the diversity of
2688 situations, the variety of supplemental metrics, and limitations, airport sponsors should
2689 coordinate their use with their FAA ADO or regional point of contact. Since a Part 150
2690 planning grant cannot be amended once it has been executed,⁴⁷ it is best to determine
2691 whether and why to use supplemental metrics when the scope of work is drafted. Refer
2692 to Appendix A and Table A-1 in this AC to determine the likelihood the study would
2693 require a supplemental metric analysis.

2694 7.7.2 Basis for Supplemental Noise Analysis.

2695 7.7.2.1 Supplemental noise analyses are most often used to describe aircraft noise
2696 impacts for specific noise-sensitive locations or situations and to assist in
2697 the public’s understanding of the noise impact. Accordingly, the analyses
2698 should clearly describe the impacts and the pertinent facts supporting use
2699 of the supplemental analyses proposed in the study document. The
2700 selection of supplemental analyses, methodologies, and metrics will
2701 depend upon the circumstances of each particular case. In some cases, a
2702 more complete narrative description of the noise events contributing to the
2703 DNL contours with additional tables, charts, maps, or metrics may be
2704 appropriate. In other cases, supplemental analyses may include metrics
2705 other than DNL.

2706 7.7.2.2 Supplemental metrics selected should fit the circumstances. Some metrics
2707 are better suited for describing human responses than others (see Table A-
2708 1 of this AC for the metric and associated noise issue). Unlike DNL,

⁴⁶ In locations where structures are proximal to or will expand beyond the contiguous DNL 65 dB noise contour area, advance coordination with the FAA ADO and/or RO is required to determine next steps for applying the block rounding approach.

⁴⁷ Order 5100.38, Paragraph 27.d.

2709 which reflects the magnitude, duration, and frequency of the noise events,
2710 supplemental metrics often do not cover all three.

2711 7.8 **Preferential Runway Use**

2712 7.8.1 Preferential runway use means voluntarily using certain runways rather than others to
2713 reduce noise impacts. The concept may apply to certain operations at particular times,
2714 such as directing evening or nighttime cargo flights away from residential areas.
2715 Another common concept is to designate a preferred calm wind runway, for use to
2716 direct traffic in a preferred direction when wind speeds are sufficiently low that there is
2717 general flexibility in runway choice. More complex runway use measures may seek to
2718 “share” or “equalize” noise by rotating through runway configurations.

2719 7.8.2 Runway selection is based principally on aircraft safety and efficiency, as well as
2720 aircraft performance capabilities, which is influenced by several factors:

- 2721 • Wind direction and speed
- 2722 • Aircraft performance, including tolerance for crosswinds
- 2723 • Runway slope, length, and pavement strength
- 2724 • Terrain and obstacles
- 2725 • Airspace traffic flow management in relation to ratio of operational demand to
2726 runway capacity

2727 7.8.3 Within these parameters, there may be informal runway-use options that can help to
2728 mitigate an airport’s noise during operative conditions. Preferential runway use for
2729 noise abatement entails using a preferred runway or runway direction for takeoff or
2730 landing which enable aircraft to avoid noise-sensitive land uses during the initial
2731 departure and final approach phases of flight. A preferential runway use program
2732 transfers the traffic from one direction or runway to another. If operationally feasible,
2733 preferential use runway reshapes the noise contour, potentially reducing the number of
2734 people exposed to high noise levels. In particular, preferential runway use can be
2735 advantageous for nighttime operations when calmer winds and/or reduced traffic
2736 demand allows for more flexibility in runway choice.

2737 7.8.4 Data Requirements.

2738 A significant amount of data is required in the NCP to support a proposed preferential
2739 runway use alternative:

- 2740 • An indication of the noise-reduction benefits to noncompatible land uses:
- 2741 • Noise contour comparisons superimposed over land use maps
- 2742 • Comparisons of numbers of people and residences impacted with and without the
2743 adjusted runway use system
- 2744 • Noise reduction in dB DNL provided to noise-sensitive sites on the ground.

- 2745 ○ Other narrative explanation related to geographic and demographic conditions
- 2746 around the airport that qualitatively describe benefits, such as flight patterns
- 2747 over vacant or compatible corridors and away from noncompatible land uses.

- 2748 • Describe the characteristics of the preferred runway length and strength to confirm
- 2749 that the preferred runway is designed for the aircraft that will use it, given the
- 2750 performance capabilities of the aircraft type(s).

- 2751 • An indication that approach and departure horizontal and vertical clearance planes
- 2752 are adequate and that required NAVAIDS and IFPs are available.

- 2753 • Indicate that the preferential runway use is in accordance with FAA Order 8400.9,
- 2754 National Safety and Operational Criteria for Runway Use Programs and 14 CFR
- 2755 Part 91.129(h):
 - 2756 ▪ describe how consideration was given to effects on controller workload
 - 2757 and airspace flow management relevant to the times and traffic volumes
 - 2758 when the proposed preferential runway use program would be in effect,
 - 2759 including:
 - 2760 ▪ the effects on terminal airspace efficiency such as aircraft routing and
 - 2761 sequencing;
 - 2762 ▪ the potential encroachment into adjacent terminal airspace serving other
 - 2763 airports; and.
 - 2764 ▪ any adverse impacts to flight safety.

- 2765 • Information on which aircraft or if all aircraft using the airport are subject to the
- 2766 preferential runway use, including whether aircraft are requested to use preferred
- 2767 runway(s) based on their noise characteristics, operational performance, or reasons
- 2768 relating to traffic separation for efficiency.

- 2769 • If significant inefficiencies such as reportable delays (per FAA Order 7210.55)
- 2770 result from the preferential runway use, information to support:

- 2771 • The noise-reduction benefit is sufficient to demonstrate a cost-beneficial tradeoff.

- 2772 • The necessity of preferential runway use compared to other noise reduction
- 2773 alternatives.

- 2774 • Costs of preferential runway use due to capacity reduction, additional aircraft
- 2775 operating time, aircraft fuel and emissions, and/or airport and airspace delay.

- 2776 • The potential for undue burden on commerce (including any unjust discrimination).

2777 7.8.5 FAA Informal Agreement.

2778 Part 150 states that “Consultation with FAA regional official shall include, to the extent
 2779 practicable, informal agreement from FAA on proposed new or modified flight
 2780 procedures.” Airport sponsors should consult with the FAA ATO staff, including
 2781 personnel in the ATCT and TRACON, as well the Operations Support Group at the
 2782 Service Center (through the ARP POC), early enough in the Part 150 process to
 2783 determine whether ATO can safely and efficiently conduct the proposed preferential

runway use plan. In particular, the TRACON serving the airport is the key resource for collaboration on airspace flow management. ATO may conduct SMS before implementation of any air traffic operational measure at a towered airport. See Section 9.3.2.

7.8.6 Approval Authority.

7.8.6.1 Approval of preferential runway use for noise abatement at both towered and nontowered airports is within the authority of the FAA. Implementation depends on airspace safety and efficiency, traffic, wind, and weather. FAA may approve preferential runway use as an informal program under 14 CFR Part 91.129(h). The final decision on which runway to use rests with the pilot in command of the aircraft, who is ultimately responsible for decisions regarding the safety of the aircraft. For these reasons, operational measures are only approved as “voluntary” in a Part 150 program.

7.8.6.2 Ensure the operative runway use parameters (e.g., runways, times, winds, traffic volume, aircraft types) are clearly described and indicated as voluntary before including them in the NCP for FAA approval.

7.8.7 National Environmental Policy Act Considerations.

The Part 150 study process does not take the place of compliance with NEPA. Before the FAA can implement approved preferential runway use programs prepared under a Part 150 study, the proposed runway use programs must be examined under NEPA and the FAA must issue a decision approving the changes. The airport sponsor plays a critical role in providing information necessary to complete an environmental review. See FAA Order 5050.4 for more information on the environmental review process.

7.9 **Aircraft Flight Operational Noise Abatement Measures.**

7.9.1 Operational flight tracks, profiles, and similar measures for abating noise may be part of a proposed NCP. They include adjusting takeoff and landing profiles, aircraft thrust settings, and approach and departure tracks for VFR or IFR traffic use.

7.9.2 Aircraft flight operational noise abatement measures may be effective in reducing area exposed to the DNL 65 dB level, thereby changing the size or changing the shape of the noise contours around an airport and the number of people affected. Noise-reduction within the DNL 65 dB contour must be analyzed and show a benefit before a proposed measure can be considered further⁴⁸

7.9.3 Where flight measures are recommended, their benefits should be preserved by ensuring the underlying land uses also are compatible, either through land use planning

⁴⁸ In cases where there is a more stringent local standard, benefits must be quantified to that standard.

2819 commitments by the jurisdiction with authority or through an airport sponsor's remedial
2820 mitigation (such as acquisition).

2821 7.9.4 Noise Abatement Departure Profiles.

2822 7.9.4.1 Takeoff profiles and their power and flap settings can be adjusted to
2823 reduce noise to either close-in or more-distant noise-sensitive areas. Noise
2824 abatement departure profiles are aircraft type- and operator-specific, and
2825 are typically implemented by runway end (i.e., departures from a specific
2826 runway or parallel runways will use a similar NADP).

2827 7.9.4.2 A noise abatement departure profiles should optimize noise reduction
2828 either close in or distant from the takeoff runway while maintaining flight
2829 safety. FAA AC 91-53A, *Noise Abatement Departure Profile*, describes
2830 acceptable criteria for safe noise abatement departure profiles (NADP) for
2831 subsonic turbojet-powered airplanes with a maximum certificated gross
2832 takeoff weight of more than 75,000 pounds. Guidance for general aviation
2833 is available from the National Business Aircraft Association (NBAA).
2834 Aircraft operators have preset techniques to fly NADPs based on airline or
2835 NBAA operating guidance. During NCP development, the airport can
2836 evaluate whether the close-in or distance NADP is best for any noise
2837 sensitive areas proximate to a given runway end. However, the airport
2838 cannot propose unique NADPs that vary from the standard NADPs that
2839 align with AC 91-53A. Absent instructions otherwise, most aircraft
2840 operators with fly a takeoff profile that is similar to the Distant NADP.

2841 7.9.4.3 For approval of the NADPs, the noise-reducing benefits within the DNL
2842 65 dB contour must be quantified in the NCP.

2843 7.9.5 Noise Abatement Approach Measures.

2844 Measures may reduce the noise from arriving aircraft. The NCP must quantify the
2845 expected noise-reducing benefits within the DNL 65 dB contour.

2846 7.9.5.1 **Reduced Drag Techniques.**

2847 The principle of reduced drag techniques consists of delaying as much as
2848 possible wing flap extension and landing gear use, consistent with speed
2849 management, height clearance, and safe operation. Noise-reduction
2850 benefits within the DNL 65 dB contour must be quantified in the NCP.

2851 7.9.5.2 **Optimum Profile Descent (OPD).**

2852 7.9.5.2.1 The OPD flight technique is an initial approach procedure between en
2853 route and interception of the final approach. OPD reduces the noise
2854 experienced on the ground by reducing the overall thrust required during
2855 initial descent and keeping the aircraft higher for a longer time. Once at
2856 the interception of the final approach, a standard profile descent to the
2857 runway is flown. Formerly, OPDs were referred to as Continuous Descent

2858 Arrival / Approach (CDA). OPDs are normally implemented with an
2859 RNAV Standard Terminal Arrival (STAR) procedure.

2860 7.9.5.2.2 While FAA modeling for OPD generally shows that the noise contour
2861 remains the same for the DNL 65 dB noise contour, OPD may show
2862 benefits, especially where a lower DNL significance threshold has been
2863 adopted. In addition to noise reduction, OPD can provide emission
2864 benefits. To date, the primary rationale for the OPDs implemented in the
2865 NAS is for aircraft fuel and emissions savings.

2866 7.9.5.2.3 If the OPD is proposed under a locally adopted noise threshold, the NCP
2867 should describe the DNL benefit and any impact on air traffic safety,
2868 management, or efficiency. Noise-reduction benefits within the DNL 65
2869 dB contour must be quantified in the NCP.

2870 7.9.5.2.4 The implementation of descent and approach procedures, OPD in
2871 particular, requires the NCP to describe how the procedures would relate
2872 to these factors:

- 2873 • Safety requirements
- 2874 • Airspace efficiency, including operational and ATC constraints
- 2875 • Weather conditions
- 2876 • Pilot workload, awareness, training, and experience
- 2877 • Aircraft and engine characteristics
- 2878 • Aircraft fleet mix
- 2879 • Operating rules.

2880 7.9.5.2.5 Successful implementation will depend on close collaboration between all
2881 parties—aircraft operators and pilots, air traffic control, airframe and
2882 engine manufacturers, airport sponsors. Enabling OPD use is often
2883 dependent on large-scale terminal airspace redesign efforts.

2884 7.9.5.3 **Reverse Thrust.**

2885 Reverse thrust is an effective, complementary way of braking an aircraft,
2886 especially on contaminated runways (for example those coated with rain
2887 or snow), and serves to significantly reduce the required runway length on
2888 landing or to abort a takeoff. In some cases, in order to minimize ground
2889 noise, the use of reverse thrust for jet or propeller engines can be limited
2890 to reverse idle. Limiting the use of reverse thrust above reverse idle might
2891 be considered during a specified period, especially during nighttime hours.
2892 Such a limitation could only be used when safety allows it. Associated
2893 noise-reduction benefits within the DNL 65 dB contour must be quantified
2894 in the NCP.

- 2895 7.9.6 Approach and Departure Routes using Visual and Instrument Methods.
- 2896 7.9.6.1 Designated approach and departure flight tracks may be used to mitigate
2897 noise by routing aircraft away from noncompatible land uses and instead
2898 over compatible land uses, when possible.
- 2899 7.9.6.2 The use of flight tracks by aircraft flying under either VFR or IFR should
2900 be considered depending on the mix of users at the airport. Often, an
2901 airport sponsor needs to consider developing noise abatement flight tracks
2902 for both visual and instrument operations. Even if the preferred the
2903 ground track is similar, the method by which the preferred flight track is
2904 accomplished varies between an aircraft flying VFR versus the same
2905 aircraft flying IFR.
- 2906 7.9.6.3 Noise abatement flight tracks can risk increasing noise exposure in other
2907 areas when noise is shifted or focused. The tradeoff of specific procedures
2908 should demonstrate overall improvements to the noise environment.
2909 Noise-reduction benefits within the DNL 65 dB contour must be
2910 quantified, and airspace efficiency and safety must be evaluated in the
2911 NCP in collaboration with ATO and aircraft operators.
- 2912 7.9.6.4 **Preferential Visual Tracks.**
2913 Preferential visual tracks can route aircraft over compatible corridors,
2914 avoiding noise-sensitive areas on departure and arrival. Approach and
2915 departure tracks may include designated headings to turn aircraft away
2916 from noise-sensitive areas under or next to the usual takeoff and approach
2917 paths. Visual tracks can combine a recommended heading with a
2918 minimum altitude for before turning over a neighborhood. Proposed
2919 approach and departure visual tracks must take into account specific
2920 constraints such as terrain and airspace flow corridors at other nearby
2921 airports. Preferential visual tracks are not charted in the TPP and are best
2922 used for aircraft operations being conducted under VFR. Aircraft that
2923 routinely under IFR, such as business jets and large turboprops, will not
2924 routinely use visual tracks to connect to IFR airways and flows.
- 2925 7.9.6.5 **Preferential Instrument Procedures.**
- 2926 7.9.6.5.1 Preferential instrument tracks have a similar purpose to visual tracks, but
2927 are charted as Instrument Flight Procedures (IFPs) in the FAA Terminal
2928 Procedures Publication (TPP). Charted Visual Flight Procedures (CVFP)
2929 that are assigned to aircraft in their IFR clearance are also published in the
2930 TPP. In the interest of clarity, the use of the term “procedures” with
2931 operational noise abatement measures should refer specifically to charted
2932 instrument and visual procedures published in the TPP.
- 2933 7.9.6.5.2 Today, nearly all new requests for IFPs are accomplished with
2934 Performance Based Navigation (PBN), including area navigation using

2935 GPS (RNAV (GPS)) and Required Navigation Performance (RNP). See
 2936 FAA's 2016 [PBN NAS Navigation Strategy](#) for further information on
 2937 RNAV and RNP capabilities and strategies for use in the NAS. PBN,
 2938 when coupled with Flight Management System (FMS) automation in
 2939 aircraft, enables the precise, repeatable routing of aircraft on an IFP.
 2940 Depending on geography and the location of noise sensitive areas, as well
 2941 as the standards governing IFP design, PBN capabilities can effectively
 2942 route aircraft away from noise sensitive areas or cause adverse impacts by
 2943 focusing aircraft tracks over noise sensitive areas. As further PBN
 2944 concepts are matured, new advanced procedures could bring further
 2945 options to design improved noise abatement IFPs.

2946 7.9.6.5.3 Developing IFPs for noise abatement is more complex than visual tracks
 2947 and necessitates detailed collaboration with FAA ATC and ATO Flight
 2948 Procedures. However, developing IFPs can also result in a more useable
 2949 and repeatable flight track as it enables aircraft that routinely fly under
 2950 IFR, such as airline and business jets and large turboprops, to incorporate
 2951 the IFPs in their flight plans and IFR clearances.

2952 7.9.6.6 **Dispersed Departure Flight Tracks.**
 2953 Successive departing aircraft may be dispersed, or fanned, on different
 2954 flight tracks over wide-ranging areas. Fanning can be accomplished with
 2955 either a range of visual headings or divergent IFR tracks (i.e., ATC vectors
 2956 or Standard Instrument Departures (SIDs)). Dispersing flight tracks in this
 2957 way tends to decrease the length of the noise contours and to increase the
 2958 width. If this measure is proposed as a noise abatement alternative, it
 2959 should not disperse noise over a wider range of people (sharing the noise)
 2960 unless it can be demonstrated there is an overall net benefit (reduction in
 2961 numbers of people impacted without causing disproportionate impacts
 2962 such as to minority or low income populations or adding people to the
 2963 DNL 70 dB contour).

2964

2965 7.9.7 Data Requirements.

2966 A significant amount of data is required in the NCP to support proposed aircraft flight
 2967 operational noise abatement measures.

- 2968 • An indication of the noise-reduction benefits to noncompatible land uses:
- 2969 • Noise contour comparisons superimposed over land use maps
- 2970 • Comparisons of numbers of people and residences impacted with and without the
- 2971 noise abatement measures.
- 2972 • Noise reduction in dB DNL provided to noise-sensitive sites on the ground.

- 2973 ○ Other narrative explanation related to geographic and demographic conditions
- 2974 around the airport that qualitatively describe benefits, such as flight patterns
- 2975 over vacant or compatible corridors and away from noncompatible land uses.

- 2976 • An indication that approach and departure horizontal and vertical clearance planes
- 2977 are adequate and that required NAVAIDS and IFPs are available.

- 2978 • An indication that consideration was given to effects on controller workload and
- 2979 airspace flow management relevant to the times and traffic volumes when the
- 2980 operational noise abatement measures would be in effect, including:
- 2981 ▪ the effects on terminal airspace efficiency such as aircraft routing and
- 2982 sequencing;

- 2983 ▪ the potential encroachment into adjacent terminal airspace serving other
- 2984 airports; and

- 2985 ▪ any adverse impacts to flight safety.

- 2986 • Information on which aircraft or if all aircraft using the airport are subject to the
- 2987 operational noise abatement measures, including whether aircraft are requested to
- 2988 use the measures based on their noise characteristics, operational performance, or
- 2989 reasons relating to traffic separation for efficiency.

- 2990 • If significant inefficiencies such as reportable delays (per FAA Order 7210.55)
- 2991 result from the operational noise abatement measures, information to support:

- 2992 • The noise-reduction benefit is sufficient to demonstrate a cost-beneficial tradeoff.

- 2993 • The necessity of operational noise abatement measures compared to other noise
- 2994 reduction alternatives.

- 2995 • Costs of operational noise abatement measures use due to capacity reduction,
- 2996 additional aircraft operating time or flight distance, aircraft fuel and emissions,
- 2997 and/or airport and airspace delay.

- 2998 • The potential for undue burden on commerce (including any unjust discrimination).
- 2999

3000 7.9.8 FAA Informal Agreement.

3001 Part 150 states that “Consultation with FAA regional official shall include, to the extent

3002 practicable, informal agreement from FAA on proposed new or modified flight

3003 procedures.” Airport sponsors should consult with the FAA ATO staff, including

3004 personnel in the ATCT and TRACON, as well the Operations Support Group at the

3005 Service Center (through the ARP POC), early enough in the Part 150 process to

3006 determine whether ATO can safely and efficiently use proposed new or modified flight

3007 procedures. FAA recommends that any deliberations on new or amended charted flight

3008 procedures use FAA’s TARGETS software to facilitate the development of flyable

3009 procedures. ATO may conduct SMS before implementation of any air traffic

3010 operational measure at a towered airport. See Section 9.3.2.

3011 7.9.9 Approval Authority.

3012 Approval of airspace and aircraft operational control measures for noise abatement is
3013 within the FAA's authority. Implementation depends on airspace safety and efficiency,
3014 traffic, wind, and weather. The final decision on pilot use of operational noise
3015 abatement measures, including those assigned in IFR clearances, is with the pilot in
3016 command of the aircraft who is ultimately responsible for decisions regarding the safety
3017 of the aircraft. For these reasons, aircraft flight operational noise abatement measures
3018 are approved as "voluntary" in a Part 150 program. Voluntary use extends to noise
3019 abatement IFPs, as the pilot has the option to refuse an IFR clearance that includes an
3020 IFP that the aircraft cannot safely fly, and instead coordinate with ATC for a different
3021 IFP that is flyable under the existing conditions.

3022 7.9.10 National Environmental Policy Act Considerations.

3023 The Part 150 study process does not take the place of compliance with NEPA. Before
3024 operational noise abatement measures approved under a Part 150 study can be
3025 implemented, the proposed measures must be examined under NEPA and the FAA must
3026 issue a decision approving the changes. See FAA Orders 5050.4 and 7400.2 for more
3027 specific information on the environmental review processes for airports and airspace.

3028 7.10 **Surface Operations.**

3029 7.10.1 Two operational measures used on the ground at airports can reduce aircraft noise:

- 3030 • Limiting the timing and location of aircraft engine ground run-ups.
- 3031 • Surface management routings to reduce taxiing time or distance.

3032 7.10.2 If these measures are proposed, the NCP must quantify the benefits within the DNL 65
3033 dB contour.

3034 7.10.3 Engine run-up operations, in which the engines are inspected on the ground by running
3035 at a high or full power, must occur on an airport in order to complete required
3036 maintenance actions and carry out checks critical to flight safety. Operational measures
3037 might be recommended that would move high-power engine run-ups to designated areas
3038 central to the airport, and away from nearby residences. Full-power run-ups might be
3039 proposed for only specified times during the day, and/or in specially-constructed testing
3040 pens that are located away from noise-sensitive areas. (See Section 7.11 of this AC.)

3041 7.10.4 Auxiliary power units provide aircraft system power and air conditioning for aircraft
3042 maintenance, pre-flight preparation, and engine start at departure. Measures might be
3043 recommended to reduce noise in the vicinity of parked aircraft by minimizing the use of
3044 this auxiliary power, provided alternative sources of power are available, such as from
3045 other ground service equipment, terminal bridge services, or gate electrification).

3046 7.10.5 Data Requirements.

3047 Instructions for noise-modeling of surface operations are included in the AEDT manual.
3048 Additional information might be needed if the modeling results for these modified

3049 surface operations do not fully reflect the noise-reducing benefits. If this is the case,
3050 contact your ARP POC for assistance. NCPs should indicate the benefits of proposed
3051 noise abatement surface operations to noncompatible land uses, such as:

- 3052 • Quantified cumulative noise reduction to noncompatible areas
- 3053 • Numbers of people for whom noise is reduced
- 3054 • Effects on the noise contours
- 3055 • Other narrative that describes quantified benefits

3056 7.10.6 The Part 150 study process does not take the place of compliance with NEPA. Before
3057 airport sponsors can implement surface operations identified under a Part 150 study, the
3058 proposed changes must be examined under NEPA and the FAA must issue a decision
3059 approving the changes. The airport sponsor plays a critical role in providing information
3060 necessary to complete an environmental review. See FAA Order 5050.4 for more
3061 information on the environmental review process.

3062 7.10.7 Applicability of Part 161.

3063 Proposed ground-based measures should demonstrate that they do not reduce the total
3064 number or hours of aircraft operations, or affect aircraft safety. To do so, would require
3065 analysis under 14 CFR Part 161.

3066 7.11 **Noise Barriers and Ground Run-up Enclosures.**

3067 7.11.1 Properly planned and constructed noise barriers may be proposed to shield noise. Noise
3068 barriers can be earthen berms, vegetation, or manufactured barriers located between
3069 sources of ground-level noise on the airport and close-in, noise-sensitive receptors.
3070 Noise barriers reduce ground-based noise from aircraft operations (such as engine
3071 run-ups or taxiway queuing), but they do not mitigate noise once aircraft are in flight.
3072 Noise barriers must be built to the correct height, depth, and placement to provide
3073 meaningful relief without interfering with safe and efficient movement of aircraft on the
3074 ground, including line of sight. Proper positioning of newly constructed airport
3075 buildings can also function as a ground-based noise screen to adjacent communities.

3076 7.11.2 Noise barriers should be constructed in areas that would provide a minimum noise
3077 reduction of 5 dB at the nearest noncompatible land use within the noise contour. A
3078 minimum change of 5 dB has been scientifically shown to be perceptible to most
3079 people. Depending on their location at the airport, noise barriers may not have an
3080 impact on the size of the noise contour.

3081 7.11.3 Some airports have proposed or constructed GREs, or ground run-up enclosures. These
3082 are three-sided structures, similar to an open garage with no roof, in which engine
3083 run-up operations are conducted and the walls lined with acoustic panels dampen the

3084 noise. FAA Order 5100.38 provides guidance on grant eligibility requirements for noise
3085 barriers and ground run-up enclosures.

3086 7.11.4 Data Requirements.

3087 7.11.4.1 The data required in the NCP to support airport development measures
3088 proposed for noise abatement are similar to what is required for
3089 preferential runway use and for flight tracks.

3090 7.11.4.2 Depending on the type of measure, the NCP could present the benefits to
3091 noncompatible land uses in several forms:

- 3092 • Quantified cumulative noise reduction for noncompatible areas.
- 3093 • Pre- and post- decibel levels for typical aircraft using a run-up
3094 enclosure at noise sensitive receptors. Use a technically acceptable
3095 methodology to equate these levels to speech and/or sleep disturbance.
- 3096 • Numbers of people for whom noise is reduced.
- 3097 • For layout changes, data on measurable change in existing and/or
3098 future noise contours over noncompatible land uses that demonstrate
3099 the benefits equal or exceed the cost for new pavement.
- 3100 • For noise barriers, the analysis should show airport line-of-sight and
3101 Part 77 surfaces (obstructions) have been evaluated as part of deciding
3102 where to place the barriers.

3103 7.11.5 Environmental Considerations.

3104 Airport operators often seek federal financial assistance to plan and construct airport
3105 development measures such as noise barriers or GREs. Additionally, many airport
3106 development measures require a change to the ALP, and the provision of federal
3107 financial assistance as well as approval of an ALP by the FAA where required by
3108 statute, is a federal action requiring environmental review. The Part 150 study process
3109 does not take the place of compliance with NEPA, so before airport sponsors can
3110 implement development measures from the Part 150 Study, the FAA may need to
3111 comply with NEPA (see Section 150.5(c)). The ROA should indicate the measures that
3112 can be implemented immediately by the sponsor and those that require environmental
3113 analysis. If required, sponsors must submit information to the FAA sufficient for
3114 compliance with NEPA. See FAA Order 5050.4 for more information on the
3115 environmental review process.

3116 7.12 **Access Restrictions.**

3117 7.12.1 Part 150 Section B150.7 requires airport sponsors to analyze restrictions on airport use
3118 by certain aircraft based on their noise characteristics. If the NCP is not proposing
3119 airport access restriction, the discussion of this alternative may be brief.

3120 7.12.2 Before a Stage 2 or Stage 3 access restriction may be implemented, sponsors must
3121 satisfy the requirements of Title 14 CFR Part 161. ANCA directed in part the FAA to
3122 establish a regulation governing airport noise and access restrictions affecting Stage 2
3123 and Stage 3 aircraft operations. Part 161 is that regulation. Part 161 allows airports to
3124 utilize the Part 150 process to apply for a restriction, although the standards of Part 161
3125 are used for FAA's determination on the proposed restriction.

3126 7.12.3 Part 161 defines noise or access restrictions as:

- 3127 • "[R]estrictions (including but not limited to provisions in ordinances and leases)
3128 affecting access or noise that affect the operations of Stage 2 or Stage 3 aircraft,
3129 such as:
- 3130 • Limits on the noise generated on either a single-event or cumulative basis;
- 3131 • A limit, direct or indirect, on the total number of Stage 2 or Stage 3 aircraft
3132 operations;
- 3133 • A noise budget or noise allocation program that includes Stage 2 or Stage 3 aircraft;
- 3134 • A restriction imposing limits on hours of operations;
- 3135 • A program of airport use charges that has the direct or indirect effect of controlling
3136 airport noise; and
- 3137 • Any other limit on Stage 2 or Stage 3 aircraft that has the effect of controlling
3138 airport noise."

3139 7.12.4 The Part 161 definition of noise or access restrictions does not include peak-period
3140 pricing programs with the objective of aligning the number of aircraft operations with
3141 airport capacity.

3142 7.12.5 Data and Approval Requirements.

3143 Aircraft use restrictions proposed by airport sponsors for Stage 3 aircraft must undergo
3144 a rigorous analysis and comply with the requirements of Part 161.

- 3145 • Restrictions affecting Stage 3 aircraft must be approved by the FAA under 14 CFR
3146 Part 161.
- 3147 • Restrictions affecting other aircraft types must be able to demonstrate they will not
3148 violate federal law, including grant assurances.

3149 7.12.6 Part 161 Standards for Approval.

3150 For restrictions affecting Stage 3 aircraft, Part 161 details six conditions that must be
3151 satisfied in order for the FAA to approve the restriction:

- 3152 • The proposed restriction is reasonable, non-arbitrary, and non-discriminatory.
- 3153 • The proposed restriction does not create an undue burden on interstate or foreign
- 3154 commerce.
- 3155 • The proposed restriction maintains safe and efficient use of the navigable airspace.
- 3156 • The proposed restriction does not conflict with any existing federal statute or
- 3157 regulation.
- 3158 • The applicant has provided adequate opportunity for public comment on the
- 3159 proposed restriction.
- 3160 • The proposed restriction does not create an undue burden on the national aviation
- 3161 system.

3162 7.12.7 Part 150 Standards for Approval.

3163 The Part 150 Standards for Approval are in 14 CFR Part 150 Section 150.35. These
3164 criteria are described in Section 7.2 of this AC.

3165 7.13 **Land Acquisition and Relocation.**

3166 Land acquisition and relocation of occupants is a remedial (corrective) land use
3167 mitigation measure. Land acquisition and relocation assure airport sponsor of long-term
3168 land use compatibility. Acquired land can be cleared and retained as a noise buffer to
3169 prevent noise-sensitive land uses near the airport if it is in a very high noise zone. It can
3170 be sold with deed restrictions to control the types of future development permitted near
3171 the airport, or it can be redeveloped for compatible land uses. Airport sponsors should
3172 work closely with the ARP POC to develop a long-term plan for land reuse. The FAA
3173 requires sponsors to release the land once it is no longer needed for noise compatibility.

3174 7.13.1 Data Requirements.

3175 For proposed remedial land acquisition, airport sponsors must document this
3176 information in the NCP:

- 3177 • The mitigation area shown on the NEM is within the existing or future DNL 65 dB
- 3178 noise contour (or within a lower noise level contour that is considered
- 3179 noncompatible under locally adopted land use guidelines). It may then be included
- 3180 in the NEM and NCP by the sponsor; however, sponsors are not required to include
- 3181 mitigation requirements down to the lower adopted standard.
- 3182 • Evidence the property's land use is noncompatible within the NEM noise contour.
- 3183 • The acquisition meets Part 150 approval criteria.

3184 7.13.2 Other Requirements.

- 3185 1. If vacant land is highly likely to be developed as a noncompatible use, local controls
- 3186 are inadequate to prevent that development, and if the FAA has approved the
- 3187 sponsor's recommendation in an approved NCP, the acquisition is eligible.

- 3188 2. Whenever federal funding is involved in the development of a Part 150 study or in
 3189 mitigation under approved NCP measures, airport sponsors must satisfy the
 3190 Uniform Relocation Assistance and Real Property Acquisition Policies Act
 3191 (Uniform Act). Title 49 CFR Part 24, Uniform Relocation Assistance and Real
 3192 Property Acquisition, is the regulation that implements the Uniform Act. Land
 3193 acquired with AIP funding must comply with AC 150/5100-17, *Land Acquisition*
 3194 *and Relocation Assistance for Airport Improvement Program Assisted Project*, FAA
 3195 Order 5100.37, *Land Acquisition and Relocation Assistance for Airport Projects*,
 3196 and FAA Order 5100.38.
- 3197 3. Properties developed after October 1, 1998, are not eligible for remedial noise
 3198 abatement measures unless they had a noise contour map published before that date
 3199 that was distributed to the public. This policy should be disclosed during the study
 3200 process so the public is aware of possible limitations on implementing this measure.
- 3201 4. Land within the DNL 75 dB noise contour may be retained in airport ownership.
 3202 Land at less than DNL 75 dB should be disposed of per Grant Assurance 31
 3203 *Disposal of Land* and associated FAA guidance. Land reuse must be consistent with
 3204 FAA's policy on disposal of noise land when it is no longer needed for noise
 3205 compatibility purposes. See FAA Order 5100.38.

3206 7.14 **Sound Insulation.**

3207 7.14.1 Data Requirements.

- 3208 7.14.1.1 These data must be provided in the NCP for proposed sound insulation:
- 3209 • Location of the sound insulation area shown on the NEM within the
 3210 existing or future DNL 65 dB noise contour or within a lower level
 3211 contour that is considered noncompatible under adopted local land use
 3212 guidelines.
 - 3213 • Documentation that the structures are noncompatible under Part 150
 3214 guidelines or under local guidelines.
 - 3215 • Numbers and types of structures proposed for mitigation (dwellings,
 3216 schools, churches, hospitals). Evidence that people residing inside the
 3217 DNL 65 dB and above noise contours have been made aware of the
 3218 requirement that they must also experience interior noise levels 45 dB
 3219 or greater as an average in habitable rooms.⁴⁹

⁴⁹ Habitable areas of residences are living, sleeping, eating, or cooking areas (single family and multifamily) per the current version of Advisory Circular 150/5000-9, Announcement of Availability Report No. DOT/FAA/PP/92-5, Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations. Bathrooms, closets, halls, vestibules, foyers, stairways, unfinished basements storage or utility spaces are not considered to be habitable.

- 3220 7.14.1.2 To be eligible for federal aid, AIP eligibility requirements must be met
3221 (see the chapter on noise compatibility projects, FAA Order 5100.38).
- 3222 7.14.2 Insulation Criteria.
- 3223 7.14.2.1 The purpose of sound insulation is to reduce airport noise impacts on
3224 occupants inside a building. Only a noise-impacted noncompatible
3225 structure that is in the DNL 65 dB contour *and* the existing interior noise
3226 levels are 45 dB or greater with the windows closed can be considered for
3227 insulation with federal aid.⁵⁰
- 3228 7.14.2.2 A noise-impacted noncompatible structure - typically a residence, place of
3229 worship, school, or hospital – must be both in the DNL 65 dB contour *and*
3230 be experiencing existing interior noise levels that are greater than 45 dB in
3231 habitable rooms with the windows closed to be considered eligible for
3232 federal aid.
- 3233 7.14.2.3 There are three ways that a structure can be considered for noise insulation
3234 in three sets of conditions.
- 3235 1. The structure is located within a valid existing or forecast DNL⁵¹ 65
3236 dB or higher noise contour associated with operations at an airport on
3237 the FAA-accepted NEM⁵² and is in an approved program measure.⁵³
3238 The NEM is normally developed by an airport sponsor as part of a Part
3239 150 study or by a state or local jurisdiction noise program under 49
3240 U.S.C. Section 47141.⁵⁴
- 3241 2. The structure is included in a noise mitigation program prepared by a
3242 local jurisdiction surrounding a medium or large hub airport that either
3243 has not prepared a 14 CFR Part 150 program or does not have an
3244 updated 14 CFR Part 150 program.⁵⁵
- 3245 3. The structure is an adversely affected school or hospital. Under 49
3246 U.S.C. Section 47504, an adversely affected school or a hospital may
3247 also be eligible whether or not it is part of an airport sponsor's NCP.
- 3248 7.14.2.4 Under 14 CFR Part 150, the FAA adopted the standard of DNL 65 dB,
3249 established by the Federal Interagency Committee on Noise⁵⁶ (FICON) as

⁵⁰ See The AIP Handbook, FAA Order 5100.38.

⁵¹ The FAA recognizes CNEL as an alternative noise metric for California. For this guidance, the metric DNL and CNEL can be used interchangeably.

⁵² 14 CFR Part 150 Section 150.21.

⁵³ Per 49 U.S.C. Section 47504(c).

⁵⁴ Compatible land use planning and projects by state and local governments.

⁵⁵ Codified in 49 U.S.C. Section 47141.

⁵⁶ Federal Agency Review of Selected Airport Noise Analysis Issues. Federal Interagency Committee on Noise, August 1992. Available online at: <http://www.fican.org/pages/fican.html>.

3250 the federal land use compatibility guideline at which residential land uses
3251 are considered noncompatible with airport noise.

3252 7.14.2.5 A lower local standard (such as DNL 60 dB) may be used for Part 150
3253 purposes if the standard is formally adopted by the local jurisdiction for
3254 land-use compatibility and the airport sponsor has incorporated it.⁵⁷ When
3255 a lower local noise standard is adopted outside of the Part 150 process, 49
3256 U.S.C. Section 47141 requires that the land use compatibility plan be
3257 developed cooperatively by the airport sponsor and local jurisdiction.

3258 7.14.3 NEMs used for Sound Insulation Programs Must Be Current.

3259 7.14.3.1 Noise contours change for many reasons, for instance in response to
3260 changes in aviation activity and changes to air traffic management or IFPs.
3261 By law, the FAA must rely on only those noise exposure maps that reflect
3262 current or reasonably projected conditions.⁵⁸ In general, NEM's that are
3263 less than 5 years old are considered current, unless conditions such as fleet
3264 mix or the day/night operations have changed.

3265 7.14.3.2 NEM's that are older than 5 years must be verified and updated. The FAA
3266 must verify that the NEM showing the DNL 65 dB contour reflects the
3267 current or projected operational conditions at the airport and associated
3268 noncompatible land uses.⁵⁹ The FAA must place a copy of the verification
3269 in the project files.

3270 7.15 **Easement Acquisition.**

3271 Sponsors are encouraged to obtain an avigation easement from owners of noise-
3272 impacted properties in return for the sound insulation of their structures, but it is not a
3273 mandatory Part 150 requirement. An avigation easement conveys a defined property
3274 interest for a specified area. It limits the owner's use of the easement-encumbered
3275 property (height restrictions, lighting, etc.), and permits right of overflight over the
3276 encumbered property.⁶⁰ An avigation easement acquisition that conveys to the airport
3277 the right of overflight and associated noise makes the encumbered property compatible
3278 with airport operations. Despite significant technological advances in aircraft design
3279 and navigation aids, and successful NCPs, problems continue to arise due to
3280 noncompatible land uses being built near airports. Obtaining avigation easements has
3281 been one way to deal with these circumstances.

⁵⁷ Per 49 U.S.C. Section 47504(c)(2)(B).

⁵⁸ 49 U.S.C. 47503.

⁵⁹ 49 U.S.C. Section 47503(b) requires submission of revised noise maps if a change in the operation of the airport would establish a substantial new noncompatible use or would significantly reduce noise over existing noncompatible uses that is not reflected in the existing conditions map or forecast map on file with the FAA. The requirement for determining currency of an NEM is in 14 CFR Part 150.

⁶⁰ An avigation easement is a "nonpossessory" interest in an owner's property that clearly describes the airport use of airspace for overflight (versus specific ownership or possession of the land) and also restricts the property owner's use of or intrusion into the area transferred.

3282 7.15.1 Data Requirements.

3283 The NCP must include these requirements for proposed easement acquisitions:

3284 • The location of the easement acquisition area shown on the NEM within the
3285 existing or future DNL 65 dB noise contour or within a lower level contour that is
3286 considered noncompatible under locally adopted land use guidelines.3287 • The number and location of noncompatible structures that are proposed to be
3288 mitigated under the measure.3289 • Documentation that the property's land use is noncompatible under Part 150
3290 guidelines or under local guidelines.

3291 • Indication that the avigation easement will establish the property as compatible.

3292 7.15.2 How Noise Easements Work in the Part 150 Program.3293 7.15.2.1 Conveyed easement rights "run with the land," which means the easement
3294 is tied to the property and moves from deed to deed regardless of
3295 subsequent owners of the encumbered property. An easement conveyance
3296 does not prevent subsequent reasonable mitigation that may be offered by
3297 the airport under Noise Compatibility Program updates or for other project
3298 purposes.3299 7.15.2.2 Under an approved NCP, a property owner who conveys an easement is
3300 compensated for the encumbrance placed on the property. Compensation
3301 is properly appraised based on the loss in value to the noise-impacted
3302 property due to the additional encumbrance.3303 7.15.2.3 Although easement compensation is difficult to appraise because of
3304 limited market information, the value is minimal. Acceptable appraisal
3305 procedures are described in the most recent version of FAA Order
3306 5100.37. Specific considerations and methods to appraise easements
3307 acquired for noise compatibility are provided in AC 150/5100-17.3308 7.15.2.4 Subsequent owners of property with a noise easement should be provided
3309 actual or physical notice of the noise impact resulting from airport and
3310 aircraft operations when the property transfers ownership (see Section
3311 7.23 of this AC for further information).3312 7.15.2.5 Airport sponsors may seek an easement conveyance in exchange for
3313 providing sound insulation assistance. An easement not only addresses
3314 existing noncompatible land use concerns, it helps establish the property's
3315 future compatibility should it be sold. The FAA encourages, but does not
3316 require, a noise easement accompany sound insulation. The easement

- 3317 provides notice with the property that the airport has provided sound
3318 insulation improvements.
- 3319 7.15.2.6 An easement acquisition may be proposed where sound insulation is not
3320 feasible for the particular structure. For example, the structure may need
3321 significant code upgrades to qualify for federally funded sound insulation,
3322 and the homeowner may not be able to bring the structure up to code.
- 3323 7.15.2.7 Easement acquisition may be an effective remedial measure when offered
3324 as a separate Part 150 measure to property owners who do not wish to
3325 move from a project area where voluntary acquisition is being proposed or
3326 when the easement is conveyed as part of a purchase assurance, sales
3327 assurance, or transaction assistance program.
- 3328 7.16 **Purchase Assurance / Sales Assurance / Transaction Assistance.**
- 3329 7.16.1 Purchase assurance, sales assurance, and transaction assistance programs are other
3330 means to achieve compatible land use along with easement acquisition. Airport
3331 sponsors either acquire a residence for resale or help a homeowner with a home market
3332 sale without changing the existing land use. These measures help homeowners who
3333 want to move from the noise-impacted area. Each of these types of measures facilitates
3334 a timely market sale of noise-impacted property.
- 3335 7.16.2 The residences are eligible for sound insulation prior to sale or resale. Also, pre-existing
3336 sound insulation offered under an earlier noise mitigation program will not disqualify a
3337 property from purchase/sales assurance/transaction assistance programs.
- 3338 7.16.3 As part of the transaction process, airport sponsors must ensure that potential buyers
3339 have an appropriate disclosure. The disclosure will describe the airport's noise exposure
3340 on the property and the sponsor's intention to retain an easement or similar interest.
- 3341 7.16.4 Data Requirements.
3342 The NCP must include this information to support the proposed purchase
3343 assurance/sales assistance/transaction assistance measures:
- 3344 • Location of the purchase assurance/sales assistance/transaction assistance area
3345 (identified on the NEMs and described in the NCP narrative). The property should
3346 be within the existing or future official NEM DNL 65 dB noise contour or a lesser
3347 noise contour level that is considered noncompatible under locally adopted land use
3348 guidelines.
 - 3349 • Number of structures within the area proposed for this mitigation measure.
 - 3350 • Discussion of how the measure will render the property compatible.

3351 7.16.5 How the Options Work in the Part 150 Program.

3352 7.16.5.1 Under purchase assurance, a property that fails to sell within a specified
 3353 time is purchased by the airport sponsor and then resold for continued
 3354 residential use. The airport sponsor purchases the property at the appraised
 3355 market value “as is” subject to airport noise. Typically, sound insulation is
 3356 provided, and the property is then listed and sold subject to the airport’s
 3357 aviation easement. If the airport sponsor purchases the property, the
 3358 sponsor must retain an easement. A purchase assurance program requires
 3359 an extensive property management and sales effort, so sponsors may
 3360 contract with consultants or realtors. Some list price premium may be
 3361 desirable to secure the market price on the airport’s sale of the property.

3362 7.16.5.2 Under sales assurance, the appraised market value of the residence is
 3363 guaranteed on a timely market sale; however, the airport does not acquire
 3364 the property. Should the property sell for less than the appraised value, the
 3365 selling owner is compensated for the shortfall by the airport sponsor.
 3366 Property is appraised at its current market value “as is” subject to airport
 3367 noise. The property is listed and sold subject to the airport’s aviation
 3368 easement that is conveyed to the sponsor at the sale of the property.

3369 7.16.5.3 Transaction assistance generally involves an agreement by the airport
 3370 sponsor to pay certain costs associated with the sale of residential
 3371 property. Allowable costs are generally limited to the real estate sales
 3372 commission. The property is listed and sold subject to the airport’s
 3373 aviation easement that is conveyed to the airport sponsor at the
 3374 property’s sale.

3375 7.16.5.4 The purchase assurance, sales assurance, and transaction assistance
 3376 programs offer several benefits:

- 3377 • The existing occupant is able to sell the property and move away from
 3378 a noise-impacted area.
- 3379 • The new occupant acquires the property with full disclosure of the
 3380 noise environment.
- 3381 • Airport sponsors retain an aviation easement over the property to
 3382 permit continued overflights and their attendant noise.

3383 7.16.5.5 The property sale listing and purchase contract should explicitly disclose
 3384 and acknowledge that the property is within the airport’s noise impact area
 3385 and that the property is encumbered with the aviation easement and
 3386 conveyed before sale of the property (see Section 7.22 of this AC for
 3387 further information).

3388 7.16.5.6 Purchase assurance, sales assurance, and transaction assistance maintains a
 3389 viable residential neighborhood (as opposed to acquisition of residential
 3390 properties for demolition and redevelopment) and are less costly measures

3391 than a buy-out and redevelopment to secure compatible land use. The
 3392 selling owner in each measure is not considered a “displaced person” and
 3393 is not eligible for relocation assistance under the Uniform Act.

3394 7.16.5.7 Purchase assurance, sales assurance, and transaction assistance measures
 3395 may be offered independently or combined with either a sound insulation
 3396 program, an easement acquisition program, or both. When these options
 3397 are offered together, the variety of options may appeal to homeowners that
 3398 want to move out of the neighborhood as well as those who prefer to
 3399 remain.

3400 7.17 **Comprehensive Planning.**

3401 7.17.1 A comprehensive plan is a local jurisdiction’s guide for the development of a
 3402 community. It is a critical and, when properly managed, effective way to ensure land
 3403 use compatibility around airports. Since aviation is an element of a region’s
 3404 transportation system, the goals of airport development should be established in the
 3405 framework of the comprehensive plan. In some instances, more than one jurisdiction
 3406 will be affected by the airport’s noise contours and flight paths. This should be
 3407 considered in each respective comprehensive plan. The comprehensive plan can provide
 3408 short-range and long-range policy recommendations regarding how the land areas
 3409 around an airport should be developed, redeveloped, or maintained.

3410 7.17.2 Some states mandate that comprehensive plans be prepared by all local governments.
 3411 Others require that comprehensive plans be prepared only if the local government wants
 3412 to adopt and enforce land regulatory tools. Other state laws contain no specific
 3413 planning-related requirements and each individual local government applies home-rule
 3414 policies. Comprehensive plans normally have a 20-year horizon. ASNA permits
 3415 forecast NEMs to extend beyond five years, so comprehensive plans can be developed
 3416 based on an airport’s longer range of forecasts.

3417 7.17.3 Data Requirements.

3418 7.17.3.1 The NCP needs to include all the data that will support the elements that
 3419 can be anticipated for the comprehensive plan. For example, it might
 3420 include the existing or forecast NEM from the Part 150 Study, land use
 3421 standards within each NEM contour zone, and relevant NCP
 3422 recommendations, such as adopting construction standards where new
 3423 noise-sensitive construction is permitted in certain noise contour zones.
 3424 These recommended policies for local comprehensive planning will guide
 3425 compatible development in the vicinity of the airport.

3426 7.17.3.2 While the FAA will render an approval or disapproval of this type of
 3427 preventive land use measure, the federal government has no authority to
 3428 control land use. Successful implementation of comprehensive planning
 3429 measures is purely within the authority of the governing land use

jurisdictions. A land use measure disapproved under Part 150 may be implemented outside the Part 150 requirements.

7.17.4 Including Comprehensive Planning in a Part 150 Study.

7.17.4.1 Development of the land use elements of a local jurisdiction's comprehensive plan is a very important step in recognizing and analyzing some of the issues of concern in and around airports. An existing land use map should be created to depict how on-site and off-site properties are currently being used. Properties can be inventoried, analyzed, and classified on the existing land use map. Existing noise exposure contours and other related informational mapping can be superimposed to discern the degree of noise exposure to properties within and around an airport. GIS can extract base map data and topographic information, property information, vegetation cover, noise contours, and other information that will be useful as land use compatibility alternatives are studied.

7.17.4.2 Comprehensive planning usually includes a future land use plan map representing the recommendations of the plan's land use. Using current and projected noise exposure mapping assists in decisions about what types of land use should be considered in the various areas. In cases where development has not yet substantially occurred around an airport, a comprehensive land use plan can provide direction to compatible new development. In areas already developed close to airport property or where airport expansion conflicts with adjacent and surrounding properties, the plan can recommend how to mitigate such conflicts.

7.17.5 Benefits of Comprehensive Planning.

7.17.5.1 Airport sponsors often include measures in their NCP to prevent the development of new noncompatible land uses as well as recommendations for preventive land use controls by local jurisdictions. Part 150 requires the NCP to describe "the agency or agencies responsible for such implementation, whether those agencies have agreed to the implementation, and the approximate schedule agreed upon."

7.17.5.2 Success in implementing these measures has been mixed, however. A major factor is the multiplicity of jurisdictions with land use control authority within airport noise impact areas. The greater the number of different jurisdictions, the greater the probability that at least some of them will not implement controls. The absence of a cooperative relationship between an airport sponsor and local jurisdictions impedes appropriate land use compatibility planning. The NCP, therefore, should not recommend measures not likely to be implemented by the respective authorities. When there is some positive response to comprehensive planning and other preventive land use measures, however, the airport

3470 sponsor should continue efforts to obtain compatible comprehensive land
3471 use planning by all parties.

3472 7.18 **Zoning.**

3473 7.18.1 The most common preventive land use control is zoning. Zoning enables state and local
3474 governments to designate uses that are permitted for each parcel of land. It normally
3475 consists of a zoning ordinance that specifies land development and use constraints.

3476 7.18.2 The use of zoning to control development in and around airport facilities has realized
3477 varied degrees of success. If put in place early enough – before development patterns
3478 are set before properties are substantially subdivided – zoning can be an effective tool to
3479 help eliminate or reduce noncompatible development and land uses around airports.

3480 7.18.3 Data Requirements.

3481 7.18.3.1 NCPs that propose zoning regulations should include these elements:

- 3482 • A description or map of the area covered by the proposed regulation.⁶¹
- 3483 • A description of the recommended re-zoning criteria and the area they
- 3484 apply to within the noise contour.
- 3485 • Explanation (or documentation) indicating how the recommendation
- 3486 meets Part 150 approval criteria; specifically, that future development
- 3487 will be compatible with the noise level if zoning regulations are
- 3488 implemented or specific parcels re-zoned.
- 3489 • Feasibility of the recommendation being implemented by the
- 3490 respective zoning authorities.

3491 7.18.3.2 The FAA will render an approval or disapproval of this type of preventive
3492 land use measure; however, the federal government has no authority to
3493 control land use. Its successful implementation is within the control of the
3494 governing land use jurisdictions.

3495 7.18.4 Factors to Consider for Zoning Recommendations in a Part 150 Study.

3496 7.18.4.1 Zoning is a preferred method of preventing noncompatible land use in
3497 noise-impacted areas. For zoning to work effectively, it should be based
3498 on a comprehensive plan that considers the total needs of the community
3499 and the specific needs of the airport, recognizing its value to the local
3500 economy. For zoning to be viable, there should be a reasonable present or

⁶¹ Although jurisdictions are encouraged to establish “buffer” areas beyond the significant noise contour (DNL 65 dB), ASNA only permits FAA approval of mitigation measures proposed within the officially adopted noncompatibility standard. The FAA will approve that portion of an NCP’s recommendation that meets ASNA criteria, and will encourage the jurisdiction with authority to prevent further noise sensitive encroachment.

3501 future need for each designated use. Zoning can be used constructively to
3502 increase the value and productivity of the affected land. One of the
3503 primary advantages of zoning is that it may be used to promote land use
3504 compatibility while leaving the land in private ownership, on the tax rolls,
3505 and economically productive.

3506 7.18.4.2 Zoning has several limitations:

- 3507 • Zoning controls are normally applicable only to those areas within the
3508 boundaries of the zoning jurisdiction. However, airport noise often
3509 impacts more than one jurisdiction. Effective zoning requires
3510 coordination among all the impacted jurisdictions.
- 3511 • Some communities may have cumulative type zoning districts which
3512 allow uses permitted in a higher use, less intensive zone to be
3513 permissible in a lower use, more intensive zone. For example,
3514 residential uses could be permitted in districts zoned for lower uses
3515 such as agricultural. Cumulative zoning could also permit
3516 noncompatible development in an area not zoned for it; so it would be
3517 necessary to revise the existing cumulative-type code or adopt
3518 additional overlay zoning use districts which create specific permitted
3519 uses and exclude all others.
- 3520 • Zoning in areas already developed incompatibly is normally not
3521 possible. In some jurisdictions, rezoning that affects current land uses
3522 may not pass state constitutional tests. Discussion with state
3523 representatives during Part 150 Study consultation will provide the
3524 opportunity to decide whether rezoning should be considered. If such
3525 zoning is allowed and is accomplished, the current use will likely be
3526 allowed to remain as a nonconforming use until it is changed
3527 voluntarily by the property owner to a conforming use, until the
3528 property owner has had time to recoup an investment in the property,
3529 or until the property is sold.
- 3530 • Zoning is often not permanent. In most jurisdictions, the current
3531 legislative body is not bound by prior zoning actions. Zoning which
3532 achieves noise compatibility is subject to continual pressure for change
3533 from urban expansion and from those who might profit from zoning
3534 changes. Periodically, the entire zoning ordinance for a jurisdiction
3535 may be updated to accommodate increased growth or new land use
3536 concepts.

3537 7.18.4.3 These steps should be taken when considering development of zoning
3538 ordinances:

- 3539 1. Review all existing regulations (particularly land use and zoning) in
3540 the jurisdictions involved. Construct an existing zoning map if one is
3541 not available. Determine whether the existing zoning ordinance has

- 3542 been properly adopted and recorded. Where possible, have the
3543 consulted jurisdictions provide this information for the Part 150 Study.
- 3544 2. Review existing state legislation and case law affecting planning
3545 review and approval actions necessary. Consultation with the state
3546 during the Part 150 Study should expedite this process.
- 3547 3. For additional ideas, research contemporary approaches to land use
3548 and zoning control being employed in similar jurisdictions around the
3549 country.
- 3550 4. With the knowledge of what is and is not feasible in the jurisdictions
3551 around the airport, consider a variety of applicable land use controls,
3552 such as airport noise overlay zones, variance procedures, special
3553 exceptions, and performance standards.
- 3554 a. Ensure that airport-related zoning recommendations and the
3555 regulations that would enforce them (for example, subdivision
3556 regulations) are consistent with the adopted comprehensive plan or
3557 that there is a measure for the recommendations to be considered
3558 in any proposed amendments to comprehensive plans.
- 3559 b. Develop an estimated implementation timeframe for the
3560 recommendations in the NCP. Allow for adequate review of all
3561 airport zoning and development ordinances by legal counsel,
3562 appropriate internal agencies and authorities, affected special
3563 districts, and all affected local government entities.
- 3564 c. Monitor the implementation process of land use zoning
3565 recommendations and include a measure that provides for
3566 continued public involvement. For example, recommend
3567 developing and implementing a public participation program
3568 designed to elicit meaningful responses from the general public as
3569 part of ongoing land use planning. Provide for airport participation
3570 whenever the jurisdiction considers land use zoning changes.
- 3571 7.18.4.4 An airport noise overlay zone (ANOV) and airport noise overlay district
3572 (ANOD) are sometimes used to regulate land use around U.S. airports.
3573 The ANOV is an overlay district that becomes part of the local zoning
3574 ordinance. Overlay zones normally use the airport's NEM noise contours
3575 within which there are restrictions on permitted land uses. These limits
3576 vary with distance from the airport, noise level impacts, and an area's
3577 location or orientation with respect to the airport. The ANOV
3578 acknowledges the unique land use impacts of airports, regulates the siting
3579 of noise sensitive uses or establishes construction requirements, and
3580 complies with FAA regulations regarding noise.
- 3581 7.18.4.5 Overlay zoning creates special zoning to meet specific needs not generally
3582 covered under the zoning ordinance. For example, airport noise overlay
3583 zones can prohibit noise-sensitive land uses near the airport or require

3584 dedication of avigation easements and/or non-suit covenants (in this case,
 3585 restrictions on future claims for noise-related damages as a result of
 3586 granting the easement). Such regulations are supplemental to the
 3587 requirements of the general zoning district. All development and building
 3588 permits for properties within an overlay district would have to meet all of
 3589 the requirements of the specific zoning district in which they are located.

3590 7.18.4.6 An Airport Noise Overlay Zone, or ANOZ is an effective way to promote
 3591 land use compatibility. The boundaries of an ANOZ are generally based
 3592 on noise exposure contours. It is advisable to use future NEMs that are
 3593 periodically updated.

3594 7.18.4.7 Title 14 CFR Part 77 addressed notification and review processes for
 3595 structure and building heights. Responsible airport planning dictates
 3596 addressing these structure heights proximate to airports, which will need
 3597 to be included in an overlay ordinance. Requests for FAA approval of
 3598 height and hazard zoning do not belong in an NCP because it is not a noise
 3599 abatement measure. Height provisions need to be addressed through the
 3600 Title 14 CFR Part 77 process. Jurisdictions that adopt zoning ordinances
 3601 will usually also adopt subdivision regulations (discussed in the next
 3602 section). It is important to ensure that ordinances include cross references
 3603 to related regulations of the zoning ordinance so all requirements of the
 3604 subdivision regulations are simultaneously considered.

3605 7.19 **Subdivision Regulations.**

3606 7.19.1 Subdivision consists of dividing a lot, tract, or parcel of land into two or more lots,
 3607 tracts, parcels, or other divisions of land for sale or development. A subdivision plat is a
 3608 plan for subdividing and developing the land.

3609 7.19.2 Since urban and rural areas grow primarily through the development of new
 3610 subdivisions, the subdividing of vacant land or the re-subdividing of existing tracts has
 3611 a major influence on the future composition of the area. It establishes street patterns and
 3612 influences the type and character of development that will occupy the land.

3613 7.19.3 Regulations controlling new subdivisions are an integral part of comprehensive
 3614 planning. Depending on differing state legislations, subdivision regulations may be
 3615 prepared, adopted, and enforced through actions of the local legislative body or the
 3616 local planning commission.

3617 7.19.4 When applied around airports, subdivision regulation works in a similar regulatory
 3618 environment as that of a zoning ordinance. Plat review procedures provide an
 3619 opportunity for jurisdictions and airport sponsors to determine how a proposed

3620 subdivision design could contribute to the incompatibility of noise exposure to
3621 residential areas around airports.

3622 7.19.5 By making certain to provide and record on the subdivision plat or deed the appropriate
3623 performance standards (such as controlling the siting of homes relative to noise contour
3624 overlays or by including compatible land use buffer zones and open spaces), proper
3625 distances from higher decibel noise exposure levels can be achieved and maintained.
3626 This is especially important when these performance standards are also made conditions
3627 of zoning.

3628 7.19.6 Data Requirements.

3629 7.19.6.1 An NCP for proposed subdivision regulations should include this
3630 information:

- 3631 • A description or map of the area covered by the proposed regulation,
3632 consistent with Part 150 and ASNA requirements.
- 3633 • A description of how future development of the property will be
3634 compatible with the noise level if subdivision regulations are
3635 implemented.
- 3636 • An account of whether responsible jurisdictions have agreed to
3637 implement regulations within their authority.

3638 7.19.6.2 The FAA will render an approval or disapproval of this type of preventive
3639 land use measure; however, the federal government has no authority to
3640 control land use. Regulations for subdivisions are within the authority of
3641 the governing land use jurisdictions.

3642 7.19.7 Considering Subdivision Regulations in a Part 150 Study.

3643 For developing subdivision regulations, these steps should be considered in consultation
3644 with the responsible governing bodies:

- 3645 1. Review all adopted subdivision regulations already in place in all affected
3646 communities and identify major variations in requirements, particularly as they
3647 apply to residential development.
- 3648 2. Review state legislation and case law affecting subdivision regulations with
3649 emphasis on application to all affected communities and any review / approval
3650 actions necessary by state agencies such as water supply and wastewater disposal.
- 3651 3. Research the contemporary approaches to subdivision regulation used in similar
3652 jurisdictions around the country to determine whether they are appropriate and can
3653 be applied at the airport.

3654 7.20 **Acquisition of Easements or Development Rights.**

3655 Acquisition of easements as a remedial measure for achieving compatible land use was
3656 discussed in Section 7.15 of this AC. Easements can also serve as a preventive measure

3657 if they are acquired before noncompatible uses are developed. Refer to Section 7.15 of
3658 this AC for information on how to implement this type of measure.

3659 7.20.1 Data Requirements.

3660 An NCP the proposed changes in development rights should include this information:

- 3661 • Location of the development rights or easement acquisition area within the NEM
3662 existing or future DNL 65 dB noise contour or within a lower level contour that is
3663 considered noncompatible under locally adopted land use guidelines.
- 3664 • Location of the area to which any development rights are to be transferred.
- 3665 • Description of how future development of the property will be compatible and the
3666 area to which rights are transferred will also be compatible with the noise level if
3667 easements or development rights are acquired.

3668 7.20.2 Development Rights Purchase Options.

3669 7.20.2.1 Purchase of Development Rights (PDR) is another way to prevent
3670 noncompatible land uses around the airport. In this option, airport
3671 sponsors purchase the property owner's right to noise-sensitive land
3672 development, leaving the owner all other rights of ownership, yet
3673 preventing any noncompatible development. The price of the development
3674 rights is generally equal to the reduction in the market value of the land,
3675 that is, the difference between the value of the land limited to development
3676 for compatible uses and its current market value.

3677 7.20.2.2 PDR, or variations of it, could also be used by local governments and
3678 airport sponsors (depending on ownership) to allow compatible uses to
3679 continue, eliminating noncompatible uses on specific properties for which
3680 their development rights have been purchased.

3681 7.20.2.3 Transfer of Development Rights (TDR) is another land use and
3682 development control technique. The basic concept of TDR is to preserve
3683 or retain land in its existing or rural setting in one location. Under a TDR,
3684 landowners sell (transfer) development rights on their land to another
3685 interested party who can use the rights to increase density of development
3686 at another location. In this case, development rights from an area within a
3687 65 DNL or higher contour could be transferred for development in an area
3688 not exposed to aircraft noise. Legally, state statutes would have to contain
3689 provisions to use TDR. A development rights transfer system would have
3690 to be adopted by the local government, and the comprehensive plan would
3691 need to recognize this means of development rights land designation. If
3692 TDR is considered, getting it enacted would be recommended in the NCP.
3693 If adopted by law, it would be included in an NCP update.

3694 7.20.2.4 TDR could allow airport-area jurisdictions to avoid unwanted
3695 development in high noise exposure areas or redevelop these areas to less

intense use, allowing such limitations to be maintained in perpetuity. The sending property would ideally be rezoned to whatever rights remained on the property. The receiving property might also have to be rezoned to allow the type and intensity of use anticipated.

7.20.2.5 Whatever changes in zoning might be necessary, the changes should conform to the adopted comprehensive plan. When comprehensive planning is evaluated along with specific zoning and preventive planning measures, individual changes can be implemented over the period of the plan. If the proposed changes had not been anticipated in the plan and therefore were not in conformance, amendments can be proposed to any comprehensive plan in the NCP so other preventive planning measures can be included. When included in a comprehensive plan, losses and gains of development rights would adequately reflect the long-term policy implications (such as land use changes) of the plan.

7.20.2.6 A very high degree of coordination and cooperation between airport sponsors and state and local governments is required for these techniques to be useful.

7.21 **Building Codes.**

Building codes are primarily concerned with the functional and structural aspects of buildings and structures, and usually require adequate sound insulation in new construction or major renovations. Some states have adopted a statewide uniform building code; others permit each local governing body to adopt its own building code.

7.21.1 Data Requirements.

7.21.1.1 An NCP that proposes building code regulations should include this information:

- A description or map of the area covered by the proposed regulation and where the properties lie within the official NEMs.
- A description of how the measure will promote future compatible development of the property.

7.21.1.2 The FAA will render an approval or disapproval of this type of preventive land use measure; however, the federal government has no authority to control land use. Successful implementation of building codes is within the authority of the governing land use jurisdictions.

7.21.2 Considerations for Building Codes.

7.21.2.1 Minimum structural construction techniques and material standards often determine whether changes in current standards or adopting new ones can increase the interior noise reduction levels of typical residential or other

- 3733 noise-sensitive structures in noise-impacted areas. Building codes are
 3734 essentially a legal means of requiring adequate sound insulation in new
 3735 construction.
- 3736 7.21.2.2 Some building codes have special requirements for properties located in
 3737 high noise exposure areas. Property owners are made aware of these
 3738 requirements through occasional notifications and when they apply for
 3739 building permits. During application for a permit, the authorizing
 3740 jurisdiction requires an action ranging from securing an avigation
 3741 easement to installing sound insulation, or prohibits construction based on
 3742 the location of the property to the applicable building code.
- 3743 7.21.2.3 Measures to achieve appropriate outdoor-to-indoor NLR is a primary goal
 3744 of any sound attenuation program. Appropriate NLR measures should be
 3745 required in proposed building code regulations. They can be required in
 3746 the design and construction of certain types of buildings, such as homes,
 3747 schools, hospitals, and churches.
- 3748 7.22 **Real Estate Disclosure.**
- 3749 7.22.1 The basic disclosure of airport noise situations is handled in some jurisdictions through
 3750 ordinances that require sellers of parcels of land to reveal to purchasers that they are in a
 3751 “noise impact zone.” Real estate agents are also instructed about these zones and the
 3752 ordinance requirements.
- 3753 7.22.2 Residents who move into an area may not be aware of an airport’s presence or the
 3754 implications of airport noise. Besides publishing NEMs on airport websites, another
 3755 method of informing the public is to record an “airport disclosure agreement” or other
 3756 applicable covenant on subdivision plats and site development plans.
- 3757 7.22.3 These preventive measures could be included in comprehensive planning, making the
 3758 airport disclosure agreement and covenants part of a property’s deed record. A
 3759 disclosure agreement could require that the property owner or selling agent inform the
 3760 prospective buyer of the airport’s location and noise potential, including any remedial
 3761 measures that have improved the property, such as sound attenuation. When disclosure
 3762 is enacted as a deed covenant on a subdivision plat, the covenant provisions would be
 3763 enforced by private parties just as a contract would be enforced.
- 3764 7.22.4 The location of the airport and whether there are other similar land use covenants in the
 3765 vicinity would be described in the real estate disclosure agreement and covenants. The
 3766 covenant also should describe the airport sponsor’s responsibilities that are part of the
 3767 covenant agreement. The airport disclosure agreement would also identify Title 14 CFR
 3768 Part 77, Objects Affecting Navigable Airspace, the imaginary surfaces used to avoid

- 3769 obstructions to flight paths and assess the need for noise controls such as avigation
3770 easements or noise overlay zones.
- 3771 7.22.5 Property owners and realtors often oppose real estate disclosures because they may
3772 make it more difficult to sell noise-impacted property. Disclosures may deter buyers
3773 sensitive to noise. Those not deterred from purchasing a noise-impacted property may
3774 also be less likely to become noise complainants or noise litigants.
- 3775 7.22.6 An NCP that proposes real estate disclosures should include a description or map of the
3776 proposed disclosure area and describe the type of disclosure proposed. The FAA will
3777 render an approval or disapproval of this type of preventive land use measure; however,
3778 the federal government has no authority to control land use. This authority is with the
3779 governing land use jurisdictions.
- 3780 7.23 **Acquisition of Vacant Land.**
3781 As with acquisition of developed land as a remedial measure for obtaining compatible
3782 land use (discussed in Section 7.13 of this AC), so too can acquiring land that does not
3783 presently have noncompatible uses, but such uses are unlikely to occur.
- 3784 7.23.1 Data Requirements.
3785 For NCPs that propose preventive land acquisition, this information should be included:
- 3786 • Location of the acquisition area shown on the NEM within the existing or future
3787 DNL 65 dB noise contour or within a lower level contour that is considered
3788 noncompatible under locally adopted land use guidelines.
 - 3789 • A discussion of how the property's current zoning would permit the now
3790 compatible vacant land to become noncompatible.⁶²
 - 3791 • An account of how the property would remain compatible after acquisition through
3792 adequate land use controls.
- 3793 7.23.2 Considering Vacant Land Acquisition in a Part 150 Study.
- 3794 7.23.2.1 If vacant land is highly likely to be developed incompatibly, local controls
3795 are inadequate to prevent that development, and if the FAA has approved
3796 the sponsor's recommendation in an approved NCP, the acquisition is
3797 eligible. If however, airport sponsors already have land use control
3798 jurisdiction over the vacant land, then they should prevent noncompatible
3799 development by a means other than acquisition of the land.⁶³
- 3800 7.23.2.2 To be eligible for federal financial assistance, acquisition of vacant land
3801 must comply with the Uniform Act. Land acquired with AIP funding must

⁶² For example, the airport sponsor has no authority to make the land use compatible except through purchase; there is no prior compatible land use agreement with the jurisdiction(s).

⁶³ Grant Assurance 21.

3802 comply with AC 150/5100-17 and the FAA Order 5100.38 chapter on land
3803 acquisition projects (see Section 7.13 of this AC for further information).

3804 7.24 **Program Management.**

3805 7.24.1 Monitoring Program Effectiveness.

3806 7.24.1.1 After an NCP has been approved, sponsors should continually evaluate its
3807 effectiveness and consider improvements and determine whether proposed
3808 measures are being implemented on schedule. For example:

- 3809 • Land acquisition and sound insulation projects should be reviewed to
3810 determine whether modifications are needed due to changes in the
3811 noise environment.
- 3812 • Operational measures for noise abatement should be monitored for
3813 adherence and to determine whether the anticipated noise benefits are
3814 being realized. Also, if land uses are changing, operational measures
3815 may need to be reexamined for continued effectiveness.
- 3816 • Use Program Management measures to continue working with the
3817 state and local governing bodies to implement preventive land use
3818 planning measures such as comprehensive plans and changes in zoning
3819 laws.
- 3820 • Use Program Management as a tool to monitor jurisdictions' actions
3821 regarding requests for changes in zoning, variances, or subdivision
3822 actions within the study area.

3823 7.24.1.2 Examples and discussions of how to carry out these Program Management
3824 measures for monitoring and evaluating the NCP follow. Program
3825 Management measures are also discussed in Sections 7.5.5 and 9.4 of this
3826 AC.

3827 7.24.1.3 **NCP Periodic Review.**

3828 7.24.1.3.1 Periodic reviews of approved measures should be scheduled and budgeted
3829 by airport sponsors as an integral part of the NCP. Each review should
3830 include how to address problems or deficiencies identified, especially
3831 those pertaining to the NCP's performance. The review should establish
3832 whether the NCP remains viable. New or corrective measures can be
3833 examined in an NCP update.

3834 7.24.1.3.2 These activities should be accomplished during the NCP implementation
3835 review:

- 3836 • Compare the then-current overall noise compatibility to that projected
3837 in the NCP's goals and objectives for the forecast timeframe.

- 3838 • Appraise the rate of growth of the community and of the airport's
3839 operations to determine if the approved NCP measures are still
3840 adequate.
- 3841 • Review the airport NEM to determine whether a change in the fleet
3842 mix or airport operations has caused, or is projected to cause, an
3843 increase or decrease to the noise exposure of DNL 1.5 dB or greater
3844 over noncompatible land uses (See Section 6.2 of this AC). A change
3845 of this magnitude will require an update to the NEMs.
- 3846 • Review the current operational measures to determine if they maintain
3847 aircraft noise within the designated noise impact areas. For example,
3848 has there been an unexpected significant increase in operations at the
3849 airport? Have there been changes in the use of local airspace such as
3850 increased air traffic or changes in flight patterns from other nearby
3851 airports that affect how often these measures can be implemented?
- 3852 • Review the land use base map to determine if there are changes in land
3853 uses that render approved operational noise abatement measures no
3854 longer beneficial.
- 3855 • Review the recommended land use preventive measures to determine
3856 if they have been implemented.
- 3857 • Review the implemented land use preventive measures to determine if
3858 they are adequate to protect the designated noise impact areas from
3859 encroachment by noise sensitive uses. Review the effectiveness of
3860 remedial measures in resolving existing noncompatible uses within the
3861 noise impact areas, and document progress and any problems
3862 encountered in their implementation.
- 3863 7.24.1.3.3 Sponsors may want to continue an advisory committee. The committee
3864 formed during the NCP process is already familiar with the contents of the
3865 NCP. Advisory Committee or Community Roundtable Committee
3866 members can maintain community participation while the NCP is
3867 implemented, monitor the NCP during its progress to determine if its
3868 measures are working, and recommend changes to the NCP as needed.
- 3869 7.24.1.4 **Addressing Noise Complaints.**
3870 A noise abatement contact or noise abatement hotline can be established to
3871 respond to noise complaints in a number of ways:
3872 • Establishing and maintaining a noise complaint file.
3873 • Providing an initial response to noise complaints.
3874 • Investigating complaints and providing appropriate follow-up actions.
3875 • Preparing publicly available noise complaint reports.

- 3876 7.24.1.5 **Need for Regular Updates.**
 3877 The NCP must provide for revision if made necessary by a significant
 3878 revision of the NEMs. This commitment can be described in the
 3879 implementation section of the NCP, or the NCP may include a separate
 3880 measure for FAA approval.
- 3881 7.24.1.6 **Portable and Permanent Fixed Noise Monitoring.**
- 3882 7.24.1.6.1 The NCP might include an ongoing requirement to monitor actual noise
 3883 conditions. Monitoring aircraft noise around airports may be as modest as
 3884 a few portable noise monitors (to respond to individual noise complaints,
 3885 for example), or an extensive system of fixed monitors linked to a central
 3886 processing unit to monitor overall NEM conditions at the airport and
 3887 determine when an NEM and NCP update are required. Eligibility for a
 3888 permanent monitoring system will be limited to circumstances where it is
 3889 clear that portable monitors would be inadequate. The greater the
 3890 operations and larger the noise contour, the more likely a permanent
 3891 system is justified.
- 3892 7.24.1.6.2 For reasons of aviation safety, FAA approval does not extend to the use of
 3893 monitoring equipment for enforcement of a noise rule or preferred flight
 3894 track. A primary justification for monitoring equipment, therefore, should
 3895 be to provide information necessary to carry out other noise compatibility
 3896 projects in the approved NCP and to monitor progress in achieving noise
 3897 compatibility objectives. Here are some sample uses of noise monitoring:
- 3898 • Selection of dwelling units or other structures for sound insulation.
 - 3899 • Pre- and post-insulation interior/exterior noise measurement.
 - 3900 • Compliance with a monitoring requirement of state noise law.
 - 3901 • Aiding implementation of other noise compatibility projects.
 - 3902 • Providing noise data for future revision of the NCP; however,
 3903 monitoring data should never be used as the basis for a future contour.
- 3904 7.24.1.6.3 FAA Order 5100.38 provides guidance on allowable costs for monitoring
 3905 equipment.
- 3906 7.24.2 Data Requirements.
 3907 For proposed program management measures, the NCP should explain how program
 3908 management measures would fit into overall NCP success.
- 3909 7.24.3 Program Management Measures in a Part 150 Study.
 3910 Program management measures normally do not reduce or prevent noncompatible land
 3911 uses. They may be approved, however, as contributing to the overall successful
 3912 implementation of the NCP and preventing the introduction of additional noncompatible
 3913 land uses.

3914 7.25 **NEM with Program Implementation.**

3915 7.25.1 If NEMs and the NCP are submitted to the FAA separately, and the forecast NEM was
3916 not based on NCP implementation, airport sponsors should submit a revised forecast
3917 NEM with the NCP in accordance with Part 150 Section B150.3(b), unless there are no
3918 aircraft operational recommendations that would change the NEM contours. NEMs may
3919 need to be updated after the FAA takes action on the NCP if the NEMs included
3920 program measures that would alter the NEM contours, but were disapproved. This
3921 requirement is described in Part 150 Section 150.21(d).

3922 7.25.2 Revisions to NEMs and new NEMs must meet the same Part 150 requirements as initial
3923 submissions.

3924 7.25.3 The program documentation must indicate which measures are recommended for
3925 implementation, and which measures are depicted in the NEMs.

3926 7.25.4 If overall numbers of people exposed to significant noise levels will be reduced through
3927 implementation of the NCP, the NCP is determined to meet ASNA and Part 150
3928 standards, even though it is possible that some noise-sensitive land uses around an
3929 airport may experience an increase in noise. The determination is based on a “net
3930 reduction” in overall noise impacts. When there is an increase in noise over
3931 noncompatible land uses of DNL 1.5 dB or greater, an EA will be required before
3932 implementing the measure (Part 150 Section 150.5).

3933 7.26 **NCP Submittal.**

3934 Sponsors should identify their Part 150 program submission as either an NCP submittal
3935 that follows an NEM submittal or as NEMs and NCP submitted together.

3936 7.26.1 Revision to a Previous NCP.

3937 If the NCP is a revision to a previously approved NCP, sponsors should identify this in
3938 their submittal.

3939 7.26.2 Separate NEM and NCP Submissions.

3940 If the NEMs and the NCP are submitted to the FAA separately, airport sponsors should
3941 include the NEMs with the later submittal of the NCP, assuming the NEMs are still
3942 valid and do not require revision under Part 150 Section 150.21(d). The NCP
3943 documentation should indicate the FAA has previously found the NEMs in compliance
3944 with Part 150. Sponsors must certify that the NEMs as well as the description of
3945 consultation and opportunity for public comment are true and complete (Part 150
3946 Section 150.21(e)) and that the NEMs still representing the current and forecast
3947 conditions at the airport as of the date the NCP is submitted. If one or both of the NEMs
3948 are no longer “true and complete,” sponsors must submit appropriately revised NEMs
3949 with the NCP.

3950 7.26.3 Identify the Submitting Party.

3951 Clearly identify the airport name and the airport sponsor's name on the NCP
3952 submission. It is desirable to have this information on a cover page of the submission.
3953 However, there is no format specified in Part 150, so it is acceptable to otherwise
3954 present this information as long as it is included and is clearly understandable.

3955 7.26.4 Submitting the NCP for Preliminary Review.

3956 The NCP may be submitted to the FAA for preliminary review, prior to the submission
3957 for formal review and approval.

3958 7.26.4.1 **Informal Submittals.**

3959 Sponsors may request from the FAA informal advice, a policy review, or
3960 technical guidance. The FAA also will provide technical advice during the
3961 Part 150 study process including whether recommendations are technically
3962 acceptable, feasible to implement, or approvable under federal criteria.
3963 Depending on the FAA's feedback, sponsors may need to revise the NCP
3964 before submitting it for formal approval.

3965 7.26.5 Formal Submission Requirements.

3966 Formal submission requirements are outlined below. An example cover letter and
3967 airport sponsor certifications are provided in Appendix C of this AC. It is helpful to
3968 ensure the checklist is included to show the requirements of Part 150 for NCPs have
3969 been met. See Appendix B for a copy of the checklist.

3970 7.26.5.1 **Cover Letter.**

3971 The formal submission of the NCP should be accompanied by a signed
3972 and dated cover letter from the airport sponsor. The letter should indicate
3973 that the NCP is being submitted by the sponsor and not by its consultant or
3974 any other party. The cover letter should state that the NCP is being
3975 submitted under the provisions of Title I of ASNA and Part 150 for
3976 appropriate FAA determinations. Certifications required by Part 150
3977 Section 150.21 should be included with the cover letter when the NEMs
3978 and NCP are submitted together. See Appendix C for examples of cover
3979 letters and certifications.

3980 7.26.5.2 **Required Number of Copies to Submit.**

3981 The Part 150 regulation states that sponsors must submit five hard copies
3982 of the NCP to the FAA through their ARP POC. Local FAA offices may
3983 request additional copies to expedite their review and response. Also,
3984 electronic submittals may be an option, so the ARP POC should be
3985 contacted for guidance.

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3987 CHAPTER 8. FAA REVIEW PROCESS

3988 8.1 Introduction.

3989 This chapter describes the review process the FAA follows when it receives an NEM,
3990 NCP, or combined NEM/NCP submittal from an airport sponsor. As noted in previous
3991 chapters, timelines and procedures associated with the FAA review process should be
3992 considered for preparing NEMs and NCPs. In general, the expectation is that the NEM
3993 and NCP will be submitted together to FAA. The only circumstances in which the FAA
3994 would expect to receive just an NEM are when noise contours have shrunk and there are
3995 no plans to revise the NCP.

3996 8.2 Preliminary NEM Submittals.

3997 8.2.1 As a best practice, airport sponsors should submit preliminary NEMs and
3998 accompanying information to the FAA for informal review and advice before sharing
3999 the NEMs with the public. Part 150 does not specify a timeline for informal reviews.
4000 For changes to AEDT modeling input (see Section 5.8) formal requests may be needed
4001 before submitting the NEMs for review. The ARP POC will coordinate requests with
4002 the AEE through the headquarters APP-400. An informal NEM review may require
4003 coordination across several FAA offices; for example, FAA ARP personnel may need
4004 to verify operational assumptions with local ATO facilities to ensure they reflect
4005 accurate operation.

4006 8.2.2 Sponsors should carefully consider comments received from the FAA following an
4007 informal review and incorporate them into the final submittal to the greatest extent
4008 possible. This will greatly increase the likelihood that the final NEM submittal complies
4009 with the requirements of Part 150.

4010 8.3 Official NEM Submittals.

4011 8.3.1 When airport sponsors submit an official NEM document package (see paragraph
4012 5.14.8) for official FAA acceptance, the Regional FAA Airports Division or ADO takes
4013 these steps:

- 4014 1. Review the NEMs and accompanying information to determine whether the
4015 documentation demonstrates compliance with Part 150.
- 4016 2. Send a letter to the airport sponsor acknowledging receipt of the NEMs and stating
4017 whether the NEMs comply with Part 150.
- 4018 3. If the NEMs comply with Part 150, prepare a notice of compliance for the NEMs
4019 that the FAA will publish in the Federal Register. The Federal Register notice
4020 advises the public of where they can review the accepted airport sponsor NEMs.

4021 8.3.2 If the NEMs do not comply with the requirements of Part 150, the letter to the airport
4022 sponsor will indicate the elements of the submittal not in compliance. The sponsor will
4023 therefore need to revise and resubmit the NEMs.

4024 For NEMs that comply, once the Federal Register notice is published the airport
4025 sponsor may publish the NEMs, which can include posting on the airport's website.

4026 8.4 **Preliminary NCP Submittals.**

4027 The process for an FAA review of preliminary NCP submittals is more extensive than
4028 preliminary NEM reviews. The FAA's Regional Airports Division or ADO will
4029 coordinate the NCP documentation with other FAA lines of business with the
4030 responsibility for and expertise in measures proposed in the NCP. For example, as with
4031 the NEMs, FAA Airports personnel will need to verify operational assumptions with
4032 local ATO facilities to ensure they reflect accurate operation. Preliminary reviews are
4033 valuable when an NCP contains operational noise abatement measures, including IFPs,
4034 or proposed restrictions. Informal reviews provide airport sponsors with feedback from
4035 the FAA and an opportunity to make necessary revisions before beginning an official
4036 FAA review.

4037 8.5 **Official NCP Submittals.**

4038 8.5.1 When airport sponsors submit their official NCP (see Section 7.26), the FAA Regional
4039 Airports Division or ADO will take these steps:

- 4040 • Conduct an independent review of the NCP using the NCP checklist in Appendix B
4041 to assess whether the program conforms to the requirements of Part 150. Evidence
4042 of consultation, certifications, and correct NEM years are important components.
4043 FAA will send a letter to the airport sponsor that acknowledges receipt of the NCP
4044 and provides comments on the NCP's conformance with Part 150 requirements.
- 4045 • If the NCP does not meet Part 150 procedural requirements, the FAA will provide
4046 comments on the deficiencies that should be addressed to receive FAA approval of
4047 the of the NCP measure.
- 4048 • Once the NCP meets Part 150 requirements, the FAA will prepare a Federal
4049 Register notice. The notice announces the airport covered by the NCP, the date the
4050 FAA received the final NCP, and where the public can review it. Typically, a copy
4051 of the final NCP will be available at the airport sponsor's offices and at the FAA's
4052 Regional Airports Division and ADO. The notice announces the start of a 60-day
4053 public comment period in which the public may send comments to the FAA. This
4054 announcement also begins the FAA's formal, final 180-day review period for the
4055 NCP.
- 4056 • When the FAA begins the 180-day review, it conducts an evaluation of each NCP
4057 measure to determine whether each one meets FAA approval criteria. In some
4058 instances, measures may be interrelated (such as a preferred runway use in
4059 combination with a charted IFP), so these will be evaluated together.

- 4060 • FAA approval criteria include whether a recommendation may create an undue
4061 burden on interstate or foreign commerce (including unjust discrimination), is
4062 reasonably consistent with the goal of reducing existing noncompatible land use or
4063 preventing additional noncompatible land use, and includes new or modified
4064 aircraft flight operational noise abatement measures. FAA also reviews measures to
4065 determine whether they may interfere with the authority and responsibility of the
4066 FAA Administrator and whether IFPs can be implemented within the period
4067 covered by the program without reducing safety or the efficient use of the navigable
4068 airspace. FAA review and approval criteria is in Part 150 Sections 150.33 and
4069 150.35.
- 4070 • As part of the FAA review, the agency will prepare a formal ROA that approves or
4071 disapproves each measure of the NCP, prepare a Federal Register notice
4072 announcing the decision(s), notify the airport sponsor of the final NCP
4073 determination, and provide the ROA to the airport sponsor.
- 4074 8.5.2 Airport sponsors need to consider numerous factors relating to the FAA’s NCP review
4075 process. First, the FAA will approve or disapprove each proposed measure contained in
4076 the NCP. The law states that any measure not acted on by the FAA within the 180-day
4077 review period is considered approved, except for measures relating to flight procedures
4078 (i.e., IFPs and CVFPs charted in the FAA’s TPP, or included in the ATCT SOP).⁶⁴ If
4079 the agency defers a decision on flight procedures, it will issue its determination on these
4080 measures within a reasonable period (typically, after completing related analyses of the
4081 measure’s feasibility or after reviewing additional information submitted to assist in a
4082 final decision on the measure).
- 4083 8.5.3 Conditional approvals are not issued, but some measures may not be able to be carried
4084 out until after completing pre-requisite actions (e.g., environmental analyses and safety
4085 management reviews before implementing IFPs that affect airport or aircraft
4086 operations). These actions will be contained within the language granting approval to
4087 these measures.
- 4088 8.5.4 During the 180-day review period, the FAA may reach out in other ways to help in the
4089 evaluation:
- 4090 • Consult with the airport sponsor and its consultant.
- 4091 • Explore the objectives of the program and propose alternatives for achieving them.
- 4092 • Convene meetings as necessary for gathering facts needed to make a determination.

⁶⁴ See Part 150 Section 150.35(a).

4093 8.5.5 Airport sponsors must provide all the information needed for the FAA to complete its
4094 review. Refer to Part 150 Section 150.33 for a complete list of these requirements.

4095 8.6 **NCP Determination / Record of Approval.**

4096 8.6.1 When the FAA determines that an NCP from an airport sponsor is complete, and after
4097 the FAA public comment period has closed, the agency will issue a ROA. The ROA
4098 will contain introductory background on why the airport conducted the Part 150 Study,
4099 a brief summary of each program measure evaluated in the NCP, and the FAA's
4100 determination regarding the measure. The ROA will make these points clear:

- 4101 • FAA approvals are approvals of actions that the airport recommends be taken.
- 4102 • Approvals indicate only that the actions would, if implemented, be consistent with
4103 the purposes of Part 150.
- 4104 • Approvals do not constitute decisions to implement the actions.⁶⁵
- 4105 • Later decisions concerning possible implementation of the actions may be subject to
4106 environmental or other procedures or requirements.

4107 For each program measure described in an NCP, the FAA will make a determination:

- 4108 • Approved
- 4109 • Disapproved
- 4110 • Approved or disapproved in part
- 4111 • No action.

4112 8.6.2 An FAA determination of disapproval will provide the reason for the decision. The
4113 determination of no action may only be applied to measures related to flight procedures
4114 (i.e., IFPs and CVFPs charted in the FAA's TPP, or included in the ATCT SOP). These
4115 measures are not subject to the 180-day deadline and may be acted on after that date.
4116 The ROA should describe the unresolved action and commit to a decision within a
4117 specified time.

4118 8.6.3 NCP determinations are effective as of the date of approval subject to any additional
4119 requirements as noted above.

4120 8.7 **NCP Withdrawal.**

4121 8.7.1 If an airport sponsor withdraws the NCP during the 180-day review period, the FAA
4122 will halt the formal review. Resubmittals that meet Part 150 NCP requirements require a
4123 restart of the 180-day review period unless the Regional Airports Division Manager
4124 determines that the modification of the program can be integrated into the rest of the

⁶⁵ Some measures require additional analysis before implementing.

4125 program without exceeding the original 180-day review period (Part 150 Section
4126 150.33(e)).

4127 8.7.2 The FAA may withdraw approvals under these conditions:

- 4128 • The FAA requires the airport sponsor to revise the program or a portion of the
4129 program, and it is not revised.
- 4130 • A revision is submitted for approval and the determination on the revised NCP is
4131 inconsistent with the earlier approval.
- 4132 • A term or condition of the program, or portion thereof, is violated by the
4133 responsible government body.
- 4134 • A flight procedure or other FAA action upon which the approved program or
4135 portion of it is dependent on is later disapproved, significantly altered, or rescinded
4136 by the FAA.
- 4137 • The airport sponsor asks the FAA to withdraw approval.
- 4138 • Impacts on flight procedures, air traffic management, or air commerce occur that
4139 could not be foreseen at the time of approval.
- 4140 • For cause—provided that the FAA sends a 30-day written notice to the airport
4141 sponsor of the FAA’s intention to withdraw or modify the determination and the
4142 reasons for the action.

4143 8.8 **Local Notice about Limitations on Recovering Damages for Noise.**

4144 8.8.1 Following official FAA acceptance of an airport’s NEMs, airport sponsor should
4145 publish a legal notice pursuant to 49 U.S.C. Section 47506 (see Part 150 Section
4146 150.21(f)). Sponsors should check with their legal staff or local jurisdiction to see if
4147 there is special language or publication requirements to follow when publishing this
4148 notice.

4149 8.8.2 An example of what the legal notice could state:

4150 This serves to provide public notice that, on [insert date], the Federal
4151 Aviation Administration (FAA) announced its determination that the
4152 “XXXX Existing Condition Noise Exposure Map” and “YYYY Future
4153 Condition Noise Exposure Map” submitted by the [insert airport sponsor’s
4154 name] for [insert airport name] under the provisions of 49 U.S.C. Section
4155 47503 and 14 CFR Part 150 were found to be in compliance with
4156 applicable requirements. The Noise Exposure Maps and supporting
4157 documentation are available for public inspection during normal business
4158 hours ([insert times and days of the week]) at [insert airport sponsor’s
4159 office location].

4160 8.8.3 The notice must be published at least three times in newspapers of general circulation in
4161 the counties (or parishes) where the airport and surrounding properties are located. The

4162 notices serve two purposes, which Part 150 statutes refer to as “constructive” and
4163 “actual” knowledge of the NEMs by local property owners. Publication of the legal
4164 notice serves as “constructive knowledge” of the existence of the new or updated NEMs
4165 for property owners or potential buyers. Actual knowledge of the NEM is achieved if a
4166 person is given a copy of the map when acquiring a property interest.

4167 8.8.4 As indicated in 49 U.S.C. Section 47506, as of the date of the notice, no person who
4168 acquires property or an interest in property in an area surrounding the airport, having
4169 actual or constructive knowledge of the existence of the Noise Exposure Maps, will be
4170 entitled to recover damages with respect to the noise attributable to the airport unless
4171 such person can show that (1) after acquiring the interest in such property, there was a
4172 significant (a) change in the type or frequency of aircraft operations at the airport, (b)
4173 change in the airport layout, (c) change in flight patterns, or (d) increase in nighttime
4174 operations; and (2) that damages have resulted from any such change or increase.

4175 8.8.5 Airport sponsors should keep on hand indefinitely proof of the notice’s publication from
4176 the newspapers in which the notice is published along with the NEMs most recently
4177 determined in compliance with Part 150 and proof of all other publication of program-
4178 related notices.

4179 8.8.6 Similarly, if airport sponsors publish a complete version of their Part 150 study
4180 following FAA acceptance of NEMs and approval of the NCP, copies of the FAA
4181 acceptance/approval correspondence, the ROA, Federal Register notices, the initial
4182 legal notice, and proof of publication should be included in the final Part 150 study
4183 documents that are retained in the airport’s publicly available files.

4184 CHAPTER 9. IMPLEMENTATION

4185 9.1 Introduction.

4186 9.1.1 This chapter describes the process for implementing FAA-approved NCP measures.
4187 Part 150 Section 150.23(e)(8) requires the NCP to include a schedule for how the
4188 implementation should proceed.

4189 9.1.2 Airport sponsors should consider whether they need to enlist the assistance of one or
4190 more experts when deciding on the best strategy for implementing the approved
4191 program. While measures may be implemented by the responsible governing body
4192 without consultant assistance, specialized consultants may be needed to provide staff
4193 and technical resources for implementing various aspects of an airport's NCP.

4194 9.1.3 After Part 150 measures have been approved, additional review may still be required for
4195 implementation, similar to the environmental review discussed in Chapter 3. For
4196 example, if the environmental review did not include a formal Section 106 review of
4197 historic resources, and it is found that approved measures could impact historic homes,
4198 then completion of a Section 106 review would be required to comply with the National
4199 Historic Preservation Act.

4200 9.2 Funding Implementation of Approved Noise Compatibility Program Measures.

4201 Normally, federally assisted funding for carrying out approved and eligible NCP
4202 measures comes from one of three sources: the AIP grant funding (see FAA Order
4203 5100.38), proceeds from the airport's disposal of noise land that is no longer needed for
4204 noise compatibility purposes, or PFCs (see FAA Order 5500.1) collected by airlines
4205 operating at an airport controlled by the airport sponsor. Implementation can be funded
4206 through other sources, including airport or local government revenues. Chapter 2 of this
4207 AC briefly describes the AIP and PFC programs. The following paragraphs provide
4208 guidance on eligibility and how to apply for these funds.

4209 9.2.1 Airport Capital Improvement Plan (ACIP) and Airport Improvement Program.

4210 9.2.1.1 The ACIP is the primary planning tool for systematically identifying,
4211 prioritizing, and assigning funds to critical airport projects. The ACIP is
4212 also the basis for distributing AIP grant funds.

4213 9.2.1.2 The ACIP identifies the airport improvement projects and their associated
4214 costs that will be needed over the next five years, including noise
4215 compatibility projects. In awarding AIP funds to sponsors of airports, the
4216 FAA emphasizes funding the highest priority projects first. One of the
4217 FAA's primary goals for projects in the ACIP is to improve the
4218 compatibility of airports with the surrounding communities. In funding
4219 noise abatement measures, the FAA gives priority to higher noise-

- 4220 impacted areas. Eligible noise compatibility projects generally fall into the
 4221 following categories:
- 4222 • Land acquisition (including relocation assistance).
 - 4223 • Acquisition of aviation easements.
 - 4224 • Purchase assurance / sales assurance / transaction Assistance.
 - 4225 • Sound insulation (see Paragraph. 7.14 for detailed requirements).
 - 4226 • Runway and taxiway construction that the FAA has approved for noise
 4227 abatement in an NCP (including associated land acquisition, lighting,
 4228 and navigational aids).
 - 4229 • Noise monitoring equipment.
 - 4230 • Noise barriers.
- 4231 9.2.1.3 For noise compatibility projects in an NCP to be considered for AIP
 4232 funding, the FAA must determine eligibility. If airport sponsors do not
 4233 conduct a Part 150 study, PFCs may still be used for noise measures;
 4234 however, PFC-funded measures must be *approvable* under Part 150.
- 4235 9.2.1.4 The FAA normally disapproves remedial noise mitigation measures⁶⁶ for
 4236 noncompatible development constructed after October 1, 1998, under Part
 4237 150 (see Federal Register, April 3, 1998 (Volume 63, Number 64)) unless
 4238 the airport sponsor did not have a noise contour map distributed to the
 4239 public before that date or the property was not within the DNL 65dB
 4240 contour. Other noise compatibility proposals may be approved in the NCP,
 4241 but may not be eligible for consideration of federal funding. Examples of
 4242 these instances are development of new or modified IFPs or CVFPs,
 4243 operation or administrative costs of an airport sponsor's ongoing noise
 4244 program, or demonstration programs to test the effectiveness of new noise
 4245 abatement and mitigation technology.
- 4246 9.2.1.5 For FAA-approved NCP measures, airport sponsors should coordinate
 4247 with their FAA points of contact to help determine the scope of AIP and
 4248 PFC funding to implement those measures.
- 4249 9.2.1.6 The AIP's grants management system generates virtually all forms and
 4250 reports necessary to apply for AIP funding. Most are available in digital
 4251 format and can be completed in a word processing program.
- 4252 9.2.1.7 The FAA website has the current versions of FAA Order 5100.38, the AIP
 4253 Handbook, which provides a description of the process for including and

⁶⁶ The most commonly used remedial noise mitigation measures are land acquisition and relocation, sound insulation, easement acquisition, purchase assurance, and transaction assistance.

4254 prioritizing projects, and which provides a complete discussion of project
4255 eligibility and funding application requirements.

4256 9.2.2 Passenger Facility Charge Program.

4257 9.2.2.1 The PFC program provides airport-generated funds by imposing a charge
4258 per enplaned (boarding) passenger. It provides airport sponsors a local
4259 source of funding for airport projects. PFC funds can be used to fund
4260 approved NCP measures and the airport sponsor's local share of
4261 implementation costs for AIP-funded projects.

4262 9.2.2.2 PFC eligibility differs from AIP eligibility. To be eligible for PFC
4263 funding, a noise abatement project must be located in an area adversely
4264 impacted by noise and eligible for approval as a noise compatibility
4265 measure were it submitted for approval under Part 150. However, PFC-
4266 funded projects do not have to be submitted to the FAA in an NCP and do
4267 not have to receive Part 150 approval. For projects not part of an approved
4268 NCP, the FAA requires sponsors to provide documentation that the project
4269 would nonetheless have accomplished a noise mitigation purpose that
4270 would be eligible for approval under Part 150. The eligibility of the
4271 proposed noise project must be supported by current noise information
4272 such as DNL grid points or current noise contours prepared for a Part 150
4273 Study, environmental (NEPA) document, or other suitable planning
4274 document.

4275 9.2.2.3 Airport sponsors interested in funding implementation of NCP measures
4276 through PFCs should refer to the FAA website for the current version of
4277 FAA Order 5500.1, for specific instructions
4278 (<http://www.faa.gov/airports/pfc/>).

4279 9.2.3 Disposal of Airport Noise Land.

4280 The disposal of noise land does not require an FAA release of obligations. Noise land is
4281 not acquired for airport development or aeronautical use. The sponsor must inventory
4282 acquired noise land and submit a re-use plan for FAA acceptance detailing land to be
4283 sold for compatible redevelopment and land that will be retained for airport use or noise
4284 buffer. Acquired noise land that may be sold is unneeded for public airport use and
4285 upon FAA acceptance of the reuse plan there is no need for an FAA release of
4286 obligations on the unneeded land. The sponsor must ensure fair market value proceeds
4287 on sale or long term lease and retain adequate property rights such as easement and
4288 lease restrictions that prevent any noncompatible land use or development of any land
4289 parcel disposed. The FAA guidance document entitled [Noise Land Management and](#)
4290 [Requirements for Disposal of Noise Land or Development Land Funded with AIP](#)
4291 describes the sponsor requirements to manage acquired noise land and the FAA review
4292 procedures for acceptance of the sponsor's noise reuse plan.

4293 9.3 **Implementing Aircraft Flight Operational Noise Abatement Measures.**

4294 As described in Sections 7.8 and 7.9, operational noise abatement measures seek to use
 4295 preferred runway use, profiles, or tracks to reduce noise over a community. Different
 4296 implementation steps exist depending on the type of operational noise abatement
 4297 measure that is approved in the NCP, as outlined in this section.

4298 9.3.1 Use Methods.

4299 9.3.1.1 Aircraft flight operational noise abatement measures are voluntary for the
 4300 pilot and ATC depending on safety, wind, weather, and traffic flow
 4301 management. Conditions may dictate that the pilot deviate from voluntary
 4302 compliance from the intended flight measure. The final decision pilot
 4303 acceptance and use of operational noise abatement measures, including
 4304 those assigned in IFR clearances, is with the pilot in command of the
 4305 aircraft who is ultimately responsible for decisions regarding the safety of
 4306 the aircraft. For these reasons, aircraft flight operational noise abatement
 4307 measures are approved as “voluntary” in a Part 150 program.

4308 9.3.1.2 Within the voluntary construct, it is essential for the airport to consider the
 4309 operational method for how noise abatement measures are utilized by
 4310 pilots, such as VFR or IFR methods. The operational method is a key
 4311 consideration to develop measures that are flyable with recurring,
 4312 repeatable use by pilots. Otherwise, the measures may not attain the noise
 4313 benefits sought by the airport and nearby communities. Voluntary use
 4314 extends to noise abatement measures assigned in ATC clearances, as the
 4315 pilot has the option to refuse an ATC clearance that includes a runway or
 4316 IFP that the aircraft cannot safely use. Instead, the pilot will coordinate
 4317 with ATC for a different clearance that is flyable under the operative
 4318 conditions.

4319 9.3.1.3 Relevant operational measures with different implementation and use
 4320 mechanisms are shown in Table 9-1:

4321 **Table 9-1. Matrix of Implementation and Use Mechanisms by Operational Noise**
 4322 **Abatement Measures.**

Operational Noise Abatement Measure	Towered Airport	Non-Towered Airport (or when Tower closed)	Publish in Chart Supplement
IFR IFPs on departure or arrival (including CVFPs)	Request published IFP; assigned to pilots by ATC on an IFR clearance.	Request published IFP; assigned to pilots by ATC on an IFR clearance.	Yes

Operational Noise Abatement Measure	Towered Airport	Non-Towered Airport (or when Tower closed)	Publish in Chart Supplement
VFR Flight Tracks on departure or arrival	Detail VFR flight track and use in LOA with ATCT. ATCT assigns use when directing visual traffic.	Pilot notification via Chart Supplement	Yes
Preferential Runway Use	Detail preferred runway use in LOA with ATCT. ATCT assigns use when directing traffic and operative conditions allow.	Identify the preferred noise abatement runway and operative conditions (e.g., nighttime, calm winds) in the Chart Supplement.	Yes
NADPs	Seek ATC input; implementation is via Chart Supplement	Pilot notification via Chart Supplement	Yes

4323

4324 9.3.2 Collaboration with ATC and Aircraft Operators.

4325 9.3.3 The airport is advised to include the ADO in all coordination with the ATO and aircraft
 4326 operators during NCP development and later implementation steps.

4327 9.3.4 Towered Airport.

4328 9.3.4.1 If new or amended visual flight tracks or IFPs are being evaluated in an
 4329 NCP, the airport should begin consultation early in the NCP process with
 4330 the Air Traffic Manager in the ATCT and TRACON, as applicable. The
 4331 Air Traffic Manager may identify that further collaboration is needed with
 4332 the Operations Support Group, ATO Flight Procedures, or other units
 4333 within the ATO Service Center. The use of TARGETS software to
 4334 facilitate the development of flyable IFPs can also be a point of
 4335 collaboration between the airport and ATO. Consultation with ATO can
 4336 determine whether special analyses, simulator evaluation with support
 4337 from airlines, or even preliminary flight testing is practical to help
 4338 demonstrate a proposed operational measure's feasibility.⁶⁷ The Air
 4339 Traffic Manager can indicate whether a measure is feasible, while units in
 4340 the ATO Service Center can review it for consistency with national policy.

⁶⁷ This can help expedite national level review when a feasible measure is submitted later for implementation.

- 4341 FAA requires a SRM analysis for aircraft flight operational noise
4342 abatement measures that may affect aviation safety per Order 5200.11,
4343 *FAA Airports (ARP) Safety Management System (SMS)*.
- 4344 9.3.4.2 In addition to ATC, airline and aircraft operator technical pilots can
4345 provide specific expertise on flyability, operational use in consideration of
4346 airline rules, aircraft performance, safety, and related operational factors
4347 that are essential to developing operational noise abatement measures.
4348 Active engagement and collaboration with aircraft operators can go a long
4349 way towards implementing successful operational noise abatement
4350 measures.
- 4351 9.3.5 Non-towered Airport.
- 4352 9.3.5.1 Consult with the servicing ATC facility (e.g., TRACON or ARTCC) if
4353 noise abatement IFPs are being evaluated in the NCP. The IFP will need
4354 to integrate with the IFR route structure serving the airport. In addition,
4355 collaboration with aircraft operators, using both VFR and IFR methods,
4356 are essential to developing and implementing viable operational noise
4357 abatement measures. Aircraft operators can provide specific expertise on
4358 flyability, operational use, and safety.
- 4359 9.3.5.2 A specific implementation path exists for NADPs. NADPs are not charted
4360 IFPs and so are not included in the TPP. NADPs are operating techniques
4361 used by the pilot for thrust, flap, and rate of climb management during
4362 takeoff. Use of NADPs is published in the FAA's Chart Supplement in the
4363 noise abatement information section for each airport (when applicable).
4364 NADP use is also included in airport specific reference sheets used by
4365 airlines. Aircraft operators will select the preset operating steps for the
4366 two available NADPs per standard airline or NBAA operating techniques.
4367 Although not a published IFP, ATC input into NADP use is still essential
4368 since the two NADPs can result in variable airspeeds that need to be
4369 considered with airspace flow and separation management.
- 4370 9.3.6 National Environmental Policy Act Review.
- 4371 9.3.6.1 Before FAA-approved NCP operational noise abatement measures can be
4372 implemented, even if they have been deemed operationally feasible and
4373 would realize noise-reduction benefits, airport sponsors must submit data
4374 sufficient for the FAA to environmentally evaluate the proposed measures
4375 under NEPA.
- 4376 9.3.6.2 FAA Order 1050.1, states that new instrument approach procedures,
4377 departure procedures, en route procedures, modifications to currently
4378 approved instrument procedures, or new or revised air traffic management
4379 (ATC) practices, which routinely route air traffic over noise-sensitive
4380 areas at less than 3,000 feet above ground level, normally require an EA.

- 4381 This includes procedures that alter flight tracks or specific altitudes.
4382 Accordingly, Preferential Runway Use and Aircraft Flight Operational
4383 Noise Abatement Measures, as described in Sections 7.8 and 7.9, normally
4384 require an environmental analysis before they can take effect when
4385 proposed at a towered airport or when using a charted IFP.
- 4386 9.3.6.3 Order 1050.1 also states that new procedures that route aircraft over non-
4387 noise sensitive areas can be categorically excluded from environmental
4388 assessment. Also excluded are procedural actions users request on a test
4389 basis for less than six months to determine effectiveness of new
4390 technology and measure possible impacts on the environment. Visual
4391 flight tracks at non-towered airports do not normally require NEPA
4392 review.
- 4393 9.3.6.4 An operational noise abatement measure may reduce noise in one noise-
4394 sensitive area around the airport but increase noise (possibly to a lesser
4395 degree) to another. When an EA is required, the FAA reviews the airport
4396 sponsor-prepared EA. During the EA process, the airport sponsor conducts
4397 an initial noise analysis, typically using the data from the NCP. The EA
4398 determines the changes in noise around the airport due to the sponsor's
4399 proposed aircraft flight operational noise abatement measure. Based on the
4400 EA's results, the sponsor may need to add noise mitigation to areas that
4401 are newly impacted if the NCP does not already address this. Examples of
4402 new noise impacts are creating a significant increase in noise over
4403 environmental justice populations (low-income or minority populations)
4404 or adding people to the DNL 70 dB contour.
- 4405 9.3.6.5 The FAA's noise threshold above which impacts are considered
4406 significant is a DNL 1.5 dB increase in noise over any noise-sensitive area
4407 within the DNL 65 dB contour. If the significance threshold is not
4408 exceeded, and no extraordinary circumstances exist (as defined by Order
4409 1050.1, Paragraph 5-2), the FAA may conclude that the proposed
4410 operational noise abatement measure will not significantly affect the
4411 human environment and issue a FONSI. Implementation of the proposed
4412 operational flight measure may be implemented following the FONSI.
- 4413 9.3.6.6 If the significance threshold is exceeded, FAA is required to report in their
4414 NEPA review of the airport EA the noise increases from the operational
4415 measure, which would include a DNL 1.5 dB increase in noise over any
4416 noise-sensitive area within the DNL 65 dB contour as well as any increase
4417 of 3 dB between DNL 60 and 65 dB contour, and any increase of 5 dB
4418 between DNL 45 and 60 dB contour.⁶⁸ When the impact is considered

⁶⁸ See FAA Order 7400.2, Procedures for Handling Airspace Matters, Chapter 32.

4419 significant, the FAA may issue a mitigated FONSI or require an EIS for
4420 the proposed operational noise abatement measure.

4421 9.3.7 Publication in FAA’s Chart Supplement and Terminal Procedures Publication.

4422 9.3.7.1 The primary reference for pilots use of airport noise abatement
4423 information is the FAA’s Chart Supplement. All airports with noise
4424 abatement programs use the noise section in the airport’s individual listing
4425 to convey relevant operational noise abatement instructions for pilot use.
4426 When there are complex noise abatement instructions, the “front matter”
4427 can be supplemented with a graphic in the Special Notices section of the
4428 Chart Supplement. Consultant available APP-400 documentation on best
4429 practices for describing noise abatement information in the Chart
4430 Supplement. If Charted IFPs are used for noise abatement purposes, the
4431 specific IFPs are referenced in the Chart Supplement, instead of describing
4432 specific steps about how the procedure is flown.

4433 9.3.7.2 If the NCP measure is approved, the language for the Chart Supplement is
4434 submitted to the ADO to ensure it meet FAA requirements, in
4435 collaboration with ATO.

4436 9.3.7.3 When charted Instrument Flight Procedures (IFPs) are proposed for use by
4437 aircraft on IFR clearances, whether a CVFP or an instrument arrival or
4438 departure procedures, the airport will need to submit the requested
4439 procedure into the FAA’s [IFP Gateway](#). This initiates the FAA Order
4440 8260.43, *Flight Procedures Management Program*, process for publishing
4441 new procedures in the Terminal Procedures Publication (TPP). IFPs
4442 authorized by an approved NCP are assigned a specific priority for
4443 publication. The typical timeframe for development of a new or amended
4444 IFP can be up to 3 years. IFPs will be developed using standard RNAV
4445 (GPS) or RNAV (RNP) criteria as described in FAA Order 8260.3,
4446 *TERPS*. Charted Visual Flight Procedures are developed using the criteria
4447 and guidance in FAA Order 8260.61, *Charted Visual Flight Procedures*.
4448 Noise abatement IFPs that seek development of SIDs, STARs, or RNP
4449 (AR) procedures use the process identified in FAA Order 7100.41, *PBN*
4450 *Implementation Process*.

4451 9.3.8 Airport Agreements with Aircraft Operators and ATC.

4452 9.3.8.1 At both towered and nontowered airports, an airport sponsor may need to
4453 include new or changed noise abatement information in the airport’s rules
4454 and regulations or minimum standards documents. The rules and
4455 regulations and minimum standards are often referenced in lease
4456 agreements, which notify and obligate airport tenants to comply. Sponsors
4457 should also notify local pilots of new or changed noise abatement
4458 information that may be relevant to them. Notification options include
4459 handouts, bulletins, newsletters, signs in the FBO, etc. FAA will not

4460 support/approve permanent Notices to Airmen about noise abatement, as
4461 the Chart Supplement is the primary source for pilots to obtain such
4462 information.

4463 9.3.8.2 At airports with an FAA ATCT, the airport should coordinate a detailed
4464 Letter of Agreement (LOA) that identifies and describes the relevant
4465 parameters for use of approved aircraft flight operational noise abatement
4466 measures. This preferential runway use measures, NADPs, and visual
4467 flight tracks, and IFPs. The LOA process services to facilitate adoption of
4468 aircraft flight operational noise abatement measures into the ATCT and
4469 TRACONs Standard Operating Procedures (SOP). This is a key step to
4470 enabling regular and safe use of the intended noise abatement measures.
4471 At nontowered airports, the airport should consider an LOA with the
4472 servicing ATC facility (e.g., TRACON or ARTCC) if there are IFPs with
4473 noise abatement purposes that are to be used by IFR aircraft.

4474 9.4 **Implementing Preventive Land Use Measures.**

4475 9.4.1 Preventive land use management measures seek to reduce the possibility of adding new
4476 noise-sensitive land uses within existing and future airport noise contours. These
4477 measures must be implemented by the entities that have jurisdiction with land use
4478 control authority. Airport sponsors may not have legal authority to implement land use
4479 controls. When there is such legal authority, the grant assurances require airport
4480 sponsors to manage land within its jurisdiction consistent with Grant Assurance 21,
4481 *Compatible Land Use* for noise projects.

4482 9.4.2 Airports are frequently surrounded by multiple local government entities, each with the
4483 authority to adopt and enforce its own local land regulatory measures. Identifying all
4484 impacted jurisdictions and diligently working toward their full participation and buy-in
4485 during the study process is critical to successfully implementing land use compatibility
4486 measures.

4487 9.5 **Implementing Remedial Land Use Measures.**

4488 When implementing remedial land use measures such as land acquisition or sound
4489 insulation, airport sponsors should anticipate potential environmental impacts. For
4490 example, a structure proposed for sound insulation may be a historic structure needing
4491 special treatment. Airport layout changes or installation of navigational aids that are
4492 approved for noise abatement may disturb areas with archeological significance. Refer
4493 to FAA Orders 1050.1 and 5050.4 for additional guidance on complying with NEPA
4494 and special purpose laws when implementing remedial land use measures.

4495 9.5.1 Developing a Policies and Procedures Manual.

4496 9.5.1.1 Airport sponsors should consider developing step-by-step procedures for
4497 implementing the approved remedial land use mitigation measures. A

- 4498 *Policies and Procedures Manual* or other implementation tracking
4499 program can document these procedures.
- 4500 9.5.1.2 The manual should include the following items:
- 4501 • A policy statement for prioritizing program participation and for
4502 addressing hardship cases.
 - 4503 • Parcels identified for purchase, sound insulation, or easement.
- 4504 9.5.1.3 FAA Order 5100.38 allows an airport to ensure equity among homes in
4505 the neighborhood affected by the acquisition program. To this end, the
4506 property acquisition limits may be expanded beyond the DNL 65 dB
4507 contour line to a logical neighborhood boundary such as the end of a block
4508 of homes that may be divided by the contour line, a highway fronting the
4509 neighborhood, or other natural feature defining the immediate pre-project
4510 neighborhood limits. Where necessary and feasible, therefore, the
4511 acquisition program may include a reasonable number of such homes
4512 located outside the eligible contour line, but identified as part of the
4513 neighborhood being acquired. The FAA Airports Regional Division or
4514 ADO (through the airport's ARP POC) must agree with the proposed
4515 boundaries.
- 4516 9.5.1.4 Each alternative mitigation measure should be described so it is easy to
4517 follow and provides a path for timely implementation. Property owners
4518 may be offered a single program option, such as land acquisition and
4519 relocation assistance where land use is being changed to compatible use.
4520 Property owners may be offered their choice of several program options
4521 that do not change land use—purchase assurance, aviation easement,
4522 sound insulation, or a combination of options.
- 4523 9.5.1.5 Land acquisition to change land use (such as from residential to
4524 compatible commercial/industrial) may not be combined with options that
4525 would not bring about the desired land use change. For example, sound
4526 insulation would not be offered with land acquisition and relocation
4527 assistance. The success changing the land use as part of an acquisition
4528 depends on owners being willing to sell their property and the airport
4529 sponsor's ability to assemble the acquired land for compatible
4530 redevelopment or compatible reuse.
- 4531 9.5.1.6 The Policies and Procedures Manual for program implementation should
4532 identify the options that are available for each alternative. For example,
4533 can displaced persons remain in the dwelling rent free for a short time
4534 after the airport takes title of the property but before relocation to a
4535 comparable replacement dwelling? Will smaller bid packages within the

4536 sound insulation program allow local construction companies a chance to
4537 work as general contractors instead of sub-contractors?

4538 9.5.1.7 The manual could also include forms and documents that will be needed in
4539 the actual implementation phase of the program, such as purchase
4540 agreements and avigation easements.

4541 9.5.1.8 FAA approval of the manual is not required, but it is recommended to
4542 have the ARP POC review it before it is finalized.

4543 9.5.2 Acquiring Avigation Easements.

4544 9.5.2.1 If the NCP includes an FAA-approved measure for acquiring avigation
4545 easements, the proposed easement acquisition procedures must conform to
4546 49 CFR Part 24. To help in this, FAA AC 150/5100-17 provides specific
4547 guidance on appraising, negotiating, and purchasing easements for NCPs.
4548 Where allowable and cost effective, the FAA AC describes a minimum
4549 offer and valuation study method to apply upon showing that the fair
4550 market value of easements to be acquired is a nominal amount.

4551 9.5.2.2 The easement valuation must comply with all FAA guidelines as described
4552 in AC 150/5100-17. It must estimate fair market value compensation for
4553 buying permanent avigation easements for the airport NCP. The valuation
4554 will appraise the effect of the easement on the market value of the
4555 participating properties. The appraisal also considers existing and
4556 proposed overlay zoning and subdivision or building code restrictions on
4557 the property.

4558 9.5.2.3 AC 150/5100-17 provides specific guidance for appraising and negotiating
4559 the purchase of avigation easements in conformance to FAA requirements.
4560 (See paragraph 2-17, Appraisal of Avigation Easements Acquired for
4561 Noise Compatibility, and paragraph 3-9, Minimum Payment
4562 Negotiations.) Airport sponsors may submit the easement appraisal reports
4563 and proposed negotiation procedure to the ARP POC for review and
4564 acceptance. Upon FAA acceptance, sponsors can include these documents
4565 in the program implementation manual.

4566 9.5.3 Preparing a Sound Insulation Program Agreement.

4567 If the NCP includes an FAA-approved measure for sound insulation of privately owned
4568 property, Grant Assurance 5, *Preserving Rights and Powers*, requires the airport
4569 sponsor to enter into an agreement with private property owners. The grant agreement
4570 contains provisions that protect the federal investment and the interests of the FAA and
4571 airport sponsors and so must be included in the agreement with the private property
4572 owner. FAA Order 5100.38 includes wording for this agreement. These grant conditions
4573 are on the FAA website [on the grant assurances page](#).

4574 9.5.4 Preparing a Relocation Plan.

4575 If the NCP includes an FAA-approved measure for providing relocation assistance,
4576 sponsors must prepare a Relocation Plan. AC 150/5100-17, Chapter 4, describes the
4577 requirements for relocation planning. Relocation planning must address issues
4578 associated with displacing individuals, families, businesses, farms, and nonprofit
4579 organizations.

4580 9.5.5 Airport Sponsor Compliance Review and Quality Control.

4581 9.5.5.1 To help assure maximum federal reimbursement of eligible costs, airport
4582 sponsors are encouraged to put in place a compliance review and quality
4583 control function. Guidance for this is in AC 150/5100-17 and the forms in
4584 Appendix 3 of that AC.

4585 9.5.5.2 The Airport Sponsor must also maintain adequate records, including those
4586 pertaining to real estate, appraisals, acquisition, relocation, and property
4587 management, and other documentation necessary to show compliance with
4588 49 CFR Part 24. This documentation needs to be readily available during
4589 regular business hours for inspection by representatives of the FAA,
4590 Office of the Secretary of Transportation, and Government Accountability
4591 Office. Airport sponsors must keep records for at least three years after
4592 FAA grant closeout.

4593 9.5.5.3 Chapter 9 of AC 150/5100-17 provides guidance to airport sponsors on
4594 required documentation to support grant assurances and certifications to
4595 the FAA. Appendix 1 of FAA Order 5100.37, *Land Acquisition and*
4596 *Relocation Assistance for Airport Projects*, provides a documentation
4597 checklist for sponsors' parcel or project files. For larger and more complex
4598 land projects, cost-effective computer or web-based document
4599 management and quality control systems are recommended.

4600 9.5.6 Maintaining a Noise Land Inventory.

4601 9.5.6.1 Land acquired under airport NCPs is often referred to as "noise land."
4602 Noise land acquired with AIP grant funds is subject to Grant Assurance
4603 31, *Written Assurances on Acquiring Land*, which is based on the statute
4604 found at 49 U.S.C. Section 47107 (c)(2)(A).

4605 9.5.6.2 Airport sponsors must keep an up-to-date Noise Land Inventory that
4606 records all of the noise land parcels that were acquired with AIP grant
4607 funds. The inventory must fully account for all grant-acquired noise land.
4608 The inventory can also help the airport sponsor dispose of land when it is

4609 no longer needed for noise compatibility (unneeded noise land). This AIP
4610 guidance is on the [Airport Improvement Program page](#).

4611 9.5.7 **Disposal of Unneeded Land.**

4612 When noise land is no longer needed for noise compatibility, the airport sponsor may
4613 “dispose of” the land. “Disposal” of noise land does not mean that airport sponsors must
4614 sell the property to another party. The airport can decide whether to sell unneeded noise
4615 land at fair market value, keep and lease it, or exchange it. Whatever the decision,
4616 sponsors must return the federal share of the disposal proceeds to the Airport and
4617 Airway Trust Fund or use it for another approved noise compatibility project or eligible
4618 AIP project at the airport.

4619 9.6 **Implementing Program Management Measures.**

4620 Program management measures may include keeping active your public involvement
4621 programs that were established during the Part 150 Study, such as meeting with
4622 advisory committees, publishing newsletters, or updating websites. Program
4623 management measures might include tracking the NCP’s overall progress and changes
4624 in aircraft operations to determine when a Part 150 map or program update might be
4625 needed.

4626 9.6.1 **Maintaining Public Involvement Programs.**

4627 Many airport sponsors keep public involvement programs active after submitting the
4628 NCP to the FAA. Keeping communication active between the airport and concerned
4629 citizens’ groups is a means to provide the status and progress of the approved NCP.
4630 These programs may distribute monthly or quarterly status reports or newsletters and
4631 maintain a website for the public to access noise contour information and status and
4632 progress reports. Public information programs can be a conduit for meaningful
4633 communication with the public and a forum for discussing complaints. While most of
4634 these programs are not eligible for federal funding, first-time development of a website
4635 for this purpose may be eligible. The ARP POC can provide guidance on the program
4636 management measures eligible for federal funding.

4637 9.6.2 **Acquisition of Noise and Operations Monitoring and Flight Tracking Systems.**

4638 For sponsors that decide to purchase a noise and operations monitoring or a flight
4639 tracking system, the federal procurement regulations for this purchase are described in
4640 49 CFR Part 18.36. Airport sponsors should develop a bid specification that describes in
4641 detail the required system capabilities, equipment, and installation and maintenance
4642 requirements.

4643 9.7 **Implementing Other Noise Abatement/Mitigation Measures Approved in an NCP.**

4644 9.7.1 Lights or other visual devices to help pilots fly specific noise abatement visual flight
4645 rules (VFR) flight tracks or traffic patterns are eligible for consideration of federal
4646 funding when they are an approved measure in an NCP. Construction of runways and
4647 taxiways, including land acquisition, lighting, and marking, is eligible for funding as a

- 4648 noise compatibility project if the measure is approved in the NCP. The NCP must
4649 clearly demonstrate that the primary purpose of the construction project is noise relief
4650 and not a planned capacity enhancement project.
- 4651 9.7.2 When implementing these types of noise abatement measures, airport sponsors should
4652 anticipate potential impacts on environmental resources. Refer to FAA Orders 1050.1
4653 and 5050.4 for additional guidance on complying with NEPA when implementing NCP
4654 measures.
- 4655 9.7.3 Sponsors can consider undertaking follow-on studies for determining other noise
4656 abatement measures which might be approved in an NCP:
- 4657 • Analysis to determine the most effective design for a ground run-up enclosure or
4658 noise barrier.
 - 4659 • Study to evaluate airport noise and access restrictions, as long as the study is
4660 included in a Part 150 Study update with accompanying recommendations.
 - 4661 • Analysis of the feasibility and eligibility of providing acoustical treatment to a
4662 particular facility or type of structure.
- 4663 9.7.4 The costs of a follow-on study approved in the NCP normally could be eligible for
4664 federal funding. Airport sponsors should select a vendor (whether a consultant,
4665 contractor, or equipment manufacturer) through a competitive sealed bid process.
4666 Allowable costs for follow-on studies include system design, noise monitoring
4667 equipment, dedicated data processing equipment and software, equipment installation,
4668 site preparation, and one-time costs for installation of electrical power and data
4669 transmission lines. If the installation involves ground disturbance, the study needs to
4670 determine if NEPA applies.
- 4671

APPENDIX A. AIRCRAFT NOISE

A.1 Aircraft Noise Background.

A.1.1 Noise is unwanted sound. Sound becomes noise when it interferes with normal activities. Sound is a physical phenomenon consisting of tiny pressure oscillations forming waves traveling through a medium, such as air, and is sensed by the human ear. Aircraft noise results from the operation of aircraft, such as engine run-ups, taxiing, departures, arrivals, and aircraft overflights.

A.1.2 Aircraft noise originates from the engines as well as the airframe or structure of aircraft. The engines are generally the most significant source of noise.⁶⁹ Although noise generated by propeller-driven aircraft can be annoying, jet aircraft are commonly the source of disturbing noise at airports.

A.1.3 The two basic types of jet aircraft (operating as of the publication date of this AC) are equipped with turbofan or turbojet engines. Aircraft flying faster than the speed of sound generate an intense pressure wave called a sonic boom, in addition to the propulsion and airframe noise. Currently, non-military aircraft are prohibited from producing sonic booms over land in the United States.

A.1.4 Today's commercial airplanes powered by high bypass jet engines have noise sources located inside the engine and external to the airplane:

- The jet exhaust mixing with the atmosphere produces noise behind the engine exhaust.
- The fan and forward stages of the low-pressure compressor generate noise which radiates forward through the engine air intake.
- Fan noise also radiates downstream through the bypass duct.
- Turbine and combustor noise radiate from the engine's core nozzle.
- As air passes over the fuselage, wings, control surfaces, and landing gear, it creates turbulence which in turn generates what is called airframe noise.

A.1.5 During flyover, this highly directional noise produced by jet airplanes is characterized by an increase in sound energy as the airplane approaches up to a maximum level. This sound level begins to decrease as the airplane passes overhead, decreasing further in a series of lesser peaks as the airplane departs the area.

⁶⁹ FAA regulation has required engine retrofit to meet Stage 3 airplane engine standards since September 1991. All airplanes weighing greater than 75,000 pounds were required to be retrofitted or phased out by January 1, 2000 (Federal Register 56, September 25, 1991). The FAA Modernization and Reform Act of 2012 extended this requirement to require all jet aircraft above and below 75,000 pounds to meet Stage 3 or Stage 4 noise levels, effective December 31, 2015.

A.1.6 Noise made by a helicopter is very complex and consists of multiple forms of noise associated with the main and tail rotors. The repetitive rotary motion of the air displaced by the blade surfaces (thickness noise) and the variation in loading on the blade surfaces (loading noise) generate what's called periodic tonal noise. Noise also results from the interactions of rotor blades with the forces generated by the tips of the rotor blades. This noise generates very directional noise pulses below the rotor plane.

A.1.7 The main noise source in a propeller-driven airplane is the propeller with possible contribution from the engine exhaust. Propeller blades generate thickness and loading noise as the previous paragraph described.

A.2 Noise Metrics.

Multiple noise metrics are used to assess potential airport noise impacts. Different noise metrics can be used to describe individual noise *events*, such as a single operation of an aircraft taking off, or groups of events, such as the cumulative effect of numerous aircraft operations, which creates a general noise environment or overall exposure level. Both types of descriptors are helpful in explaining how people tend to respond to a given noise condition. Descriptions of these metrics follow.

A.2.1 Decibel, dB.

A.2.1.1 Because of the vast range of sound pressure or intensity detectable by the human ear, sound pressure level (SPL) is represented by the metric known as a decibel (dB). A dB is a ratio of one sound value to another on a logarithmic scale. It is ten times the logarithm of the ratio of the sound pressure from a source relative to a reference pressure that equal to the threshold of human hearing. Therefore, a SPL of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet (laboratory-type) listening conditions. At 120 dB, the ear begins to feel a discomfort, and pain begins at approximately 140 dB. Most environmental sounds have SPLs ranging from 30 to 100 dB.

A.2.1.2 Because decibels are logarithmic (non-linear), they cannot be added or subtracted directly like other (linear) numbers. For example, if two sound sources each produce 100 dB, when they are operated together they will produce 103 dB, not 200 dB. Four 100 dB sources operating together again double the sound energy, resulting in a total SPL of 106 dB, and so on. In addition, if one source is much louder than another, the two sources operating together will produce practically the same SPL as if the louder source were operating alone. For example, a 100 dB source plus an 80 dB source produce 100 dB when operating together. The louder source masks the quieter one.

A.2.1.3 Two useful rules to remember when comparing SPLs are: (1) most people perceive a 10 dB increase in SPL between two noise events to be a

doubling of loudness, and (2) changes in SPL of less than 3 dB between two events are not easily detected in everyday environments.

A.2.2 A-Weighted Decibel, dBA.

A.2.2.1 A-weighting is a “filtering” of sound that approximates the auditory sensitivity of the human ear. Frequency, or pitch, is a basic physical characteristic of sound and is expressed in units of cycles per second, or hertz (Hz). The normal frequency range of hearing for most people is from about 20 to 15,000 Hz. Because the human ear is more sensitive to middle and high frequencies (1000 to 4000 Hz), a frequency weighting called “A” weighting is applied to the measurement of sound. Frequencies below and above the range of frequencies to which the human ear is most sensitive contribute less to the overall perception of sound, which is reflected in the sound pressure range quantified in an A-weighted decibel. The international “A” standard approximates the sensitivity of the human ear and helps in assessing the perceived loudness of various sounds.

A.2.2.2 Figure A-1 charts common indoor and outdoor sound levels. A quiet rural area at night may be 30 dBA or lower, a quiet urban area at night may be 40 dBA, whereas the operator of a typical gas lawn mower may experience a level of 90 dBA or higher. Similarly, the level in a library may be 30 dBA or lower; rock concerts may reach levels near 110 dBA.

A.2.3 Maximum A-Weighted Noise Level, L_{max}.

Sound levels vary with time. For example, sound increases as an aircraft approaches, then decreases and blends into the ambient, or background, as the aircraft recedes into the distance. Because of this variation, it is often convenient to describe a particular noise event (e.g., a single aircraft flyover) by its highest or maximum sound level (L_{max}). Figure A-1 shows common sound levels for comparison. The L_{max} metric describes only one dimension of an event; it provides no information on the cumulative noise exposure generated by a sound source. In fact, two events with identical L_{max} levels may produce very different total noise exposures. One may be of very short duration, while the other may last much longer. L_{max} is useful for identifying detectable noise changes. A 3 dB increase in L_{max} is “barely perceptible,” while a 5 dB increase in L_{max} is “clearly perceptible.”

A.2.4 Sound Exposure Level, SEL.

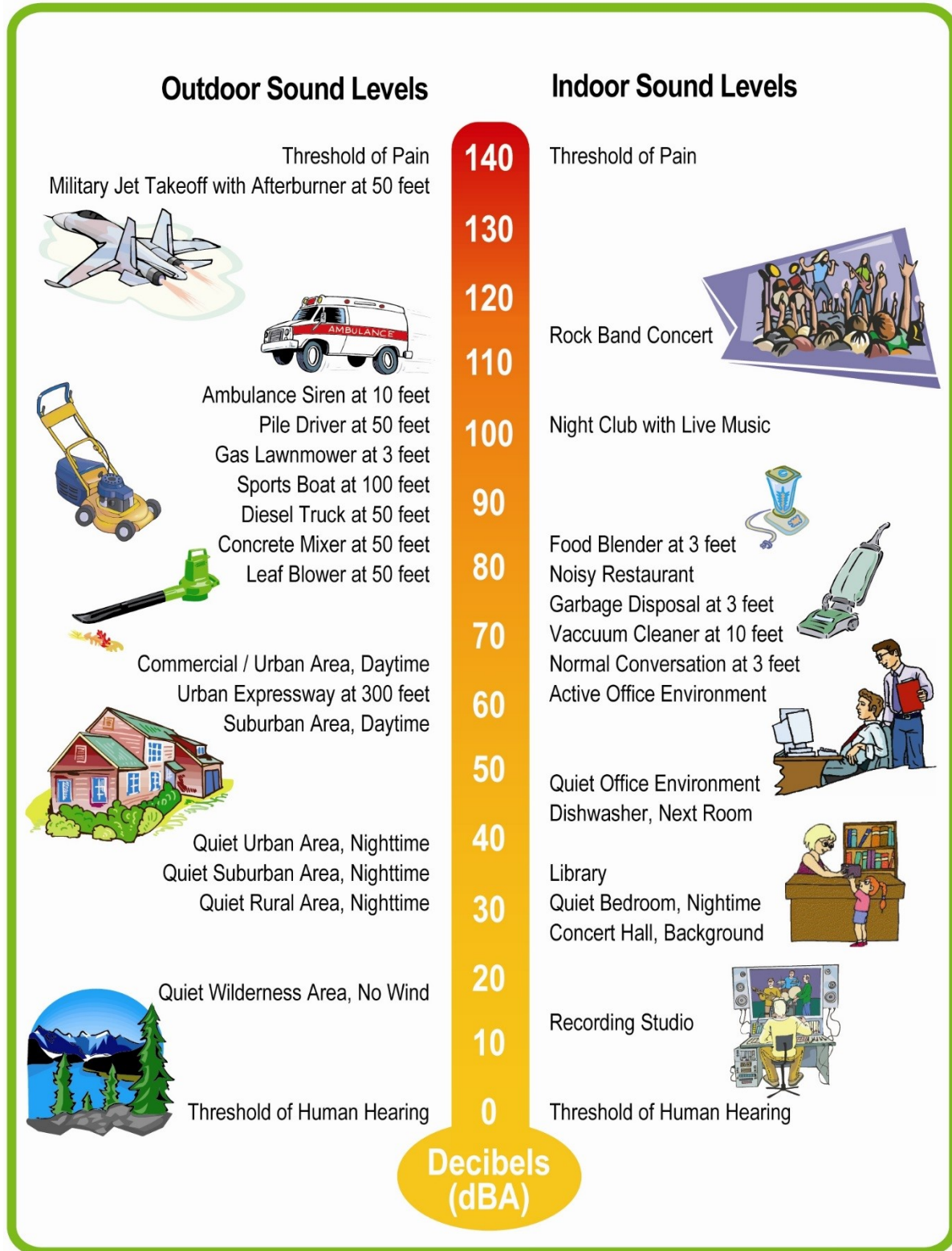
A.2.4.1 The most common measure of noise exposure for a single aircraft flyover event is the sound exposure level (SEL). SEL is a summation of the A-weighted sound energy at a particular location over the true duration of a noise event, normalized (or compressed) to a fictional duration of one second. The true noise event duration is defined as the amount of time the noise event exceeds a specified level (that is at least 10 dBA below the maximum value measured during the noise event). For noise events lasting more than one second, SEL does not directly represent the sound level

111 heard at any given time, but rather provides a measure of the gross impact
112 of the entire acoustic event.

113 A.2.4.2 Using the one-second measure enables the comparison of noise events of
114 different duration and maximum levels. Because the SEL is normalized to
115 one second, it will almost always be larger in magnitude than the L_{\max} for
116 the same event. For most aircraft events, the SEL is about 7 to 12 dBA
117 higher than the L_{\max} . Additionally, since it is a cumulative measure, a
118 higher SEL can result from louder or longer events.

119 A.2.4.3 SEL is used for comparing the noise energy emitted by different sources.
120 In noise analysis documentation, SEL can be used to compare the noise
121 energy emitted by different aircraft types. Figure A-2 is a graphic
122 comparison of the SEL 80, 85, and 90 dBA noise contour areas for one
123 takeoff and landing for a few select airplane types.
124

125

Figure A-1. Common Outdoor and Indoor Sound Levels

126

Source: URS Corporation, 2008

127

- 128 A.2.4.4 Computer noise models, such as the AEDT, base their computations on
129 SEL.
- 130 A.2.4.5 Figure A-3 shows an event's "time history," or the variation of sound level
131 with time. For typical sound events experienced by a stationary listener,
132 such as an aircraft flyover, the sound level increases as the source (or
133 aircraft) approaches the listener, peaks, and then diminishes as the aircraft
134 flies away from the listener. In Figure A-3, the area under the time history
135 curve represents the overall sound energy of the noise event. The L_{max} for
136 the event shown in Figure A-3 was 93.5 dBA. Compressing the event's
137 total sound energy into one second computes its SEL which is 102.7 dBA.
- 138 A.2.5 Equivalent Sound Level, L_{eq} .
- 139 A.2.5.1 Equivalent sound level (abbreviated L_{eq}) is a measure of the noise
140 exposure resulting from the accumulation of A-weighted sound levels over
141 a specified period (an hour, an 8-hour school day, nighttime, or a full 24-
142 hour day).
- 143 A.2.5.2 Because the length of the L_{eq} period can differ depending on the time
144 frame measured, the applicable period should always be identified or
145 clearly understood when discussing this metric. Such durations are often
146 identified through a subscript. For example, for an 8-hour day $L_{eq(8)}$ is
147 used; for 24-hours, $L_{eq(24)}$.
- 148 A.2.5.3 According to the equal energy principle, the effect of a combination of
149 noise events is related to their combined sound energy. Thus, L_{eq} sums up
150 the total energy over the time period of interest and gives a level
151 equivalent to the average sound energy over that period. Such average
152 levels are usually based on integrating A-weighted levels. Thus L_{eq} is the
153 average energy equivalent level of the A-weighted sound over a specified
154 time period.
- 155 A.2.5.4 For typical aircraft flight events, and as noted earlier for SEL, L_{eq} does not
156 represent the sound level heard by the listener when the event occurs, but
157 rather represents the total sound exposure for the L_{eq} timeframe of interest.
158 Also, the "average" sound level suggested by L_{eq} is not an arithmetic or
159 linear value, but a logarithmic, or "energy-averaged," sound level. Loud
160 events that tend to dominate the noise environment, therefore, are best
161 described by the L_{eq} metric.

162 A.2.6 Day-Night Average Sound Level, DNL70 and Community Noise Equivalent Level,
163 CNEL.

164 A.2.6.1 The FAA has adopted, in title 14 CFR Part 150, a single system for
165 measuring noise at airports and surrounding areas that generally provides a
166 highly reliable relationship between projected noise exposure and
167 surveyed reaction of people to noise. It also covers determining exposure
168 of individuals to noise resulting from the operations of an airport at night.

⁷⁰ Ldn is the mathematical symbol for DNL as noted in Section A150.203 of the Part 150 regulation.

169

Figure A-2. SEL Noise Footprints

170

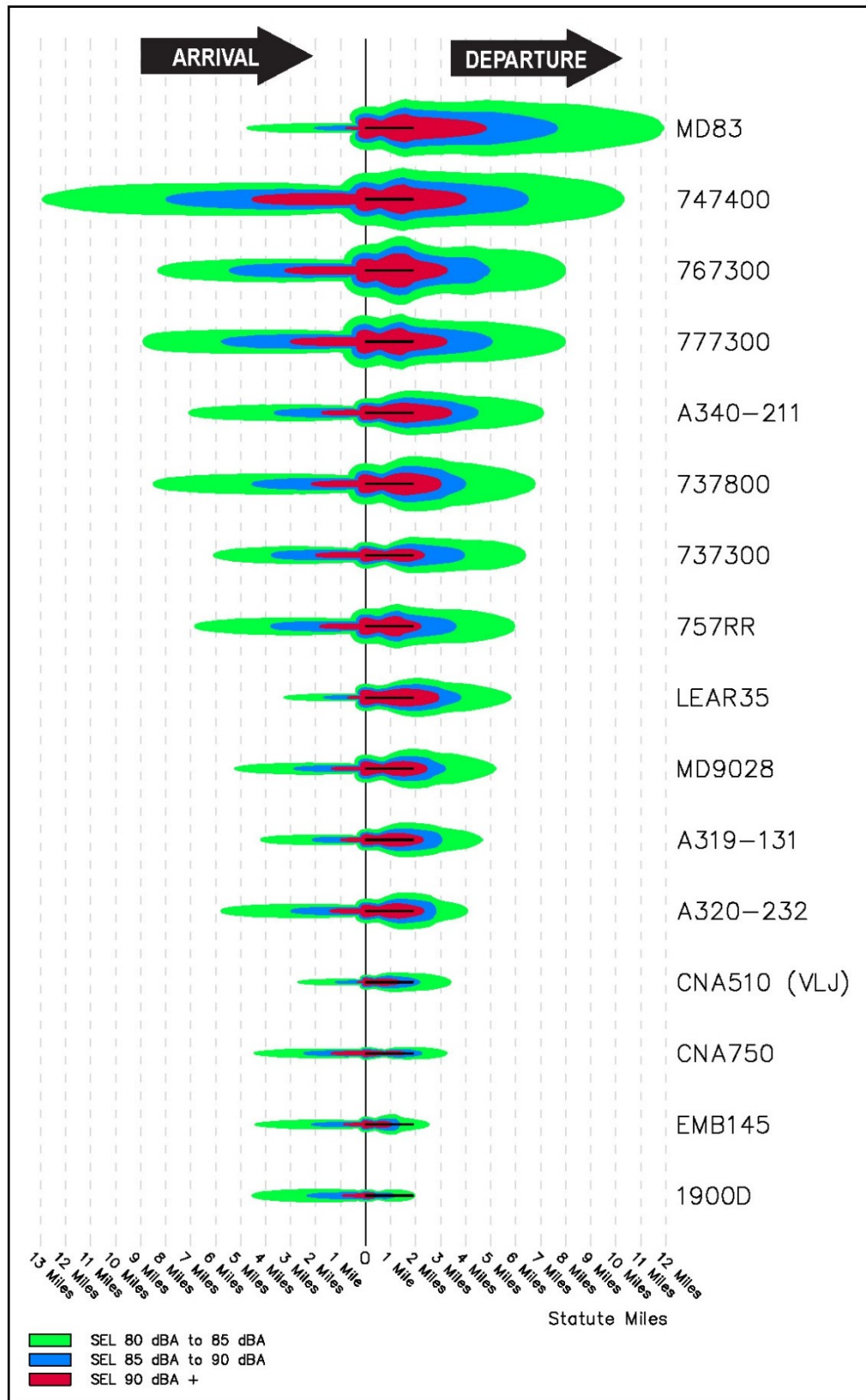
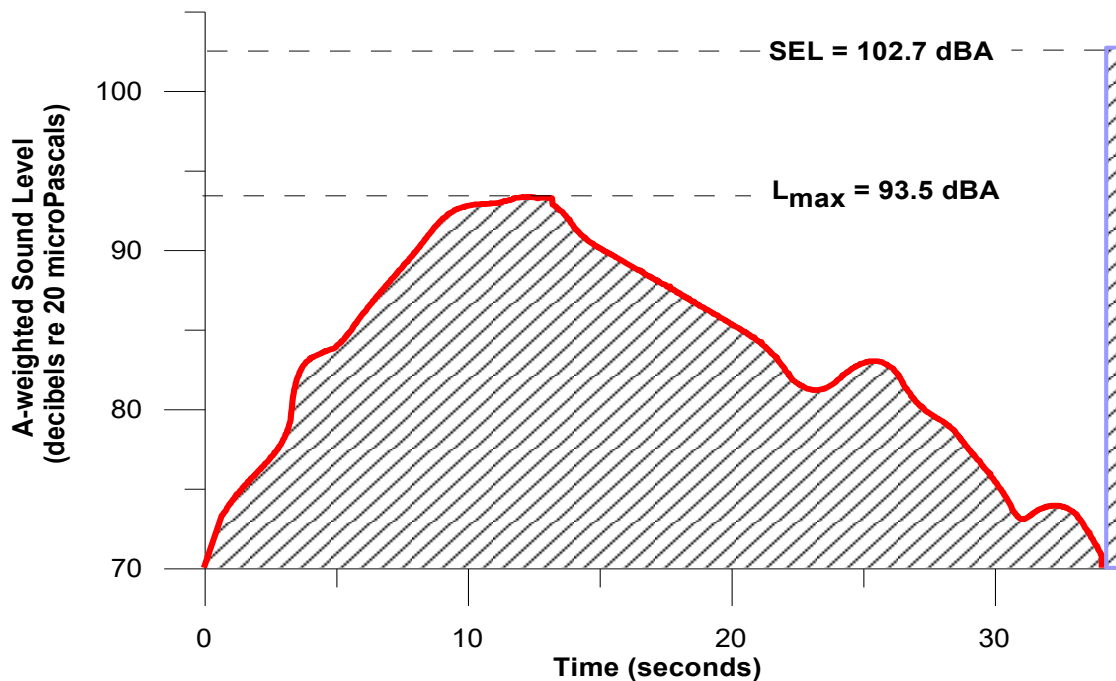


Figure A-3. Comparison of Maximum Sound Level (L_{max}) and Sound Exposure Level (SEL)



A.2.6.2 This metric is the DNL or the CNEL for California airports. Both noise metrics logarithmically average aircraft sound levels generated at the airport over an annualized average 24-hour period. Each aircraft operation between 10:00 p.m. and 6:59 a.m. is treated as if it were ten operations. Similarly, CNEL (but not DNL) includes an additional penalty weighting for operations taking place between 7:00 p.m. and 9:59 p.m. in the evening. Each aircraft operation during these hours is counted as if it were three operations. Logarithmically, these multipliers are the equivalent of adding 10 dB to the noise level of each nighttime operation and 4.77 dB to the noise level of each evening operation.

A.2.6.3 These weightings are added to account for the increased sensitivity to noise during evening and night time hours. Ambient (without aircraft) sound levels during evening and nighttime are typically lower than during the day. The decibel "penalty" represents the added intrusiveness of sounds occurring during the evening and at night.

A.2.6.4 Like L_{eq} , DNL and CNEL are time-averaged sound levels, and therefore are measurements of sound averaged over a specified length of time. DNL and CNEL quantify the average sound energy during a 24-hour period. The DNL and CNEL metrics account for the noise levels of all individual aircraft events, the number of times they occur, and when they occur (day/evening/night). Values of DNL and CNEL can be measured with standard monitoring equipment, but for developing Part 150 Noise Exposure Maps (NEMs), they are predicted with an FAA-approved

196 computer model. The current FAA-approved model is the AEDT. The
197 AEDT model, as well as guidance and other information, is available for a
198 nominal fee at: https://aedt.faa.gov/2c_information.aspx.

199 A.2.6.5 Due to the DNL descriptor's close correlation with the degree of
200 community annoyance from aircraft noise, DNL has been formally
201 adopted by most federal agencies for measuring and evaluating
202 transportation noise for land use planning and noise impact assessment.
203 CNEL has been adopted by the State of California.

204 A.2.6.6 In 1979, the Federal Interagency Committee on Urban Noise (FICUN)
205 was formed to develop federal policy and guidance on noise. The
206 committee's membership included the Environmental Protection Agency
207 (EPA), FAA, the Federal Highway Administration, and the Departments
208 of Defense (DOD), Housing and Urban Development (HUD), and
209 Veterans Affairs (VA). It also developed consolidated federal land use
210 compatibility guidelines using DNL as the common descriptor of noise
211 levels.

212 A.2.6.7 To develop the guidelines, it was also necessary to establish a correlation
213 between land use and noise exposure classifications. The FICUN issued its
214 report entitled *Guidelines for Considering Noise in Land Use Planning*
215 *and Control* in June 1980. This report established the Federal
216 government's DNL 65 dB standard and related guidelines. The FICUN
217 generally agreed that standard residential construction was compatible for
218 noise exposure from all sources up to DNL 65 dB.

219 A.2.6.8 In 1991, the FAA and EPA initiated the Federal Interagency Committee
220 on Noise (FICON) to review technical and policy issues related to
221 assessment of noise impacts around airports. Membership included
222 representatives from DOD, DOT, HUD, the Department of Justice, VA,
223 and the Council on Environmental Quality. The FICON review focused,
224 among other things, on how noise impacts are determined and described,
225 and to what extent impacts outside of DNL 65 dB should be reviewed in
226 NEPA documents. The FICON's findings and recommendations were
227 published in the August 1992 *Federal Agency Review of Selected Airport*
228 *Noise Analysis Issues*. With respect to DNL, the FICON found that there
229 were no new descriptors or metrics of sufficient scientific standing to
230 substitute for the DNL metric. It recommended continuing using the DNL
231 metric as the principal means for describing long-term noise exposure
232 from civil and military aircraft operations. The FICON reaffirmed the
233 methodology for using DNL as the noise exposure metric to determine
234 community noise impacts.

235 A.2.6.9 DNL provides a simple method to compare the effectiveness of alternative
236 airport scenarios. Land use planners have acquired over 20 years of
237 working experience applying this metric to make zoning and planning

238 decisions. DNL is a sound and workable tool for land use planning and in
239 relating aircraft noise to community reaction. Experience indicates that
240 DNL provides a very good measure of impacts on the quality of the
241 human environment, forming an adequate basis for decisions that
242 influence major transportation infrastructure projects.

243 A.2.6.10 As of the publication date of this AC, FAA believes DNL continues to be
244 the best metric available in the scientific community for measuring aircraft
245 noise and land use compatibility. Scientific studies on this subject,
246 however, are ongoing.

247 A.2.6.11 FAA Order 1050.1 requires DNL be used to describe cumulative noise
248 exposure and to identify aircraft noise and land use compatibility. Already
249 mentioned is the FAA's acceptance of CNEL as an alternative metric for
250 California. Besides DNL and CNEL, other cumulative and single event
251 metrics can be used to supplement noise compatibility studies.

252 A.2.6.12 Some airport sponsors may wish to examine seasonal impacts of aircraft
253 operations using a DNL analysis, for example, to provide additional
254 information on the short-term (usually summer/winter tourism or
255 vacationing season) peak activity at an airport. In locations experiencing
256 these fluctuations, there can be an immense difference in noise contours
257 based on aircraft operations averaged over 365 days versus contours based
258 on the shorter timeframes of peak seasons. Seasonal DNL may also be
259 applied to runway use. One season may be a predominantly northern flow
260 and another predominantly southern. In either case, modeling results of
261 DNL (or CNEL for California) for a shorter timeframe than annual
262 averages may not be substituted for the official NEMs submitted in Part
263 150 studies.

264 A.2.7 Time Above (TA).
265 Time Above (TA) is the amount of time (usually expressed in minutes) for which
266 aircraft-related noise exceeds a specified A-weighted sound level, expressed in decibels,
267 during a given period. In other words, it provides the number of minutes an aircraft's
268 noise level is louder than another noise level during the given period. Examples include
269 the duration an aircraft is louder than the ambient noise level or louder than the level
270 that interferes with speech.

271 A.2.8 Number of Events Above (NA).
272 Number of Events Above (NA) is the count of the number of aircraft noise events above
273 a specified sound level, expressed in decibels. The threshold is usually expressed as
274 either an SEL or L_{\max} . The NA at a given location are counted and summed over a
275 specified period. Examples include the number of aircraft events louder than the
276 ambient noise level or louder than the level that interferes with speech. The NA is
277 sometimes included as a supplement to DNL to provide more detail on the frequency of
278 events in the vicinity of an airport.

A.3 Supplemental Noise Analysis.

A.3.1 Part 150 Section 150.9(b) requires that exposure of individuals to noise resulting from the operation of an airport be established in terms of DNL as the FAA's primary noise metric. The FAA also recognizes CNEL for use as the cumulative metric for California. In Part 150 studies, supplemental noise metrics may be used to describe the aircraft noise exposure for specific noise-sensitive locations or situations and to assist in the public's understanding of the noise exposure.

A.3.2 Supplemental analyses use other noise metrics to describe annoyance and other noise effects such as speech interference, sleep disturbance, and effects on children's learning. Examples of these *supplemental* metrics include L_{eq} , L_{max} , SEL, TA, and NA. Table A-1 provides suggested supplemental metrics to describe particular noise effects. Supplemental metrics may be used to help create *dose responses* (changes resulting from exposure to a stressor) for evaluating noise's effect on sleep disturbance, speech interference, and children's learning. These areas of study are still in the research stage; so there is no scientific consensus on a methodology for these studies. Table A-1 presents a list of possible effects of noise and supplemental metrics that may be useful on a case-by-case basis in describing them.

Table A-1. Sample Supplemental Descriptors⁷¹

Possible effects	Cumulative energy average	Loudness of single events	Time aircraft are heard	Numbers of events
Community annoyance Psychological response to a given noise exposure	DNL – Average Day Night sound level Leq – Equivalent Sound Level	Lmax – Maximum Sound Level SEL – Sound Exposure Level	Time Above – Typically 60 or 65 dB, the speech interference level.	N70 – Number of events above 70 dBA / Australian metric cited in '02 FICAN report.
Sleep disturbance Threshold noise level causing sleep arousal	Leq (night)	SEL (Used in 1997 FICAN sleep disturbance curve) Lmax		
Speech interference Intruding noise that masks speech and reduces intelligibility	Leq (daytime)	SEL Lmax		Number of events above 60/65 dB

⁷¹ No required supplemental metrics. A-Weighted except for N70 and PSIL (the arithmetic average of sound pressure levels for 500, 1000 and 2000 Hz octave bands).

Possible effects	Cumulative energy average	Loudness of single events	Time aircraft are heard	Numbers of events
School learning As related to school sound insulation programs	Leq (school hours) 45 dB interior goal	SEL – for interior noise reduction (NLR) minimum 5 dB SEL preferred to older PSIL (Preferred Speech Interference Level) ⁷²		Number of events above 45 dB (interior)
Park visitor annoyance Covers “interference with visitor enjoyment” & “appreciation of natural quiet” (daytime and seasonal variations)	Leq (park hours)	Lmax	TAA – Time above Ambient (Existing or Natural) ⁷³	Number of events above ambient and 10 dB increments

297

298 A.3.3 Publications that synthesize the research of these select areas of interest (sleep
 299 disturbance, children’s learning, and speech interference) are nonetheless available to
 300 help determine how to complete these analyses.⁷⁴ Using these sources should be
 301 coordinated with the FAA point when these supplemental analyses are discussed in the
 302 NCP.

303 A.3.4 Sleep Disturbance.

304 A.3.4.1 To study sleep disturbance, FICON developed several dose-response
 305 relationships in 1992, as did the Federal Interagency Committee on
 306 Aircraft Noise (FICAN) in 1997 and others (see the annotated
 307 bibliography in Appendix E). These relationships link SEL to a percent-
 308 awakened number (percent of a population likely to be awakened as a
 309 result of single event noise levels). No provision was made in the FICAN
 310 study for combining the effects of multiple events, although more recent
 311 work has begun to address this area.⁷⁵ In July 2008, the American National
 312 Standards Institute (ANSI) published a standard for estimating the

⁷² PSIL is arithmetic avg of sound pressure levels for 500, 1000 and 2000 Hz octave bands.

⁷³ Background (ambient) measurements often desirable.

⁷⁴ Mestre, Vincent. “Effects of Aircraft Noise: Research Update on Selected Topics A Synthesis of Airport Practice,” ACRP Synthesis 9, Transportation Research Board of the National Academies, 2008.

⁷⁵ Miller, Nicholas. “Computing Number of People Awakened by Aircraft Operations Noise.” Acoustics ’08, June 2008. See also Miller, Nicholas, “Alternative Analysis of Sleep-Awakening data,” Noise Control Eng. J.55(2), p.224, 2007 March - April.

likelihood of behavioral awakenings in ANSI S12.9-2008, *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*.

A.3.4.2 Rather than calculate the number of awakenings, ANSI S12.9-2008 provides a method to estimate the probability of being awakened at least once during a full night of aircraft operations. In 2009, the FICAN recommended this new estimation procedure for analyzing behavioral awakenings from aircraft noise. However, FICAN recognizes that additional sleep disturbance research is underway by various organizations and that work may result in additional changes to FICAN’s position. Until then, FICAN recommends the use of ANSI S12.9-2008. Based on the FICAN recommendation, the FAA endorses the use of ANSI S12.8-2008 for developing supplemental analyses for sleep disturbance. However, FAA cautions that a supplemental analysis must not attach undue significance of supplemental metric levels to specific noise impacts, and must include effective language about existing scientific uncertainties and the lack of FAA assessment methodology, impact criteria, and policy guidance.

A.3.5 Speech Interference.

To examine speech interference, FICAN recommends using a cumulative A-weighted metric that is limited to the affected time period hours ($L_{eq(x)}$, where x equals the hours evaluated) or a TA analysis (outdoor educational exhibits, for example). The EPA established a relationship between percent sentence intelligibility and steady indoor A-weighted sound level in the EPA “Levels Document.”

A.3.6 Effects on Children’s Learning.

To assess the effects on children’s learning, it is important to evaluate three variables: the steady ambient level, the level of voice communication, and the single event level that might interfere with speech. FAA Order 5100.38 indicates that schools should have an A-weighted L_{eq} of less than 45 dBA, during school hours and in the classroom environment. For determining eligibility for consideration for federal funding, the school must be located within the significant⁷⁶ noise contour of the FAA-accepted NEM. If the school is located within the contour, supplemental $L_{eq(x)}$ measurements should be taken during the school day (where x equals school day hours). Several days of measurements should be taken to establish the average school day L_{eq} interior noise level. Sound insulation would be eligible for federal funding if the noise level exceeds $L_{eq(x)}$ 45 dBA.

⁷⁶ Using either the federal tables or local standards of significance adopted by the Land Use Jurisdiction and Airport Sponsor.

APPENDIX B. NEM AND NCP CHECKLISTS

Use the checklists as a guide in reviewing your NEM or NCP package for completeness and compliance with FAA guidance before submitting them to your FAA Airports Regional Office or ADO point of contact. Including the NEM and NCP checklists completed in detail for NEM and NCP submission (as appropriate) packages facilitate FAA's review.

The first table in the Appendix is an NEM checklist and the second is an NCP checklist.

Table B-1. NEM Checklist

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST		
AIRPORT NAME: _____ REVIEWER: _____		
Item	Yes/No/NA	Page Number/ Other Reference
I. Identification and Submission of Map Document:		
A. Is this submittal appropriately identified as one of the following, submitted under 14 C.F.R. Part 150:		
1. An NEM only?		
2. An NEM and NCP?		
3. A revision to NEMs which have previously been determined by FAA to be in compliance with Part 150?		
B. Is the airport name and the qualified airport sponsor identified?		
C. Is there a dated cover letter from the airport operator which indicates the documents and geospatial map data are submitted under Part 150 for appropriate FAA determinations?		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
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II. Consultation: [150.21(b), A150.105(a)]:

A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?

B. Identification:

1. Are the consulted parties identified?

2. Do they include all those required by 150.21(b) and A150.105(a)?

C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b), and certification as true and complete under 150.21(e)? Note: Certifications are covered under VI so recommend deleting reference here.

D. Does the document indicate whether written comments were received during consultation and, if there were comments, they are on file with the FAA region, or were all comments included in the documentation?

III. General Requirements: [150.21]

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
A. Are there two maps, each clearly labeled on the face with year (existing condition year and future forecast)?		
B. Map currency:		
1. Does the existing condition map year match the year on the airport operator's NEM submittal?		
2. Is the future map based on reasonable forecasts and other planning assumptions?		
3. Forecast aircraft operations?		
4. Forecast fleet mix?		
5. Forecast number of night operations?		
6. Forecast flight tracks or any planned IFPs under development?		
7. If the answer to 1 and 2 above is no, has the airport operator verified in writing that data in the documentation are representative of existing condition and future forecast conditions as of the date of submission?		
C. If the NEM and NCP are submitted together:		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
1. Has the airport operator indicated whether the future map is based on future contours without the program vs. contours if the program is implemented?		
2. If the future map is based on program implementation:		
3. Are the specific program measures which are reflected on the map identified?		
4. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?		
5. Only one future condition NEM can be designated for a finding under Part 150 Section 21(a)(1). The NEM forecast map must be based on reasonable forecast aircraft operations and other reasonable planning assumptions for the fifth calendar year or later beginning after the year the NEM's are submitted to the FAA. This does not preclude the inclusion of additional maps for supporting information, analytical purposes, or longer range planning.		
IV. Map Scale Graphics, and Data Requirements: [A150.101, A150.103, A150.105, 150.21(a)]		
A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps?		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
B. Is the quality of the graphics such that required information is clear and readable?		
C. Depiction of the airport and its environs:		
1. Is the following graphically depicted to scale on both the existing conditions and future maps?: [A150.101e2,4]		
a. Airport boundaries?		
b. Runway configurations with runway end numbers?		
2. Does the depiction of the off-airport data include:		
a. A land use base map depicting streets and other identifiable geographic features?		
b. The area within the DNL 65 dB contour (or beyond, at local discretion)?		
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB contour (or beyond, at local discretion)? [A150.105(a),(b)]		
D. Noise Contours		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
1. Continuous contours for at least the DNL 65, 70, 75 dB?		
2. Based on current airport and operational data for the existing condition year NEM, and forecast data for the future NEM? [A150.101(a),(e) (3)]		
E. Flight tracks for the existing condition and future forecast timeframes (which must use the same scale as the NEM, and the same land use base map as the existing condition and future NEM), which are numbered to correspond to accompanying narrative? [A150.101(e) (2)]		
F. Locations of any noise monitoring sites (these may be on supplemental graphics that must use the same land use base map as the official NEMs). [A150.101(e) (7)]		
G. Noncompatible land use identification:		
1. Are noncompatible land uses within at least the 65 Ldn depicted on the maps? [150.21(a), A150.101 (a),(b),(c),(d),(e) (5)]		
2. Are noise sensitive public buildings identified? [150.21 (a)] National Register Properties? [150.101(e) (6), (9)]		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?		
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?		
V. Narrative Support of Map Data: [(50.21(a), A150.1, A150.101, A150.103]		
A. Technical Data:		
1. Are the technical data, including data sources, on which the NEMs are based adequately described in the narrative?		
2. Are the underlying technical data and planning assumptions reasonable? [150.21(a) (1), A150.103(b)]		
B. Calculation of noise contours:		
1. Is the methodology indicated?		
a. Is it FAA approved? [A150.103(a)]		
b. Was the same model used for both maps? (If this is unclear, the sponsor needs to verify.)		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
c. Has AEE approval been obtained for use of a model other than those that have previous blanket FAA approval?		
2. Correct use of noise models:		
a. Does the documentation indicate the airport operator has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another?		
b. If so, does this have written approval from AEE?		
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?		
4. For noise contours below DNL 65 dB contour, does the supporting documentation include explanation of local reasons (i.e., local planning purposes? Narrative explanation is highly desirable but not required by the Rule.		
5. Is there evidence that local jurisdiction adopted a lower standard?		
C. Noncompatible Land Use Information: [150.21(a), A150.101(a),(b),(c),(d),(e) (5)]		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
1. Does the narrative give estimates of the number of people residing in each of the contours (LDN 65, 70, and 75, at a minimum) for both the existing condition and future maps?		
2. Does the documentation indicate whether Table 1 of Part 150 was used by the airport operator?		
a. If a variation to Table 1 was used:		
(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?		
(2) Does the narrative include the airport operator's complete substitution for Table 1?		
3. Does the narrative include information on self-generated or ambient noise where noncompatible land use identifications consider non-airport/aircraft sound sources?		
4. Where normally noncompatible land uses are not depicted as such on the NEMs, does the narrative satisfactorily explain why, with reference to the specific geographic areas?		
5. Does the narrative describe how forecasts will affect land use compatibility?		
VI. Map Certification: [150.21(b), 150.21.(e)]		

14 CFR PART 150**NOISE EXPOSURE MAP CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/ Other Reference
A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?		
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete?		
C. If NEM dates are older than the date of submittal (DOS), has the airport operator certified in writing that aircraft operations, fleet mix, number of operations, and airport operating procedures are representative of existing conditions, and that forecasts for future NEM remain valid as of the DOS? Often a sensitivity analysis is necessary.		

1

Table B-2. NCP Checklist

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST		
AIRPORT NAME: _____ REVIEWER: _____		
Item	Yes/No/NA	Page Number/Other Reference
I. Identification and Submission Program:		
A. Submission is properly identified:		
1. 14 C.F.R. Part 150 NCP?		
2. NEM and NCP together?		
3. Program revision?		
B. Airport and Airport Sponsor's name identified?		
C. NCP transmitted by airport operator cover letter?		
II. Consultation: [150.23]		
A. Documentation includes narrative of public participation and consultation process?		
B. Identification of consulted parties:		
1. Are parties in 150.23(c) consulted?		
2. Public and planning agencies identified?		
3. Agencies in 2, above, correspond to those indicated on the NEM?		

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST		
AIRPORT NAME: _____ REVIEWER: _____		
Item	Yes/No/NA	Page Number/Other Reference
C. Satisfied 150.23(d) requirements:		
1. Documentation shows active and direct participation of parties in B. above?		
2. Active and direct participation of general public:		
3. Participation was prior to and during development of NCP and prior to submittal to FAA?		
4. Indicates adequate opportunity afforded public to submit views, data, etc.?		
D. Evidence included of notice and opportunity for public hearing on NCP?		
E. Documentation of comments:		
1. Includes summary of public hearing comments if hearing was held?		
2. Includes copy of all written material submitted to operator?		
3. Includes operator's responses/disposition of written and verbal comments?		
F. Informal agreement received from FAA on flight procedures?		

14 CFR PART 150**NOISE COMPATIBILITY PROGRAM CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/Other Reference
III. Noise Exposure Maps: [150.23, B150.3, B150.35(f)] This section of the checklist is not a substitute for the Noise Exposure Map checklist. It deals with maps in the context of the Noise Compatibility Program submission.		
A. Inclusion of NEMs and supporting documentation:		
1. Map documentation either included or incorporated by reference?		
2. Maps previously found in compliance by FAA?		
3. Compliance determination still valid?		
4. Does 180-day period have to wait for map compliance finding?		
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal)		
1. Revised NEMs included with program?		
2. Has airport operator requested FAA to make a determination on the NEM(s) when NCP approval is made?		
C. If program analysis uses noise modeling:		
1. AEDT, Heliport Noise Model (HNM), or FAA-approved equivalent?		
2. Modeling in accordance with A150.5?		

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST		
AIRPORT NAME: _____ REVIEWER: _____		
Item	Yes/No/NA	Page Number/Other Reference
D. Existing condition and future maps clearly identified as the official NEMs?		
IV. Consideration of Alternatives: [B150.7, 150.23(e)]		
A. At a minimum, are the alternatives below considered? If not, appropriate rationale provided?		
1. Land acquisition and interest therein, including air rights, easements, and development rights		
2. Barriers, acoustical shielding, public building soundproofing		
3. Preferential runway use system		
4. Visual Flight Tracks and/or Instrument Flight Procedures		
5. Noise Abatement Flight Profiles (e.g., AC 91-53A)		
6. Restrictions on type/class of aircraft (as least one restriction below must be checked) Any proposed restriction must be coordinated with APP-400.		
a. Deny use based on Federal standards		
b. Capacity limits based on noisiness		
c. Noise abatement takeoff/approach procedures		

14 CFR PART 150**NOISE COMPATIBILITY PROGRAM CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/Other Reference
d. Landing fees based on noise or time of day		
e. Nighttime restrictions		
7. Other actions with beneficial impact		
8. Other FAA recommendations		
B. Responsible implementing authority identified for each considered alternative?		
C. Analysis of alternative measures:		
1. Measures clearly described?		
2. Measures adequately analyzed?		
3. Adequate reasoning for rejecting alternatives?		
D. Other actions recommended by the FAA:		
1. Should other actions be added? List separately or on back of this form, actions and discussion with airport operator to have them included prior to the start of the 180-day cycle.		
V. Alternatives Recommended for Implementation: [150.23(e), B150.7(c), B150.35(b), B150.5]		
A. Document clearly indicates:		

14 CFR PART 150**NOISE COMPATIBILITY PROGRAM CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/Other Reference
1. Alternatives recommended for implementation?		
2. Final recommendations are airport operator's, not those of consultant or third party?		
B. Do all program recommendations:		
1. Relate directly or indirectly to reduction of noise and noncompatible land uses?		
2. Contain description of contribution to overall effectiveness of program?		
3. Noise/land use benefits quantified to extent possible?		
4. Include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?		
5. Effects based on relevant and reasonably expressed assumptions?		
6. Have adequate supporting data to support its contribution to noise/land use compatibility?		
C. Analysis appears to support standards set forth in 150.35(b) and B150.5?		

14 CFR PART 150**NOISE COMPATIBILITY PROGRAM CHECKLIST****AIRPORT NAME:** _____ **REVIEWER:** _____

Item	Yes/No/NA	Page Number/Other Reference
D. When use restrictions are recommended:		
1. Are alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions can be made?		
2. Use restrictions coordinated with APP-400 prior to making determination on start of 180 days?		
E. Do the following also meet Part 150 analytical standards:		
1. Formal recommendations which continue existing practices?		
2. New recommendations or changes proposed at end of Part 150 process?		
F. Documentation indicates how recommendations may change previously adopted plans?		
G. Documentation also:		
1. Identifies agencies which are responsible for implementing each recommendation?		
2. Indicates whether those agencies have agreed to implement?		

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST		
AIRPORT NAME: _____ REVIEWER: _____		
Item	Yes/No/NA	Page Number/Other Reference
3. Indicates essential government actions necessary to implement recommendations?		
H. Timeframe:		
1. Includes agreed upon schedule to implement alternatives?		
2. Indicates period covered by the program?		
I. Funding/Costs:		
1. Includes costs to implement alternatives?		
2. Includes anticipated funding sources?		
VI. Program Revision: [150.23(e)(9)]		
A. Supporting documentation includes provision for revision?		

**APPENDIX C. NEM AND NCP SUBMISSION COVER LETTERS AND
CERTIFICATIONS**

This Appendix provides cover letters and certifications for your NEM and NCP submissions. You can use these examples as a guide in writing your Airport Sponsor Certification and cover letter to your ARP POC.

Cover letters and certifications are provided for the following submittal situations:

1. NEMs submitted by themselves
2. NCP submitted by itself, following submission of NEMs
3. NEMs and NCP submitted together

[Airport Sponsor Letterhead]

[Date]

[FAA Point of Contact]

[Address]

**RE: TITLE 14 CFR PART 150 NOISE EXPOSURE MAPS
SUBMITTAL FOR FEDERAL AVIATION ADMINISTRATION
COMPLIANCE DETERMINATION**

Dear [FAA Point of Contact]:

Enclosed are _____ copies of [Airport's Name] Title 14 CFR Part 150 Noise Exposure Maps (NEMs) and supporting documentation, along with an electronic version. These NEMs and supporting documentation are submitted under the provisions of Title 49 United States Code, chapter 475 and Title 14 CFR Part 150. The [Airport Sponsor], as owner and operator of [Airport], is submitting these NEMs and supporting documentation for appropriate Federal Aviation Administration (FAA) determination.

Should you have any questions regarding the enclosed document, please do not hesitate to contact [Contact Information]. We appreciate your assistance in this matter.

Sincerely,

[Name]

[Title]

Enclosures

[Airport Sponsor's Logo]

SPONSOR'S CERTIFICATION

The Noise Exposure Maps (NEMs) for [Airport Name], hereby submitted in accordance with Title 14 CFR Part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The Existing Condition NEM is based on data generated for a timeframe representing the year of submission. [or, The Existing Condition NEM is not based on data generated for a timeframe representing the year of submission. However, there has been no change in operation at the airport that would create any substantial new noncompatible uses or significantly reduce noise over noncompatible uses]. The assumptions and activity levels used to develop the Existing Condition NEM are based on data from [Existing Condition Time Period Used for Modeling]. The noise contours representing the existing condition are identified as the [Year] Noise Exposure Map.

The assumptions and activity levels used to develop the Future Condition NEM are based on reasonable forecasts and other planning assumptions. The Future Condition NEM is based on data generated for a timeframe [Number of Years (must be at least five years from the date of submission represented by your Existing Condition NEMs)] years in the future from the year of submission. The noise contours representing the future condition are identified as the [Future Year] Noise Exposure Map.

The NEMs were prepared in consultation with officials of the state and public and planning agencies whose area, or any portion of whose area, of jurisdiction is within the DNL contour depicted on the NEMs. The consultation also included Federal officials having local responsibility and regular aeronautical users of the airport. It is further certified that adequate opportunity has been afforded interested persons to submit their views, data, and comments concerning the correctness and adequacy of the NEMs and the supporting documentation and forecasts. As required in 14 CFR Part 150 Section 21(b), a copy of all written comments received during consultation has been filed with the FAA Regional airports division manager.

Date of Signature

[Name]

[Title]

[Airport Sponsor]

[Airport Sponsor Letterhead]

[Date]

[FAA Point of Contact]

[Address]

**RE: TITLE 14 CFR PART 150 NOISE COMPATIBILITY PROGRAM
SUBMITTAL FOR FORMAL REVIEW AND APPROVAL**

Dear [FAA Point of Contact]:

Enclosed are _____ copies⁷⁷ of the Noise Compatibility Program (NCP) for [Airport], for your formal review and approval. The [Airport Sponsor], as owner and operator of the [Airport], is submitting this NCP under the provisions of Title 49 USC chapter 471 and Title 14 CFR Part 150.

The NCP for [Airport] includes the Future Condition Noise Exposure Map, With Program Implementation. The [Airport Sponsor] is requesting the Federal Aviation Administration (FAA) to make a new map compliance finding upon approval of the NCP as outlined in 150.21.⁷⁸

The NCP for [Airport] was made available for public review prior to the public hearing, which was held on [Date] [if no hearing was held, state that a notice of opportunity for a public hearing was published prior to submittal of this NCP and the Airport Sponsor did not receive any requests for a hearing]. Comments received during the public review period and any public hearing have been included as an appendix to the NCP.⁷⁹

The [Airport Sponsor] formally adopted the recommendations contained in the NCP for [Airport] [describe the forum and provide date].

Should you have any questions regarding the enclosed document, please do not hesitate to contact [Contact Information]. We appreciate your assistance in this matter.

Sincerely,

[Name]

[Title]

Enclosures

⁷⁷ Your FAA point of contact may have different requirements for the number and type of submittal.

⁷⁸ Include this request only if you are submitting a revised future condition NEM that incorporates measures (i.e., with Program Implementation) that were not included in your original NEM submission that would change the NEM.

⁷⁹ Inclusion of comments is an optional way to meet the Part 150 requirement, which is to summarize the comments received. Disposition of comments applicable to the content and process for preparing the NCP is mandated by Part 150 section 150.23(e)(7). 150.23 only deals with NCP. Part 150 Section 21 only deals with NEM and does not have the same requirement to dispose of comments.

[Airport Sponsor's Logo]

SPONSOR'S CERTIFICATION

The Noise Compatibility Program (NCP) and the Future Condition Noise Exposure Map (NEM), With Program Implementation⁸⁰ for [Airport], hereby submitted in accordance with Title 14 CFR Part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The NEM and NCP were developed and prepared in consultation with Federal Aviation Administration (FAA) regional officials, the officials of the state, and of any public agencies and planning agencies whose area of jurisdiction, or any portion thereof, is within the DNL contour depicted on the NEM, and other Federal officials having local responsibility for land uses depicted on the map. This consultation included regular aeronautical users of the airport, including air carriers, military and other aircraft operators, as appropriate. The Future Condition NEM, With Program Implementation, is intended to replace the Future Condition NEM, Without Program Implementation, which was found by FAA to be in compliance with applicable requirements effective [Date]. The [Airport Sponsor] is requesting FAA to make a new map compliance finding for the Future Condition NEM, With Program Implementation. The new Future Condition NEM development went through process outlined in 150.21 to ensure updated consultation with regular aeronautical users of the airport.

It is further certified that prior to and during the development of the NCP, and prior to submission of the resulting program to the FAA, the [Airport Sponsor] afforded adequate opportunity for the active and direct participation of the state, public agencies and planning agencies in the areas surrounding the airport, aeronautical users of the airport, and the general public to submit their views, data, and comments on the formulation and adequacy of the NCP. Prior to submitting this NCP to the FAA, the [Airport Sponsor] held a public hearing [or state that an opportunity was provided and no requests were received].

This document constitutes the official NCP for [Airport], as recommended by the [Airport Sponsor]. The recommendations in this NCP are those of the [Airport Sponsor], not the consultant or another party.

Date of Signature

[Name]

[Title]

[Airport Sponsor]

⁸⁰ Include only if submitting a revised future condition NEM that incorporates operational measures (i.e., with Program Implementation).

[Airport Sponsor Letterhead]

[Date]

[FAA Point of Contact]

[Address]

**RE: TITLE 14 CFR PART 150 NOISE EXPOSURE MAPS
SUBMITTAL FOR FAA COMPLIANCE DETERMINATION AND
TITLE 14 CFR PART 150 NOISE COMPATIBILITY PROGRAM
SUBMITTAL FOR FAA FORMAL REVIEW AND APPROVAL**

Dear [FAA Point of Contact]:

Enclosed are _____ copies⁸¹ of the Noise Exposure Maps (NEMs) and Noise Compatibility Program (NCP) for [Airport]. This document is being submitted by the [Airport Sponsor], as owner and operator of the [Airport]. The NEMs and supporting documentation are submitted under the provisions of Title 49 USC, chapter 475 and Title 14 CFR Part 150 for appropriate FAA determination. The NCP is submitted under the provisions of Title 49 USC, chapter 471 and Title 14 CFR Part 150 for your formal review and approval.

The NCP for [Airport] was made available for public review prior to the public hearing, which was held on [Date] [if no hearing was held, state that a notice of opportunity for a public hearing was published prior to submittal of this NCP and the Airport Sponsor did not receive any requests for a hearing]. Comments received during the public review period and any public hearing have been included as an appendix to the NCP.⁸²

The [Airport Sponsor] formally adopted the recommendations contained in the NCP for [Airport] [describe the forum and provide date].

Should you have any questions regarding the enclosed document, please do not hesitate to contact [Contact Information]. We appreciate your assistance in this matter.

Sincerely,

⁸¹ Your FAA point of contact may have different requirements for the number and type of submittal.

⁸² Inclusion of comments is an optional way to meet the Part 150 requirement which is to summarize the comments received. Disposition of comments applicable to the content and process for preparing the NCP is mandated by Part 150 Section 150.23(e)(7). 150.23 only deals with the NCP and Part 150 Section 21 only deals with the NEM and does not have the same requirement to dispose of comments.

169

170

171 [Name]

172 [Title]

173

174 Enclosures

175

176 [Airport Sponsor's Logo]

177 **SPONSOR'S CERTIFICATION**

178 The Noise Exposure Maps (NEMs) and the Noise Compatibility Program (NCP) for [Airport],
179 hereby submitted in accordance with Title 14 CFR Part 150, were prepared with the best
180 available information and are certified as true and complete to the best of my knowledge and
181 belief.

182 The Existing Condition NEM is based on data generated for a timeframe representing the year of
183 submission. [Or, The Existing Condition NEM is not based on data generated for a timeframe
184 representing the year of submission. However, there has been no change in operation at the
185 airport that would create any substantial new noncompatible uses or significantly reduce noise
186 over noncompatible uses]. The assumptions and activity levels used to develop the Existing
187 Condition NEM are based on data from [Existing Condition Time Period Used for Modeling].
188 The noise contours representing the existing condition are identified as the [Year] Noise
189 Exposure Map.

190 The assumptions and activity levels used to develop the Future Condition NEM are based on
191 reasonable forecasts and other planning assumptions. The Future Condition NEM is based on
192 data generated for a timeframe [Number of Years (must be at least five years from the date of
193 submission represented by your Existing Condition NEMs)] years in the future from the year of
194 submission. The noise contours representing the future condition are identified as the [Future
195 Year] Noise Exposure Map.

196 The NEMs and NCP were developed and prepared in consultation with Federal Aviation
197 Administration (FAA) regional officials, the officials of the state, and of any public and planning
198 agencies whose area of jurisdiction, or any portion thereof, is within the DNL contour depicted
199 on the NEM, and other Federal officials having local responsibility for land uses depicted on the
200 map. This consultation included regular aeronautical users of the airport, including air carriers,
201 military and other aircraft operators, as appropriate.

202 It is further certified that prior to and during the development of the NCP, and prior to
203 submission of the resulting program to the FAA, the [Airport Sponsor] afforded adequate
204 opportunity for the active and direct participation of the state, public agencies and planning
205 agencies in the areas surrounding the airport, aeronautical users of the airport, and the general
206 public to submit their views, data, and comments on the formulation and adequacy of the NCP.
207 Prior to submitting this NCP to the FAA, the [Airport Sponsor] held a public hearing [or state
208 that an opportunity was provided and no request for a hearing was received].

209 This document constitutes the official NEMs and NCP for [Airport], as recommended by the
210 [Airport Sponsor]. The recommendations in this NCP are those of the [Airport Sponsor], not the
211 consultant or another party.

Date of Signature

[Name]

[Title]

[Airport Sponsor]

APPENDIX D. REFERENCES

- American Planning Association. (2008). *Land-Based Classification Standards*. Retrieved June 2008 from <http://www.planning.org/LBCS>. Chicago, Illinois: American Planning Association.
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- 37 International Civil Aviation Organization. (2004). *Guidance on the Balanced Approach to*
38 *Aircraft Noise Management*. Doc 9828, AN/451, First Edition.
- 39 Urban Renewal Administration, Housing and Home Finance Agency, and Bureau of Public
40 Roads, Department of Commerce. (1965). *Standard Land Use Coding Manual: A*
41 *Standard System for Identifying and Coding Land Use Activities*.

APPENDIX E. ANNOTATED BIBLIOGRAPHY

Note: A large portion of the material in this annotated bibliography is taken from the Airport Cooperative Research Program (ACRP) project 03-03, Enhancing Airport Land Use Compatibility.⁸³ Much of it has been edited.

American National Standards Institute. (2002). *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools*. ANSI S12.60-2002. Melville, NY: Acoustical Society of America.

This Standard provides acoustical performance criteria, design requirements, and design guidelines for new school classrooms and other learning spaces. The standard may be applied when practicable to the major renovation of existing classrooms. These criteria, requirements, and guidelines are keyed to the acoustical qualities needed to achieve a high degree of speech intelligibility in learning spaces. Test procedures are provided in an annex when conformance to this standard is to be verified.

Basner, M., et al. (2004, July). *Effects of Nocturnal Aircraft Noise*, Vol. 1, Executive Summary. German Aerospace Center (DLR), Institute of Aerospace Medicine. Cologne, Germany.

This study reports the results of laboratory and in-home sleep studies. The in-home study locations were chosen to be sites with high aircraft noise and low levels of other noise. The in-home results differed considerably from the laboratory results, with subjects being much less inclined to awaken from aircraft noise in their homes. Many variables were recorded, such as sleep stage, heart rate, respiratory movements, and general body movements (motility). The aircraft noise was quantified in terms of the maximum A-weighted sound level at the sleeper's ear. The subject was considered to be awakened if the sleep stage changed from a deeper sleep stage to the lightest sleep stage (called S1) or to awake. The study attempted to determine the percentage of awakenings that are induced by aircraft noise beyond the awakenings that normally (spontaneously) occur. In general, aircraft levels must exceed 35 dBA at the sleeper's ear before any awakenings more than spontaneous ones, are likely to occur. When accounting for spontaneous awakenings, aircraft maximum levels of up to approximately 75 dBA are likely to produce 10% additional awakenings.

Brink, M., Wirth, K., and Schierz C. (2006). *Effects of Early Morning Aircraft Overflights on Sleep and Implications for Policy Making*. *Euronoise 2006*. Tampere, Finland.

This paper reports a study of what happened when recorded aircraft arrivals and departures were played in sleeper's bedrooms. The findings were that 1) the subjects were awakened more readily by aircraft noise events in the early morning (closer to rising time) than by the same events in the evening (the time closer to retiring); 2) the first aircraft noise events in the early morning are more disturbing (greater motility) than succeeding events or than events in the evening; 3) the amount of motility is affected by

⁸³ The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. In October 2005, the FAA executed a contract with the National Academies, acting through its Transportation Research Board (TRB), to serve as manager of the ACRP. Additional information on the ACRP and the Land Use Project is available on the TRB website.

the time history of the noise event – events like arrivals that quickly rise and fall, produce higher levels of motility than do the slower rising and falling levels of departures, despite having equal maximum levels.

California Department of Transportation, Division of Aeronautics. *Noise Standards*. Title 21, Subchapter 6.

Article 3, Chapter 4, Part 1, Division 9, Public Utilities Code (Regulation of Airports) provides the noise standards governing the operations for all California DOT approved airports. “These standards are based upon two separate legal grounds: (1) the power of airport proprietors to impose noise ceilings and other limitations on the use of the airport, and (2) the power of the state to act to an extent not prohibited by federal law.”

If a county, city, or community declares an airport as having a noise problem (i.e., noncompatible uses within the Noise Impact Boundary (NIB)) then, the county can require the airport to monitor the noise and validate the NIB. If the county’s audit of the airport’s NIB study finds the airport does have a noise problem, then the airport must submit quarterly reports with a map depicting the NIB, noise measurement levels, and number of people estimated living within the NIB, as well as aircraft operations and number of aircraft type having the highest noise levels. The regulation provides suggestions for controlling and reducing noise issues.

California Department of Transportation, Division of Aeronautics. (2002, January). *California Airport Land Use Planning Handbook*. Santa Rosa, CA.

The Handbook is divided into two parts. Part I describes Airport Land Use Commission (ALUC) procedures and plans. These chapters discuss the establishment of ALUCs, the preparation and adoption of airport land use compatibility plans, formulation of airport land use compatibility policies, ALUC review of local actions, and responsibilities of local agencies. Part II discusses in more detail the two principal airport land use compatibility issues of aircraft noise and safety. These chapters address measurement of airport noise, establishment of airport noise compatibility policies, aircraft accident characteristics and data, and the establishment of airport safety compatibility policies. The handbook also contains a 14 page summary and ten appendices that include a summary of California laws related to airport land use planning, federal regulation governing obstructions in the vicinity of airports, sample implementation documents and guidance on performing supporting analysis, general aviation accident data, and a list of reference documents.

Caves, R. E., & Gosling, G. D. (1999). *Strategic Airport Planning*. Oxford: Elsevier Science, Limited.

The book provides an overview of airport systems planning from a global perspective and addresses how the concept of strategic system planning can be applied to planning airports and airport systems. The authors examine the evolving context of airport planning, including environmental concerns and economic considerations, as well as institutional issues. The book describes both the regional and national airport system planning process, and presents a wide range of case studies from the United States, Canada, Europe, Brazil, and Japan. There is a chapter on the community response to aircraft noise which provides a brief review of selected literature on the effect of aircraft

noise on property values and discusses some of the implications for noise mitigation measures, including sound-proofing homes and compensation.

Clark County, Nevada. (2000, June 21). *Unified Development Code*, Title 30, Zoning Overlay Districts, Section 30.48.

Clark County, NV, uses an Airport Environs (AE) Overlay District to determine the range of compatible land uses to prohibit noncompatible development and prohibit uses that are detrimental to the health, safety, and welfare of its citizens. The AE Overlay District supersedes the nine other types of overlay districts which include a residential neighborhood preservation overlay, a gaming enterprise overlay, and a red rock design overlay. Specifically the AE Overlay District requires all development to follow FAA regulations concerning airspace and safety, and requires noise attenuated construction standards in compliance with Clark County Code, chapter 22.22. The code designates 12 sub-districts or areas with specific land-use requirements that include runway protection zones, accident potential zones, and a variety of noise contour zones. These 12 sub-districts use a table to determine the appropriate type of land-use, permitting standards, and mitigation requirements. Further, the code requires all county airports to submit Airport Airspace Zoning Maps and specifically requires McCarran Airport to provide a Noise Exposure Map to the County every 5 years.

Denver Regional Council of Governments. (1998). *Airport Compatible Land Use Design Handbook*.

This reference document provides tools for local policymakers, planners, and airport managers to improve compatibility between airports and surrounding communities.

Department of Defense (DOD). (1977, November 8). *Air Installations Compatible Use Zones*. Number 4165.57. Washington, D.C.: DOD.

This document defines the DOD policy to achieve compatible land uses of public and private lands near military airfields while maintaining operational effectiveness. Incompatible land is defined as areas that may obstruct the airspace or as areas exposed to health, safety, or welfare hazards of aircraft operations. The DOD's first priority is to take all "reasonable, economical and practical measures to reduce and/or control the generation of noise from flying and flying related activities." After all reasonable noise source control measures are taken, the DOD recognizes that significant land areas will remain exposed to noise that is incompatible with certain uses. Therefore the DOD developed guidelines for compatible land uses within three zones: the Clear Zone, the Accident Potential Zone, and the Noise Zone.

DOD. (2002, August). *Joint Land Use Study (JLUS)*, Program Guidance Manual. Washington, D.C.: DOD.

The purpose of the JLUS is to encourage cooperative land use planning between military installations and surrounding communities in order to accommodate future compatible growth of both. The DOD will fund a study to develop local jurisdictional development guidelines for accident potential zones and noise exposure zones above DNL 65 dB that will include limits on tall structures, on-base measures to mitigate community impacts, and peripheral land uses that adversely impact installation operations. Communities are asked to put forth a good faith commitment that the study recommendations which may

include comprehensive planning, zoning ordinances, subdivision regulations, and building codes will be accepted and incorporated into local land development planning and decision-making. This study is a partnership between the military and the local community. JLUS recommends implementation through a permanent advisory board comprised of military and community stakeholders in order to uphold the JLUS recommendations and offer peer support for politically sensitive land use controls.

DOD, Departments of the Air Force, the Army, and the Navy. (1978, June 15). *Planning in the Noise Environment*. Washington, D.C.: DOD.

This document was developed for installation planners as a procedural tool designed to aid in the development of acceptable noise environments for facilities on military installations. It presents guidance for selecting sites for new facilities within existing or expected future noise environments and discusses noise reduction techniques which may be applied to render marginally acceptable locations suitable for use. The guidelines presented are consistent with the Air Installation Compatible Use Zone Program and land use recommendations generally accepted by the planning community.

EPA. (1974, March). *Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety*. Report 550/9-74-004. Washington, D.C.: EPA.

In order to provide adequate guidance to state and local government, the EPA published information as to the levels of noise “requisite to protect the public health and welfare with an adequate margin of safety.” The document identifies levels to protect public health and welfare for a number of situations. These levels are not standards, but it is EPA’s judgment that the maintenance of levels of environmental noise at or below the identified levels is requisite to protect the public from adverse health and welfare effects.

FAA. AC 150/5320-14, *Airport Landscaping for Noise Control*.

This document provides guidance to airport planners and operators in the use of tree and vegetation screens in and around airports.

FAA. (1999, May). *Airport Noise Compatibility Planning (ANCP) Toolkit*. Washington, D.C.

The Airport Noise Compatibility Planning Toolkit implements the FAA Land Use Planning Initiative's short-term recommendations to develop a land use planning information package for FAA regions. This toolkit includes various publications that address airport noise compatibility planning. It can be used by airport sponsors, local planning jurisdictions, and other government entities as a guide to assist in compatible land use planning around the nation's airports. A similar version of the toolkit is being specifically designed for use by state aviation officials.

FAA. (2015, July 16). Order 1050.1F, *Environmental Impacts: Policies and Procedures*. Washington, D.C.

This is the FAA’s agency-wide environmental protocol for compliance with the National Environmental Policy Act, and implements the CEQ’s regulations. Appendix A, section 14, addresses noise. An initial noise analysis is accomplished during the environmental assessment in order to determine if significant noise impacts are expected for forecasted

conditions. If significant noise impacts are expected, then either noise abatement and mitigation that reduces noise impact below the significant noise impact threshold levels or a more detailed analysis as part of an EIS is required. Additional contours and supplemental noise analyses are optional and determined by the FAA on a case-by-case basis.

FAA. (2006, April 28). Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*. Washington, D.C.

This supplements FAA Order 1050.1E by providing NEPA instructions for Federal actions that support airport development projects. Essentially, NEPA and CEQ's regulations "provide Federal agencies with instructions on protecting the quality of the human and natural environments" and requires these agencies to consider the environmental impacts of actions prior to making a decision. This Order provides implementation guidance of NEPA, CEQ's regulations, 40 CFR 1500-1508, and Department of Transportation's Order 5610.1C, *Procedures for Considering Environmental Impacts*. Additionally, Order 5050.4B incorporates the Vision 100 provisions on increasing air capacity and decreasing congestion.

FAA. (2019, February 26). Order 5100.38C Change 1, *Airport Improvement Program Handbook*. Appendix R is most relevant to the Part 150 program. Washington, D.C.

This Handbook describes the FAA's funding and project criteria for Airport Improvement Program grants.

FAA. Title 14 CFR part 91. *General Operating and Flight Rules*.

This federal regulation establishes general rules for the operation of aircraft with regard to diverse airport types. This includes various flight conditions, such as Instrument Flight Rules or Visual Flight Rules, maintenance, special flight operations, foreign aircraft operations, and operating noise limits.

FAA. (2004). Title 14 CFR part 150, and Amendments 150-1 to 150-4. *Airport Noise Compatibility Planning*.

Part 150, Airport Noise Compatibility Planning, is the primary Federal regulation guiding and controlling planning for aviation noise compatibility on and around airports. Part 150 established procedures, standards, and methodologies to be used by airport operators for the preparation of Noise Exposure Maps and Noise Compatibility Programs. The Part 150 process is a balanced approach for mitigating the noise impacts of airports upon their neighbors, while protecting or increasing both airport access and capacity as well as maintaining the efficiency of the national aviation system.

The regulations contained in Part 150 are voluntary and airport operators are not required to participate. However, an approved Part 150 NCP is the primary vehicle for gaining approval of applications for Federal grants for noise abatement projects, and provides the analyses of impacts of proposed changes to an airport's operations. The Part 150 program responds to the principles set forth in the Aviation Noise Abatement Policy Statement of 1976 and the requirements of the Aviation Safety and Noise Abatement Act of 1979.

206 FAA. Title 14 CFR part 161. *Notice and Approval of Airport Noise and Access Restrictions.*

207 This regulation implemented that portion of the Airport Noise and Capacity Act of 1990
208 governing notice and approval of airport noise and access restrictions affecting the
209 operation of Stage 2 and Stage 3 aircraft. This regulation defines requirements and
210 procedures for airport operators to follow when proposing new or modified aircraft noise
211 and access restrictions. Under this regulation, airport sponsors must comply with
212 applicable Part 161 requirements before imposing noise or access limitations on any
213 aircraft classified as Stage 2 or Stage 3, regardless of aircraft weight.

214 Before restrictions on Stage 2 aircraft may be imposed, the airport operator must inform
215 the public of the proposed restriction, its anticipated or actual costs and benefits, any
216 alternative restrictions proposed, and non-restriction alternatives considered. The sponsor
217 must allow several entities to comment on the proposed restriction, including federal,
218 state, and local government agencies, aircraft operators, and the public. Any restriction on
219 the operation of Stage 2 aircraft must also comply with applicable federal law, including
220 grant agreements.

221 Before restrictions on Stage 3 aircraft may be imposed, the airport operator must inform
222 the public of the proposed restriction, its anticipated or actual costs and benefits, any
223 alternative restrictions proposed, and non-restriction alternatives considered. The sponsor
224 must allow several entities to comment on the proposed restriction, including federal,
225 state, and local government agencies, aircraft operators, and the public. The airport
226 operator must then submit an application to the FAA for approval or disapproval of the
227 proposed noise or access restriction(s). Another means of imposing a restriction on Stage
228 3 aircraft operations is to reach written agreement between the airport operator and the
229 operators of Stage 3 aircraft affected by the proposed restriction.

230 Part 161 could provide improved airport land use compatibility should the proposed
231 restriction be shown to be noise beneficial, not unjustly discriminatory and not unduly
232 burdensome on commerce or the national system of airports. See Part 161 for a full
233 description of the statutory conditions for approval of noise and access restrictions. The
234 analysis must demonstrate the proposed restriction provides benefits that non-restriction
235 alternatives do not and cannot provide within the significant (DNL/CNEL 65 dB) noise
236 contour. Successful completion of the Part 161 process would permit the airport operator
237 to implement noise and access restrictions at the airport.

238 FAA & National Association of State Aviation Officials (NASAO). (2000, February).
239 *Cooperative Partnership between the FAA and the State Agencies for Reducing*
240 *Community Concerns Related to Aircraft Noise.*

241 This survey of state agencies and FAA regions primarily focuses on awareness and
242 education programs and activities, including laws and regulations in effect. Responses
243 were received from eight FAA regions and 42 states. Of these, 79 percent reported some
244 type of noise program run by local or state officials, including many regulations and
245 guidelines. Of the reported programs, few were directed at public education and
246 awareness. The document summarizes the best examples of education programs gleaned
247 from the survey.

Federal Interagency Committee on Aviation Noise (FICAN). (1997, June). *Effects of Aviation Noise on Awakenings from Sleep*.

In 1992, FICON recommended an interim dose-response curve to predict the percent of the exposed population expected to be awakened as a function of the exposure to single event noise levels expressed in terms of sound exposure level (SEL). Since the adoption of FICON's interim curve in 1992, substantial field research in the area of sleep disturbance has been completed. The data from these studies show a consistent pattern, with considerably less percent of the exposed population expected to be behaviorally awakened.

In light of this new information, FICAN recommends the adoption of a new dose-response curve for predicting awakening, based on the data in this paper and the supporting references. Because the adopted curve represents the upper limit of the data presented, it should be interpreted as predicting the "maximum percent of the exposed population expected to be behaviorally awakened."

Federal Interagency Committee on Noise (FICON). (1992, August). *Federal Agency Review of Selected Airport Noise Analysis Issues*. Spectrum Sciences and Software Inc.: Ft. Walton Beach, FL.

The 1990 Federal Interagency Committee on Noise, FICON, was formed to review Federal policies that govern the assessment of airport noise impacts. It has since been superseded by FICAN. FICON produced this report and made aviation noise policy recommendations. This report explicitly recommends continued use of DNL, but recognizes that this metric and use of only the value of DNL 65 dB may be insufficient to communicate the potential noise effects and the need for noise abatement measures. Policy recommendations included: (1) Continued use of the DNL metric as the principal means for describing long-term noise exposure of aircraft. (2) Continued agency discretion in the use of supplemental noise analyses. (3) Improved public understanding of the DNL metric, supplemental methodologies and aircraft noise impacts. (4) A screening analysis for noise sensitive areas (i.e., additional analysis should be performed in environmental documents where there is an increase in noise of 3 dB or greater at the DNL 60 dB noise level). The full report can be downloaded from the FICAN website.

Federal Interagency Committee on Urban Noise (FICUN). (1980, June). *Guidelines for Considering Noise in Land Use Planning and Control*.

A number of Federal agencies have published policies and/or guidance on noise and land use. These agencies included the Department of Defense, Department of Transportation, Housing and Urban Development, Environmental Protection Agency, and Veteran's Administration. The 1980 document provided a consolidation of federal guidance on incorporating noise considerations in local development planning and site review. While this document did not replace individual federal agency material, it has served as a guide for individual agencies in dealing with their respective noise and land use compatibility programs.

Fidell, S., Barger, D.S., Schultz, T.J. (1991, January). Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise. *Journal of the Acoustic Society of America*, 89, 221-233.

More than a decade had passed since a relationship between community noise exposure and the prevalence of annoyance was synthesized by Schultz from the findings of a dozen social surveys. This quantitative dosage-effect relationship (DNL metric) has been adopted as a standard means for predicting noise-induced annoyance in environmental assessment documents. This 1991 document updates the 1978 relationship with findings of social surveys conducted since its publication. Although the number of data points from which a new relationship was inferred more than tripled, the 1978 relationship still provides a consistent fit to the original data.

Fidell, S., Pearsons, K., Tabachnick, B.G., Howes, R. (2000, May). Effects on Sleep Disturbance of Changes in Aircraft Noise Near Three Airports. *Journal of the Acoustical Society of America*, 107(5), 2,535-2,548.

Field measurements were conducted of potential sleep disturbance associated with changes in nighttime aircraft noise exposure near three airports. One study was conducted near Stapleton International Airport and Denver International Airport in anticipation of the closure of the former and opening of the latter. A second study was conducted in the vicinity of DeKalb-Peachtree Airport, a large general aviation airport. No major differences in noise-induced sleep disturbance were observed as a function of changes in nighttime aircraft noise exposure.

Fidell, S., Richard, H., Tabachnick, B.G., Pearsons, K., and Sneddon, M.D. (1995, December). *Noise-Induced Sleep Disturbance near Two Civil Airports*, NASA Report 198252.

This report presents the methods and results of four in-home sleep studies conducted in the vicinities of Denver Stapleton International Airport (DEN) and Denver International Airport (DIA). The studies were carried out before and after the closing of DEN and before and after the opening of DIA. Sound Exposure Level, SEL, was the metric of the noise event used. The percent of noise events producing either awakenings or increased movement varied widely. Approximately 2% of events at 70 dB SEL resulted in behavioral awakenings, and from 21% to 75% of events at 70 dB SEL resulted in actimetric (movement) responses depending on the criteria used. All measures show an increasing awakening or arousal response with increasing SEL.

General Accounting Office. (2000, August). *Aviation and the Environment, Airport Operations and Future Growth Present Environmental Challenges*. GAO/RCED-00-153. Washington, D.C.

This report provides “information on (1) the key concerns and challenges associated with airports’ current operations and future growth—particularly concerns about noise, water pollution, and air pollutant emissions—and the actions being taken by the nation’s busiest airports to balance environmental concerns with such operations and growth and (2) the actions taken by FAA and other federal agencies to address environmental concerns associated with airports’ current operations and future growth.” The study found that noise is the primary environmental concern and challenge for airports. The top concern was older aircraft, followed by incompatible local zoning, pressure for residential development, and increasing population.

Miedema, H.M.E., et al. (2003, January). *Elements for a Position Paper on Night-Time Transportation Noise and Sleep Disturbance*. TNO Inro report 2002-59. Netherlands.

The EU Directive (DIRECTIVE 2002/49/EC, relating to the assessment and management of environmental noise) specifies L_{night} as the indicator for sleep disturbance. This report presents relationships between L_{night} and sleep disturbance for transportation noise. The effects of sleep that are addressed are: 1) onset of motility, 2) increase in mean motility during sleep and 3) self-reported sleep disturbance.

National Technical Information Service (NTIS), U.S. Department of Commerce. (1992, October). *Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations*.

The guide provides a project management handbook for studying, initiating, and implementing residential sound insulation programs in neighborhoods around civilian and military airports. The guide presents information based on fundamental acoustic principles supported by practical experience gained in numerous residential sound insulation projects across the country. The most successful solutions to problems typically encountered in these projects have been discussed in the guide.

Navrud, Stale. (2002, April 12). *The State-of-the-Art on Economic Valuation of Noise*. Final Report to European Commission DG Environment.

This paper reviews the state-of-the-art in economic valuation of noise to provide advice to the European Commission in determining interim values for noise to be used in Benefit Cost Analysis.

Nijland, H.A., E.E.M.M. Van Kempen, G.P. Van Wee, and J. Jabben. (2003). *Costs and Benefits of Noise Abatement Measures*. Transport Policy 10, pp. 131-140.

This paper describes a cost-benefit analysis of a number of possible noise abatement measures in the Netherlands. Benefits are calculated according to consumers' preferences for dwellings, and values applied are derived from two different methodologies (hedonic pricing and contingent valuation). Costs are shown to be surpassed by benefits. The paper identifies weaknesses in valuing noise, particularly where issues of equity, benefit transfer and embedding are concerned.

Ollerhead, J.B., et al. (1992, December). *Report of a Field Study of Aircraft Noise and Sleep Disturbance*. United Kingdom: Department of Transport.

This is one of the first large scale in-home studies of awakening due to aircraft noise. Subjects were between the ages of 20 and 70 years. Subjects kept sleep diaries and wore actimeters (to measure motility) for 15 nights. The objectives were to determine the relationship between outdoor aircraft sound levels and the probability of sleep disturbance. Overall, aircraft noise events with a Sound Exposure Level less than 90 dB were unlikely to produce any measurable increase in rates of sleep disturbance. The study also found that sensitivity to sleep disturbance varied by more than a factor of two – the most sensitive individuals were more than twice as likely to be disturbed by an event than were the least sensitive. An important conclusion was that all sleep disturbance data collected in laboratory situations significantly over-estimated the probability of awakening in a home situation.

Oregon Department of Aviation. (2003, January). *Airport Land Use Compatibility Guidebook for Oregon*.

Oregon's Department of Environmental Quality (DEQ) recognizes airport noise as a threat to the public health and welfare of residents living near an airport. Oregon follows the FAA recommendations for specific noise abatement and mitigation within and above the 65 DNL noise contours.

The guidebook offers overlay zoning ordinances and planning templates for airports in order to identify noncompatible land uses, prevent future noncompatible development and protect the airport as a viable part of the transportation system. Due to complex fleet mixes these templates should not be used at larger commercial airports, such as Portland, Eugene, and Medford.

Papsidero, V. (1992). Airport Noise Regulations. *Planning Advisory Service Report 437*. Chicago, IL: American Planning Association.

This report looks at how to use noise overlay districts to encourage land-use compatibility within an airport area. It reviews the federal guidelines for establishing noise overlay zones, defines terms used in discussions of airport-related noise problems, and presents models of a zoning ordinance, a subdivision ordinance, a building code, and an easement contract.

Passchier-Vermeer, W., et al. (2002, June). *Sleep Disturbance and Aircraft Noise Exposure, Exposure-Effect Relationships*. TNO Report number 2002.027. Netherlands.

This study was conducted in people's homes in the vicinity of Schiphol Airport. Both actimeters and button pushes were used to identify motility and behavioral awakenings. Results are reported as probability of motility and probability of increased motility relative to non-noise motility. One result was that the probability of increased motility increases when indoor maximum A-weighted sound levels from aircraft exceed 40 dB (or an SEL of about 50 dB). Indoor sound levels were found to effect subjects' response, with louder interior levels decreasing the probability of aircraft noise induced motility.

Schultz, T.J. (1978, August). Synthesis of Social Surveys on Noise Annoyance. *Journal of the Acoustical Society of America*, 64 (2), 377-405.

This article is the original published paper relating percent of people reporting being "highly annoyed" to DNL. It provides a curve, now often referred to as "the Schultz Curve," that graphically presents that "dose-response" relationship. It is often cited as the basis for the use of DNL 65 dB as the threshold of noise impact. It should be noted that the "Schultz Curve" includes annoyance from all transportation sources, see Fidell, S. Mar-Apr 2004, for an interpretation of annoyance produced by aircraft only.

Transportation and Regional Services. (2000). *Expanding Ways to Describe and Assess Aircraft Noise*. Australia.

This document strives to advance the way in which aircraft noise exposure information is conveyed to the non-expert as a basis for informed dialogue between airports and surrounding communities. It responds to the difficulties in communicating the sound levels produced or expected to be produced by aircraft operations at an airport. This document presents several tested alternative descriptions for cumulative metrics. The methods presented do not replace, but supplement, the cumulative metrics of noise exposure.

Upham, P., Thomas, C., Gillingwater, D., and Raper, D. (2003, May). Environmental Capacity and Airport Operations: Current Issues and Future Prospects. *Journal of Air Transport Management*, 9 (3), 145–151. Manchester, United Kingdom: Elsevier.

This paper defines the environmental capacity of an airport in terms of “aircraft noise, air quality, third party risk, biodiversity, climate change and community opposition to growth.” The positive effects of quieter aircraft have been offset by growth in air traffic. Impact can be mitigated in the short term through operational noise abatement measures. Effective land use planning is mentioned as a long term measure. The recommendations for maximizing the environmental capacity of an airport do not address land use compatibility. Long term airport planning, including planning for ground transportation infrastructure, is recommended.

US Code Title 49 Transportation, Subtitle VII *Aviation Programs*, Part B, Chapter 471 Airport Development, Subchapter I Airport Improvements, Section 47101 (c) Capacity Expansion and Noise Abatement.

This paragraph states “...it is in the public interest to recognize the effects of airport capacity expansion projects on aircraft noise. Efforts to increase capacity through any means can have an impact on surrounding communities. Noncompatible land uses around airports must be reduced and efforts to mitigate noise must be given a high priority.”

US Code Title 49 Transportation, Subtitle VII *Aviation Programs*, Part B, Chapter 475 Noise, Subchapter I Noise Abatement.

This subchapter requires that a single system be developed for measuring noise and determining the level of noise exposure caused by airport operations. It also requires identification of land uses normally compatible with exposure to noise. Section 47505 of the act authorizes the issuance of grants for airport noise compatibility planning to reduce or prevent noncompatible land uses in communities around airports.

US Code Title 49 Transportation, Subtitle VII *Aviation Programs*, Part B, Chapter 475 Noise, Subchapter II National Aviation Noise Policy Airport Noise and Capacity Act of 1990.

As stated in the law, Congress found that community noise concerns led to uncoordinated and inconsistent restrictions on aviation that could impede the national air transportation system and that a noise policy must be carried out on a national level. Congress stated it recognized that community concerns can be alleviated through the use of new technology airplanes and the use of revenues. In this law, Congress established the collection of passenger facility charges, the phase out of Stage 2 airplanes weighing greater than 75,000 pounds from operating in the continental United States, and a requirement for the federal government to establish procedures for reviewing airport noise and access restrictions on the operation of Stage 2 and Stage 3 airplanes. As of January 1, 2000, all turbojet airplanes weighing greater than 75,000 pounds were required to meet Stage 3 noise levels or cease operations in the continental United States.

The FAA adopted a new noise standard for subsonic jet airplanes and subsonic transport category large airplanes. The standard ensures that the latest available noise reduction technology is incorporated into new airplane designs. This Stage 4 airplane design noise standard (published July 5, 2005, in the *Federal Register*) applies to any person submitting an application for a new airplane type design on and after January 1, 2006.

US Code Title 49 Transportation, Subtitle VII *Aviation Programs*, Part B, Chapter 471 Airport Development, Subchapter I Airport Improvement Section 47141

This section, authorized in section 160 of *Vision 100 - Century of Aviation Reauthorization Act*, Public Law 108-176, H.R.2115 (2003, December), established a pilot program enabling states or local governmental agencies to receive federal funding for land-use compatibility planning and projects. The government entity must have land use jurisdiction and be located around large or medium sized hub airports that had not conducted a Part 150 Study within the past 10 years. The state or local agency must enter into a written cooperative agreement with the airport operator that the agreement will achieve, to the maximum extent possible, compatible land uses consistent with Federal land use compatibility criteria under Section 47502(3) and that those compatible land uses will be maintained in perpetuity. Additionally, it requires jurisdictions that accept federal funding for land-use compatibility plans to comply in perpetuity with all FAA land-use regulations including airspace and height constraints.

The law also provided funding for an FAA study to provide prospective home buyers located within the vicinity of an airport access to the Noise Exposure Maps and other information derived from these maps. The ability to have information about an airport's noise exposure was seen as an expansion of real estate disclosure and was viewed as an important step in compatible land-use planning around airports.

Waitz, IA, et al. (2004, December). *Aviation and the Environment*. Report to the United States Congress. Cambridge, MA.

This is the study required by Vision 100, to seek ways to reduce aircraft noise and emissions and increase aircraft fuel efficiency. Three recommendations were made from this study. First, establish a federal interagency group to coordinate and communicate governmental actions to reduce the negative impacts of aviation on local air quality, noise and climate change. Secondly, develop metrics and tools that communicate best scientific understandings of aviation's environmental impacts on human health and welfare. The tools should integrate environmental and economic cost/benefit analyses in order to evaluate research benefits of source reduction technologies and operational advancements, assess environmental constraints on airspace expansion, account for airline economics, assess policy and operational decision impacts on communities, and understand aviation's environmental damage and future mitigation costs. Third, nationally pursue a balanced approach towards development of operational, technological and policy options to reduce the unfavorable aviation environmental impacts.

Washington State Department of Transportation, Aviation Division. (1999, February). *Airports and Compatible Land Use*. Volume One: An Introduction and Overview for Decision-Makers. Seattle, WA.

This volume is an introduction to airport land use compatibility planning as applied in Washington State. Part I covers the State interest in aviation. Part II covers the challenge of encroachment and the Airport Land Use Compatibility Program. The program includes general technical assistance, a best practices handbook, comprehensive plan review, and technical outreach workshops. Part III discusses the impact of the challenge: height hazards, safety, and noise. Part IV discusses the dimensions of the challenge:

504 understanding risk and liability. Part V concludes that airports and local jurisdictions
505 must be willing to work together on long term solutions.

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1 APPENDIX F. TERMS AND ACRONYMS

A

2	AC	Advisory Circular
3	ADO	Airports District Office
4	AEDT	Aviation Environmental Design Tool
5	AEE	Office of Environment and Energy
6	AEM	Area Equivalent Method
7	AFE	Above Field Elevation
8	AIP	Airport Improvement Program
9	AIR	Aerospace Information Report
10	Airport Operator	The public agency or private owner of a public-use airport,
11		typically referred to in this AC as airport sponsor.
12	ALP	Airport Layout Plan
13	ANCA	Airport Noise and Capacity Act
14	ANOZ	Airport Noise Overlay Zones
15	APA	American Planning Association
16	APO	Office of Aviation Policy and Plans
17	APU	Auxiliary Power Unit
18	ARTCC	Air Route Traffic Control Center
19	ASNA	Aviation Safety and Noise Abatement Act of 1979
20	ATCT	Airport Traffic Control Tower
21	ATO	Air Traffic Organization

C

22	CAC	Citizen's Advisory Committee
23	CatEx	Categorical Exclusion
24	CDA	Continuous Descent Arrival
25	CFR	Code of Federal Regulations
26	CNEL	Community Noise Equivalent Level (California)
27	CIR	Circuit Flight

D

28	dB	Decibel
29	dB(A)	A-weighted decibels
30	DNL	Day-Night Average Sound Level
31	DOT	Department of Transportation

E

32	EA	Environmental Assessment
33	EIS	Environmental Impact Statement
34	EPA	Environmental Protection Agency

F

35	FAA	Federal Aviation Administration
36	ARP POC	The airport sponsor's normal point of contact within the FAA
37		Airports line of business. This is typically the FAA project
38		manager at an Airports District Office (ADO) or Regional
39		Office.
40	FBO	Fixed Base Operator
41	FICON	Federal Interagency Committee on Noise
42	FICAN	Federal Interagency Committee on Aviation Noise
43	FMS	Flight Management Systems
44	FOIA	Freedom of Information Act
45	FONSI	Finding of No Significant Impact

G

46	GIS	Geographic Information Systems
47	GSE	Ground Service Equipment

H

48	HNM	Heliport Noise Model
----	------------	----------------------

I

49	ILS	Instrument Landing System
50	INM	Integrated Noise Model

L

51	LBCS	Land-Based Classification Standards
52	Leq	Equivalent Sound Level
53	Lmax	Maximum Sound Level

N

54	NADP	Noise Abatement Departure Profile
55	NASAO	National Association of State Aviation Officials
56	NAVAIDs	Navigational Aids
57	NBAA	National Business Aviation Association
58	NCP	Noise Compatibility Program
59	NED	National Elevation Dataset
60	NEM	Noise Exposure Map
61	NEPA	National Environmental Policy Act
62	NLR	Noise Level Reduction
63	NPD	Noise-Power-Distance Curves
64	NPIAS	National Plan of Integrated Airport Systems
65	NRHP	National Register of Historic Places

O

66	ODP	Optimum Descent Performance/Procedure
----	------------	---------------------------------------

P

67	Part 150	“Part 150” refers to title 14 Code of Federal Regulations (CFR) Part 150, in other words the regulation.
68		
69	Part 150 Study	“Part 150 Study” or “Part 150 Process” (upper case) refers to an airport sponsor’s Noise Compatibility Planning Study.
70		
71	PDR	Purchase of Development Rights
72	PFC	Passenger Facility Charge

R

73	RNAV	Area Navigation
74	RNP	Required Navigation Performance

75 **RV** Recreational Vehicle

S

76 **SAE** Society of Automotive Engineers

77 **SEC** Securities and Exchange Commission

78 **SEL** Sound Exposure Level

79 **SID** Standard Instrument Departure

80 **SLUCM** Standard Land Use Coding Manual

81 **SRM** Safety Risk Management

82 **STAR** Standard Terminal Arrival

T

83 **TA** Time Above

84 **TAC** Technical Advisory Committee

85 **TAF** Terminal Area Forecast

86 **TDR** Transfer Development Rights

87 **TNG** Touch-And-Go (check to see which one is correct)

88 **TRACON** Terminal Radar Approach Control

U

89 **USC** United States Code

90 **USGS** United States Geological Survey

V

91 **VFR** Visual Flight Rules

Advisory Circular Feedback Form

Paperwork Reduction Act Burden Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0746. Public reporting for this collection of information is estimated to be approximately 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. All responses to this collection of information are voluntary to obtain or retain benefits per 14 CFR 77. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Federal Aviation Administration, 10101 Hillwood Parkway, Fort Worth, TX 76177-1524.

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Planning & Environmental Division, Federal Aviation Administration ATTN: APP-400, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Planning & Programming at (202) 267-5383.

Subject: AC 150/5020-1A

Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page ____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

☐ Other comments:

☐ I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____

Date: _____



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Hazardous Wildlife Attractants on or
near Airports

Date: 02/21/2020

AC No: 150/5200-33C

Initiated By: AAS-300

Change:

1 **Purpose.**

This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2 **Cancellation.**

This AC cancels AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, dated August 28, 2007.

3 **Application.**

The Federal Aviation Administration recommends the guidance in this AC for land uses that have the potential to attract hazardous wildlife on or near public-use airports. This AC does not constitute a regulation, is not mandatory, and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except as follows:

1. Airports that hold Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D, may use the standards, practices and recommendations contained in this AC as one, but not the only, acceptable means of compliance with the wildlife hazard management requirements of Part 139.
2. The FAA recommends the guidance in this AC for airports that receive funding under Federal grant assistance programs, including the Airport Improvement Program. See Grant Assurance #34.

3. The FAA recommends the guidance in this AC for projects funded by the Passenger Facility Charge program. See PFC Assurance #9.
4. The FAA recommends the guidance in this AC for land-use planners and developers of projects, facilities, and activities on or near airports.

4 **Principal Changes.**

Changes are marked with vertical bars in the margin. Change in this AC include:

1. Clarification by the FAA that non-certificated airports are recommended to conduct a Wildlife Hazard Assessment (Assessment) or a Wildlife Hazard Site Visit (Site Visit);
2. Table 1, Ranking of Hazardous Species, has been moved to Advisory Circular 150/5200-32, *Reporting Wildlife Aircraft Strikes* (5/31/2013);
3. Consolidation and reorganization of discussion on land uses of concern; and updated procedures for evaluation and mitigation. Discussion addresses off-airport hazardous wildlife attractants, followed by discussion of on-airport attractants. It also clarifies language regarding the applicability of the AC.

5 **Background.**

1. Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a risk¹ to aircraft safety, they are not equally hazardous². These hazard rankings can help focus hazardous wildlife management efforts on those species or groups that represent the greatest risk to safe air and ground operations in the airport environment. Used in conjunction with a site-specific Assessment that will determine the relative abundance and use patterns of wildlife species, these rankings combined with a systematic risk analysis can help airport operators better understand the general threat level (and consequences) of certain wildlife species. Also, the rankings can assist with the creation of a “high risk” list of hazardous species that warrant immediate attention.
2. Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport’s approach or departure airspace or aircraft operations area. Constructed or natural areas— such as

¹ Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.

² Hazardous wildlife are species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).

poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, wetlands, or some conservation-based land uses — can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

3. During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6 **Memorandum of Agreement Between Federal Resource Agencies.**

The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation's valuable environmental resources.

7 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody
Director of Airport Safety and Standards

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CHAPTER 1. GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

1.1 Introduction.

- 1.1.1 Airport operators should maintain an appropriate environment for the safe and efficient operation of aircraft, which entails mitigating wildlife strike hazards by fencing, modifying the landscape in order to deter wildlife or by hazing or removing wildlife hazardous to aircraft from congregating on airports. When considering proposed land uses, operators and sponsors of airports certificated under Part 139, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports, specifically those listed in Chapter 2, can significantly increase the potential for wildlife strikes.
- 1.1.2 The FAA urges regulatory agencies and planning and zoning agencies to evaluate proposed new land uses within the separation criteria and prevent the creation of land uses that attract or sustain hazardous wildlife within the separation distances.
- 1.1.3 The FAA recommends the use of minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or aircraft operations area. (See the discussion of the synergistic effects of surrounding land uses in Paragraph 2.8 of this AC.). For the purpose of evaluating distance criteria, the delineation of the aircraft operations area may also consider future airport development plans depicted on the Airport Layout Plan (e.g., planned runway extension).
- 1.1.4 The separation distances are based on (1) flight patterns and performance criteria of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board recommendations.

1.2 Airports Serving Piston-Powered Aircraft.

Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 5,000-foot separation distance measured from the nearest aircraft operations area.

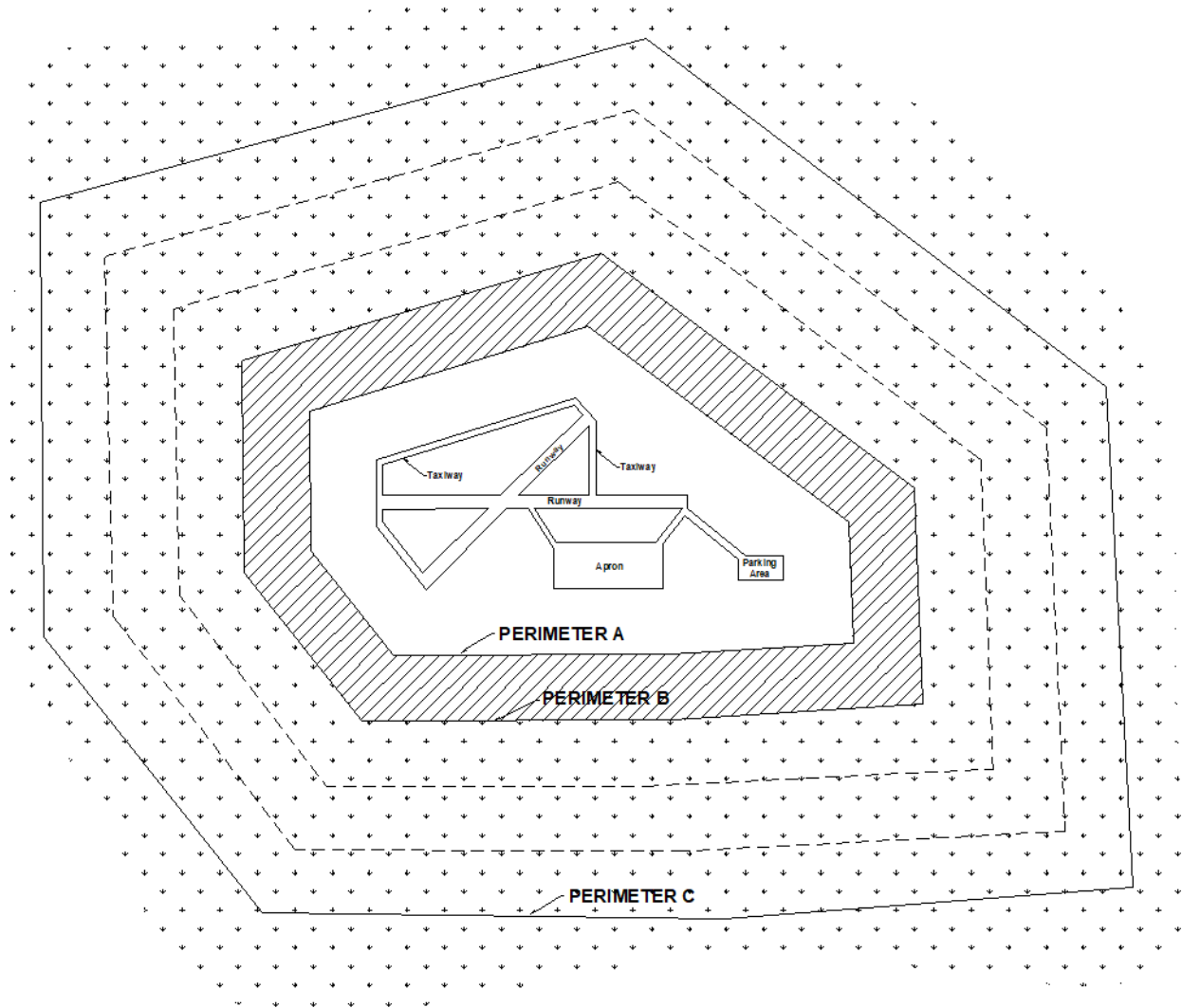
1.3 Airports Serving Turbine-Powered Aircraft.

For airports serving turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 10,000-foot separation distance from the nearest aircraft movement areas.

1.4 Protection of Approach, Departure, and Circling Airspace.

For all airports, the FAA recommends a distance of 5 miles between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Special attention should be given to hazardous wildlife attractants that could cause hazardous wildlife movement into or across the approach or departure airspace. Figure 1 depicts an example of the 5-mile separation distance measured from the nearest aircraft operations area.

Figure 1. Example of recommended separation distances described in Chapter 1 within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, it is recommended hazardous wildlife attractants be 5,000 feet from the nearest aircraft operations area.

PERIMETER B: For airports serving turbine-powered aircraft, it is recommended hazardous wildlife attractants be 10,000 feet from the nearest aircraft operations area.

PERIMETER C: Recommended for all airports, 5-mile range to protect approach, departure and circling airspace.

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CHAPTER 2. LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE

2.1 General.

- 2.1.1 Many types of vegetation, habitats and land use practices can provide an attractant to animals that pose a risk to aviation safety. Hazardous wildlife use the natural or artificial habitats on or near an airport for food, water or cover. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports* manual, prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French). This manual, as well as other helpful resources can be viewed and downloaded free of charge from the Wildlife Strike Resources section of the FAA's wildlife hazard mitigation web site:
http://www.FAA.gov/airports/airport_safety/wildlife).
- 2.1.1.1 The USDA / Animal and Plant Health Inspection Service (APHIS) / Wildlife Services developed a new publication series on wildlife damage management and is available online. The Wildlife Damage Management Technical Series highlights wildlife species or groups of wildlife species that cause damage to agriculture, property and natural resources, and/or impact aviation and human health and safety. The publications can be found at:
https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/ct_wildlife+damage+management+technical+series.
- 2.1.1.2 Additional resources have been provided by the USDA / APHIS / Wildlife Services National Wildlife Research Center (NWRC) at:
https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nwrc/sa_publications/ct_research_gateway. The NWRC Research Gateway contains research articles, reports, factsheets, technical notes, data and other materials on wildlife hazard mitigation, risk reduction, animal ecology, habitats, and advanced technologies and methodologies.
- 2.1.2 This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. The FAA has determined that the land uses listed below are generally not compatible with safe airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.
- 2.1.3 As a reminder, these types of land uses or facilities often require permits from the appropriate permitting agency. The FAA may work with the permitting agency to include conditions for monitoring and mitigation measures, if necessary. Ultimately, the permittee is responsible for compliance to these conditions and the permitting agency is responsible for tracking compliance.

2.2 Waste Disposal Operations.

Municipal solid waste landfills (municipal landfills) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Paragraphs 1.2 through 1.4, are considered incompatible with safe airport operations.

2.2.1 Siting for New Municipal Solid Waste Landfills Subject to AIR 21.

- 2.2.1.1 Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (P. L. 106-181) (AIR 21), 49 U.S.C. § 44718(d), prohibits the construction or establishment of a new municipal landfill within 6 miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.
- 2.2.1.2 The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.
- 2.2.1.3 The proposed municipal landfill must (1) be within 6 miles of the airport, as measured from airport property line to the landfill property line, and (2) have started construction or establishment on or after April 5, 2001. Section 44718(d) only limits the construction or establishment of some new landfills. It does not limit the expansion, either vertical or horizontal, of existing landfills.
- 2.2.1.4 Regarding existing municipal landfills and lateral expansions of landfills, 40 CFR § 258.10 requires owners or operators of a landfill units located within the separation distances provided in Paragraphs 1.2 through 1.4 to demonstrate that the unit is designed and operated so that it does not pose a bird hazard to aircraft. To accomplish this, follow the instructions provided in Paragraphs 3.2 and 3.3, document the wildlife monitoring and mitigation procedures that are cooperatively developed, and place this documentation in the operating permit of the facility.

2.2.2 Siting for New Municipal Landfills Not Subject to AIR 21.

If an airport and a municipal landfill do not meet the criteria of § 44718(d), then FAA recommends against locating the landfill within the separation distances identified in Paragraphs 1.2 through 1.4. In determining this distance separation, measurements should be made from the closest point of the airport property boundary to the closest point of the landfill property boundary.

2.2.3 Considerations for Existing Waste Disposal Facilities Within the Limits of Separation Criteria.

The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near landfill operations located within the separations identified in Paragraphs 1.2 through 1.4. In addition, in accordance with 40 CFR § 258.10, owners or operators of existing landfill units that are located within the separations listed in Paragraphs 1.2 through 1.4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Paragraph 4.3.2 of this AC for a discussion of this demonstration requirement.)

2.2.4 Enclosed Trash Transfer Stations.

Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are constructed and operated properly and are not located on airport property or within the Runway Protection Zone. These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; or store uncovered quantities of municipal solid waste outside, even if only for a short time; or use semi-trailers that leak or have trash clinging to the outside; or do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers fully enclosed waste-handling facilities constructed or operated incorrectly incompatible with safe airport operations if they are located closer than the separation distances specified in Paragraphs 1.2 through 1.4.

2.2.5 Composting Operations on or near Airport Property.

Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property unless effective, risk-reducing mitigations are in place. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any aircraft operations area or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area, Obstacle Free Zone, Threshold Siting Surface, or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic.

2.2.6 Underwater Waste Discharges.

The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Paragraphs 1.2 through 1.4 because it could attract scavenging hazardous wildlife.

2.2.7 Recycling Centers.

Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, aluminum, electronic, and household wastes such as paint, batteries, and oil, are, in most cases, not attractive to hazardous wildlife and are acceptable.

2.2.8 Construction and Demolition Debris Facilities.

2.2.8.1 Construction and demolition landfills generally do not attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, construction and demolition landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, construction and demolition landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities.

2.2.8.2 Therefore, a construction and demolition landfill co-located with another waste disposal operation should be located outside of the separations identified in Paragraphs 1.2 through 1.4.

2.2.8.3 Airport operators should be aware that on-site storage of construction and maintenance debris, as well as out-of-service aircraft or aircraft components, may provide an attractant for hazardous species (e.g., nesting or perching locations). The FAA recommends these on-site areas be monitored and/or mitigated, if necessary.

2.2.9 Fly Ash Disposal.

2.2.9.1 The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

2.2.9.2 Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Paragraphs 1.2 through 1.4.

2.3 **Water Management Facilities.**

Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, ponds

and fountains for ornamental purposes, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. Development of new open water facilities within the separation criteria identified in Paragraphs 1.2 through 1.4 should be avoided to prevent wildlife attractants. If necessary, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment. The FAA recommends these plans be developed in consultation with a Qualified Airport Wildlife Biologist³, to minimize hazardous wildlife attractants.

2.3.1 Existing Stormwater Management Facilities.

- 2.3.1.1 On-airport stormwater management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect stormwater, protect water quality, and control runoff. Because they slowly release water after storms, they may create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan, Part 139 regulations require the immediate correction of any wildlife hazards arising from existing stormwater facilities located on or near airports using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist.
- 2.3.1.2 Where possible, airport operators should modify stormwater detention ponds to allow a maximum 48-hour detention period for the design storm. The combination of open water and vegetation is particularly attractive to waterfowl and other hazardous wildlife. Water management facilities holding water longer than 48 hours should be maintained in a manner that keeps them free of both emergent and submergent vegetation. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat. Drainage basins with a concrete or paved pad should be maintained to prevent or remove any sediment build-up to prevent vegetation growth.
- 2.3.1.3 When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wire grids, pillows,

³ See Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports.*

or netting, to deter birds and other hazardous wildlife. When physical barriers are proposed, airport operators must evaluate their use, effectiveness and maintenance requirements. Airport operators must also ensure physical barriers will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

- 2.3.1.4 The FAA recommends that airport operators encourage off-airport stormwater treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into stormwater treatment facility operating practices when their facility is located within the separation criteria specified in Paragraphs 1.2 through 1.4.

2.3.2 New Stormwater Management Facilities.

The FAA recommends that storm water management systems located within the separations identified in Paragraphs 1.2 through 1.4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48-hour detention period after the design storm and to remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap or concrete lined, narrow, linear-shaped water detention basins. When it is not possible to place these ponds away from an airport's aircraft operations area (but still on airport property), airport operators may use physical barriers, such as bird balls, wire grids, floating covers, vegetation barriers (bottom liners), or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. Caution is advised when nets or wire grids are used for deterring birds from attractants. Mesh size should be < 5 cm (2") to avoid entangling and killing birds and should not be made of a monofilament material. Grids installed above and across water to deter hazardous birds (e.g., waterfowl, cormorants, etc.) are different than using a small mesh covering but also provides an effective deterrent. Grid material, size, pattern and height above water may differ on a case-by-case basis. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, a review by a Qualified Airport Wildlife Biologist should be conducted, prior to approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages the use of underground storm water infiltration systems because they are less attractive to wildlife.

2.3.3 Existing Wastewater Treatment Facilities.

- 2.3.3.1 The FAA recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport.

2.3.3.2 Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a Qualified Airport Wildlife Biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

2.3.4 New Wastewater Treatment Facilities.

The FAA recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Paragraphs 1.2 through 1.4. Appendix 1 defines wastewater treatment facility as “any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes.” The definition includes any pretreatment involving the reduction or elimination of pollutants prior to introducing such pollutants into a treatment facility. When a wastewater treatment facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If possible, a more suitable location for the proposed facility should be identified. If no other suitable location exists, FAA recommends that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility’s potential to attract hazardous wildlife. If appropriate measures cannot be incorporated to reduce potential wildlife hazards, airport operators should document their opposition in a letter to the local jurisdiction.

2.3.5 Artificial Marshes.

In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA recommends against establishing artificial marshes within the separations identified in Paragraphs 1.2 through 1.4.

2.3.6 Wastewater Discharge and Sludge Disposal.

The FAA recommends careful consideration regarding the discharge of wastewater or biosolids (i.e., secondarily treated sewage sludge) on airport property. Such discharges might improve soil moisture and quality on unpaved areas and lead to improved turf growth. Depending on the airfield plant communities and habitats present, this can be an attractive food source for many species of animals or, conversely, could result in limited attractiveness to hazardous wildlife. Also, improved turf requires more frequent mowing and could attract geese. Airports should improve their turf with the goal of a monoculture of turf that is least attractive to wildlife. Wastewater or biosolids

applications might assist in achieving this goal. Caution should be exercised when discharges saturate airfield areas adjacent to paved surfaces. The resultant soft, muddy conditions could restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2.4 Wetlands.

Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Wetlands can be attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1 - AC 150/5200-32). Some types of wetlands are not as attractive to wildlife as others and they should be reviewed on a case-by-case basis to determine the likelihood of proposed wetlands increasing the numbers of hazardous wildlife at the airport. Factors such as size, shape, location, canopy cover and vegetative composition among other things should be considered when determining compatibility.

Note: If questions exist as to whether an area qualifies as a wetland, contact the District Office of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

2.4.1 Existing Wetlands on or near Airport Property.

If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports within 5 miles of the aircraft operations area. Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a FAA Qualified Airport Wildlife Biologist.

2.4.2 New Airport Development.

Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Paragraphs 1.2 through 1.4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a Qualified Airport Wildlife Biologist, in coordination with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a wildlife management plan that indicates methods of minimizing the hazards.

2.4.3 Mitigation for Wetland Impacts from Airport Projects.

Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4.

2.4.3.1 Onsite Mitigation of Wetland Functions.

Wetland mitigation/conservation easements must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations and grant assurance compliance. Early coordination with the FAA is encouraged for any proposal to use airport land for wetland mitigation. A Qualified Airport Wildlife Biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Paragraphs 1.2 through 1.4 before the mitigation is implemented. A wildlife management plan should be developed to reduce the wildlife hazards.

2.4.3.2 Offsite Mitigation of Wetland Functions.

- 2.4.3.2.1 The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4 unless they provide unique functions that must remain onsite (see 2.4.3.1). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.
- 2.4.3.2.2 The FAA encourages landowners or communities supporting the restoration or enhancement of wetlands to do so only after critically analyzing how those activities would affect aviation safety. To do so, landowners or communities should contact the affected airport sponsor, FAA, and/or a Qualified Airport Wildlife Biologist.
- 2.4.3.2.3 Those parties should work cooperatively to develop restoration or enhancement plans that would not worsen existing wildlife hazards or create such hazards. See Paragraphs 4.1.1 – 4.1.3 for land-use modifications evaluation criteria.
- 2.4.3.2.4 If parties develop a mutually acceptable restoration or enhancement plan, the landowner or community proposing the restoration or enhancement must monitor the restored or enhanced site. This monitoring must verify that efforts have not worsened or created hazardous wildlife attraction or activity. If such attraction or activity occurs, the landowner or community should work with the airport sponsor, or a Qualified Airport Wildlife Biologist to reduce the hazard to aviation.

2.4.3.3 **Mitigation Banking.**

Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Paragraphs 1.2 through 1.4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2.5 **Dredge Spoil Containment Areas.**

The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Paragraphs 1.2 through 1.4 if the containment area or the spoils contain material that would attract hazardous wildlife. Proposals for new dredge spoil containment areas located within the separation distances should be reviewed on a case-by-case basis to determine the likelihood of resulting in an increase in hazardous wildlife. The FAA recommends that airport sponsors work with a Qualified Airport Wildlife Biologist and/or the FAA to review proposals for dredge spoil containment areas located within separation criteria.

2.6 **Agricultural Activities.**

Many agricultural crops can attract hazardous wildlife and should not be planted within the separations identified in Paragraphs 1.2 through 1.4. Corn, wheat, and other small grains in particular should be avoided. If the airport has no financial alternative to agricultural crops to produce the income necessary to maintain the viability of the airport, then the airport should consider growing crops that hold little food value for hazardous wildlife, such as grass hay. Attractiveness to hazardous wildlife species during all phases of production, from planting through harvest and fallow periods, should be considered when contemplating the use of airport property for agricultural production. Where agriculture is present, crop residue (e.g., waste grain) should not be left in the field following harvest. Also, airports should consult AC 150/5300-13, *Airport Design*, to ensure that agricultural crops do not create airfield obstructions or other safety hazards. Before planning or initiating any agricultural practices on airport property, operators should get approval from the appropriate FAA regional Airports Division Office and demonstrate that the additional cost of wildlife control and potential accidents is offset by revenue generated by agricultural leases. Annual review of the Airport Certification Manual by the Certification Inspector does not constitute approval and is insufficient to meet this requirement.

2.6.1 Livestock Production.

Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as blackbirds, starlings, or pigeons that pose a hazard to aviation. Therefore, the FAA recommends against such facilities within the separations identified in Paragraphs 1.2 through 1.4. The airport operator should be aware of any wildlife hazards that appear to be attracted to off-site livestock operations and consider working with a Qualified Airport Wildlife Biologist to identify reasonable and feasible measures that may be proposed to landowners to reduce the attractiveness of the site to the potentially hazardous wildlife species.

2.6.1.1 In exceptional circumstances, and following FAA review and approval, livestock may be grazed on airport property as long as they are off the airfield and separated behind fencing where they cannot pose a hazard to aircraft. The livestock should be fed and watered as far away from the airfield and approach/departure space as possible because the feed and water may attract birds. The wildlife management plan should include monitoring and wildlife mitigation for any areas where the livestock and their feed/water is located in case a wildlife hazard is detected. Airports without wildlife management plans should equally consider monitoring and mitigation protocols to identify and address any wildlife hazards associated with livestock and their feeding operations.

2.6.2 Alternative Uses of Agricultural Land.

2.6.2.1 Habitat modification both on and surrounding an airfield is one of the best and most economical long term mitigation strategies to decrease risk that wildlife pose to flight safety. Alternative land uses (e.g., solar and biofuel) at airports could help mitigate many of the challenges for the airport operator, developers, and conservationists. However, careful planning must first determine that proposed alternative energy production at airports does not create wildlife attractants or other hazards.

2.6.2.2 Some airports are surrounded by vast areas of farmed land within the distances specified in Paragraphs 1.2 through 1.4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, among others, flood their land to attract waterfowl or for conservation efforts. This is often done during waterfowl hunting season to obtain additional revenue by renting out duck blinds.

2.6.2.3 The waterfowl hunters then use decoys and call in hundreds, if not thousands, of birds, creating a threat to aircraft safety. It is recommended that a Qualified Airport Wildlife Biologist review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate mitigating measures into the wildlife management plan, when possible.

2.7 Aquaculture.

Aquaculture is the breeding, rearing, and harvesting of fish, shellfish, and plants in all types of water environments including ponds, rivers, lakes, and the ocean. Aquaculture is used to produce food fish, sport fish, bait fish, ornamental fish, and to support restoration activities. Aquacultured species are grown in a range of facilities including tanks, cages, ponds, and raceways. When an aquaculture facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its attraction to hazardous species, location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If a facility is identified as a possible significant attraction, a more suitable location for the proposed facility should be identified. If no other suitable location exists, it is recommended that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility's potential to attract hazardous wildlife.

2.7.1 Freshwater Aquaculture.

2.7.1.1 Freshwater aquaculture activities (e.g., catfish, tilapia, trout or bass production) are typically conducted outside of fully enclosed buildings in constructed ponds or tanks and are inherently attractive to a wide variety of birds and therefore pose a significant risk to airport safety when within the separation distances specified in Paragraphs 1.2 through 1.4. Freshwater aquaculture should only be considered if extensive mitigation measures have been incorporated to eliminate attraction to hazardous birds. Examples of such mitigation include:

1. Netting or other material to exclude hazardous birds (e.g., eagles, osprey, gulls, cormorants);
2. Acoustic hazing including pyrotechnics, propane cannons, directional sonic/hailing devices and other similar technologies;
3. Feeding procedure cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2 Marine Aquaculture.

Marine aquaculture (Mariculture) refers to the culturing of species that live in the ocean. When appropriately managed and mitigated as necessary, mariculture facilities do not pose a significant risk to airport safety.

2.7.2.1 Finfish Mariculture.

2.7.2.1.1 U.S. finfish mariculture primarily produces salmon and steelhead trout as well as lesser amounts of cod, moi, yellowtail, barramundi, seabass, and seabream. Maricultures use rigid and non-rigid enclosures (e.g., cages) at the surface or submerged in the water column. These enclosures may be fully enclosed, or be open at the top or covered with netted material to negate losses from depredation by birds or other predators. Different facilities employ different designs and operational protocols.

2.7.2.1.2 While mariculture operations typically do not pose a significant attractant to hazardous birds, design and operational features can be incorporated as permit conditions to mitigate attraction and effectively reduce this risk. Examples of such mitigation include:

1. Fully enclosed cages using netting or other material to exclude hazardous birds (e.g., gulls, cormorants, pelicans) and to insure retention of fish;
2. Submerged enclosures to reduce attraction to hazardous birds;
3. Feed barge cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2.2 Shellfish Mariculture.

U.S. shellfish mariculture primarily produces oysters, clams, mussels, lobster and shrimp. Shellfish may be grown directly on the bottom, in submerged cages or bags, or on suspended lines. These types of mariculture operations do not typically present a significant attractant to hazardous birds. For those operations that are found to pose a significant risk, design and operation features that diminish possible attraction to hazardous bird species (e.g., reducing areas for perching or feeding) can effectively reduce this risk.

2.7.2.3 Plant Mariculture.

2.7.2.3.1 Microalgae, also referred to as phytoplankton, microphytes, or planktonic algae constitute the majority of cultivated algae. Macroalgae, commonly known as seaweed, also have many commercial and industrial uses.

- 2.7.2.3.2 While few commercial seaweed farms exist, the sector is growing. These types of mariculture operations do not typically present an attractant to hazardous birds.

2.8 **Golf Courses, Landscaping, Structures and Other Land-Use Considerations.**

2.8.1 Golf Courses.

The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. If golf courses are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. Accordingly, airport operators should develop, at a minimum, onsite measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist. Existing golf courses located within these separations that have been documented to attract hazardous wildlife are encouraged to develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Paragraphs 1.2 through 1.4 if determined that the new facility would create a significant wildlife hazard attractant by a Qualified Airport Wildlife Biologist. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2 Landscaping and Landscape Maintenance.

2.8.2.1 Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. Vegetation that produces seeds, fruits, or berries, or that provides dense roosting or nesting cover should not be used. Airports should develop a landscape plan to include approved and prohibited plants. The landscape plan should consider the watering needs of mature plants. A Qualified Airport Wildlife Biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2.2 Turf grass areas on airports have the potential to be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one airfield vegetation management regimen will deter all species of hazardous wildlife in all situations. The composition and height of airfield grasslands should be properly managed to reduce their attractiveness to hazardous wildlife. In many situations, an intermediate height, monoculture turf grass might be most favorable. In cooperation with a

Qualified Airport Wildlife Biologist, airport operators should develop airport turf grass management plans on a prescription basis, including cultivar selection during reseeding efforts, that is specific to the airport's geographic location, climatic conditions, and the type of hazardous wildlife likely to frequent the airport.

- 2.8.2.3 Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a Qualified Airport Wildlife Biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a Qualified Airport Wildlife Biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

2.8.3 Structures.

- 2.8.3.1 Certain structures attract birds for loafing and nesting. Flat rooftops can be attractive to many species of gulls for nesting, hangars provide roosting / nesting opportunities for rock doves, towers, light posts and navigation aids can provide loafing / hunting perches for raptors and aircraft can provide loafing / nesting sites for European starlings, blackbirds and other species. These structures should be monitored and mitigated, if located on-site. Off-site structural attractions may require additional coordination to effectively mitigate their use by hazardous species.

- 2.8.3.2 Cellular communications towers are becoming increasingly more attractive to large birds (e.g., osprey, eagles, herons, vultures) for nesting and rearing their young. This problem is a growing concern because once the young fledge from nests built on manmade structures they are more likely to return to these kinds of sites to reproduce in future years.

2.8.4 Other Hazardous Wildlife Attractants.

Other land uses (e.g., conservation easements, parks, wildlife management areas) or activities not addressed in this AC may have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, each certificate holder must take prompt remedial action(s) to protect aviation safety and all non-certificated airports should take prompt remedial action(s) to protect aviation safety.

2.9 **Habitat for State and Federally Listed Species on Airports.**

An airport's air operations area is an artificial environment that has been created and maintained for aircraft operations. Because an aircraft operations area can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's aircraft operations area are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are Federal or state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

2.9.1 State-Listed Species Habitat Concerns.

2.9.1.1 Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise caution in adopting new management techniques because they may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.

2.9.1.2 Not all state-listed threatened and endangered species or species of concern pose a direct threat to aviation safety. However, these species may pose an indirect threat and be hazardous because they attract other wildlife species or support prey species attractive to other species that are directly hazardous. Also, the habitat management practices that benefit these state-listed threatened and endangered species and species of special concern may attract other hazardous wildlife species. On-airport habitat and wildlife management practices designed to benefit wildlife that directly or indirectly create safety hazard where none existed before are incompatible with safe airport operations.

2.9.2 Federally Listed Species Habitat Concerns.

2.9.2.1 The FAA supports efforts to protect threatened and endangered species, as a matter of principle and consistent with the Endangered Species Act of 1973. The FAA must balance these requirements with our requirements and mission to maintain a safe and efficient airport system. Requests to enhance or create habitat for threatened and endangered species often conflict with the safety of the traveling public and may place the protected species at risk of mortality by aircraft collisions. The FAA does not support the creation, conservation or enhancement of habitat or refuges to attract endangered species on airports. If endangered species are present on an airport, specific obligations may apply under the Endangered

Species Act, 16 U.S.C. § 1531 et seq. and the airport operator should contact the Airports District Office Environmental Protection Specialist.

- 2.9.2.2 The designation of critical habitat for listed species under the Endangered Species Act on airport lands may be an incompatible land use in conflict with the intended and dedicated purpose of airport lands and may limit or preclude the ability of the airport to develop new infrastructure and growth capacity to meet future air carrier service demand. In addition, depending on the listed species (primarily but not limited to avian species), the designation of critical habitat within the separation distances provided in paragraphs 1.2 - 1.4 can represent a hazardous wildlife attractant in conflict with 14 CFR Part 139.337.

2.10 Synergistic Effects of Surrounding Land Uses.

There may be circumstances where two or more different land uses would not, by themselves, be considered hazardous wildlife attractants or are located outside of the separations identified in Paragraphs 1.2 through 1.4 but collectively may create a wildlife corridor directly through the airport and/or surrounding airspace. An example involves a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport. These two land uses, taken together, could create a flyway for Canada geese directly across the airspace of the airport. Airport operators must consider the entire surrounding landscape and community when developing the wildlife management plan.

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CHAPTER 3. PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS AND CONDITIONS FOR NON-CERTIFICATED AIRPORTS TO CONDUCT WILDLIFE HAZARD ASSESSMENTS AND WILDLIFE HAZARD SITE VISITS

3.1 Introduction.

In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA recommends all airports conduct a Wildlife Hazard Site Visit or Wildlife Hazard Assessment unless otherwise mandated after an initial triggering events defined in Part 139 Section 139.337. After the airport has completed the site visit or assessment and implemented a wildlife management plan, investigations should be conducted following subsequent triggering events to determine if the original assessment and plan adequately address the situation or if conditions have changed that would warrant an update to the plan. In this section, airports that are certificated under 14 C.F.R. § 139.337 are referred to as “certificated airports” and all others are referred to as “non-certificated airports.” When a statement refers to both certificated and non-certificated airports, “airport” or “all airports” is used.

3.2 Coordination with Qualified Airport Wildlife Biologists.

Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, only airport wildlife biologists meeting the qualification requirements in Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*, can conduct Site Visits and Assessments. Airports must maintain documentation that the Qualified Airport Wildlife Biologist meets the qualification requirements in Advisory Circular 150/5200-36.

3.3 Wildlife Hazard Management at Airports: A Manual For Airport Personnel.

- 3.3.1 The Wildlife Hazard Management at Airports manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of wildlife management plans at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, Assessments, Plans, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA’s wildlife hazard mitigation web site: https://www.faa.gov/airports/airport_safety/wildlife. This manual only provides a starting point for addressing wildlife hazard issues at airports. FAA recommends that airports consult with a Qualified Airport Wildlife Biologists to assist with development of a wildlife management plan and the implementation of management actions by airport personnel.

- 3.3.2 There are many other resources complementary to this manual for use in developing and implementing wildlife management plans. Several are listed in the manual's bibliography or on the FAA Wildlife Mitigation website:
https://www.faa.gov/airports/airport_safety/wildlife

3.4 Wildlife Hazard Site Visits and Wildlife Hazard Assessments.

- 3.4.1 Operators of certificated airports are encouraged to conduct an initial assessment regardless of whether the airport has experienced one of the triggering events. Doing so would allow the airport to take proactive action and mitigate the wildlife risk before experiencing an incident. All other airports are encouraged to conduct an assessment or site visit (as defined in FAA Advisory Circular 150/5200-38) conducted by a Qualified Airport Wildlife Biologist (as defined in FAA Advisory Circular 150/5200-36). Part 139 certificated airports are currently required to ensure that an assessment is conducted consistent with 14 C.F.R. § 139.337.
- 3.4.2 The intent of a site visit is to provide an abbreviated analysis of an airport's wildlife hazards and to provide timely information that allows the airport to expedite the mitigation of these hazards. The FAA also recommends that airports conduct an assessment or site visit as soon as practicable in order to identify any immediate wildlife hazards and/or mitigation measures.
- 3.4.3 Non-certificated airports should submit the results of the site visit or assessment to the FAA for review. The FAA will review the submitted site visit or assessment and make a recommendation regarding the development of a wildlife management plan. A wildlife management plan can be developed based on a site visit and will be required if the non-certificated airport is going to request federal grants for the purpose of mitigating wildlife hazards.

3.5 Wildlife Hazard Management Plan.

- 3.5.1 The FAA will consider the results of the assessment, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a wildlife management plan is needed for certificated airports, or recommended for non-certificated airports.
- 3.5.2 If the FAA determines that a wildlife management plan is needed for a certificated airport, the airport operator must formulate a plan, using the assessment as its basis and submit to the FAA for approval. If the FAA recommends that a non-certificated airport develop a plan, either an assessment or a site visit can be used as the basis for the wildlife management plan. Airports should consult AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*, for further information on preparation and implementation requirements for their wildlife management plan.

- 3.5.3 The goal of an airport's wildlife management plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport. For wildlife management plans to effectively reduce wildlife hazards on and near airports, accurate and consistent wildlife strike reporting is essential. Airports should consult AC 150/5200-32, *Reporting Wildlife Aircraft Strikes*, for further information on responsibilities and recommendations concerning wildlife strikes.
- 3.5.4 The wildlife management plan must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3.6 Local Coordination.

The FAA recommends establishing a Wildlife Hazards Working Group to facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the wildlife management plan. The cooperation of the airport community is essential to prevent incompatible development in the airport vicinity. Whether on or off the airport, input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Based on available resources, airport operators should undertake public education activities with the local planning agencies because some activities in the vicinity of an airport, while harmless under normal conditions, can attract wildlife and present a danger to aircraft (see Paragraphs 4.5 to 4.8). For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

3.7 Operational Notifications of Wildlife Hazards.

- 3.7.1 Operational notifications include active correspondence addressing wildlife issues on or near an airport, notifications and alerts. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land owner or manager to take steps to control the wildlife hazard and minimize further attraction. Permanent attractions that cannot be eliminated or mitigated may be noted in the Airport/Facility Directory. NOTAMS and Airport/Facility Directory notifications are not appropriate for short-term or immediate advisories that can be relayed via Pilot Reports, direct air traffic control voice communications, or temporary Automated Terminal Advisory System alerts. Care should be given to avoid the continual broadcast of general warnings for extended periods of time. General warnings such as "birds in the vicinity of the aerodrome" offer little timely information to aid pilots and eventually may be ignored if not updated.
- 3.7.2 The Automated Terminal Advisory System (ATIS) is a continuous broadcast of recorded aeronautical information for aerodromes and their immediate surroundings. ATIS broadcasts contain essential information, such as current weather information,

active runways, available approaches, wildlife hazards and any other information required by the pilots. They indicate significant (moderate or severe) wildlife activity, as reported by an approved agency that presents temporary hazards on the ATIS broadcast. Pilots take notice of available ATIS broadcasts before contacting the local control unit, which reduces the controllers' workload and relieves frequency congestion. The recording is updated in fixed intervals or when there is a significant change in the information. Although ATIS broadcasts involving wildlife should be timely and specific, pilots do not need to know species-specific information. General descriptive information detailing size and number of animals, locations and timing of occurrence provides useful, actionable information for pilots.

- 3.7.3 A pilot report (PIREP) is reported by a pilot to indicate encounters of hazardous weather (e.g., icing or turbulence) and hazardous wildlife. Pilot reports are short-lived warnings providing immediate information on pilot observations that are transmitted in real-time to air traffic control. Large animals near active surfaces, soaring vultures and raptors within approach/ departure corridors and waterfowl such as geese feeding in grassy areas next to runways are all examples of pilot reports generated by pilots.

3.8 Federal and State Depredation Permits.

The FAA recommends that airports maintain federal and state depredation permits to allow mitigation and/ or removal of hazardous species. All protected species require special permits for lethal mitigation or capture and relocation procedures. Similarly, endangered or threatened species mitigation also requires special permits. The FAA recommends that airports work closely with a Qualified Airport Wildlife Biologist during the U.S. Fish and Wildlife Service consultation and permitting process. The following Orders can help airports reduce risks from hazardous species by allowing private citizens to control hazardous species off airport properties without the need for a Federal depredation permit.

3.8.1 Standing Depredation Orders.

- 3.8.1.1 Federal law allows people to protect themselves and their property from damage caused by migratory birds. Provided no effort is made to kill or capture the birds, a depredation permit is not required to merely scare or herd depredating migratory birds other than endangered or threatened species or bald or golden eagles (50 CFR 21.41).
- 3.8.1.2 In addition, certain species of migratory birds may be mitigated without a federal permit under specific circumstances, many of which relate to agricultural situations. The following Standing Depredation Orders have applicability near airports:
- 50 CFR § 21.49- Control Order for Resident Canada Geese at Airports and Military Airfields.
 - 50 CFR § 21.50- Depredation Order for Resident Canada Geese Nests and Eggs.

- 50 CFR § 21.43 - Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies.
- 50 CFR § 21.54 - Control Order for Muscovy Ducks in the United States.
- 50 CFR § 21.55 - Control Order for Invasive Migratory Birds in Hawaii.

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CHAPTER 4. RECOMMENDED PROCEDURES FOR THE FAA, AIRPORT OPERATORS AND OTHER GOVERNMENT ENTITIES REGARDING OFF-AIRPORT ATTRACTANTS

4.1 FAA Notification and Review of Proposed Land-Use Practice Changes in the Vicinity of Public-Use Airports.

4.1.1 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes increase risk to airport safety by attracting hazardous wildlife on and around airports. The FAA is not a permitting agency for land use modifications that occur off airport properties, therefore, such reviews are typically initiated by state or federal permitting agencies seeking FAA input on new or revised permits. Each of the land uses listed in Chapter 2 of this AC has the potential to pose a risk to airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.

4.1.2 Off-site land use modifications near airports may include an assessment of risk for facilities and land-use changes and, if necessary, mitigation strategies that may reduce risk to an acceptable level. However, the FAA recognizes that individual facilities or land-use modifications may present a range of attractants to different species, resulting in varying levels of risk. Therefore, the FAA considers each proposal on a case-by-case basis.

4.1.3 The FAA analyzes each land-use modification or new facility proposal prior to its establishment or any significant planned changes to design or operations that may increase the risk level. As part of a review, the FAA considers several factors that include, but are not limited to:

1. Type of attractant;
2. Size of attractant;
3. Location/distance of attractant from airport;
4. Design (e.g., construction, material, mitigation techniques employed into design);
5. Operation (e.g., cleanliness, constancy/ volume of use, seasonality, time of day);
6. Monitoring protocols (e.g., frequency, documentation, evaluation, species identification and number thresholds that trigger actions of communication or mitigation, baseline wildlife data);
7. Mitigation protocols (e.g., responsibilities, methods, intensity, pre-determined objectives, documentation, evaluation); and
8. Communication protocols to airport and/ or air traffic control tower;

4.1.4 The review of these factors may result in FAA recommended additions or modifications to a conditional use permit that allows the permitting agency to track compliance with the permittee obligations. Such conditions placed within a permit

may involve a comprehensive outline and recognition of individuals responsible for monitoring, communication, and mitigation measures if certain action thresholds are met. Action thresholds are defined in this instance as those pre-determined parameters (e.g., number, location, behavior, time of day) of specific hazardous species that would trigger a mitigation response. Additionally, baseline data should be used to determine the effect, if any, on wildlife populations at the proposed off-site location and/or at the airport.

- 4.1.5 Baseline data may need to be collected, depending on the existence of useful data and timeline for site modification. If, after taking into account the factors above, FAA determines that a facility poses a significant risk to airport safety, FAA will object to its establishment or renewal.
- 4.1.6 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA Airport District Office may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.
- 4.1.7 Where a Qualified Airport Wildlife Biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4.2 Waste Management Facilities.

4.2.1 Notification of New/Expanded Project Proposal.

- 4.2.1.1 49 U.S.C. § 44718(d), prohibits the construction or establishment of new municipal landfills within 6 miles of certain public-use airports, when both the airport and the landfill meet specific conditions. See Paragraph 2.2 of this guidance for a more detailed discussion of these restrictions.
- 4.2.1.2 The Environmental Protection Agency (EPA) requires any landfill operator proposing a new or expanded waste disposal operation within 5 miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal. See 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*. The EPA also requires owners or operators of new landfill units, or lateral expansions of existing MSWLF landfill units, that are located within 10,000 feet of any airport runway end used by turbine-powered aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4.3.2 below.)

- 4.2.1.3 When new or expanded municipal landfills are being proposed near airports, landfill operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR § 258.
- 4.2.1.4 The FAA discourages the development of waste disposal and other facilities, discussed in Chapter 2, located within the separation criteria specified in Paragraphs 1.2 through 1.4. To show that a waste-handling facility sited within the separations identified in Paragraphs 1.2 through 1.4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish the facility will not handle putrescible material other than that as outlined in 2.2.4. The FAA recommends against any facility other than those outlined in 2.2.4 (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

4.3 Other Land-Use Practice Changes.

- 4.3.1 The FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 miles of their airports to notify their assigned Airport Certification Safety Inspector or Airports District Office Program Manager. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.
- 4.3.2 The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, Notice of Proposed Construction or Alteration, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process prior to submitting Form 7460-1.
- 4.3.3 It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.
- 4.3.4 Airports that have Received Federal Assistance.
Airports that have received Federal assistance are required under their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. See Grant Assurance 21. The FAA recommends that airport operators oppose off-airport land-use changes or practices, to

the extent practicable, within the separations identified in Paragraphs 1.2 through 1.4, which may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for preventing, eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for airport development projects.

4.4 Coordination to Prevent Creation of New Off-Airport Hazardous Wildlife Attractants.

Airport operators should work with local and regional planning and zoning boards to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Paragraphs 1.2 through 1.4. Pay particular attention to proposed land uses involving creation or expansion of wastewater treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, it is recommended that airport operators are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife. This may be accomplished through one or more of the following:

4.4.1 Site-specific Criteria.

The airport should establish site-specific criteria for assessment of land uses attractive to hazardous wildlife and locations that would be of concern based on wildlife strikes and on wildlife abundance and activity at the airport and in the local area. These criteria may be more selective, but should not be less restrictive than this guidance.

4.4.2 Outreach.

Airports should actively seek to provide educational information and/ or provide input regarding local development, natural resource modification or wildlife-related concerns that affect wildlife hazards and safe air travel.

4.4.2.1 External Outreach.

Airport operators and a Qualified Airport Wildlife Biologist should consider outreach to local planning and zoning organizations on land uses of concern or to local organizations responsible for natural resource management (including wildlife, wetlands, and parks.) Airports should also consider developing and distributing position letters and educational materials on airport-specific concerns regarding wildlife hazards, wildlife activity and attraction. Finally, airports should provide formal comments on local procedures, laws, ordinances, plans, and regulatory actions such as permits related to land uses of concern.

4.4.2.2 **Internal Outreach.**

Airports should consider developing and distributing position letters and educational materials on airport-specific concerns regarding species identification and mitigation procedures, wildlife hazards, wildlife activity and attraction to employees and personnel with access to the aircraft operations area.

4.5 **Coordination on Existing Off-Airport Hazardous Wildlife Attractants.**

Airports are encouraged to work with landowners and managers to cooperatively develop procedures to monitor and manage hazardous wildlife attraction. If applicable, these procedures may include:

1. Conducting a wildlife hazard site visit by a wildlife biologist meeting the qualification requirements of Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
2. Conducting regular, standardized, wildlife monitoring surveys;⁴
3. Establishing threshold numbers of wildlife which would trigger certain actions and/or communications;
4. Establishment of procedures to deter or remove hazardous wildlife.

4.6 **Prompt Remedial Action.**

For attractants found on and off airport property, and with landowner or manager cooperation, Part 139 certificated airports must take immediate action in accordance with their Airport Certification Manual and the requirements of Part 139.337, to alleviate wildlife hazards whenever they are detected. It is also recommended that non-certificated airports take immediate action to alleviate wildlife hazards whenever they are detected. In addition, airports should take prompt action to identify the source of attraction and cooperatively develop procedures to mitigate and monitor the attractant. **For Part 139 Certificated airports, immediate actions are required in accordance with 139.337(a).**

4.7 **FAA Assistance.**

If there is a question on the implementation of any of the guidance in this section, contact the FAA Regional Airports Division for assistance.

⁴ Recommended survey protocols can be found in AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*, and DeVault, T.L., B.F. Blackwell, and J.L. Belant, eds. 2013. *Wildlife in Airport Environments: Preventing Animal–Aircraft Collisions through Science-Based Management*. Johns Hopkins University Press, Baltimore, MD, USA. 181 pp.

4.7.1 Airport Documentation Procedures.

Airports should document on-site and off-site wildlife attractants as part of their “Wildlife Hazard Management Plan Annual Review,” “Wildlife Hazard Management Plan Review Following a Triggering Event,” and the airport’s Continual Monitoring Annual Report (as outlined in FAA Advisory Circular 150/5200-38). As a best management practice, airports may choose to keep a log to track contacts from landowners or managers, permitting agencies, or other entities concerning land uses near the airport.

APPENDIX A. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR

A.1 General.

This appendix provides definitions of terms used throughout this AC.

1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.
2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.
3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.
4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.
5. **Certificate holder.** The holder of an Airport Operating Certificate issued under 14 C.F.R. Part 139.
6. **Construct a new municipal landfill.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.
7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.
8. **Establish a new municipal landfill.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.
9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.
10. **General aviation aircraft.** Any civil aviation aircraft operating under 14 CFR Part 91.
11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).
12. **Municipal Landfill.** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. A municipal landfill may receive other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and

industrial solid waste, as defined under 40 CFR § 258.2. A municipal landfill can consist of either a stand-alone unit or several cells that receive household waste.

13. **New municipal landfill.** A municipal solid waste landfill that was established or constructed after April 5, 2001.
14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.
15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.
16. **Public agency.** A state or political subdivision of a state, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).
17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).
18. **Public-use airport.** An airport used or intended to be used for public purposes where the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).
19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).
20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.
21. **Retention ponds.** Storm water management ponds that hold water for more than 48 hours.
22. **Risk.** Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.
23. **Runway protection zone.** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.
24. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

25. **Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR § 257.2)
26. **Sludge.** Any solid, semi-solid, or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR § 257.2).
27. **Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954.(40 CFR § 257.2).
28. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.
29. **Turbine-use airport.** Any airport that sells fuel for fixed-wing turbine-powered aircraft.
30. **Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including publicly owned treatment works, as defined by Section 212 of the Clean Water Act. This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a publicly owned treatment system. (See 40 CFR § 403.3 (q), (r), & (s)).
31. **Wildlife.** Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof. 50 CFR § 10.12. As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).
32. **Wildlife attractants.** Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's aircraft operations area. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

33. **Wildlife hazard.** A potential for a damaging aircraft collision with wildlife on or near an airport.
34. **Wildlife strike.** A wildlife strike is deemed to have occurred when:
- a. A strike between wildlife and aircraft has been witnessed;
 - b. Evidence or damage from a strike has been identified on an aircraft;
 - c. Bird or other wildlife remains, whether in whole or in part, are found:
 - i. Within 250 feet of a runway centerline or within 1,000 feet of a runway end unless another reason for the animal's death is identified or suspected, unless another reason for the animal's death is identified or;
 - ii. On a taxiway or anywhere else on or off airport that there is reason to believe was the result of a strike with an aircraft.
 - d. The presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal).

APPENDIX B. ADDITIONAL RESOURCES

B.1 Regulations

- 14 CFR § 139.337, *Wildlife Hazard Management*
- 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills*

B.2 Advisory Circulars

- AC 150/5200-32, *Reporting Wildlife Aircraft Strikes*
- AC 150/5200-33, *Hazard Wildlife Attractants on or Near Airports*
- AC 150/5200-34, *Construction or Establishment of New Landfills Near Public Airports*
- AC 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculum for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
- AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*
- AC 150/5220-25, *Airport Avian Radar Systems*
- AC 150/5210-24, *Airport Foreign Object Debris (FOD) Management*

B.3 Certification Alerts

- Certalert No. 97-09, *Wildlife Hazard Management Plan Outline* (11/17/1997)
- Certalert No. 98-05, *Grasses Attractive To Hazardous Wildlife* (9/21/1998)
- Certalert No. 06-07, *Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State Listed Threatened and Endangered Species and Species of Special Concern on Airports* (11/21/2006)
- Certalert No. 13-01, *Federal and State Depredation Permit Assistance* (1/30/2013)
- Certalert No.14-01, *Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls* (2/26/2014)
- Certalert No. 16-03, *Recommended Wildlife Exclusion Fencing* (8/2016)

B.4 Airport Cooperative Research Program Reports

These, and other wildlife / aviation reports, are available from the Transportation Research Board of the National Academies (TRB) at

<http://www.trb.org/Publications/Publications.aspx>.

- ACRP Research Report 198: Wetland Mitigation, Volume 2, A Guidebook for Airports (2019)
- ACRP Synthesis 92: Airport Waste Management and Recycling Practices (2018)
- ACRP Research Report 174: Guidebook and Primer (2018)
- ACRP Report 122: Innovative Airport Responses to Threatened / Endangered Species (2015)
- ACRP Report 125: Balancing Airport Stormwater and Bird Hazard Management (2015)
- ACRP Report 145: Applying an SMS Approach to Wildlife Hazard Management (2015)
- ACRP Synthesis 39 Report: Airport Wildlife Population Management (2013)
- ACRP Synthesis 52 Report: Habitat Management to Deter Wildlife at Airports (2014)
- ACRP Synthesis 23 Report: Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports (2011)
- ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports (2010)

B.5 Manuals

- Wildlife Hazard Management at Airports - A Manual for Airport Personnel (2005)

B.6 Orders

- 50 CFR § 21.49, Control Order for Resident Canada Geese at Airports and Military Airfields
- 50 CFR § 21.50, Depredation Order for Resident Canada Geese Nests and Eggs
- 50 CFR § 21.43, Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies
- 50 CFR § 21.54, Control Order for Muscovy Ducks in the United States
- 50 CFR § 21.55, Control Order for Invasive Migratory Birds in Hawaii

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Safety and Operations Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of AAS-300 at (202) 267-5257.

Subject: AC 150/5200-33C

Date: _____

Please check all appropriate line items:

- ☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.
- ☐ Recommend paragraph _____ on page _____ be changed as follows:
- _____
- _____
- _____
- ☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)
- _____
- _____
- _____
- ☐ Other comments:
- _____
- _____
- _____
- ☐ I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____

Date: _____



MT. DIABLO UNIFIED SCHOOL DISTRICT
JAMES W. DENT EDUCATION CENTER
1936 Carlotta Drive
Concord, California 94519-1358
(925) 682-8000, ext. 4000

Dr. Lisa Gonzales
Chief Business Officer

To: City of Pittsburg
From: Dr. Lisa Gonzales, Chief Business Officer
Re: Environmental Impact Report (EIR) for the adoption and implementation of the
Envision Pittsburg 2040 General Plan Update (2040 General Plan)
Date: May 4, 2022

This memo is in response to the proposed EIR and the 2040 General Plan in Pittsburg, and this response is on behalf of the Mt Diablo Unified School District (MDUSD).

Leaders in MDUSD have notable concerns about the proposed Envision Pittsburg 2040 General Plan, updates, and amendments. Any changes that result in additional housing will create increased need for student housing in the form of schools. MDUSD does not have capacity for additional students at this time in its current school sites, and many of the proposed General Plan amendments are within the MDUSD boundaries.

Any amendments to the General Plan relating to housing will result in significant financial and substantial adverse physical hardships for the Mt. Diablo Unified School District.

Any approval of amendments will be subject to mitigation agreements with Mt. Diablo Unified. The agreements will need to be resolved and funded prior to permitting in order for the school district to get ahead of the necessary student housing that will need to be built prior to students moving into the proposed homes.



Elise Carroll <ecarroll@denovoplanning.com>

FW: Comments for Notice of Preparation 2040 General Plan Update draft Environmental Impact Report

John Funderburg <JFunderburg@pittsburgca.gov>

Thu, May 12, 2022 at 5:11 PM

To: Beth Thompson <bthompson@denovoplanning.com>, Elise Carroll <ecarroll@denovoplanning.com>

FYI...comments...

From: Jolan Longway <Jlongway@pittsburgca.gov>**Sent:** Thursday, May 12, 2022 4:16 PM**To:** John Funderburg <JFunderburg@pittsburgca.gov>**Subject:** Comments for Notice of Preparation 2040 General Plan Update draft Environmental Impact Report

Hello,

I have two main stormwater-related requests for the Environmental analysis:

1. Could the creek areas, and tributaries to creek areas be assigned "special" park designations? Pittsburg, like many cities is losing its battle to keep unhoused individuals from these areas.
2. Language that supports the implementation of the City's Green Stormwater Infrastructure Plan.

Let me know if you need more information regarding these.

Thank you

Jolan Longway

City of Pittsburg

Engineering Department

[65 Civic Avenue](#)[Pittsburg, CA 94565](#)

Development Manager / Clean Water

Program Coordinator

Phone: (925) 252-4803

5/17/22, 9:56 AM

De Novo Planning Group Mail - FW: Comments for Notice of Preparation 2040 General Plan Update draft Environmental Impact R...

Email: jlongway@pittsburgca.gov

APPENDIX B

Environmental Noise Assessment Appendices

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B: Continuous and Short-Term Ambient Noise Measurement Results



Appendix B1: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Tuesday, June 25, 2019	0:00	58	74	52	50
Tuesday, June 25, 2019	1:00	63	83	51	48
Tuesday, June 25, 2019	2:00	55	76	51	48
Tuesday, June 25, 2019	3:00	56	76	52	50
Tuesday, June 25, 2019	4:00	61	81	56	54
Tuesday, June 25, 2019	5:00	67	85	62	54
Tuesday, June 25, 2019	6:00	67	79	65	56
Tuesday, June 25, 2019	7:00	68	80	66	56
Tuesday, June 25, 2019	8:00	66	82	62	53
Tuesday, June 25, 2019	9:00	65	83	59	53
Tuesday, June 25, 2019	10:00	65	83	59	53
Tuesday, June 25, 2019	11:00	64	79	59	53
Tuesday, June 25, 2019	12:00	65	80	60	52
Tuesday, June 25, 2019	13:00	68	81	65	54
Tuesday, June 25, 2019	14:00	67	95	63	52
Tuesday, June 25, 2019	15:00	66	79	63	52
Tuesday, June 25, 2019	16:00	68	83	64	54
Tuesday, June 25, 2019	17:00	70	98	66	56
Tuesday, June 25, 2019	18:00	68	80	66	55
Tuesday, June 25, 2019	19:00	67	77	65	56
Tuesday, June 25, 2019	20:00	67	82	63	57
Tuesday, June 25, 2019	21:00	66	81	63	58
Tuesday, June 25, 2019	22:00	63	77	59	56
Tuesday, June 25, 2019	23:00	62	75	58	56

Statistics	Leq	Lmax	L50	L90
Day Average	67	83	63	54
Night Average	63	79	56	52
Day Low	64	77	59	52
Day High	70	98	66	58
Night Low	55	74	51	48
Night High	67	85	65	56
Ldn	70	Day %	79	
CNEL	71	Night %	21	

Site: LT-1

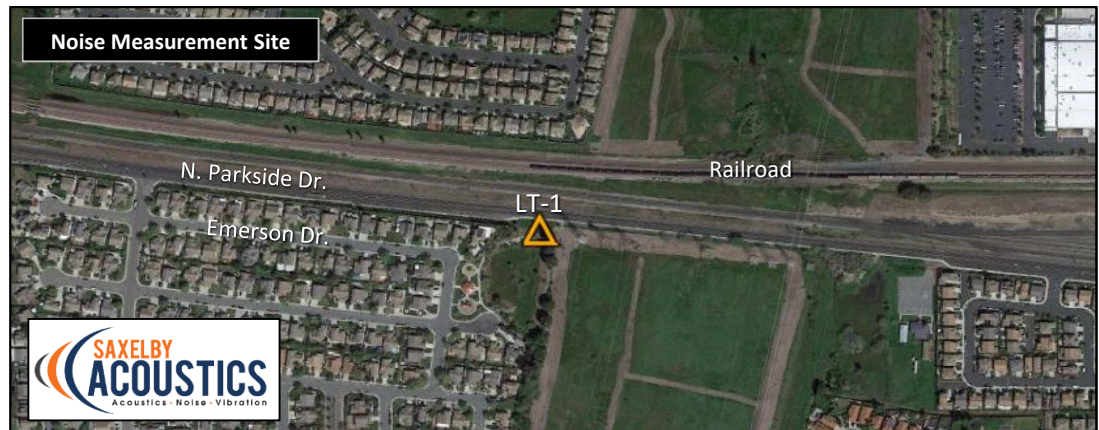
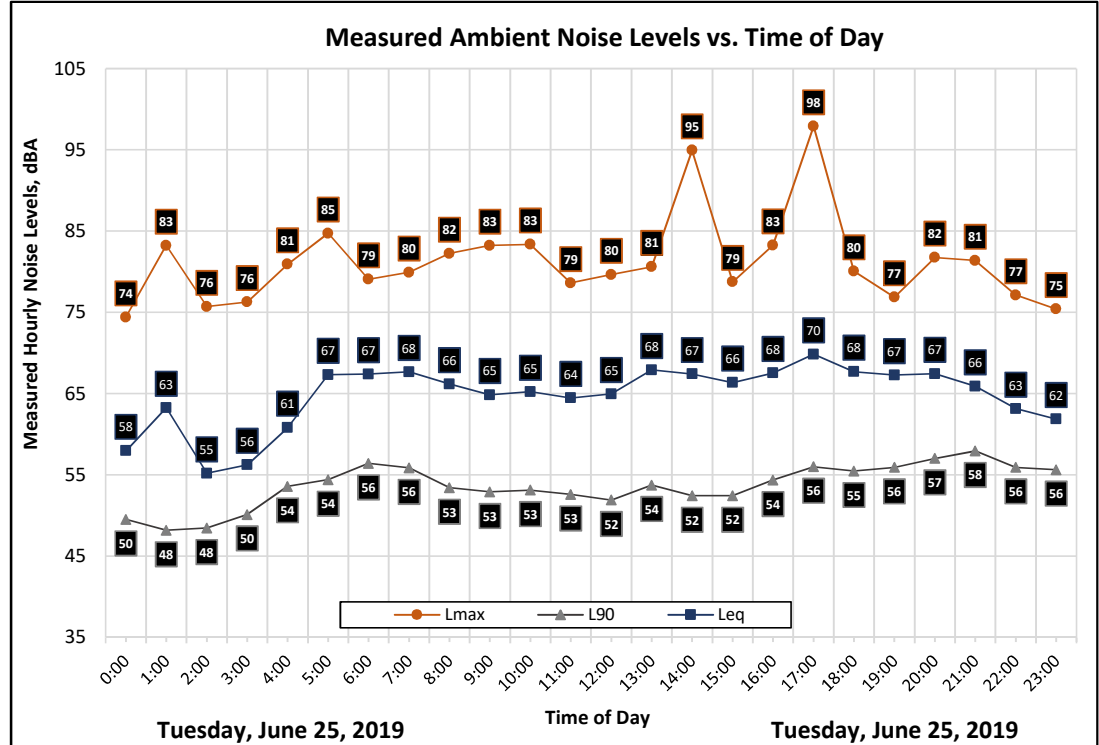
Project: City of Pittsburg General Plan Update

Meter: LDL 820-1

Location: N. Parkside Dr. at Americana Park

Calibrator: B&K 4230

Coordinates: 38.0259622°, -121.9085844°



Appendix B2: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Tuesday, June 25, 2019	0:00	69	79	69	63
Tuesday, June 25, 2019	1:00	67	77	66	59
Tuesday, June 25, 2019	2:00	65	78	63	57
Tuesday, June 25, 2019	3:00	64	80	62	58
Tuesday, June 25, 2019	4:00	67	82	65	62
Tuesday, June 25, 2019	5:00	68	77	67	63
Tuesday, June 25, 2019	6:00	69	79	68	64
Tuesday, June 25, 2019	7:00	70	85	69	65
Tuesday, June 25, 2019	8:00	71	77	70	67
Tuesday, June 25, 2019	9:00	70	78	69	66
Tuesday, June 25, 2019	10:00	70	78	69	65
Tuesday, June 25, 2019	11:00	71	78	70	67
Tuesday, June 25, 2019	12:00	71	78	70	67
Tuesday, June 25, 2019	13:00	71	89	71	68
Tuesday, June 25, 2019	14:00	72	85	71	69
Tuesday, June 25, 2019	15:00	71	79	70	68
Tuesday, June 25, 2019	16:00	70	91	70	67
Tuesday, June 25, 2019	17:00	69	78	69	64
Tuesday, June 25, 2019	18:00	71	86	70	68
Tuesday, June 25, 2019	19:00	71	82	71	68
Tuesday, June 25, 2019	20:00	71	85	70	67
Tuesday, June 25, 2019	21:00	70	83	69	66
Tuesday, June 25, 2019	22:00	69	87	68	65
Tuesday, June 25, 2019	23:00	68	76	68	64

Statistics	Leq	Lmax	L50	L90
Day Average	70	82	70	67
Night Average	68	79	66	62
Day Low	69	77	69	64
Day High	72	91	71	69
Night Low	64	76	62	57
Night High	69	87	69	65
Ldn	75	Day %		76
CNEL	75	Night %		24

Site: LT-2

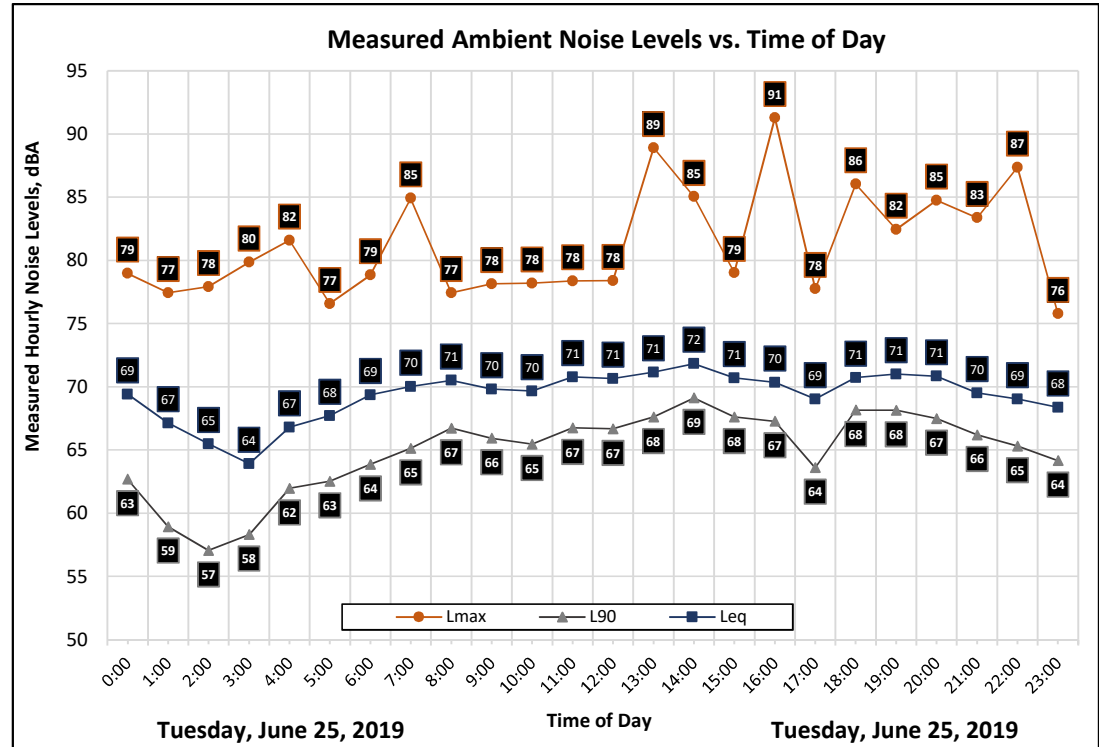
Project: City of Pittsburg General Plan Update

Meter: LDL 812-2

Location: CA-4/BART at Amrbose Park

Calibrator: B&K 4230

Coordinates: 38.0182485°, -121.9372823°



Appendix B3: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Tuesday, June 25, 2019	0:00	60	76	55	51
Tuesday, June 25, 2019	1:00	57	74	52	49
Tuesday, June 25, 2019	2:00	55	75	51	48
Tuesday, June 25, 2019	3:00	56	78	52	49
Tuesday, June 25, 2019	4:00	60	77	56	53
Tuesday, June 25, 2019	5:00	62	84	58	54
Tuesday, June 25, 2019	6:00	65	77	62	56
Tuesday, June 25, 2019	7:00	67	79	64	57
Tuesday, June 25, 2019	8:00	67	81	64	56
Tuesday, June 25, 2019	9:00	70	90	66	58
Tuesday, June 25, 2019	10:00	68	84	65	58
Tuesday, June 25, 2019	11:00	67	91	63	56
Tuesday, June 25, 2019	12:00	67	84	64	56
Tuesday, June 25, 2019	13:00	67	88	64	56
Tuesday, June 25, 2019	14:00	67	83	65	57
Tuesday, June 25, 2019	15:00	68	81	65	56
Tuesday, June 25, 2019	16:00	71	101	65	57
Tuesday, June 25, 2019	17:00	69	87	66	57
Tuesday, June 25, 2019	18:00	73	101	65	57
Tuesday, June 25, 2019	19:00	67	86	63	55
Tuesday, June 25, 2019	20:00	67	90	62	56
Tuesday, June 25, 2019	21:00	65	83	62	55
Tuesday, June 25, 2019	22:00	65	82	61	56
Tuesday, June 25, 2019	23:00	62	80	58	54

Statistics	Leq	Lmax	L50	L90
Day Average	69	87	64	57
Night Average	61	78	56	52
Day Low	65	79	62	55
Day High	73	101	66	58
Night Low	55	74	51	48
Night High	65	84	62	56
Ldn	70	Day %	90	
CNEL	70	Night %	10	

Site: LT-3

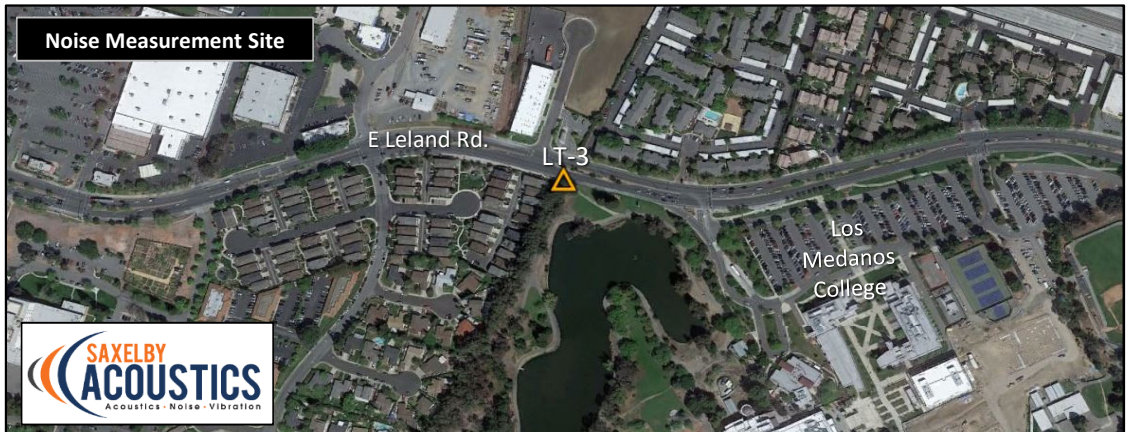
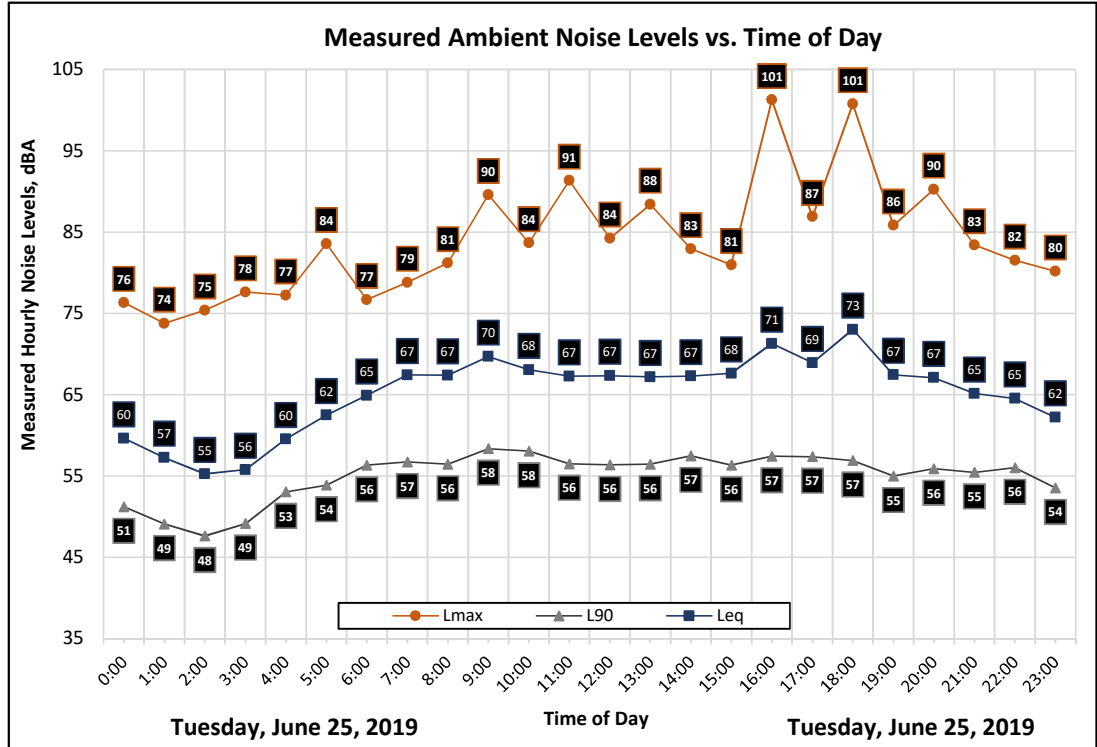
Project: City of Pittsburg General Plan Update

Meter: LDL 812-1

Location: East Leland Rd. at Los Medanos College

Calibrator: B&K 4230

Coordinates: 38.0080675°, -121.8639300°



Appendix B4: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Tuesday, June 25, 2019	0:00	56	74	45	39
Tuesday, June 25, 2019	1:00	54	75	45	40
Tuesday, June 25, 2019	2:00	55	80	45	41
Tuesday, June 25, 2019	3:00	54	79	47	42
Tuesday, June 25, 2019	4:00	59	78	54	49
Tuesday, June 25, 2019	5:00	65	81	62	53
Tuesday, June 25, 2019	6:00	66	81	65	57
Tuesday, June 25, 2019	7:00	66	80	64	56
Tuesday, June 25, 2019	8:00	66	79	64	54
Tuesday, June 25, 2019	9:00	64	80	61	52
Tuesday, June 25, 2019	10:00	64	86	60	53
Tuesday, June 25, 2019	11:00	64	82	60	53
Tuesday, June 25, 2019	12:00	64	85	60	50
Tuesday, June 25, 2019	13:00	63	79	60	50
Tuesday, June 25, 2019	14:00	65	88	62	52
Tuesday, June 25, 2019	15:00	66	84	63	52
Tuesday, June 25, 2019	16:00	66	87	64	57
Tuesday, June 25, 2019	17:00	66	82	64	56
Tuesday, June 25, 2019	18:00	66	84	64	55
Tuesday, June 25, 2019	19:00	64	78	62	54
Tuesday, June 25, 2019	20:00	66	96	61	54
Tuesday, June 25, 2019	21:00	63	78	60	56
Tuesday, June 25, 2019	22:00	62	81	60	55
Tuesday, June 25, 2019	23:00	61	76	58	54

Statistics	Leq	Lmax	L50	L90
Day Average	65	83	62	54
Night Average	61	78	54	48
Day Low	63	78	60	50
Day High	66	96	64	57
Night Low	54	74	45	39
Night High	66	81	65	57
Ldn	68	Day %	79	
CNEL	69	Night %	21	

Site: LT-4

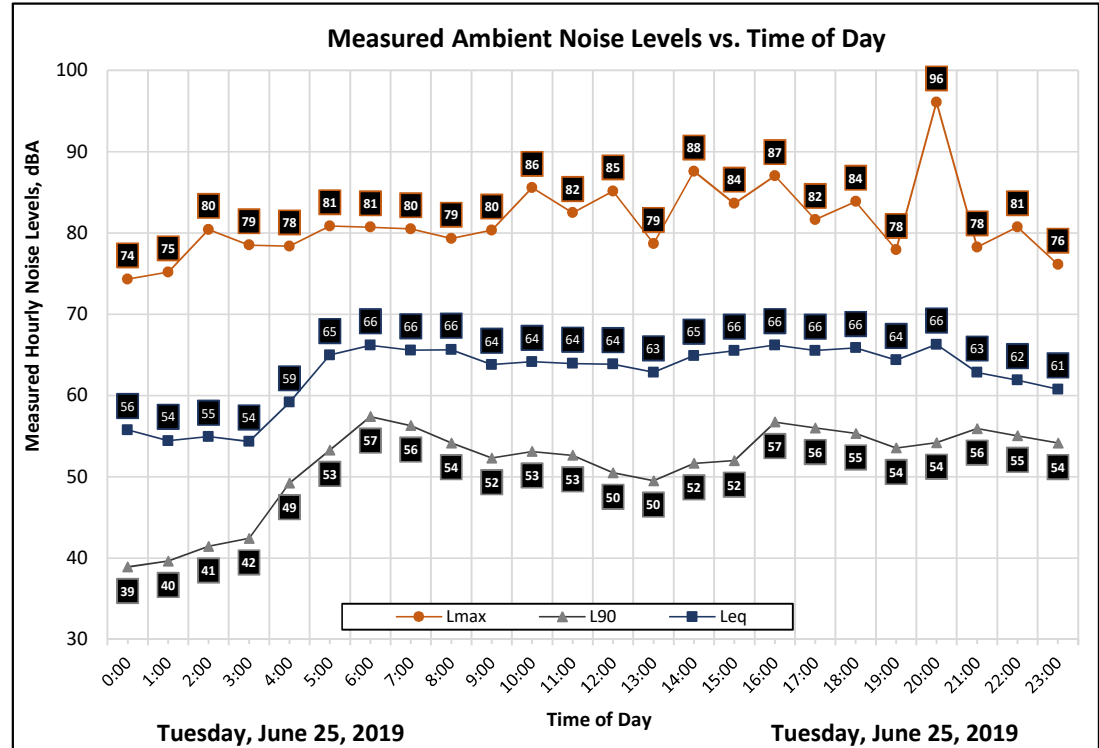
Project: City of Pittsburg General Plan Update

Meter: LDL 812-2

Location: Kirker Pass Rd. at Castlewood Dr.

Calibrator: B&K 4230

Coordinates: 37.9953322°, -121.8970643°



Appendix B5 : Short Term Noise Monitoring Results

Site: ST-1

Project: Pittsburg General Plan Update

Location: Larry Lasater Park

Coordinates: 38.0127554°, -121.9688892°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-24 16:29:52

Stop: 2019-06-24 16:39:52

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 47

L_{max} : 60

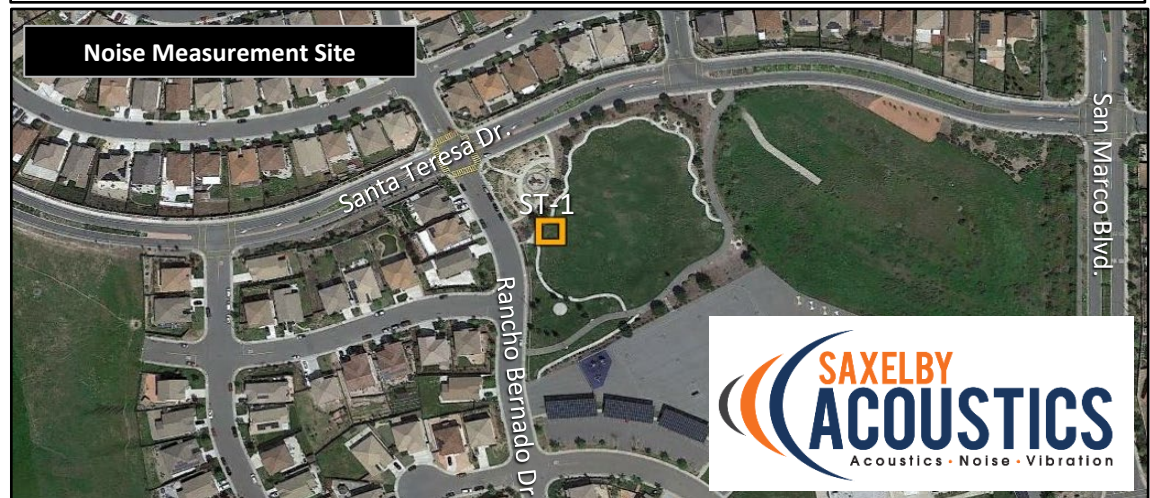
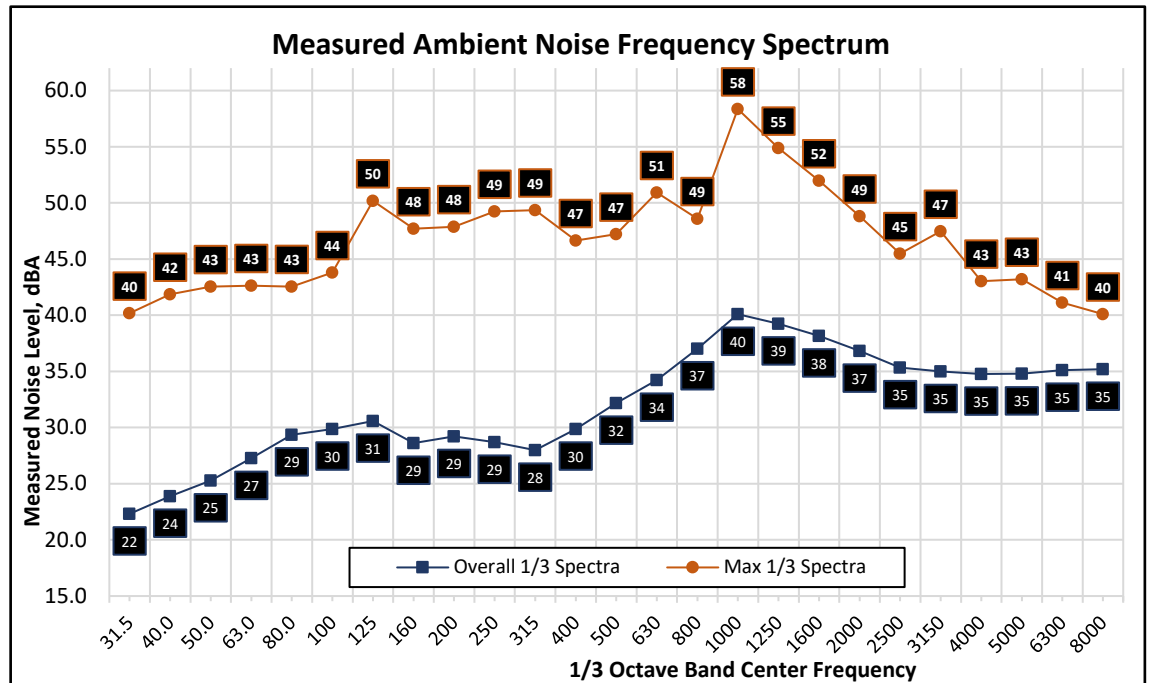
L_{min} : 38

L_{50} : 45

L_{90} : 43

Notes

Primary noise source is traffic on Rancho Bernado Dr. and Santa Teresa Dr. Secondary noise source is activity from neighboring schools.



Appendix B6 : Short Term Noise Monitoring Results

Site: ST-2

Project: Pittsburg General Plan Update

Location: Lynbrook Park

Coordinates: 38.031067°, -121.955070°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-24 16:50:25

Stop: 2019-06-24 17:00:25

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 55

L_{max} : 74

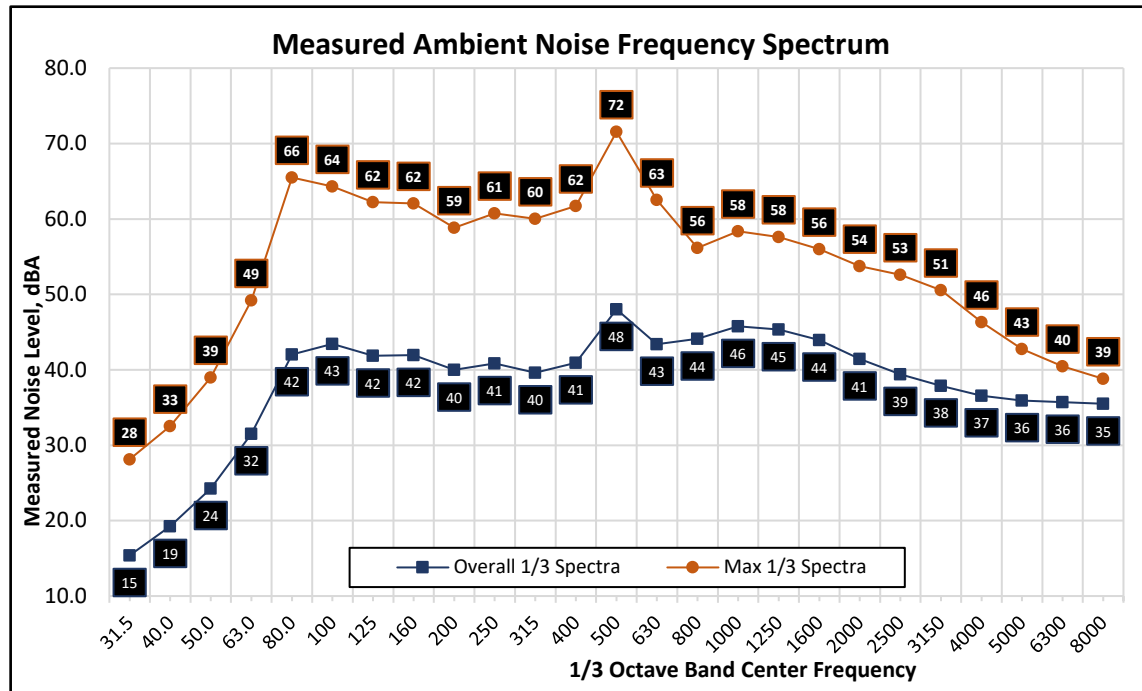
L_{min} : 47

L_{50} : 50

L_{90} : 48

Notes

Primary noise source is traffic on Kevin Dr. Secondary noise source is activity from park-goers.



Appendix B7 : Short Term Noise Monitoring Results

Site: ST-3

Project: Pittsburg General Plan Update

Location: California Seasons Park

Coordinates: 38.0294526°, -121.9301923°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-26 09:47:46

Stop: 2019-06-26 09:57:46

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 55

L_{max} : 74

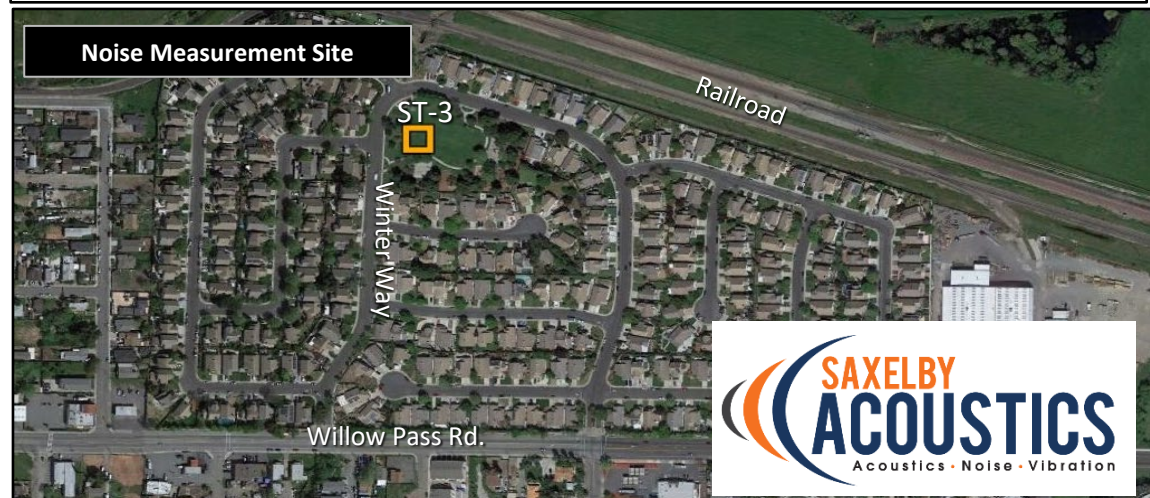
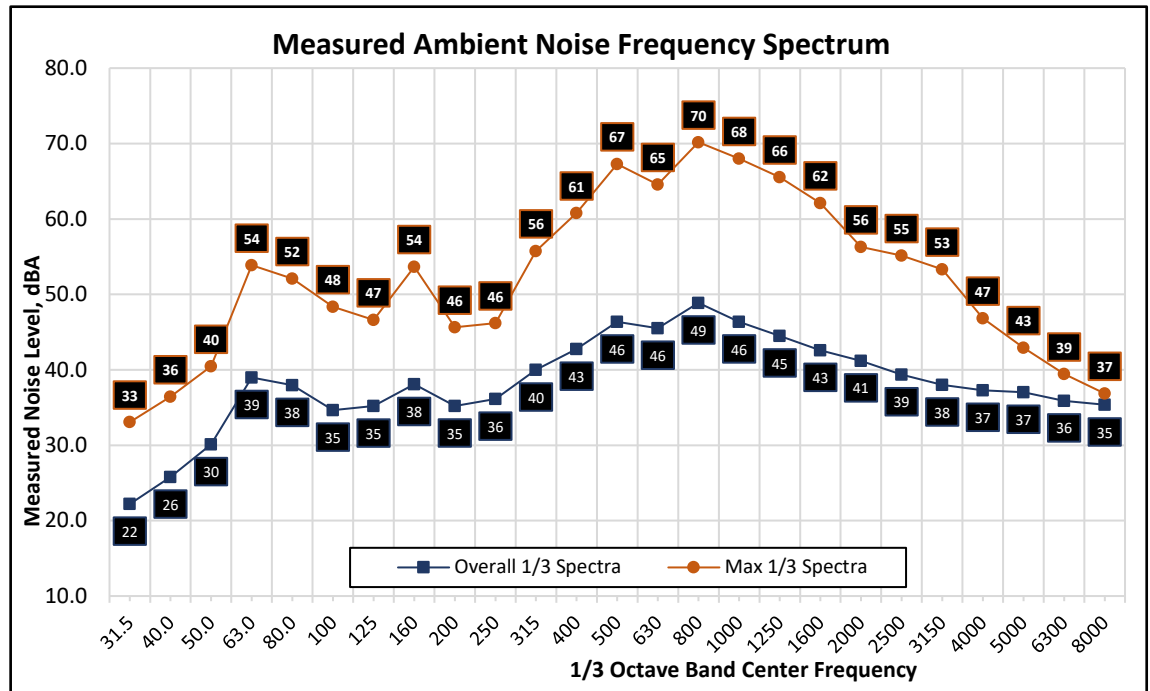
L_{min} : 46

L_{50} : 50

L_{90} : 48

Notes

Primary noise source is train horn from adjacent railway.
Secondary noise source is activity from traffic on Winter Way and park-goers.



Appendix B8 : Short Term Noise Monitoring Results

Site: ST-4

Project: Pittsburg General Plan Update

Location: Columbia Linear Park

Coordinates: 38.0240923°, -121.8734283°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-24 11:37:17

Stop: 2019-06-24 11:47:17

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 52

L_{max} : 58

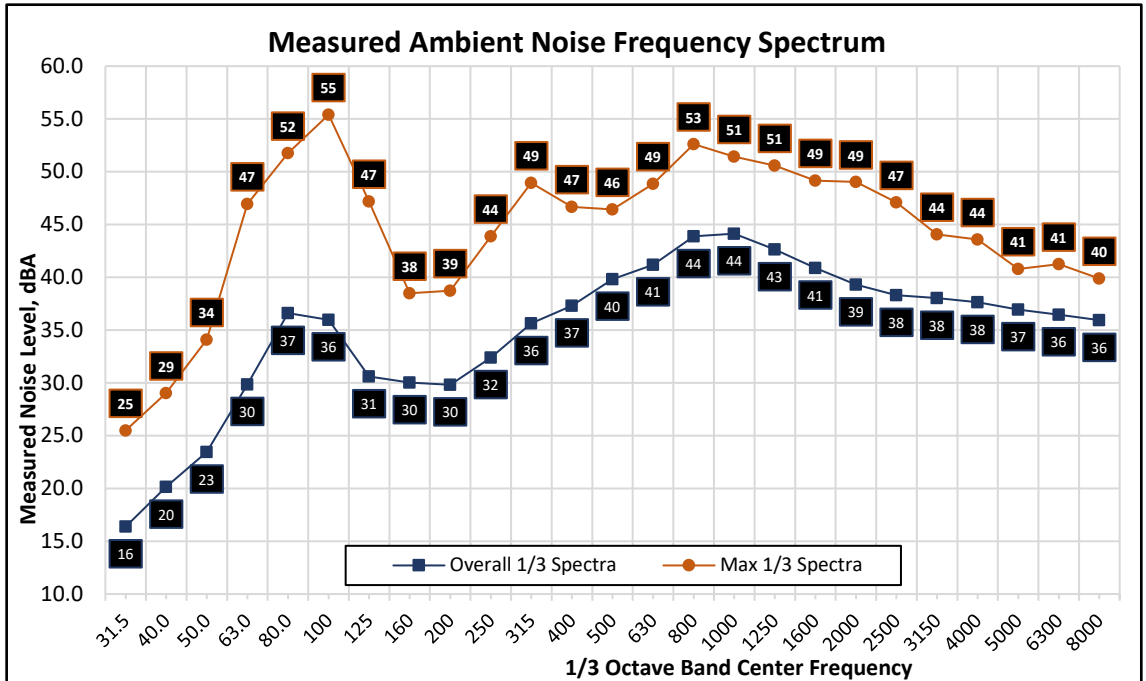
L_{min} : 45

L_{50} : 50

L_{90} : 47

Notes

Primary noise source is traffic on Winter Way. Secondary noise source is traffic on Pittsburg Antioch Hwy.



Appendix B9 : Short Term Noise Monitoring Results

Site: ST-5

Project: Pittsburg General Plan Update

Location: Buchanan Park

Coordinates: 38.0006621°, -121.8880326°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-28 08:08:26

Stop: 2019-06-28 08:18:26

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 50

L_{max} : 65

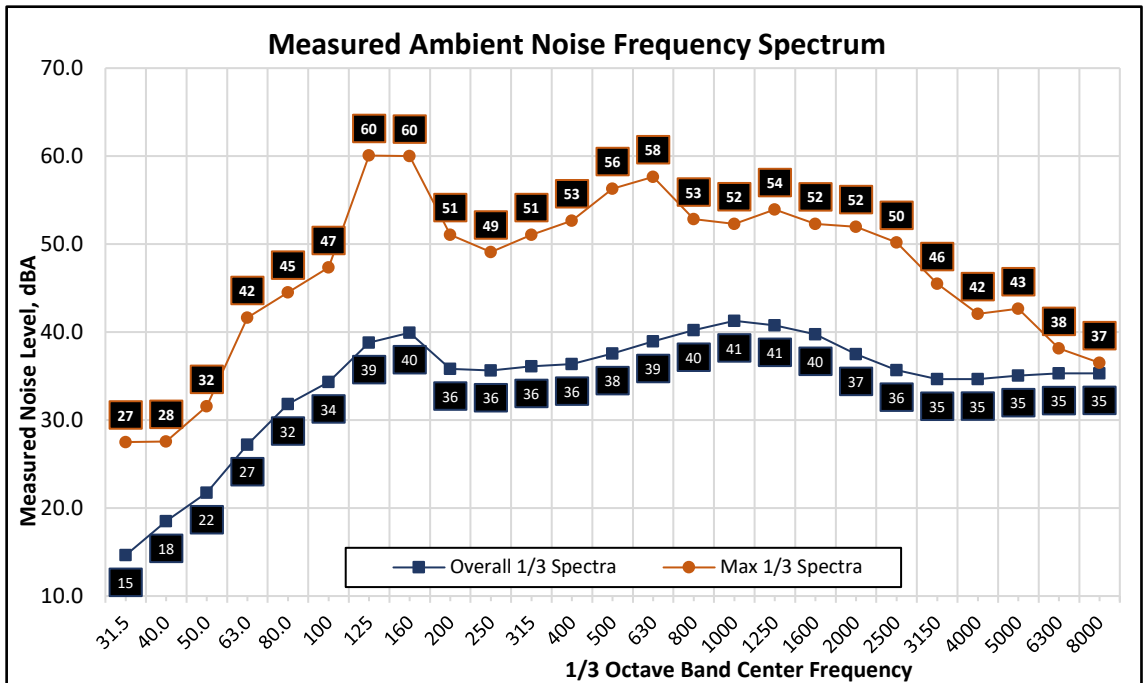
L_{min} : 42

L_{50} : 48

L_{90} : 45

Notes

Primary noise source is traffic on Yosemite Drive and Harbor Street. Secondary sources include park-goers and wildlife.



Appendix B10 : Short Term Noise Monitoring Results

Site: ST-6

Project: Pittsburg General Plan Update

Location: Highlands Ranch Park

Coordinates: 37.9966982°, -121.8659252°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-28 08:31:55

Stop: 2019-06-28 08:41:55

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 48

L_{max} : 57

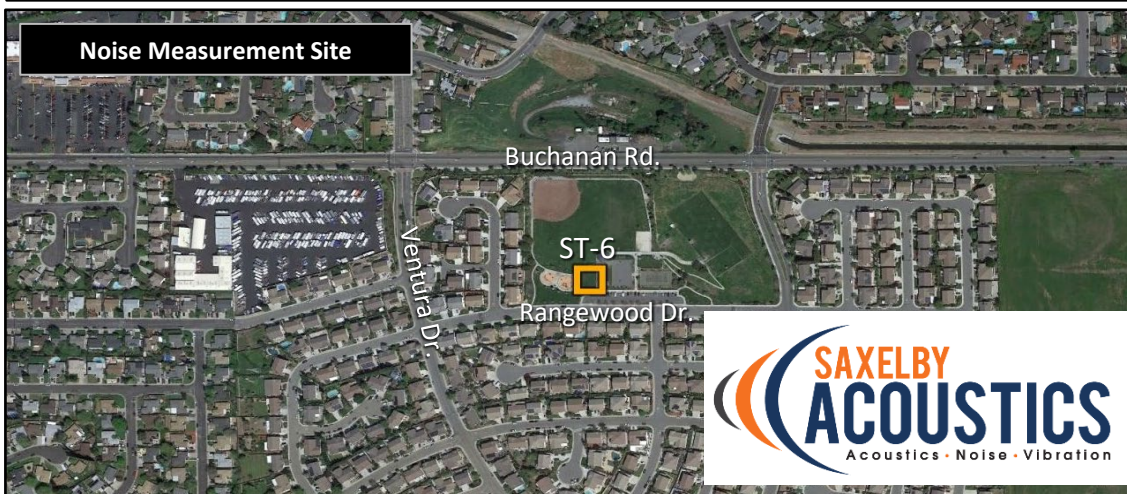
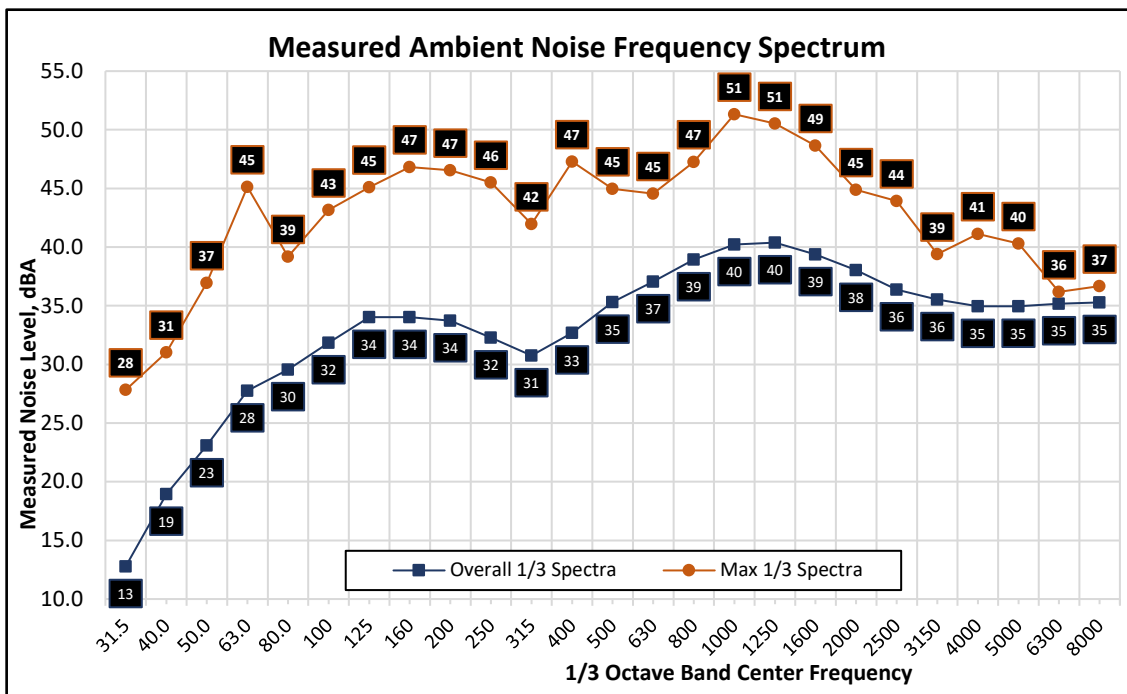
L_{min} : 42

L_{50} : 48

L_{90} : 46

Notes

Primary source of noise is traffic on Rangewood Drive. Secondary sources include park-goers and traffic on Buchanan Road.



Appendix B11 : Short Term Noise Monitoring Results

Site: ST-7

Project: Pittsburg General Plan Update

Location: Markley Creek Park

Coordinates: 37.9899832°, -121.8545057°

Meter: LDL 831-1

Calibrator: B&K 4230

Start: 2019-06-24 13:05:49

Stop: 2019-06-24 13:15:49

SLM: Model 831

Serial: 1800

Measurement Results, dBA

Duration: 0:10

L_{eq} : 45

L_{max} : 52

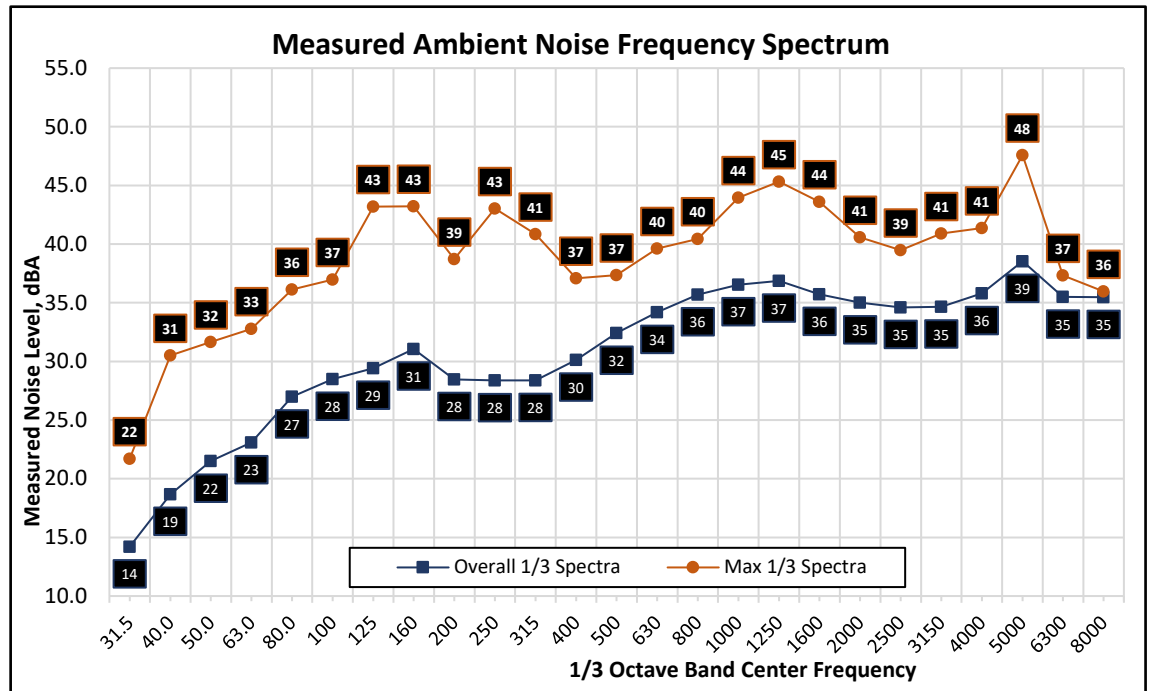
L_{min} : 41

L_{50} : 44

L_{90} : 43

Notes

Primary source of noise is traffic on Summit Way. Secondary noise source is construction in adjacent vacant field north of park boundary.



Appendix C: Traffic Noise Calculation Inputs and Results



Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190203

Description: City of Pittsburg General Plan Update - Existing 2018

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	State Route 4	W/O Bailey Road	163,300	76	0	24	1.0%	1.0%	65	670	-5	2185	1014	471	63
2	State Route 4	W/O Railroad Ave	153,200	76	0	24	1.0%	1.0%	65	370	-5	2094	972	451	66
3	State Route 4	E/O Railroad Ave	137,600	76	0	24	1.0%	1.0%	65	370	-5	1949	905	420	66
4	State Route 4	E/O Loveridge Ave	131,100	76	0	24	1.0%	1.0%	65	310	-5	1887	876	407	67
5	Bailey Road	N/O Leland Ave	18,300	90	0	10	1.0%	1.0%	35	250	0	127	59	27	56
6	West Leland Rd	E/O Range Rd	18,900	90	0	10	1.0%	1.0%	40	70	-5	161	75	35	60
7	East Leland Rd	E/O Harbor St	25,800	90	0	10	1.0%	1.0%	40	70	-5	198	92	43	62
8	Railroad Ave	N/O Buchanan Rd	16,200	90	0	10	1.0%	1.0%	35	70	0	117	54	25	63
9	Railroad Ave	N/O California Ave	34,300	84	0	16	1.0%	1.0%	35	60	-5	229	106	49	64
10	California Ave	E/O Railroad Ave	23,400	90	0	10	1.0%	1.0%	40	50	0	186	86	40	69
11	W 10th St	W/O Herb White Way	11,700	90	0	10	1.0%	1.0%	35	40	0	94	44	20	66
12	Tenth St	E/O Railroad Ave	10,800	90	0	10	1.0%	1.0%	30	80	0	76	35	16	60
13	Willow Pass Rd	W/O Bailey Road	7,800	90	0	10	1.0%	1.0%	45	70	-5	108	50	23	58
14	Willow Pass Rd	W/O Range Road	17,600	84	0	16	1.0%	1.0%	40	80	-5	181	84	39	60
15	Harbor St	S/O SR 4	16,100	90	0	10	1.0%	1.0%	35	80	0	117	54	25	62
16	Harbor St	N/O Buchanan Rd	15,400	90	0	10	1.0%	1.0%	35	70	0	113	53	24	63
17	Atlantic Ave	E/O Railroad Ave	22,500	90	0	10	1.0%	1.0%	30	50	0	124	58	27	66
18	Loveridge Rd	N/O California Ave	21,500	90	0	10	1.0%	1.0%	40	2340	0	175	81	38	43
19	Loveridge Rd	N/O Buchanan Rd	18,900	90	0	10	1.0%	1.0%	35	60	0	130	60	28	65
20	Buchanan Rd	E/O Harbor St	19,100	90	0	10	1.0%	1.0%	35	100	-5	131	61	28	57
21	Pittsburg Antioch Hwy	E/O Loveridge Ave	12,300	90	0	10	1.0%	1.0%	50	1800	0	176	81	38	45
22	E 14th St	W/O Pittsburg Antioch Hwy	5,400	90	0	10	1.0%	1.0%	30	50	0	48	22	10	60
23	Kirker Pass Rd	S/O Buchanan Rd	20,600	79	0	21	1.0%	1.0%	45	130	0	274	127	59	65
24	Somersville Rd	N/O Century Blvd	15,300	90	0	10	1.0%	1.0%	35	210	-5	113	52	24	51
25	Solari St	S/O E 10th St	2,100	90	0	10	1.0%	1.0%	35	50	0	30	14	6	57
26	Evora Rd	W/O Willow Pass Rd	14,700	90	0	10	1.0%	1.0%	45	6560	-5	165	77	36	31
27	E 3rd St	E/O Railroad Ave	3,000	90	0	10	1.0%	1.0%	25	50	0	25	12	5	56
28	N Parkside Dr	E/O Range Rd	8,700	79	0	21	1.0%	1.0%	40	60	-5	127	59	27	60

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190203

Description: City of Pittsburgh General Plan Update - Future 2040

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60	65	70	
1	State Route 4	W/O Bailey Road	186,700	76	0	24	1.0%	1.0%	65	670	-5	2389	1109	515	63.3
2	State Route 4	W/O Railroad Ave	172,200	76	0	24	1.0%	1.0%	65	370	-5	2264	1051	488	66.8
3	State Route 4	E/O Railroad Ave	150,800	76	0	24	1.0%	1.0%	65	370	-5	2072	962	446	66.2
4	State Route 4	E/O Loveridge Ave	149,900	76	0	24	1.0%	1.0%	65	310	-5	2064	958	445	67.3
5	Bailey Road	N/O Leland Ave	22,700	90	0	10	1.0%	1.0%	35	250	0	147	68	32	56.5
6	West Leland Rd	E/O Range Rd	23,300	90	0	10	1.0%	1.0%	40	70	-5	185	86	40	61.3
7	East Leland Rd	E/O Harbor St	30,500	90	0	10	1.0%	1.0%	40	70	-5	222	103	48	62.5
8	Railroad Ave	N/O Buchanan Rd	20,200	90	0	10	1.0%	1.0%	35	70	0	136	63	29	64.3
9	Railroad Ave	N/O California Ave	47,400	84	0	16	1.0%	1.0%	35	60	-5	284	132	61	65.1
10	California Ave	E/O Railroad Ave	27,300	90	0	10	1.0%	1.0%	40	50	0	206	96	44	69.2
11	W 10th St	W/O Herb White Way	24,500	90	0	10	1.0%	1.0%	35	40	0	155	72	33	68.8
12	Tenth St	E/O Railroad Ave	22,600	90	0	10	1.0%	1.0%	30	80	0	124	58	27	62.9
13	Willow Pass Rd	W/O Bailey Road	12,300	90	0	10	1.0%	1.0%	45	70	-5	147	68	32	59.8
14	Willow Pass Rd	W/O Range Road	30,100	84	0	16	1.0%	1.0%	40	80	-5	259	120	56	62.7
15	Harbor St	S/O SR 4	20,300	90	0	10	1.0%	1.0%	35	80	0	136	63	29	63.5
16	Harbor St	N/O Buchanan Rd	19,700	90	0	10	1.0%	1.0%	35	70	0	134	62	29	64.2
17	Atlantic Ave	E/O Railroad Ave	28,900	90	0	10	1.0%	1.0%	30	50	0	146	68	32	67.0
18	Loveridge Rd	N/O California Ave	23,300	90	0	10	1.0%	1.0%	40	2340	0	185	86	40	43.5
19	Loveridge Rd	N/O Buchanan Rd	20,000	90	0	10	1.0%	1.0%	35	60	0	135	63	29	65.3
20	Buchanan Rd	E/O Harbor St	22,700	90	0	10	1.0%	1.0%	35	100	-5	147	68	32	57.5
21	Pittsburg Antioch Hwy	E/O Loveridge Ave	13,600	90	0	10	1.0%	1.0%	50	1800	0	188	87	40	45.3
22	E 14th ST	W/O Pittsburg Antioch Hwy	6,600	90	0	10	1.0%	1.0%	30	50	0	55	25	12	60.6
23	Kirker Pass Rd	S/O Buchanan Rd	25,000	79	0	21	1.0%	1.0%	45	130	0	312	145	67	65.7
24	Somersville Rd	N/O Century Blvd	15,300	90	0	10	1.0%	1.0%	35	210	-5	113	52	24	51.0
25	Solari St	S/O E 10th St	4,800	90	0	10	1.0%	1.0%	35	50	0	52	24	11	60.3
26	Evora Rd	W/O Willow Pass Rd	21,200	90	0	10	1.0%	1.0%	45	6560	-5	211	98	45	32.6
27	E 3rd St	E/O Railroad Ave	5,800	90	0	10	1.0%	1.0%	25	50	0	39	18	8	58.4
28	N Parkside Dr	E/O Range Rd	11,100	79	0	21	1.0%	1.0%	40	60	-5	149	69	32	60.9

Appendix D: Example Noise Barrier Calculations

Appendix D-1 : Barrier Insertion Loss Calculation

Project Information:

Project Name: Pittsburg GPU

Location(s): Example Loading Dock - 100' with 12' sound wall

Noise Level Data:

Source Description: Loading Dock

Source Noise Level, dBA Leq: 66.0

Source Frequency (Hz): 1000

Source Height (ft): 8

Site Geometry:

Receiver Description: Sensitive Use

Source to Barrier Distance (C_1): 100

Barrier to Receiver Distance (C_2): 15

Pad/Ground Elevation at Receiver: 0

Receiver Elevation¹: 5

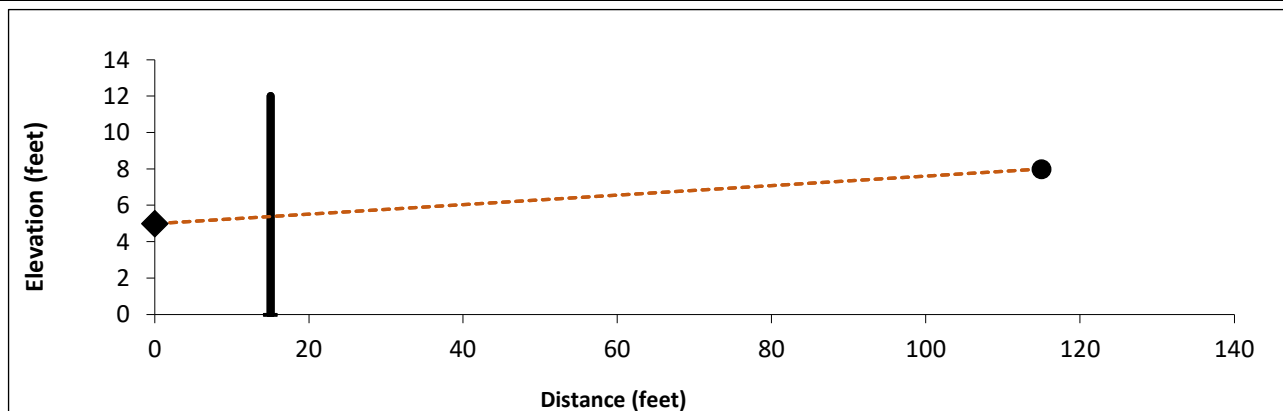
Base of Barrier Elevation: 0

Starting Barrier Height 12

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
12	12	-13	53	Yes
13	13	-14	52	Yes
14	14	-15	51	Yes
15	15	-15	51	Yes
16	16	-16	50	Yes
17	17	-17	49	Yes
18	18	-17	49	Yes
19	19	-17	49	Yes
20	20	-17	49	Yes
21	21	-17	49	Yes
22	22	-17	49	Yes

Notes: ¹ Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)



Appendix D-2 : Barrier Insertion Loss Calculation

Project Information:

Project Name: Pittsburg GPU

Location(s): Example Loading Dock - 250' with 12' sound wall

Noise Level Data:

Source Description: Loading Dock

Source Noise Level, dBA Leq: 58.0

Source Frequency (Hz): 1000

Source Height (ft): 8

Site Geometry:

Receiver Description: Sensitive Use

Source to Barrier Distance (C_1): 250

Barrier to Receiver Distance (C_2): 15

Pad/Ground Elevation at Receiver: 0

Receiver Elevation¹: 5

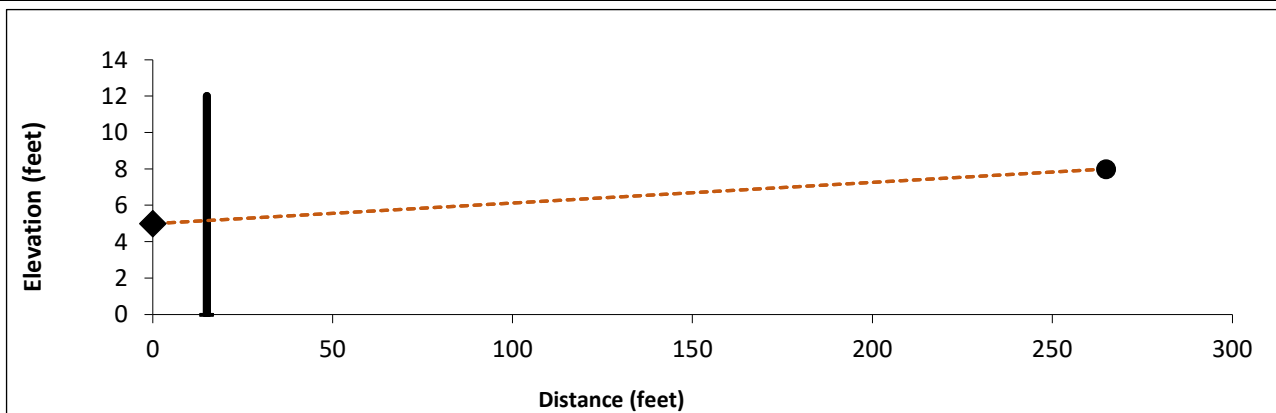
Base of Barrier Elevation: 0

Starting Barrier Height 12

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
12	12	-13	45	Yes
13	13	-14	44	Yes
14	14	-15	43	Yes
15	15	-15	43	Yes
16	16	-16	42	Yes
17	17	-16	42	Yes
18	18	-17	41	Yes
19	19	-17	41	Yes
20	20	-17	41	Yes
21	21	-17	41	Yes
22	22	-17	41	Yes

Notes: ¹ Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)



Appendix D-3 : Barrier Insertion Loss Calculation

Project Information:

Project Name: Pittsburg GPU

Location(s): Example Loading Dock - 150' with building shielding

Noise Level Data:

Source Description: Loading Dock

Source Noise Level, dBA Leq: 62.5

Source Frequency (Hz): 1000

Source Height (ft): 8

Site Geometry:

Receiver Description: Sensitive Use

Source to Barrier Distance (C_1): 150

Barrier to Receiver Distance (C_2): 15

Pad/Ground Elevation at Receiver: 0

Receiver Elevation¹: 5

Base of Barrier Elevation: 0

Starting Barrier Height 20

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
20	20	-17	45	Yes
21	21	-17	45	Yes
22	22	-17	45	Yes
23	23	-17	45	Yes
24	24	-17	45	Yes
25	25	-17	45	Yes
26	26	-18	44	Yes
27	27	-18	44	Yes
28	28	-18	44	Yes
29	29	-18	44	Yes
30	30	-18	44	Yes

Notes: ¹ Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

