

## Chapter 4 Noise Compatibility Program

The culmination of the 14 Code of Federal Regulations (CFR) Part 150 planning process is the development of a set of measures designed to enhance the compatibility between an airport and its surrounding environs. This chapter presents the analysis conducted to develop the measures recommended for implementation, which are collectively referred to as the 2024 Noise Compatibility Program (NCP). This includes a review of the existing measures approved in the 1996 NCP for CLT, and the evaluation of new measures recommended for implementation.

The 2024 NCP includes noise abatement, land use compatibility, and land use mitigation measures designed to reduce or mitigate the impact of aircraft noise upon the surrounding community. The measures recommended for implementation have resulted from the planning process and public involvement described throughout this document. **Appendix F, Public Involvement**, contains meeting materials and summaries of the Technical Advisory Committee (TAC) meetings and public meetings, which included discussion of NCP measures. The NCP measures fall within one of three categories:

- Noise Abatement Measures that address noise at the source (i.e., aircraft and how they operate);
- Land Use Compatibility Measures that are intended to prevent new development that is noncompatible with airport noise; and
- Land Use Mitigation Measures that are intended to correct existing noncompatible land uses.

This chapter is organized as shown below:

- Section 4.1 – Noise Abatement Measures
  - Section 4.1.1 – Includes a review of existing Noise Abatement Measures and the recommendation to either continue, modify, or withdraw each measure
  - Section 4.1.2 – Presents the new Noise Abatement Measures recommended for inclusion in the 2024 NCP
  - Section 4.1.3 – Identifies the Alternative Noise Abatement Measures that were considered but not recommended for inclusion in the 2024 NCP
  - Section 4.1.4 – Summary of the Noise Abatement Measures recommended for inclusion in the 2024 NCP
- Section 4.2 – Land Use Compatibility Measures
  - Section 4.2.1 – Includes a review of existing Land Use Compatibility Measures and the recommendation to either continue, modify, or withdraw each measure
  - Section 4.2.2 – Presents the Alternative Land Use Compatibility Measures that were considered but not recommended for inclusion in the 2024 NCP
  - Section 4.2.3 – Summary of the Land Use Compatibility Measures recommended for inclusion in the 2024 NCP
- Section 4.3 – Land Use Mitigation Measures
  - Section 4.3.1 – Includes a review of existing Land Use Mitigation Measures and the recommendation to either continue, modify, or withdraw each measure
  - Section 4.3.2 – Presents the new Land Use Mitigation Measures recommended for inclusion in the 2024 NCP
  - Section 4.3.3 – Summary of Land Use Mitigation Measures recommended for inclusion in the 2024 NCP
- Section 4.4 includes a description of the complete 2024 NCP

## 4.1 Noise Abatement Measures

### 4.1.1 Existing Noise Abatement Program

This section provides a review of the nine (9) currently approved noise abatement measures included in the 1996 NCP (as amended in 1998). Of these measures, two (2) measures were previously withdrawn. Provided for each measure is a description, the current status, and the recommendation for this 2024 NCP.

#### **NOISE ABATEMENT MEASURE NA-1**

- **Description:** Continue periodic monitoring procedures, initiated as a result of the 1990 Part 150 NCP, within the Airport Environs.
- **Status:** This measure was previously implemented but is no longer active. The initial 1990 Part 150 Study recommended the initiation of noise measurements on a periodic basis, as well as the acquisition of equipment to monitor the locations of aircraft in flight. Equipment was acquired for both purposes, and a monitoring program was initiated. The 1996 NCP measure recommended continuing the noise monitoring and that it be used to monitor trends in noise exposure, as aircraft were transitioned to a 100 percent Stage 3 fleet by 2000.<sup>9</sup> Additionally, it was recommended that where significant differences between measured and forecast noise levels are noted, appropriate measure be taken to address issues which might arise from those differences (preparation of new noise contour maps, discussions with users, evaluation of mitigation program measures).

The Airport has ceased conducting noise measurements as described in this measure. Many of the older, louder aircraft that operated at CLT in the 1990s and early 2000's have been phased-out or been significantly reduced from commercial airline fleets. Additionally, airlines continue to retire older, noisier aircraft from their fleets and replace them with more modern, quieter, fuel-efficient aircraft. This effort continues to help reduce noise levels at airports often times even as the number of aircraft operations increase.

Furthermore, temporary noise monitoring efforts have been conducted in the surrounding communities through various efforts. Specifically, temporary noise monitoring efforts were conducted for the Airport's 2015 Noise Exposure Map Update in 2014, for the Major Capacity Enhancement Projects Environmental Assessment (Capacity EA) in 2019, and for this Part 150 Study Update in 2022. In each effort, the measurements were compared with pre-existing database information related to aircraft noise level and performance characteristics in the FAA's noise modeling software used to develop noise exposure contours. The information collected during the measurement program included acoustical output, as measured at known locations, as well as flight trajectory data (the aircraft's three-dimensional location) relative to the noise measurement site. This information was used to ensure the input data into the noise modeling software was as accurate as possible and the resulting noise exposure contours are accurate.

- **Recommendation:** Noise measurement efforts as described in this measure have ceased. As such, the measure is recommended for withdrawal.

#### **NOISE ABATEMENT MEASURE NA-2**

- *Measure previously withdrawn. Listed for numeric continuity.*

#### **NOISE ABATEMENT MEASURE NA-3**

- *Measure previously withdrawn. Listed for numeric continuity.*

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<sup>9</sup> See 14 CFR Part 36 for more information.

#### **NOISE ABATEMENT MEASURE NA-4**

- **Description:** Provide monthly reports on late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions to Airport Traffic Control Tower management and frequent nighttime operators. Conduct follow-up with FAA (ATCT) and carriers to enhance adherence to existing program.
- **Status:** This measure is currently partially implemented. During the preparation of the 1996 NCP, adherence to the existing NCP was lacking. The intent of the measure was to assure that ATCT and the users were aware of the effectiveness of the program. Since approval of Measure NA-4, the Airport has implemented the measure by working closely with ATCT and the users to ensure the effectiveness of the program. While monthly reporting has ceased, the Airport continues to monitor late night runway utilization and variances from NCP assumptions. If a concern is brought forward, a question arises, or a discrepancy is observed at the Airport, an evaluation of runway utilization and variances from NCP assumptions is conducted and further coordination with ATCT is performed.
- **Recommendation:** Continue approved Measure NA-4 with modification. The modified NA-4 would state “Monitor late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions. Conduct follow-up with FAA Air Traffic Control Tower (ATCT) and carriers as needed to enhance adherence to existing program.”

#### **NOISE ABATEMENT MEASURE NA-5**

- **Description:** Designate Runway 18R or 18L as preferred for takeoffs by turbojet and large four-engine prop aircraft between 11:00 p.m. and 7:00 a.m. when, under the current preferential runway use program, Runway 23 or Runway 5 cannot be used for reasons of wind, weather, operational necessity, or required runway length.
- **Status:** This measure is currently implemented. Since the approval of Measure NA-5 in 1996, the existing Runway 18R/36L was constructed (previously referred to as Runway 17/35) and the previous Runway 18R became Runway 18C. Additionally, Runway 5/23 was decommissioned in 2022 and is no longer used for aircraft arrivals or departures. To date, the Airport continues to utilize Runways 18C and 18L for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. Additionally, there are no scheduled operations of four-engine prop aircraft at the Airport.
- **Recommendation:** Continue approved Measure NA-5 with modification to remove reference to Runway 5/23 and large four-engine prop aircraft, and to update the names of the existing runways. The modified NA-5 would state “Designate Runway 18C or 18L as preferred for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. when wind, weather, and operational conditions allow.”

#### **NOISE ABATEMENT MEASURE NA-6**

- **Description:** Reaffirm Airport user policy which designates locations and procedures for aircraft engine run-ups. Establish a run-up position on the US Airways ramp parallel to Runway 5/23.
- **Status:** This measure is currently implemented. In the past, residents of neighborhoods in the Airport Environs have complained about the noise levels produced by aircraft run-ups, which may have been attributed to aircraft run-ups or power up at the initiation of takeoff roll or reverse thrust during landing. To minimize noise levels produced by aircraft run-ups, Measure NA-6 in the approved 1996 NCP reaffirmed the Airport’s user policy which designates locations and procedures for aircraft engine run-ups and identified a new run-up position for American Airlines (the former US Airways) in the midfield of the Airport. To date, the Airport’s established user policy and procedure addresses the location of engine run-ups by the North Carolina Air National Guard (NCANG or the Guard) and the airlines using the Airport. The Guard is directed by that policy to use the NCANG ramp. American Airlines (the former US Airways) is directed to

use the American Airlines maintenance ramp using a heading of either 230 or 050 degrees to assure that the aircraft on the American Airlines (the former US Airways) ramp are facing at least partially into the wind. Other airlines are directed to use taxiways parallel to runways. All run-ups are conducted only after advising ATCT of the requirement for run-up. Run-up activity conducted on the taxiways are to be positioned under the guidance of ATCT ground control.

- **Recommendation:** The intent of this measure is to reaffirm the Airport's existing policy and to maximize the use of midfield run-up locations over those located on the east side of the Airport as recommended in NA-A-1 (see Section 4.1.2). The higher usage of midfield run-up locations over those on the east side of the Airport would help reduce noise levels produced by aircraft run-ups to communities in the Airport Environs. Additionally, two airfield projects that are currently under construction would provide additional run-up locations for use at the Airport. This includes the deice pad located on the south airfield east of Runway 36C and in the northeast airfield east of Taxiway D. Construction is anticipated to conclude in 2025 and would be able to be used for run-ups when commissioned. As such, the recommendation is to continue approved Measure NA-6 with modification to add two new run-up locations and include language to encourage maximizing the use of midfield run-up locations over those located on the east side of the Airport as stated in NA-A-1 (see Section 4.1.2 for more information). The modified NA-6 would state: "Reaffirm Airport user policy which designates locations and procedures for aircraft engine run-ups. Establish a run-up location on the deice pad and northeast airfield that are currently under construction. Maximize the use of midfield run-up locations over those located on the east side of the Airport."

#### **NOISE ABATEMENT MEASURE NA-7**

- **Description:** Departing Runways 36R and 36L, turbojet and large four-engine prop aircraft initiate turns at the 2.5 (36L) and 2.6 DME (36R) north of the CLT VOR/DME, respectively.
- **Status:** This measure is currently implemented. Since the approval of Measure NA-7 in 1996, the existing Runway 18R/36L was constructed and the previous Runway 36L became Runway 36C. The 1996 NCP Measure NA-7 require large aircraft departing from Runway 36R to turn to a heading of 025 degrees at the 2.6 DME north of the CLT VOR/DME, and large aircraft departing Runway 36C (formerly 36L) to turn to a heading of 330 degrees at the 2.5 DME north of the CLT VOR/DME, respectively. The intent is to enhance noise abatement by concentrating overflights into specific corridors of compatible land uses northeast and northwest of the Airport. Additionally, there are no scheduled operations of four-engine prop aircraft at the Airport.
- **Recommendation:** Continue approved Measure NA-7 with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft. Since the approval of Measure NA-7 in 1996, the existing Runway 18R/36L (previously referred to as Runway 17/35) was constructed and the previous Runway 18R/36L is now referred to as Runway 18C/36C. The modified Measure NA-7 would state: "Departing Runways 36R and 36C, all turbojet aircraft initiate turns at the 2.5 DME (36C) and 2.6 DME (36R) north of the CLT VOR/DME, respectively." Note, the measure would be implemented in the short-term and would be withdrawn when Measure NA-13 becomes active (see Section 4.1.2).

#### **NOISE ABATEMENT MEASURE NA-8**

- **Description:** After construction of a third parallel runway (17/35) 3,700 feet west of Runway 18R/36L, establish an initial departure turn for Runway 17, to be made as soon as practicable by turbojets and large four-engine prop aircraft, to a heading of 195 degrees.
- **Status:** This measure is currently implemented. Since the approval of Measure NA-8 in 1996, the existing Runway 18R/36L was constructed (previously referred to as Runway 17/35) and the previous Runway 18R/36L became Runway 18C/36C. The approved Measure NA-8 is intended

to assure adequate separation between departures on Runway 18R and missed approaches on Runway 18C as ATCT is required to maintain visual separation between the operations. Departures from Runway 18R may occasionally be diverged to a heading of 210 degrees or more. The heading of 195 degrees is intended to direct traffic along a course roughly parallel to and west of Steele Creek Road and over more compatibly used lands than would a departure along runway heading. Additionally, there are no scheduled operations of four-engine prop aircraft at the Airport.

- **Recommendation:** Continue approved Measure NA-8 with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft. Since the approval of Measure NA-8 in 1996, the proposed Runway 17/35 was constructed and is now referred to as existing Runway 18R/36L. The modified Measure NA-8 would state: “Departing Runway 18R, turbojet aircraft initiate turns as soon as practicable to a heading of 195 degrees.”

#### **NOISE ABATEMENT MEASURE NA-9**

- **Description:** After commissioning of a third parallel runway west of Runway 18R/36L, establish an initial departure turn, as soon as practicable, by turbojets and large four-engine prop aircraft to a heading of 315 degrees from Runway 35.
- **Status:** This measure is currently implemented. Since the approval of Measure NA-9 in 1996, the existing Runway 18R/36L was constructed (previously referred to as Runway 17/35). The approved Measure NA-9 is intended to turn departures from Runway 36C (formerly Runway 36L) and Runway 36L to diverging headings. This is to prevent the Runway 36C route (as described in Measure NA-7) from crossing the extended centerline of Runway 18R/36L between one and two miles north of the north end of the new runway. The heading of 315 degrees from Runway 36L is intended to direct any turbojet departures from that runway along an initial course roughly aligned with the intersections of Wilkinson Blvd and Sam Wilson Road and of I-85 and Moores Chapel Road. Additionally, there are no scheduled operations of four-engine prop aircraft at the Airport.

To assure adequate separation between departures on Runway 36L and missed approaches on Runway 36C (a combination which is not the normal expected operating configuration), ATCT is required to maintain visual separation between the operations. Departures from Runway 36L may occasionally be delayed until the missed approach has cleared or, optionally, the missed approach course from Runway 36C may be revised to provide for climbs along the runway heading prior to transitioning to the missed approach fix.

- **Recommendation:** Continue approved Measure NA-9 with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft. Since the approval of Measure NA-9 in 1996, the proposed Runway 17/35 was constructed and is now referred to as existing Runway 18R/36L. The modified Measure NA-9 would state: “Departing Runway 36L, turbojets aircraft initiate turns as soon as practicable to a heading of 315 degrees.”

#### 4.1.2 New Noise Abatement Measures Recommended for Inclusion in the 2024 NCP

A total of 34 alternative noise abatement measures were considered and evaluated for inclusion in the 2024 NCP, labeled NA-A-1 through NA-I-3. The alternative noise abatement measures were developed based on comments received from members of the TAC, including the local FAA ATCT, airlines operating at CLT, and the Airport Community Roundtable (ACR).

The following list includes examples of the types of alternatives that were considered.

##### Facility Modifications

- Run-up Locations
- Displaced Arrival Thresholds

##### Preferential Runway Use

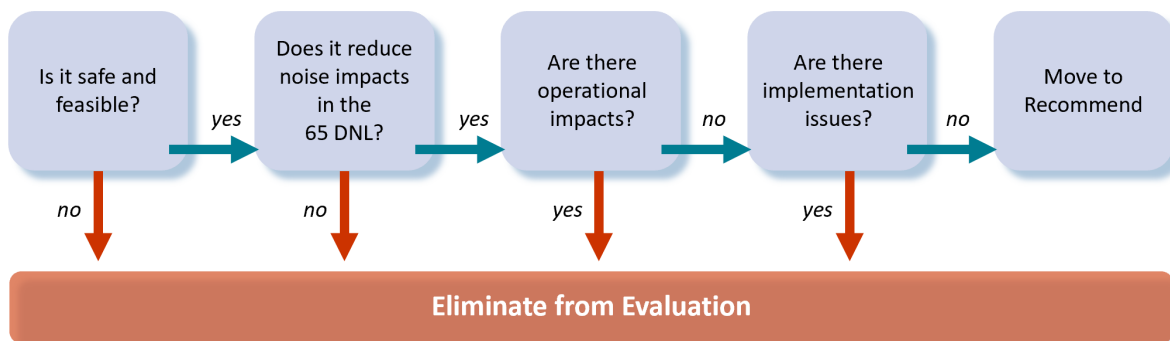
- Airport Flow
- Daytime Runway Use
- Nighttime Runway Use

##### Flight Procedures

- Divergent Headings - North and South Flow Operations
- Departure Flight Corridors
- Arrival Flight Corridors

In order to evaluate each alternative, a set of evaluation criteria was established and used to identify the benefits and drawbacks of each alternative. The criteria include safety and feasibility, noise reduction, operational considerations, and implementation considerations. After it was determined that an alternative was feasible and safe, a noise impact assessment was prepared to document increases and decreases in various noise levels as compared to the Future (2028) Baseline. If the alternative was determined to result in noise reductions, the alternative was evaluated for operational efficiency. If the alternative was determined to not result in any impacts to operational efficiency, the alternative was evaluated for implementation considerations. **Exhibit 4-1** summarizes the noise abatement alternative evaluation process. While not all alternatives may be practical or achievable, all potential alternatives were considered in accordance with 14 CFR Part 150 §150.23(e) and § B150.7.

#### Exhibit 4-1 Noise Abatement Alternative Screening Process



The alternatives identified for further evaluation cannot all be implemented at the same time due to recommendations that would conflict with each other. As such, the combined effect of various alternatives yield different levels of noise exposure. Therefore, the most promising alternatives were compiled into NCP operating scenarios for further analysis, as described in **Appendix E, Noise Abatement Alternatives**. Based on the scenario analysis, Scenario 2 (which consists of six alternative noise abatement measures) was selected as the preferred scenario because it provides the most capacity, delay, and flexibility benefits.

This section describes the six alternative noise abatement measures which comprise Scenario 2 that are recommended for inclusion in this 2024 NCP. See Section 4.1.3 for a description of the 28 alternative noise abatement measures that are not recommended for inclusion in this 2024 NCP.

The following information is provided for each alternative noise abatement measure:

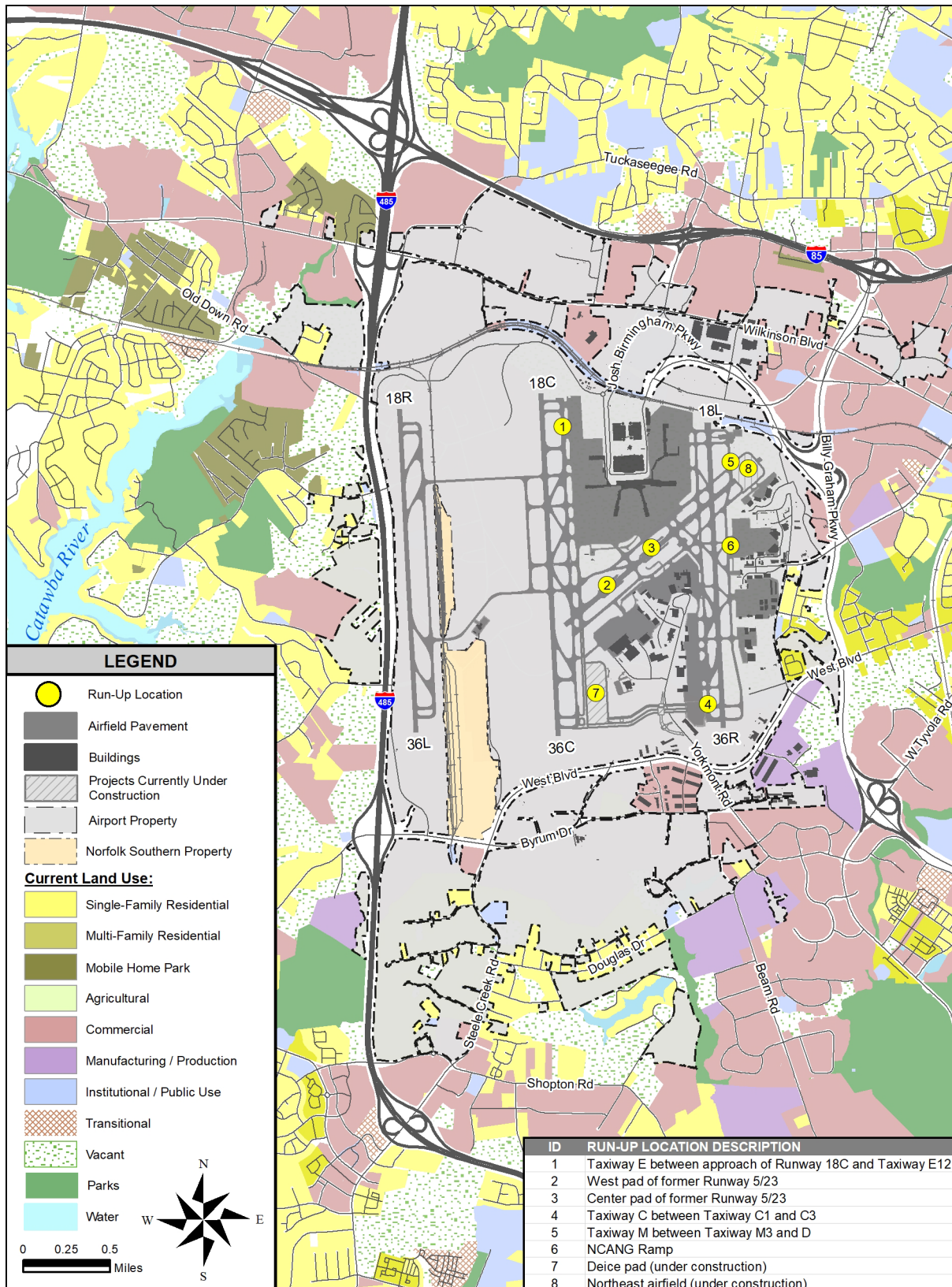
- Title – includes a brief descriptive title of the measure.
- Background and Intent – includes the intent of the measure as a means to mitigate noise impacts and the background and setting to which the measure relates where applicable.
- Benefits – includes a statement of how the measure would provide noise mitigation benefits
- Drawbacks – identifies any potential negative consequences of implementing the measure
- Cost to Implement – identifies the potential cost to implement each measure
- Evaluation Method – provides the method by which the measure was evaluated for changes in noise impacts. This was either accomplished as a qualitative analysis or a quantitative evaluation using the FAA’s Aviation Environmental Design Tool (AEDT) model to develop an alternative noise exposure contour and develop counts of noise-sensitive land uses within the DNL 65+ dB to compare to the Future (2028) Baseline. For each alternative in which a quantitative analysis was performed, an exhibit is included showing a comparison of the noise exposure contour that would result from the implementation of the alternative and the Future (2028) Baseline noise exposure contour. In addition, a table of noise impacts that would result from the implementation of the alternative is included to either show an increase or a decrease in housing units and noise-sensitive sites within the DNL 65 dB.
- Findings and Recommendations – indicates if the alternative was carried forward for further evaluation and if it was recommended for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-A-1: Update to Measure NA-6**

<b>TITLE:</b>	Establish a run-up location on the deice pad and northeast airfield that are currently under construction. Maximize the use of midfield run-up locations over those located on the east side of the Airport. Refer to <b>Exhibit 4-2, Run-Up Locations</b> for the existing run-up locations.
<b>BACKGROUND AND INTENT:</b>	<p>The Airport user policy currently identifies six run-up locations and procedures for aircraft engine run-ups. The measure would establish two new run-up locations that are currently under construction: on the deice pad located on the south airfield east of Runway 36C (ID 7); and in the northeast airfield east of Taxiway D (ID 8). Construction is anticipated to conclude in 2025 and the sites would be able to be used for run-ups when completed.</p> <p>The measure would maximize the use of midfield run-up locations (ID 2, 3, 7) and reduce the use of those located on the east side of the Airport (ID 4, 5, 6, 8). The intent of the measure is to reduce sideline noise from run-ups on the east side of the Airport.</p>
<b>BENEFITS:</b>	The addition of two new run-up locations would allow for increased flexibility for carriers to conduct run-ups. Evaluations conducted at major airports throughout the United States have indicated that run-up activity has little effect on the location of the noise contours. However, sustained single-event noise levels associated with run-ups are often sources of complaint within neighborhoods near airports. The maximized use of midfield locations over those located on the east side of the Airport would appear to result in reduced sideline noise from run-ups for homes directly east of Airport Drive.
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	Minimal cost for development and publication of new airport procedures.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure is anticipated to result in reduced sideline noise from run-ups for homes directly east of Airport Drive. For this reason, this measure is <b>RECOMMENDED</b> for inclusion in this 2024 NCP.



**Exhibit 4-2 Run-Up Locations**



Source: Landrum & Brown, 2024

**Alternative Noise Abatement Measure NA-A-2: New Measure NA-10**

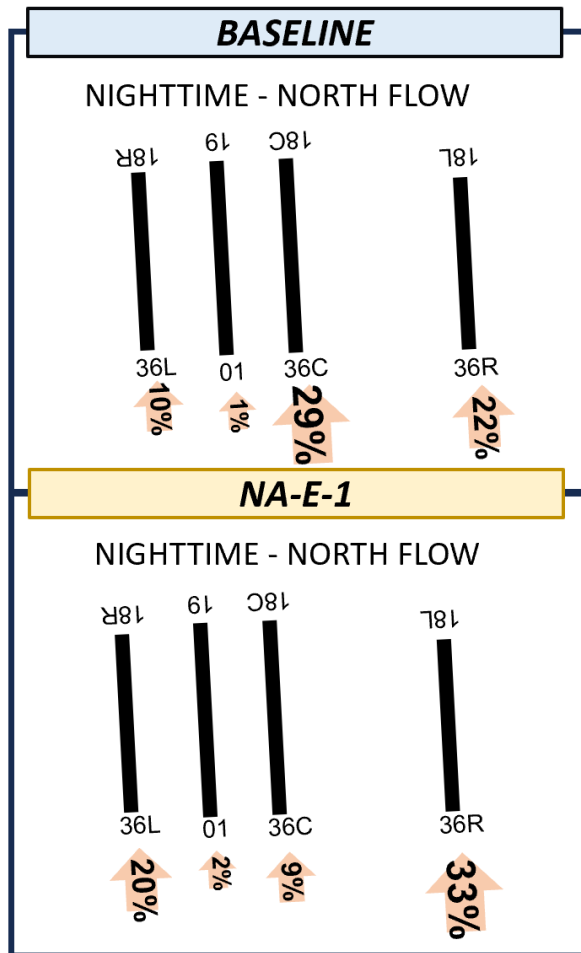
<b>TITLE:</b>	Conduct an assessment of ground run-up procedures after construction of the new fourth parallel runway to identify run-up locations in the midfield of the Airport.
<b>BACKGROUND AND INTENT:</b>	The Airport user policy currently identifies six run-up locations and procedures for aircraft engine run-ups. Based on approval of the modification to Measure NA-6, two additional run-up locations would be available and operational in 2025. When the new fourth parallel runway is constructed and operational, run-up ID 1 would be removed as a run-up location. This measure would conduct an assessment of ground run-up locations to identify additional locations in the midfield in the future airport layout after construction of the new fourth parallel runway (anticipated 2028). The intent of this measure is to reduce sideline noise from run-ups after construction of the new fourth parallel runway.
<b>BENEFITS:</b>	Evaluations conducted at major airports throughout the United States have indicated that run-up activity has little effect on the location of the noise contours. However, sustained single-event noise levels associated with run-ups are often sources of complaint within neighborhoods near airports. The maximized use of midfield locations over those located on the east side of the Airport would appear to result in reduced sideline noise from run-ups for homes directly east of Airport Drive.
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	Cost related to conducting an assessment of ground run-up procedures after construction of the new fourth parallel runway. Minimal costs related to development and publication of new airport procedures to document new run-up locations based on the assessment.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure is anticipated to result in reduced sideline noise from run-ups for homes directly east of Airport Drive. For this reason, this measure is <b>RECOMMENDED</b> for inclusion in this 2024 NCP.

**Alternative Noise Abatement Measure NA-E-1: New Measure NA-11**

<b>TITLE:</b>	Designate Runway 36L and 36R as preferred for north flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates Runway 36C and Runway 36R would be primarily used for north flow arrivals in the nighttime (10:00 p.m. to 7:00 a.m.). <sup>10</sup> This measure would designate Runway 36R and Runway 36L primarily for nighttime north flow arrivals. Refer to <b>Exhibit 4-3, Alternative Noise Abatement Measure NA-E-1</b> . The intent of the measure is to shift the nighttime overflights over residential land uses off Douglas Drive and Shopton Road to noise-compatible land uses over Airport property west of Steele Creek Road and to the east off Beam Road.
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour. NA-E-1 and NA-E-3 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because both alternative noise abatement measures would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, noise impacts between the DNL 60- and 65-dB noise exposure contour were estimated to evaluate if there are any notable differences between the two alternatives. The results demonstrated NA-E-1 would perform better than NA-E-3. See Appendix E for more information.
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and revision to the Tower Order would be the responsibility of the FAA. The cost related to the required environmental processing per the National Environmental Policy Act (NEPA) for the implementation of the measure would be the responsibility of the Airport.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Further analysis determined that NA-E-1 performed better than NA-E-3 between the DNL 60- and 65-dB noise exposure contour. As such, NA-E-1 is <b>RECOMMENDED</b> for inclusion in the 2024 NCP.

<sup>10</sup> The runway use patterns for the Future (2028) Baseline are based on data from the Capacity EA that was developed in consultation with FAA ATC personnel and review of airfield simulation modeling.

**Exhibit 4-3 Alternative Noise Abatement Measure NA-E-1**



Note: Orange arrows denote average-annual arrival operation conditions.

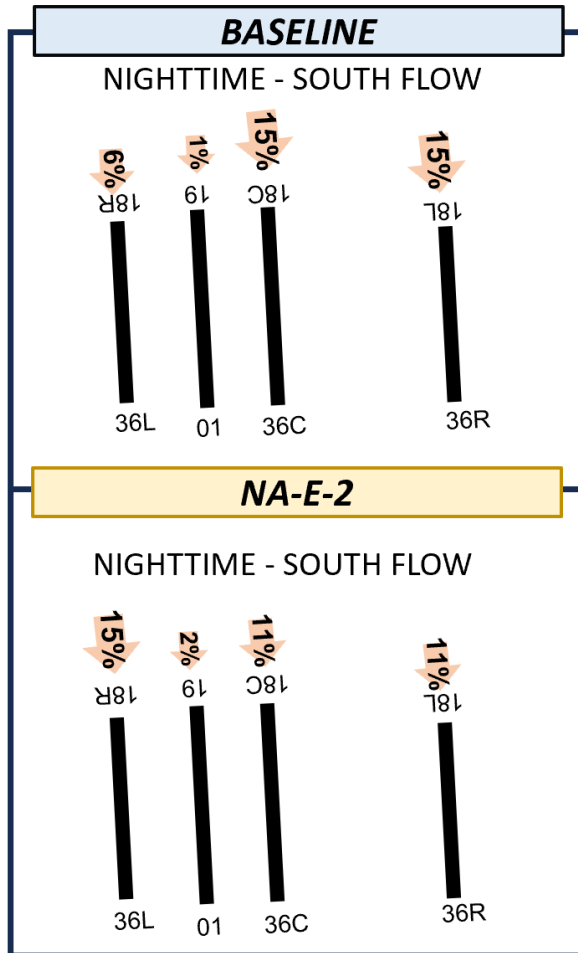
Source: Landrum & Brown, 2024

**Alternative Noise Abatement Measure NA-E-2: New Measure NA-12**

<b>TITLE:</b>	Designate Runways 18L, 18C, and 18R for south flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates Runway 18C and Runway 18L would be primarily used for south flow arrivals in the nighttime (10:00 p.m. to 7:00 a.m.). <sup>11</sup> This measure would designate Runway 18R, Runway 18C, and Runway 18L for south flow arrivals in the nighttime. Refer to <b>Exhibit 4-4, Alternative Noise Abatement Measure NA-E-2</b> . The intent of this measure is to spread out south flow arrivals in the nighttime to reduce the nighttime traffic over residential land uses off Tuckaseegee Road, Westwood Drive, and Little Rock Road. In turn, this would increase nighttime arrival overflights over Interstate 485 and Airport property.
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and revision to the Tower Order would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure would be the responsibility of the Airport.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Based on further evaluation, NA-E-2 is <b>RECOMMENDED</b> for inclusion in the 2024 NCP.

<sup>11</sup> The runway use patterns for the Future (2028) Baseline are based on data from the Capacity EA that was developed in consultation with FAA ATC personnel and review of airfield simulation modeling.

**Exhibit 4-4 Alternative Noise Abatement Measure NA-E-2**



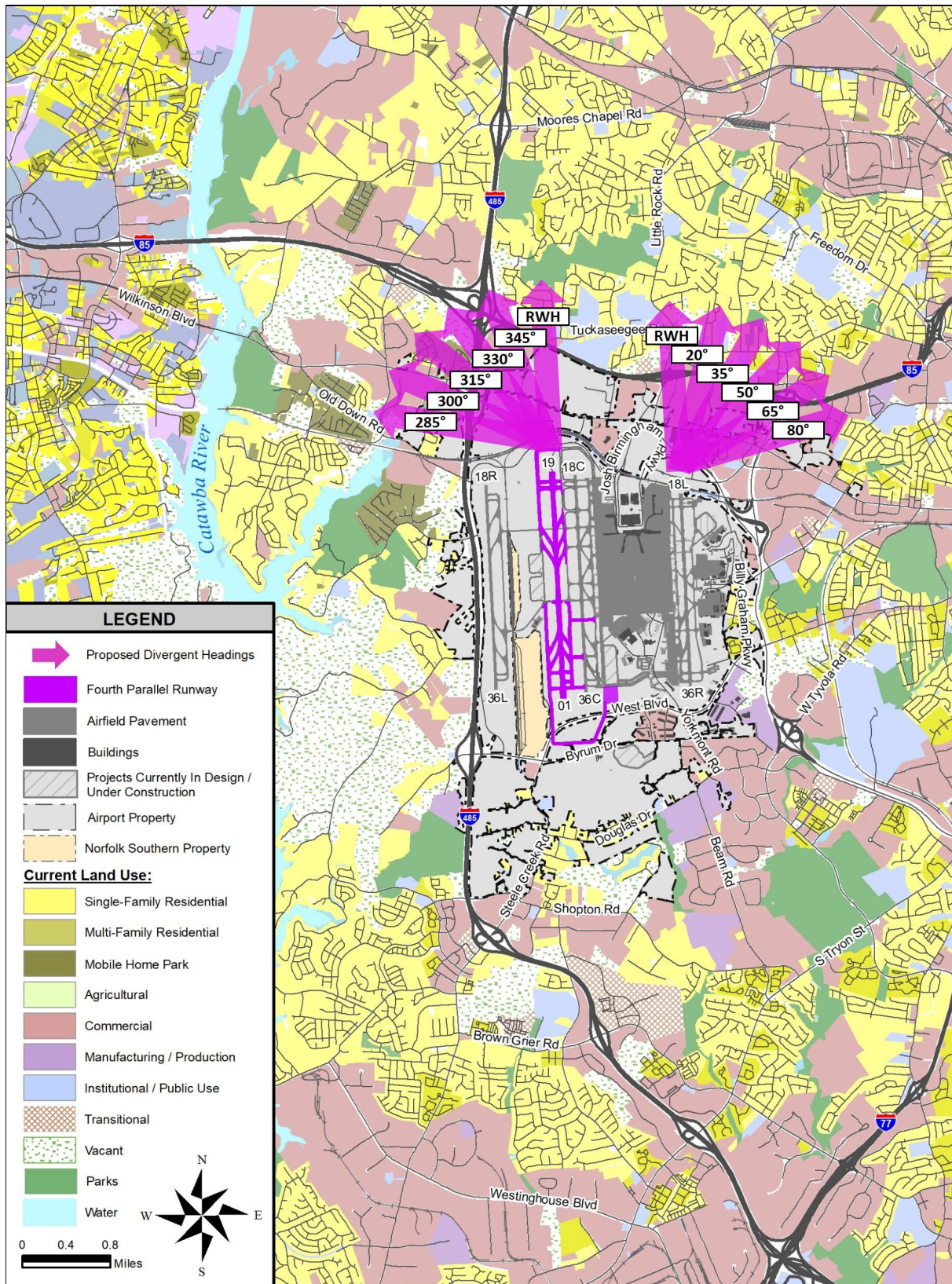
Note: Orange arrows denote average-annual arrival operation conditions.

Source: Landrum & Brown, 2024

**Alternative Noise Abatement Measure NA-F-2: New Measure NA-13**

<b>TITLE:</b>	Maximize the number of divergent headings for north flow departures while maintaining a 15° separation between headings on Runway 36C, Runway 36R, and Runway 01.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts north of the Airport by providing additional flight corridors over as wide of an area as possible. This measure would replace the existing headings with the following divergent headings, as shown in <b>Exhibit 4-5, Alternative Noise Abatement Measure NA-F-2:</b></p> <ul style="list-style-type: none"> <li>• Runway 36R: Runway Heading (RWH), 20°, 35°, 50°, 65°, 80°</li> <li>• Runway 36C and Runway 01: RWH, 345°, 330°, 315°, 300°, 285°</li> </ul> <p>Note, this measure assumes the runway use for the Future (2028) Baseline which designates Runway 01 and Runway 36R for daytime departure operations and Runway 36C and Runway 36R for nighttime departure operations. Additionally, Runway 36C would be used for departures in the daytime if Runway 01 could not be used for reasons of operational necessity. As such, headings proposed for Runway 01 are also proposed for Runway 36C.</p> <p><i>While a straight-out heading is identified for Runways 36R and 01 (or 36C), these headings cannot be used simultaneously because a 15-degree separation is required per 7110.65Z.</i></p>
<b>BENEFITS:</b>	<p>The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.</p> <p>NA-F-2 and NA-F-1 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because both alternative noise abatement measures would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, a simulation modeling analysis was conducted to evaluate the capacity and delay implications of each measure. The results demonstrated NA-F-2 would provide more capacity and delay benefits than NA-F-1.</p>
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment: AEDT and Air Traffic Optimization (AirTOP) modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Because NA-F-2 provides more capacity and delay benefits than those provided by NA-F-1, NA-F-2 measure is <b>RECOMMENDED</b> for inclusion in the 2024 NCP.

**Exhibit 4-5 Alternative Noise Abatement Measure NA-F-2**



Source: Landrum & Brown, 2024.

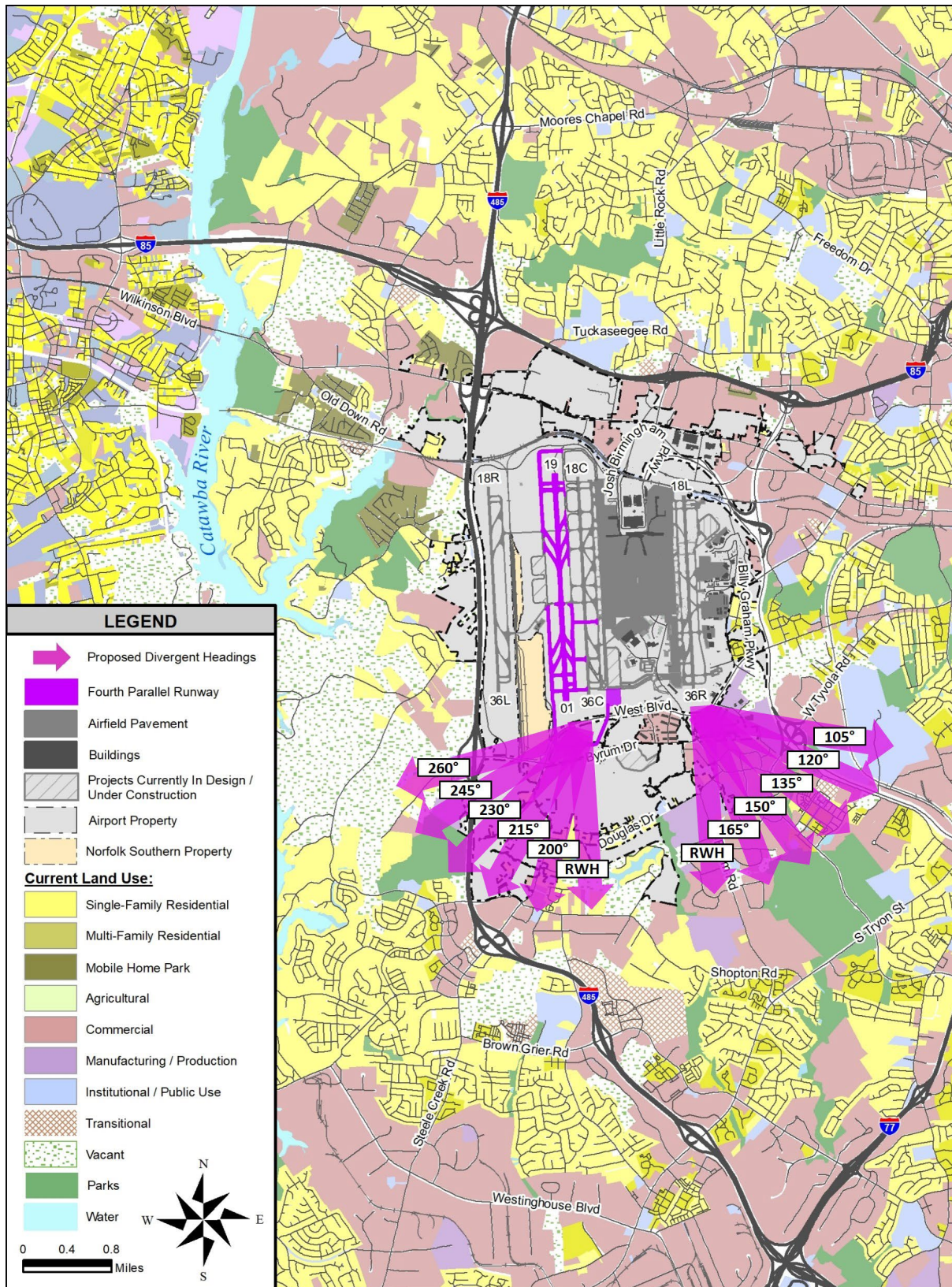


**Alternative Noise Abatement Measure NA-G-4: New Measure NA-14**

<b>TITLE:</b>	Maximize the number of divergent headings for south flow departures while maintaining a 15° separation between headings on Runway 18C, Runway 18L, and Runway 19. This would require the elimination of the 2-mile restriction.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts to the south of the Airport by dispersing flights over a wider area. The measure would implement the maximum number of divergent headings while maintaining a 15° separation between headings to spread noise over as wide an area surrounding the Airport as possible. The measure would implement the following divergent headings, as shown in <b>Exhibit 4-6, Alternative Noise Abatement Measure NA-G-4:</b></p> <ul style="list-style-type: none"> <li>• Runway 18L: RWH, 165°, 150°, 135°, 120°, 105°</li> <li>• Runway 18C and Runway 19: RWH, 200°, 215°, 230°, 245°, 260°</li> </ul> <p>Note, this measure assumes the runway use for the Future (2028) Baseline which designates Runway 19 and Runway 18L for daytime departure operations and Runway 18C and Runway 18L for nighttime departure operations. Additionally, Runway 18C would be used for departures in the daytime if Runway 19 could not be used for reasons of operational necessity. As such, headings proposed for Runway 19 are also proposed for Runway 18C.</p> <p><i>While a straight-out heading is identified for Runways 18L and 19, these headings cannot be used simultaneously because a 15° separation is required per 7110.65Z.</i></p>
<b>BENEFITS:</b>	<p>The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.</p> <p>NA-G-1, NA-G-2, NA-G-3, and NA-G-4 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because NA-G-2, NA-G-3, and NA-G-4 would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, a simulation modeling analysis was conducted to evaluate the capacity and delay implications of these alternatives. The results demonstrated NA-G-4 would provide more capacity and delay benefits than NA-G-2 and NA-G-3.</p>
<b>DRAWBACKS:</b>	None
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT and AirTOP modeling

<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Because NA-G-4 provides the most capacity and delay benefits than those provided by NA-G-2 and NA-G-3, NA-G-4 is <b>RECOMMENDED</b> for inclusion in the 2024 NCP.
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**Exhibit 4-6 Alternative Noise Abatement Measure NA-G-4**



Source: Landrum & Brown, 2024.

#### 4.1.3 Alternative Noise Abatement Measures Considered but Not Recommended for Inclusion in the 2024 NCP

This section describes the 28 alternative noise abatement measures that are not recommended for inclusion in this 2024 NCP.

##### Alternative Noise Abatement Measure NA-B-1

<b>TITLE:</b>	Implement a 1,235-foot displaced arrival threshold on Runway 36C.
<b>BACKGROUND AND INTENT:</b>	Aircraft arriving from the south to Runway 36C currently land at the runway end. The implementation of the displaced arrival threshold would direct aircraft to land 1,235 north of the Runway 36C end. The intent of the measure is to increase the altitude of arriving aircraft to reduce noise levels over residential areas south of the Airport, including those off Douglas Drive and Shopton Road. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would not result in a decrease in the number of housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-B-2**

<b>TITLE:</b>	Implement a 1,376-foot displaced arrival threshold on Runway 36R.
<b>BACKGROUND AND INTENT:</b>	Aircraft arriving from the south to Runway 36R currently land at the runway end. The implementation of the displaced arrival threshold would direct aircraft to land 1,376 north of the Runway 36R end. The intent of the measure is to increase the altitude of arriving aircraft to reduce noise levels over residential areas south of the Airport, including those off Beam Road. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would not result in a decrease in the number of housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-B-3**

<b>TITLE:</b>	Implement a 1,376-foot displaced arrival threshold on Runway 18L.
<b>BACKGROUND AND INTENT:</b>	Aircraft arriving from the north to Runway 18L currently land at the runway end. The implementation of the displaced arrival threshold would direct aircraft to land 1,376 feet south of the Runway 18L end. The intent of the measure is to increase the altitude of arriving aircraft to reduce noise levels over residential areas to the north of the Airport including Tuckaseegee Road and Little Rock Road. Refer to Appendix E for more information.
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	Negative operational impacts would occur due to the existing high-speed taxiways not being positioned for a displaced threshold. The results would be greater runway occupancy times, longer taxi distance, and potentially increased congestion due to where aircraft would exit the runway. Furthermore, the cost to redesign and reconstruct the taxiways along the runway would far exceed any benefits.
<b>COST TO IMPLEMENT:</b>	The cost to redesign and reconstruct all taxiways along Runway 18L/36R would be the responsibility of the Airport. The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative Assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in a decrease in the number of housing units and noise-sensitive facilities that would be located within the DNL 65+ dB noise exposure contour. However, the measure would result in negative operational impacts that could only be resolved by redesigning and reconstructing the taxiways along the runway. The cost of such redesigning and reconstruction would far exceed any benefits. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-B-4**

<b>TITLE:</b>	Implement a 1,100-foot displaced arrival threshold on Runway 01.
<b>BACKGROUND AND INTENT:</b>	<p>Aircraft arriving from the south to Runway 01 currently land at the runway end. The implementation of the displaced arrival threshold would direct aircraft to land 1,100 feet north of the Runway 01 end. The intent of the measure is to increase the altitude of arriving aircraft over residential areas south of the Airport including those off Douglas Drive and Steeleberry Drive.</p> <p>The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures. As such, this measure would only be implemented in conjunction with NA-D-1, which would revise the new fourth parallel runway to be used as a primarily arrival runway. See Alternative Noise Abatement Measure <i>NA-D-1</i> for more information. Refer to Appendix E for more information.</p>
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-B-4-A**

<b>TITLE:</b>	Implement a 1,100-foot displaced arrival threshold on Runway 01.
<b>BACKGROUND AND INTENT:</b>	<p>This measure is similar to NA-B-4, as it is aimed to implement a displaced arrival threshold for aircraft to land 1,100 feet north of the Runway 01 end. The intent of the measure is to increase the altitude of arriving aircraft over residential areas south of the Airport including those off Douglas Drive and Steeleberry Drive.</p> <p>The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures. As such, this measure would only be implemented in conjunction with NA-D-1-A, which would revise the runway use for the new fourth parallel runway as a primarily arrival runway. See <i>Alternative Noise Abatement Measure NA-D-1-A</i> for more information.</p> <p>In summary, this measure would implement the displaced arrival threshold identified in NA-B-4 with runway use identified in NA-D-1-A. Refer to Appendix E for more information.</p>
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.



**Alternative Noise Abatement Measure NA-C-1**

<b>TITLE:</b>	Balanced Mix of North v. South Flow: Increase the amount of time the Airport operates in south flow to achieve a 50/50 balance of north versus south flow
<b>BACKGROUND AND INTENT:</b>	<p>Historically, the Airport has operated approximately 64 percent in north flow (arriving to and departing from Runways 36L/36C/36R) and 36 percent in south flow (arriving to and departing from Runways 18L/18C/18R). While the annual direction of flow may vary year to year from the historical direction of flow, the long-term percentage is a better representation of typical annual conditions.</p> <p>The intent of this measure is to evaluate the balancing of the direction of flow by increasing the amount of time the Airport operates in south flow to achieve a 50/50 balance of north flow and south flow.</p>
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	<p>Coordination with the local FAA ATCT was conducted to identify if setting guidelines in attempt to increase the amount of time the Airport operates in south flow would result in potential safety and/or feasibility issues. The local FAA ATCT stated the direction of flow is primarily determined by wind direction and wind speed on the surface and aloft (above the ground). It is also determined by the location of severe weather systems within a hundred miles of the Airport. Additionally, local FAA ACTC stated the amount of time when the direction of flow is not dictated by these factors, but is up to the discretion of the local FAA ATCT operators, is negligible. The point being that even though surface wind reports might suggest the potential for achieving balanced north/south operations, the Airport and the airspace is too dynamic and complex to actually achieve the goal. There are examples of other airports attempting to put artificial goals on runway use and those goals not being achievable for similar reasons. Based on these factors, it was determined implementation of any guidelines to dictate or maintain an annual direction of flow is not likely to result in the intended goal (not feasible) and to try to force it would limit the air traffic controller's ability to choose the safest direction of flow for the operation of the Airport (safety).</p>
<b>COST TO IMPLEMENT:</b>	<p>The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. Additionally, the cost related to the monitoring and documentation of the Airport's direction of flow would be the responsibility of the Airport. The cost related to the required environmental processing per the NEPA for the implementation of the measure.</p>
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	<p>Because the measure was found to be neither safe nor feasible, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.</p>

**Alternative Noise Abatement Measure NA-C-2**

<b>TITLE:</b>	Limit One Direction Flow to a Maximum Number of Days: Prevent continuous flow in one direction over more than [two consecutive days] to bring relief to people who have been getting noise/flow from one type of operation continuously for multiple days. After [two consecutive days] of flow in the same direction, flow should be reversed at the first reasonable opportunity and maintained in the reverse direction for a reasonable period.
<b>BACKGROUND AND INTENT:</b>	Similar to NA-C-1, the measure is aimed to balance the direction of flow by increasing the amount of time the Airport operates in south flow to achieve a 50/50 balance of north flow and south flow. This measure would further require setting a cap on the number of days the Airport operates in the same direction of flow. The intent of this measure is to reduce net residential noise impacts to the north by reducing departure operations over residential land uses and to the south by reducing arrival operations over residential land uses.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	Coordination with the local FAA ATCT was conducted to identify if setting guidelines in attempt to increase the amount of time the Airport operates in south flow would result in potential safety and/or feasibility issues. The local FAA ATCT stated the direction of flow is primarily determined by wind direction and wind speed on the surface and aloft (above the ground). It is also determined by the location of severe weather systems within a hundred miles of the Airport. Additionally, local FAA ACTC stated the amount of time when the direction of flow is not dictated by these factors, but is up to the discretion of the local FAA ATCT operators, is negligible. The point being that even though surface wind reports might suggest the potential for achieving balanced north/south operations, the airport and the airspace is too dynamic and complex to actually achieve the goal. There are examples of other airports attempting to put artificial goals on runway use and those goals not being achievable for similar reasons. Based on these factors, it was determined implementation of any guidelines to dictate the runway flow is not feasible and to try to force it generally or on a day-to-day basis would likely limit the air traffic controller's ability to choose the safest direction of flow for the operation of the Airport.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. Additionally, the cost related to the monitoring and documentation of the Airport's direction of flow would be the responsibility of the Airport. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	Because the measure was found to be neither safe nor feasible, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-1**

<b>TITLE:</b>	Evaluate the new runway as an arrival runway. Designate Runways 18R/36L and 01/19 as preferred for arrivals and Runway 18C/36C and 18L/36R as preferred for departures by turbojet aircraft between 7:00 a.m. and 10:00 p.m.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures in the daytime (7:00 a.m. to 10:00 p.m.). This measure would designate Runway 01/19 as preferred for arrivals and Runway 18C/36C and 18L/36R as preferred for departures in the daytime. The intent of this measure is to reduce net residential noise impacts to the north and south of the Airport by shifting arrivals to the west of residential land uses. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour. This measure could be implemented in conjunction with NA-B-4 for additional noise abatement benefits.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-1-A**

<b>TITLE:</b>	Evaluate the new runway as an arrival runway. Designate Runways 18R/36L and 01/19 as preferred for arrivals and Runway 18C/36C and 18L/36R as preferred for departures by turbojet aircraft between 7:00 a.m. and 10:00 p.m.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures in the daytime (7:00 a.m. to 10:00 p.m.). This measure is similar to NA-D-1 which would designate the new fourth parallel runway, Runway 01/19, as preferred for arrivals and Runway 18C/36C and 18L/36R as preferred for departures in the daytime. The intent of this measure is to reduce net residential noise impacts to the north and south of the Airport by shifting arrivals to the west of residential land uses. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour. This measure could be implemented in conjunction with NA-B-4-A for additional noise abatement benefits.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-2**

<b>TITLE:</b>	At low periods, spread operations to avoid concentration of a particular mode of operation (e.g., most/all departures or most/all arrivals) to a single runway, leaving others underutilized for the same mode of operation. For example: Avoid sending all arrivals to Runway 18R while Runways 18L and 18C are held open for occasional departures.
<b>BACKGROUND AND INTENT:</b>	The intent of the measure is to spread operations during low periods of operations by avoiding concentration of a particular mode of operation on a runway to reduce net residential noise impacts.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	During low periods of operation, FAA ATCT personnel currently spreads operations to avoid concentration of a particular mode of operation to a single runway, which is the stated goal of this measure. As such, the measure is already part of the Future (2028) Baseline as it is anticipated that the Airport would continue to operate this way in the future after construction of the new fourth parallel runway. Therefore, implementation of this measure would not result in a reduction of noise impacts within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline.
<b>COST TO IMPLEMENT:</b>	None
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	Because the measure is already part of the Future (2028) Baseline, implementation would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-3**

<b>TITLE:</b>	Ensure that the new fourth parallel runway (Runway 01/19), Runway 18R/36L (for arrivals), and Runway 18C/36C (for departures) will never have more, in the aggregate, than [50%] of arrivals/departures over any single daily period.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to ensure the spreading of operations and avoid a concentration of a volume of flights on one area on an average-annual day.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The suggestion of caps on runways inherently creates barriers to implementation from a feasibility perspective because the Airport is a dynamic environment that may require the use of runways that would exceed the limits of this measure. To force caps and percentages into a complex system like the one at CLT would reduce operational capability and potentially reduce safety. As such, the measure is not feasible for implementation.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	Because the measure was found to not be feasible for implementation, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-4**

<b>TITLE:</b>	Set guidelines that require a minimum allocation of departures for Runway 18R/36L for a given timeframe (e.g., over the course of a quarter or year), with the goal of achieving at least ten percent of daily departures on that runway.
<b>BACKGROUND AND INTENT:</b>	Runway 18R/36L was planned (location) and designed (length) to be primarily used as an arrival runway. The runway has the capability to be used for departures, but due to its location in relationship to the terminal area, it is used for departures only under extenuating circumstances. The Future (2028) Baseline runway use indicates Runway 18R/36L would continue to be primarily used for arrivals. This measure would designate Runway 18R/36L as a departure runway for up to ten percent of departures on an average-annual day. The intent of this measure is to reduce net residential noise impacts to the north of the Airport by reducing departures north of Runway 18L/36R and the new fourth parallel runway, Runway 01/19, and increasing them over noise-compatible land uses and major transportation corridors. Refer to Appendix E for more information.
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	Implementation of this measure would require aircraft to routinely taxi across two active runways (Runway 18C/36C and Runway 01/19), which reduces the operational efficiency of those active runways due to the need for ATC to space operations to maintain adequate separation between aircraft taxiing across the runway(s) and aircraft on final approach. This would increase ATC workload and result in increased delays to ensure no runway incursions occur. Therefore, this measure is not considered feasible due to operational and safety concerns.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Implementation of this measure would result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. However, the measure is not considered feasible due to operational and safety concerns. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-5**

<b>TITLE:</b>	Between 7am-10pm, do not use the new fourth parallel runway (Runway 01/19) and Runway 18R/36L to receive arrivals in “dual stream” mode during non-peak periods.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to prevent dual stream arrivals during non-peak periods to reduce net residential noise impacts to the north and south of the Airport.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	Dual stream arrival operations take place at CLT during daytime arrival peaks when there is a high demand for arrivals. After the construction of the new fourth parallel runway, dual stream arrivals would typically only occur at the Airport during arrival peaks, as captured in the Future (2028) Baseline. Because the measure is already part of the Future (2028) Baseline, implementation would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour.
<b>COST TO IMPLEMENT:</b>	None
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	Because the measure is already part of the Future (2028) Baseline, implementation would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.



**Alternative Noise Abatement Measure NA-D-6**

<b>TITLE:</b>	Alternate use of runways so that no two adjacent runways will be used primarily for the same mode of operation (arrival or departure) over a daily period.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to reduce net residential noise impacts by dispersing departure and arrival operations as much as possible.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	Currently, no two adjacent runways are used primarily for the same mode of operation (west runway for arrivals, center runway for departures, and east runway for mixed operations). The new fourth parallel runway was evaluated in the Major Capacity Enhancement Projects Environmental Assessment (Capacity EA) and was approved as a primarily departure runway. As approved in the Capacity EA, the Airport would continue to have alternative modes of operation (west runway for arrivals, new fourth parallel runway for departures, center runway for arrivals, and east runway for mixed operations). As such, the runway use proposed in this measure was captured in the Future (2028) Baseline. Therefore, implementation of this measure would not result in a reduction of noise impacts within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline
<b>COST TO IMPLEMENT:</b>	None
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-7**

<b>TITLE:</b>	Utilize Runway 01/19 and Runway 18C/36C primarily for departures and Runway 18R/36L and Runway 18L/36R primarily for arrivals.
<b>BACKGROUND AND INTENT:</b>	<p>The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures in the daytime (7:00 a.m. to 10:00 p.m.). This measure would designate the new fourth parallel runway, Runway 01/19, and Runway 18C/36C primarily for departures and Runway 18R/36L and Runway 18L/36R primarily for arrivals in the daytime. Refer to Appendix E for more information.</p> <p>The intent of this measure is to reduce net residential noise impacts to the north and south of the Airport by shifting arrivals to the west and east of residential land uses and concentrating departures north and south of the new fourth parallel runway, Runway 01/19, and Runway 18C/36C.</p>
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	The measure would result in an increase in one place of worship within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour. Implementation of the measure would result in an increase in delay at the Airport when compared to the Future (2028) Baseline scenario. Arrival delays would increase during periods of high arrival demand due to the loss of a runway used for arrivals when compared to the Future (2028) Baseline.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Implementation of this measure would result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. However, the measure is not considered feasible due to operational concerns. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-D-8**

<b>TITLE:</b>	Utilize Runway 01/19 and Runway 18C/36C for both arrivals and departures.
<b>BACKGROUND AND INTENT:</b>	<p>The Future (2028) Baseline runway use indicates the new fourth parallel runway, Runway 01/19, would be primarily used for departures and Runway 18C/36C primarily for arrivals in the daytime (7:00 a.m. to 10:00 p.m.). This measure would designate Runway 01/19 and Runway 18C/36C for both arrival and departure operations in the daytime.</p> <p>The intent of this measure is to reduce net residential noise impacts to the south of the Airport by shifting arrivals to the east over noise-compatible land uses and to the north of the Airport by shifting departures to the west of residential land uses. Refer to Appendix E for more information.</p>
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-E-3**

<b>TITLE:</b>	Focus nighttime north flow arrivals on the runway that typically receives fewer arrivals during the full 24-hour period (Runway 36R). Due to their close proximity, consider Runways 1/19 and 18C/36C as one runway by aggregating their volumes when determining which runway receives fewest arrivals.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates Runway 36C and Runway 36R would be primarily used for nighttime (10:00 p.m. to 7:00 a.m.) north flow arrivals. This measure would designate Runway 36R as the primary runway for nighttime north flow arrivals. Refer to Appendix E for more information. The intent of this measure is to shift nighttime arrival traffic east of residential land uses south of Runway 36C and 36L towards noise-compatible land use off Beam Road.
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	NA-E-1 and NA-E-3 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because both alternative noise abatement measures would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, noise impacts between the DNL 60- and 65-dB noise exposure contour were estimated to evaluate if there are any notable differences between the two alternatives. The results demonstrated NA-E-1 would perform better than NA-E-3. See Appendix E for more information.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Further analysis determined that NA-E-3 performed worse than NA-E-1 between the DNL 60- and 65-dB noise exposure contour. As such, NA-E-3 is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-E-4**

<b>TITLE:</b>	Focus nighttime south flow arrivals on the runway that typically receives fewer arrivals during the full 24-hour period (Runway 18L). Due to their close proximity, consider Runways 01/19 and 18C/36C as one runway by aggregating their volumes when determining which runway receives fewest arrivals.
<b>BACKGROUND AND INTENT:</b>	The Future (2028) Baseline runway use indicates Runway 18C and Runway 18L would be primarily used for nighttime (10:00 p.m. to 7:00 a.m.) south flow arrivals. This measure would designate Runway 18L as the primary runway for nighttime north flow arrivals. The intent of this measure is to shift nighttime arrival traffic east of residential land uses north of Runway 18C.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would result in an increase in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would result in an increase in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-F-1**

<b>TITLE:</b>	Increase the number of departure headings for north flow departures while maintaining existing approved headings and maximizing departure corridors.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts north of the Airport by providing additional flight corridors over noise-compatible land uses.</p> <p>This measure would keep existing headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 36R: 25°</li> <li>• Runway 36L: 315°</li> </ul> <p>This measure would add divergent headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 36R: 85° heading to follow the Wilkinson Boulevard corridor and 55° &amp; 70° heading to follow the Interstate 85 corridor</li> <li>• Runway 36C and Runway 01: Implement the existing Runway 36C's approved 330° heading, 345° heading to follow the I-85/485 Interchange and follow the I-485 corridor, 305° heading to follow the Wilkinson Boulevard corridor</li> </ul> <p>Divergent headings for Runway 36R departures would reduce noise impacts on homes off Tuckaseegee Road and direct more flights over transportation corridors and commercial and industrial land uses. The divergent heading for Runway 01 and Runway 36C departures would direct more flights over Airport property, transportation corridors and commercial and industrial land uses.</p> <p>This measure assumes the runway use for the Future (2028) Baseline which designates Runway 01 and Runway 36R for daytime departure operations and Runway 36C and Runway 36R for nighttime departure operations. Additionally, Runway 36C would be used for departures in the daytime if Runway 01 could not be used for reasons of operational necessity. As such, headings proposed for Runway 01 are also proposed for Runway 36C. Refer to Appendix E for more information.</p>
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	NA-F-2 and NA-F-1 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because both alternative noise abatement measures would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, a simulation modeling analysis was conducted to evaluate the capacity and delay implications of each measure. The results demonstrated NA-F-2 would provide more capacity and delay benefits than NA-F-1.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT and AirTOP modeling

<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Because NA-F-1 provides less capacity and delay benefits than those provided by NA-F-2, NA-F-1 is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.
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**Alternative Noise Abatement Measure NA-G-1**

<b>TITLE:</b>	Increase the number of departure headings for south flow departures while keeping the 2-mile restriction on the new fourth parallel runway, Runway 01/19 and the existing Runway 18C/36C.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts to the south of the Airport by providing additional flight corridors over noise-compatible land uses. The measure would keep the existing headings and implement divergent headings for Runway 18L and Runway 18R departures that would direct more flights over transportation corridors and commercial and industrial land uses.</p> <p>The measure would keep existing headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18R: 200° heading</li> <li>• Runway 18L: RWH°</li> </ul> <p>The measure would add divergent headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18R (remove 2-mile restriction): 220° heading to follow the Garrison Road corridor</li> <li>• Runway 18C and Runway 19 (keep 2-mile restriction): Implement the existing Runway 18C's approved RWH</li> <li>• Runway 18L (remove 2-mile restriction): 120° heading to follow the Billy Graham Parkway corridor, 150° heading and 165° heading to follow the W Tyvola Road corridor</li> </ul> <p>Note, this measure assumes the runway use for the Future (2028) Baseline which designates Runway 19 and Runway 18L for daytime departure operations and Runway 18C and Runway 18L for nighttime departure operations. Additionally, Runway 18C would be used for departures in the daytime if Runway 19 could not be used for reasons of operational necessity. As such, headings proposed for Runway 19 are also proposed for Runway 18C.</p> <p><i>While a straight-out heading is identified for Runways 18L and 19, these headings cannot be used simultaneously because a 15° separation is required per 7110.65Z.</i></p>
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would not result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour. NA-G-1, NA-G-2, NA-G-3, and NA-G-4 are conflicting alternative noise abatement measures and cannot be implemented at the same time.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.



**Alternative Noise Abatement Measure NA-G-2**

<b>TITLE:</b>	Increase the number of departure headings for south flow departures while keeping the 2-mile restriction on Runway 18L.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts to the south of the Airport by utilizing flight corridors over noise-compatible land uses. The measure would keep the existing headings and implement divergent headings for Runway 18L and Runway 18R departures that would direct more flights over transportation corridors and commercial and industrial land uses.</p> <p>The measure would keep existing headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18R: 200°</li> <li>• Runway 18L (keep 2-mile restriction): RWH</li> </ul> <p>The measure would add divergent headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18R (remove 2-mile restriction): 220° heading to follow the Garrison Road corridor</li> <li>• Runway 18C and Runway 19 (remove 2-mile restriction): Implement the existing Runway 18C’s approved RWH, 200° heading and 215° heading to follow the Steele Creek Road corridor</li> </ul> <p>Note, this measure assumes the runway use for the Future (2028) Baseline which designates Runway 19 and Runway 18L for daytime departure operations and Runway 18C and Runway 18L for nighttime departure operations. Additionally, Runway 18C would be used for departures in the daytime if Runway 19 could not be used for reasons of operational necessity. As such, headings proposed for Runway 19 are also proposed for Runway 18C.</p> <p><i>While a straight-out heading is identified for Runways 18L and 19, these headings cannot be used simultaneously because a 15° separation is required per 7110.65Z.</i></p>
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	NA-G-1, NA-G-2, NA-G-3, and NA-G-4 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because NA-G-2, NA-G-3, and NA-G-4 would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, a simulation modeling analysis was conducted to evaluate the capacity and delay implications of these alternatives. The results demonstrated NA-G-4 would provide more capacity and delay benefits than NA-G-2 and NA-G-3.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT and AirTOP modeling

<b>FINDINGS AND RECOMMENDATIONS:</b>	Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Because NA-G-2 provides less capacity and delay benefits than those provided by NA-G-4, this measure is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.
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**Alternative Noise Abatement Measure NA-G-3**

<b>TITLE:</b>	Increase the number of departure headings for south flow departures while maintaining existing approved headings and maximizing departure corridors. This requires eliminating the 2-mile restriction for all runways.
<b>BACKGROUND AND INTENT:</b>	<p>The intent of this measure is to reduce net residential noise impacts to the south of the Airport by utilizing flight corridors over noise-compatible land uses. The measure would keep the existing headings and implement divergent headings for Runway 18L, Runway 18C, and Runway 18R departures that would direct more flights over transportation corridors and commercial and industrial land uses. The divergent heading for Runway 19 and Runway 18C departures would direct more flights over Airport property, transportation corridors and commercial and industrial land uses. The measure would keep the existing headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18L: RWH</li> <li>• Runway 18R: 200°</li> </ul> <p>The measure would eliminate the 2-mile restriction and add divergent headings as follows:</p> <ul style="list-style-type: none"> <li>• Runway 18L: 120° heading to follow the Billy Graham Parkway corridor, 150° heading and 165° heading to follow the W Tyvola Road corridor</li> <li>• Runway 18R: 220° heading to follow the Garrison Road corridor</li> <li>• Runway 18C and Runway 19: Implement the existing Runway 18C's approved RWH, 200° heading and 215° heading to follow the Steele Creek Road corridor</li> </ul> <p>Note, this measure assumes the runway use for the Future (2028) Baseline which designates Runway 19 and Runway 18L for daytime departure operations and Runway 18C and Runway 18L for nighttime departure operations. Additionally, Runway 18C would be used for departures in the daytime if Runway 19 could not be used for reasons of operational necessity. As such, headings proposed for Runway 19 are also proposed for Runway 18C.</p> <p><i>While a straight-out heading is identified for Runways 18L and 19, these headings cannot be used simultaneously because a 15° separation is required per 7110.65Z.</i></p>
<b>BENEFITS:</b>	The measure would result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>DRAWBACKS:</b>	NA-G-1, NA-G-2, NA-G-3, and NA-G-4 are conflicting alternative noise abatement measures and cannot be implemented at the same time. Because NA-G-2, NA-G-3, and NA-G-4 would result in a similar decrease in housing units within the DNL 65+ dB noise exposure contour, a simulation modeling analysis was conducted to evaluate the capacity and delay implications of these alternatives. The results demonstrated NA-G-4 would provide more capacity and delay benefits than NA-G-2 and NA-G-3.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA. The cost related to the required environmental processing per the NEPA for the implementation of the measure.

<p><b>EVALUATION METHOD:</b></p>	<p>Quantitative assessment – AEDT and AirTOP modeling</p>
<p><b>FINDINGS AND RECOMMENDATIONS:</b></p>	<p>Due to the decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour, this measure was recommended for further evaluation, including coordination with the local FAA ATCT, the TAC, and the public to obtain input and comments. Because NA-G-3 provides less capacity and delay benefits than those provided by NA-G-4, this measure is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.</p>

### Alternative Noise Abatement Measure NA-H-1

<b>TITLE:</b>	Evaluate helicopter operations in the south general aviation apron to takeoff towards the south and stay between Yorkmont and Billy Graham Parkway before turning on course.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to reduce helicopter flights over non-mitigated homes directly east of Airport Drive by implementing additional helicopter corridors. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would not result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-H-2**

<b>TITLE:</b>	Change Headings of First Turns off Runways 18L and 18C.
<b>BACKGROUND AND INTENT:</b>	The intent of the measure is to reduce the effect of noise on more densely populated areas and foster the desire by the ACR to return to pre-Metroplex flight paths. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	The measure would not result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Quantitative assessment – AEDT modeling
<b>FINDINGS AND RECOMMENDATIONS:</b>	The measure would not result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

### Alternative Noise Abatement Measure NA-H-3

<b>TITLE:</b>	For south flow departures, revert to 2016 procedures where aircraft depart from the Runway 18C at a 183° heading and fly between 2 to 4 nautical miles before turning to a 270° heading.
<b>BACKGROUND AND INTENT:</b>	The intent of the measure is to reduce the effect of noise on more densely populated areas and foster the desire by the ACR to return to 2016 flight paths. Refer to Appendix E for more information.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	This noise abatement alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in housing units within the 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-I-1**

<b>TITLE:</b>	For south flow arrivals along the CHSLY procedure, maintain the published altitude of 6,000 feet at the HEELZ procedure so flights will not cut the corner.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to reduce the effect of noise on more densely populated areas by utilizing noise abatement corridors for arrival procedures.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	This noise abatement alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in housing units within the 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.



### Alternative Noise Abatement Measure NA-I-2

<b>TITLE:</b>	For south flow arrivals, extend the eastern downwind so that flights intercept the final approach over the main channel of Mountain Island Lake keeping an altitude of 6,000 feet until turning final approach course.
<b>BACKGROUND AND INTENT:</b>	The intent of this measure is to reduce the effect of noise on more densely populated areas by utilizing noise abatement corridors for arrival procedures.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	This noise abatement alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

**Alternative Noise Abatement Measure NA-I-3**

<b>TITLE:</b>	For north flow arrivals, utilize Interstate 77 as a flight corridor.
<b>BACKGROUND AND INTENT:</b>	The intent of the measure is to reduce the effect of noise on more densely populated areas by utilizing noise abatement corridors for arrival procedures.
<b>BENEFITS:</b>	None
<b>DRAWBACKS:</b>	This noise abatement alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in housing units within the DNL 65+ dB noise exposure contour when compared to the Future (2028) Baseline Noise Exposure Contour.
<b>COST TO IMPLEMENT:</b>	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
<b>EVALUATION METHOD:</b>	Qualitative assessment
<b>FINDINGS AND RECOMMENDATIONS:</b>	The alternative targets procedures outside of the DNL 65+ dB noise exposure contour and is not anticipated to result in a decrease in the number of housing units that would be located within the DNL 65+ dB noise exposure contour. As such, this measure is not recommended for further evaluation and is <b>NOT RECOMMENDED</b> for inclusion in the 2024 NCP.

#### 4.1.4 Summary

This 2024 NCP includes eleven (11) noise abatement measures of which one (1) is recommended for the short-term, five (5) are recommended for the long-term, and five (5) are recommended as described below. Recommendation for a measure to be included in the NCP in the short-term means that the measure would be active after approval of the 2024 NCP until it is withdrawn and replaced by a long-term measure. Long-term measures may become active after the new fourth parallel runway has been constructed and/or all required environmental processing per the NEPA is approved and the development of air traffic procedures and implementation to the CLT Tower Order is complete.

- NA-4: Monitor late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions. Conduct follow-up with FAA ATCT and carriers as needed to enhance adherence to existing program. (Modified)
- NA-5: Designate Runway 18C or 18L as preferred for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. when wind, weather, and operational conditions allow. (Modified)
- NA-6: Reaffirm Airport user policy which designates locations and procedures for aircraft engine run-ups. Establish a run-up location on the deice pad and northeast airfield that are currently under construction. Maximize the use of midfield run-up locations over those located on the east side of the Airport. (Modified with NA-A-1)
- NA-7 (Short-Term): Departing Runways 36R and 36C, all turbojet aircraft initiate turns at 2.5 DME (36C) and 2.6 DME (36R) north of the CLT VOR/DME, respectively. (Modified)
- NA-8: Departing Runway 18R, turbojet aircraft initiate turns as soon as practicable to a heading of 195 degrees. (Modified)
- NA-9: Departing Runway 36L, turbojet aircraft initiate turns as soon as practicable to a heading of 315 degrees. (Modified)
- NA-10 (Long-Term): Conduct an assessment of ground run-up procedures after construction of the new fourth parallel runway to identify run-up locations in the midfield of the Airport. (NA-A-2)
- NA-11 (Long-Term): Designate Runway 36L and 36R as preferred for north flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m. (NA-E-1)
- NA-12 (Long-Term): Designate Runways 18L, 18C, and 18R for south flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m. (NA-E-2)
- NA-13 (Long-Term): Maximize the number of divergent headings for north flow departures while maintaining a 15° separation between headings. (NA-F-2)
- NA-14 (Long-Term): Maximize the number of divergent headings for south flow departures while maintaining a 15° separation between headings. This would require the elimination of the 2-mile restriction. (NA-G-4)

## 4.2 Land Use Compatibility Measures

### 4.2.1 Existing Land Use Compatibility Measures

This section provides a review of the nine (9) currently approved land use compatibility measures included in the 1996 NCP. Of these measures, three (3) were previously withdrawn. Provided for each measure is a description, the current status, and the recommendation for this 2024 NCP.

#### LAND USE COMPATIBILITY MEASURE LU-1

- **Description:** Promote compatible land use planning within the 65 DNL of the combined 1996 NEM and 1996 NCP contours.
- **Status:** The measure is currently implemented. The initial 1990 NCP recommended amending local land use policies (zoning, density, and capital improvement recommendations) to reduce the development of new noncompatible land uses within the Airport Environs. The intent of this measure is to amend land use policies to be consistent with Part 150 compatible land use guidelines outlined in 14 CFR Part 150 Appendix A. In the 1996 NCP, the Airport Environs was defined as the area within the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours. This area is also referred to as the Airport Noise Disclosure Overlay District which was implemented through the approval of Measure LU-7.

Since the implementation of Measure LU-1, the City of Charlotte Aviation Department has continued to coordinate with the Charlotte Planning, Design and Development Department regarding land use planning and zoning. The Airport has addressed a majority of concerns related to noise-sensitive land uses within the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours through acquisition and sound insulation (where eligible). Additionally, the City of Charlotte supports compatible development through Land Use Maps that recommend compatible development within this area. However, some areas are proposed for residential use in the current City of Charlotte Proposed Land Use Map as there is an increased demand for residential land uses in the area.

- **Recommendation:** Continue approved Measure LU-1 with modification to clarify that the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours is the same as the Airport Noise Disclosure Overlay District. The modified LU-1 would state “Promote compatible land use planning within the Airport Noise Disclosure Overlay District (DNL 65 dB of the combined 1996 NEM and 1996 NCP contours).”

#### LAND USE COMPATIBILITY MEASURE LU-2

- **Description:** Pursue zoning for compatible development.
- **Status:** This measure is ongoing. This is a continuation of Measure LU-2 in the approved 1990 NCP which recommended the rezoning of property to permit only compatible uses within specific noise contours, to retain compatible zoning, and to limit the density of residential development permitted within noise contours. This measure is intended to establish the policy of making airport-compatible land uses the priority within the Airport Noise Disclosure Overlay District (DNL 65 dB noise exposure of the combined 1996 NEM and 1996 NCP noise contours). The 1996 NCP called for the immediate implementation of this measure through amending the local zoning ordinances. Ongoing coordination takes place between the City of Charlotte Aviation Department the Charlotte-Mecklenburg Planning Commission regarding land use planning and zoning.
- **Recommendation:** Continue approved Measure LU-2.

#### LAND USE COMPATIBILITY MEASURE LU-3

- *Measure previously withdrawn. Listed for numeric continuity.*

#### LAND USE COMPATIBILITY MEASURE LU-4

- **Description:** Pursue the dedication of an avigation easement as a condition to approval of development of property located in the Airport Environs.
- **Status:** This measure is not implemented. This measure is a continuation of the approved Measure LU-4 in the 1990 NCP which recommended the dedication of avigation easement as a condition of approval for the development of property located in the Airport Environs. Amending local zoning and subdivision regulations to provide for the dedication of an easement as a condition of approval for residential rezoning or subdivision plats within the DNL 65 dB noise contour of the combined 1996 NCP and 1996 NEM contours would alert developers, lenders, and prospective purchasers to the proximity of the Airport and to the existence of a potential noise issue. The implementation of the avigation easement would also protect the Airport from future litigation by purchasers of the rezoned or subdivided property.  
Since the approval of this measure in the initial 1990 NCP, the Airport has not been successful in the implementation of this measure despite continuous efforts. As such, there is no requirement for dedication of an avigation easement as a condition of new development, rezoning, or subdividing property in the City's zoning or subdivision ordinances.
- **Recommendation:** Implementation of Measure LU-4 has not been successful and has not resulted in any benefits to the Airport or its surrounding community. As such, the measure is recommended for withdrawal.

#### LAND USE COMPATIBILITY MEASURE LU-5

- *Measure previously withdrawn. Listed for numeric continuity.*

#### LAND USE COMPATIBILITY MEASURE LU-6

- *Measure previously withdrawn. Listed for numeric continuity.*

#### LAND USE COMPATIBILITY MEASURE LU-7

- **Description:** Pursue the establishment of an Airport Overlay District that corresponds to the Airport Environs in which there will be special requirements relating to developing, rezoning, and transferring residential property.
- **Status:** The measure is implemented. The approved Measure LU-7 in the 1996 NCP recommended the pursuit of establishment of an Airport Overlay District that corresponds to the Airport Environs in which there will be special requirements relating to developing, rezoning, and transferring residential property. The Airport Environs were defined as the area within the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours.  
The Charlotte Planning, Design and Development Department adopted an Airport Noise Disclosure Overlay District to provide mechanisms for the disclosure to residential property owners and prospective residential property owners in the Airport Environs that the use and enjoyment of property located within the district is subject to overflights and aircraft noise that may be objectionable. The Airport Noise Disclosure Overlay District boundary includes all parcels intersecting the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours. An Airport Noise Disclosure Overlay District Notice is included with every building permit and certificate of occupancy issued for residential construction and use located in the Airport Noise Disclosure Overlay District, which states: "Noise Warning—This property, either partially or wholly, is zoned Airport Noise Disclosure Overlay District and lies within or near the Noise Exposure Map Areas of Charlotte/Douglas International Airport and may be subject to noise that may be objectionable."  
▪ **Recommendation:** Continuation of measure.

### LAND USE COMPATIBILITY MEASURE LU-8

- **Description:** Pursue amending the state building code to authorize the City of Charlotte and Mecklenburg County to raise the minimum building standards (Noise Level Reduction requirements) by incorporating noise attenuation requirements for new residential construction within an Airport Overlay District.
- **Status:** This measure is not implemented. The approved Measure LU-8 in the 1996 NCP aimed to raise the minimum building standards for new residential construction within the Airport Noise Overlay District. However, judicial precedent in North Carolina precludes local variations in the state building code without prior approval by the North Carolina Building Code Council. Since the approval of this measure in 1996 NCP, the Airport has not been successful in the implementation of this measure despite continuous efforts. As such, the Airport Noise Overlay District does not include building code requirements.
- **Recommendation:** Implementation of Measure LU-8 has not been successful and has not resulted in any benefits to the Airport or its surrounding community. As such, the measure is recommended for withdrawal.

### LAND USE COMPATIBILITY MEASURE LU-9

- **Description:** Develop a purchaser disclosure notice and pursue method of enforcement.
- **Status:** This measure is partially implemented. The Charlotte-Mecklenburg Planning Department adopted an Airport Noise Disclosure Overlay District to provide mechanisms for the disclosure to residential property owners and prospective residential property owners in the Airport Environs that the use and enjoyment of property located within the district is subject to overflights and aircraft noise that may be objectionable. The Airport Noise Disclosure Overlay District boundary includes all parcels intersecting the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours. The following Airport Noise Disclosure Overlay District Notice is included with every building permit and certificate of occupancy issued for residential construction and use located in the Airport Noise Disclosure Overlay District: "Noise Warning— This property, either partially or wholly, is zoned Airport Noise Disclosure Overlay District and lies within or near the Noise Exposure Map Areas of Charlotte/Douglas International Airport and may be subject to noise that may be objectionable." To date, no method of enforcement has been implemented.
- **Recommendation:** Continue approved Measure LU-9 with modification to remove the requirement to "pursue method of enforcement." The modified measure would state "Continue efforts to maintain the use of the Airport Noise Disclosure Overlay District Notice."

#### 4.2.2 Alternative Land Use Compatibility Measures Considered but Not Recommended for Inclusion in the 2024 NCP

Land use compatibility measures seek to prevent the introduction of additional noise-sensitive land uses within existing and future airport noise contours. These potential measures are discussed in **Appendix D, *Land Use Methodology*** and summarized below:

##### **Preventative (Compatibility)**

- Compatible Use Zoning
- Subdivision Regulations
- Building Codes
- Capital Improvement Programs
- Growth Risk Assessment
- Fair Disclosure Policies

One (1) land use compatibility measure, LU-A, was considered and evaluated for inclusion in the 2024 NCP in accordance with 14 CFR Part 150 §150.23(e) and § B150.7. However, the measure was not recommended for inclusion in this 2024 NCP.

The following information is provided for each alternative:

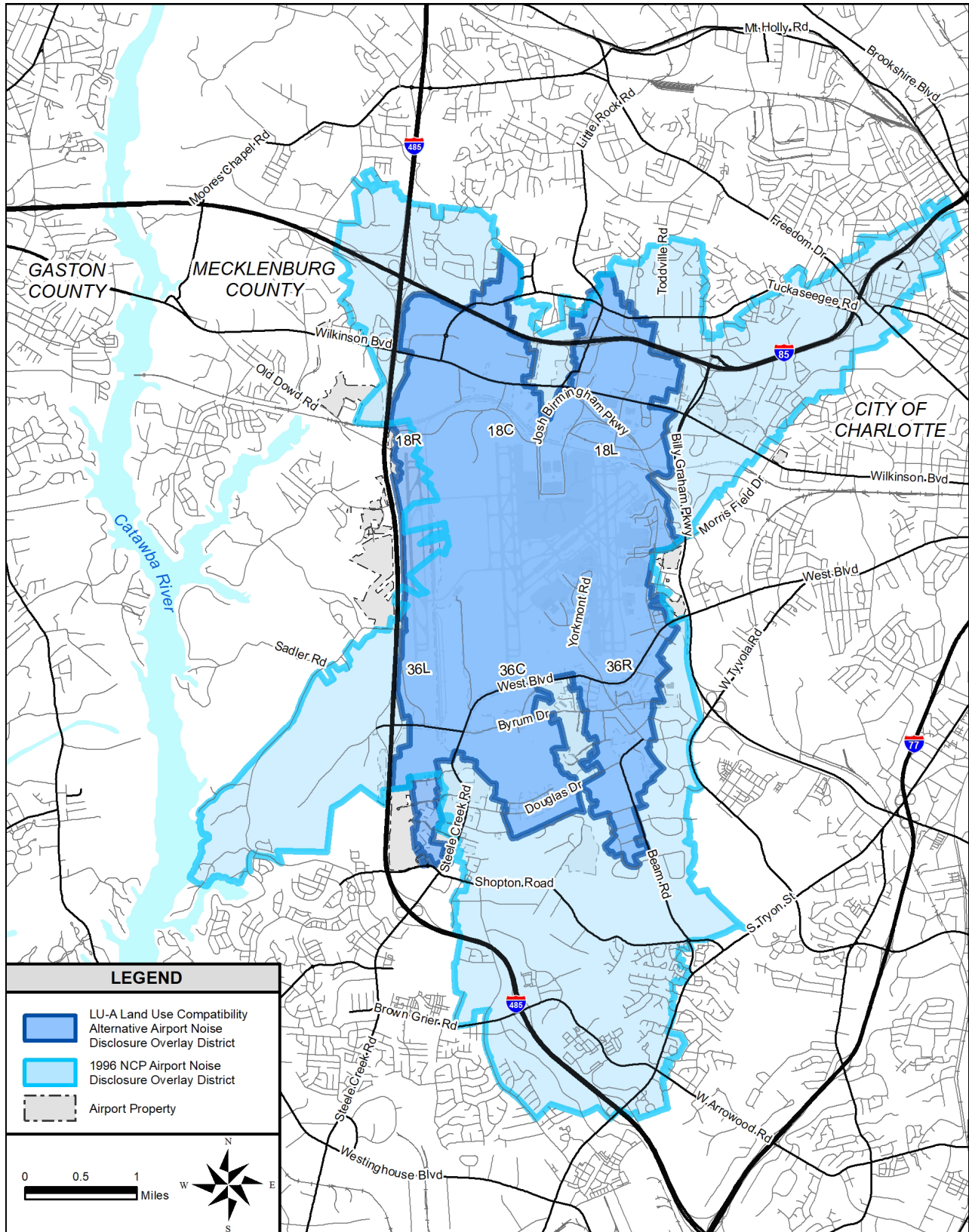
- Title – includes a brief descriptive title of the measure.
- Background and Intent – includes the intent of the measure and the background and setting to which the measure relates where applicable.
- Benefits – includes a statement of how the measure would provide benefits.
- Drawbacks – identifies any potential negative consequences of implementing the measure.
- Findings and Recommendations – indicates if the alternative was recommended for inclusion in the 2024 NCP.

**Alternative Land Use Compatibility Measure LU-A**

<p><b>TITLE:</b></p>	<p>Modify the definition of the Airport Environs and Airport Overlay District referred to in the approved 1996 NCP Land Use Compatibility measures to reflect the DNL 65 dB of the Future (2028) NEM/NCP Noise Exposure Contour.</p>
<p><b>BACKGROUND AND INTENT:</b></p>	<p>The Airport Environs and Airport Overlay District referred to in the approved 1996 NCP were based on the DNL 65 dB noise exposure patterns of the combined 1996 NEM and 1996 NCP contours. This alternative would redefine the Airport Environs and Airport Overlay District to reflect the DNL 65 dB noise exposure patterns of the Future (2028) NEM/NCP Noise Exposure Contour, as shown in <b>Exhibit 4-7, <i>Alternative Airport Noise Disclosure Overlay District</i></b>.</p> <p>Since the approval of the initial 1990 NCP and the current 1996 NCP, the noise exposure contours for the Airport have reduced in size due to various factors. Many of the older, louder aircraft that operated at CLT in the 1990s and early 2000’s have been phased-out or been significantly reduced from commercial airline fleets. Additionally, airlines continue to retire older, noisier aircraft from their fleets and replace them with more modern, quieter, fuel-efficient aircraft. Furthermore, the implementation of the 1996 NCP has helped the Airport minimize noise impact to the areas surrounding the Airport. These efforts continue to help minimize and reduce noise levels at airports often times even as the number of aircraft operations have increased. Furthermore, the Airport has addressed a majority of concerns related to noise-sensitive land uses within the combined 1996 NEM and 1996 NCP contours through acquisition and sound insulation (where eligible). As such, the intent for this measure is to update the definition of the Airport Environs and Airport Overlay District to reflect the reduced DNL 65 dB noise exposure patterns anticipated and estimated for the Future (2028) NEM/NCP Noise Exposure Contour.</p>
<p><b>BENEFITS:</b></p>	<p>Updating the Airport Environs and Airport Overlay District to include the reduced area within the DNL 65 dB of the Future (2028) NEM/NCP Noise Exposure Contour would reflect the anticipated noise exposure at CLT which has been reduced since the 1990s.</p>
<p><b>DRAWBACKS:</b></p>	<p>The implementation of this measure would reduce the area near the Airport where noise-compatible development would be encouraged. This would result in areas being excluded that are currently being developed for noise-compatible development.</p>
<p><b>FINDINGS AND RECOMMENDATION:</b></p>	<p>This alternative is <b>NOT RECOMMENDED</b> for inclusion in the NCP.</p>



### Exhibit 4-7 Alternative Airport Noise Disclosure Overlay District



Source: Landrum & Brown, 2024.

### 4.2.3 Summary

This 2024 NCP includes four (4) land use compatibility measures, as summarized below.

- LU-1: Promote compatible land use planning within the Airport Noise Disclosure Overlay District (DNL 65 dB of the combined 1996 NEM and 1996 NCP contours). (Modified)
- LU-2: Pursue zoning for compatible development. (Continuation)
- LU-7: Pursue the establishment of an Airport Overlay District that corresponds to the Airport Environs in which there will be special requirements relating to developing, rezoning, and transferring residential property. (Continuation)
- LU-9: Continue efforts to maintain the use of the Airport Noise Disclosure Overlay District Notice. (Modified)

## 4.3 Land Use Mitigation Measures

### 4.3.1 Existing Land Use Mitigation Measures

This section provides a review of the nine (9) currently approved land use mitigation measures included in the 1996 NCP. Of these measures, two (2) were previously withdrawn. Provided for each measure is a description, the current status, and the recommendation for this 2024 NCP.

#### LAND USE MITIGATION MEASURE NM-1

- **Description:** Establish a public information program which distributes noise and noise abatement information to the public.
- **Status:** This measure is ongoing. This measure is a continuation of the approved Measure NM-1 in the 1990 NCP. A public information program is in place that provides the general public, land developers, lending institutions, planning officials, and real estate professionals with the current status of Airport operations, proposed Airport development, noise impacts, and mitigation programs. This is implemented through the Airport’s noise office and website. Additionally, two newsletters are currently in place: *Connections* provides information of interest to business and development concerns, and *Neighborhood Update* focuses on the implementation of mitigation programs, neighborhood meetings, and noise issues of community importance. The newsletters are published on the Airport’s website and are distributed to the interested public through email.
- **Recommendation:** Continuation of measure.

#### LAND USE MITIGATION MEASURE NM-2

- **Description:** Sound insulate noise-sensitive buildings intended for public use, instruction (e.g., schools), or assembly (e.g., churches) within the DNL 65 dB noise contour of the combined 1996 NCP contours and 1996 NEM contours.
- **Status:** This measure is ongoing. This measure is a continuation of the approved Measure NM-2 in the 1990 NCP. The Airport’s noise office sound insulation program actively implements this measure. To date, six churches and three schools have been sound insulated.
- **Recommendation:** Continue approved Measure NM-2 with modification to refer to area within the Future (2028) NEM/NCP Noise Exposure Contour. The modified Measure NM-2 would state: “Sound insulate noise-sensitive public building intended for public use, instruction (e.g., schools) or assembly (e.g., churches) located within the Future (2028) NEM/NCP Noise Exposure Contour.”

#### LAND USE MITIGATION MEASURE NM-3

- **Description:** Sound insulate eligible houses located within the 65 DNL noise contour of the 1996 NCP contours and 1996 NEM contours, whichever is greater, which may be benefited under FAA design criteria.
- **Status:** This measure is ongoing. This measure was originally approved in the 1990 NCP and updated in the 1996 NCP to recommend sound insulation of eligible properties within the DNL 65 dB of the combined 1996 NCP and 1996 NEM contours, whichever is greater. This program provides mitigation to all private residences (other than mobile homes) that meet the FAA design objective for interior noise level reduction. This program is voluntary on the part of the homeowner. In order for homeowners to participate in the sound insulation program, noncompatible structures would first have to be deemed eligible. The design objective for sound insulation is to achieve a DNL of 45 dB in all habitable rooms. Eligibility criteria requires that residential sound insulation projects be designed to provide at least 5 dB improvement in noise level reduction (NLR). Only those structures able to achieve the minimum improvement in NLR

and a DNL of 45 dB are eligible for participation mitigation program. If the structure already has an interior DNL of 45 dB in all habitable rooms, it is not eligible for the program. Program eligibility determination is a two-step process. The first step is identifying potentially eligible houses within the program boundary. The second step is to determine whether or not the house (or portions of the house) meets the FAA design objective for interior NLR.

This measure is implemented through the Airport's noise office sound insulation program and continues to offer sound insulation based on eligibility. To date, nearly 1,000 homes have been sound insulated.

- **Recommendation:** Continue approved Measure NM-3 with modification to refer to the sound insulation program boundary as recommended in NM-A (see Section 4.3.2). The modified Measure NM-3 would state: "Sound insulate eligible houses located within the 2024 NCP sound insulation program boundary which may be benefited under FAA design criteria."

#### **LAND USE MITIGATION MEASURE NM-4**

- *Measure previously withdrawn. Listed for numeric continuity.*

#### **LAND USE MITIGATION MEASURE NM-5**

- *Measure previously withdrawn. Listed for numeric continuity.*

#### **LAND USE MITIGATION MEASURE NM-6**

- **Description:** Acquire mobile homes located within the 70 DNL noise contour of the 1996 NCP and 1996 NEM, whichever is greater.
- **Status:** This measure has been completed. The approved Measure NM-6 in the 1996 NCP recommended acquisition of mobile homes within the DNL 70 dB noise exposure pattern of the combined 1996 NEM and 1996 NCP noise contours. According to the Federal Aviation Regulation (FAR) Part 150 noise compatibility guidelines, mobile homes are not compatible land uses within the DNL 65 dB noise contour. Additionally, mobile home construction materials are not conducive to sound insulation treatment. Because mobile homes cannot be effectively sound insulated, the approved Measure NM-6 recommended the voluntary acquisition of these structures. Since the approval of this measure, all mobile home parks previously identified within the DNL 70 dB noise exposure pattern of the combined 1996 NEM and 1996 NCP noise contours have been acquired and no longer exist.
- **Recommendation:** No mobile homes have been identified within the DNL 70 dB noise exposure pattern of the combined 1996 NEM and 1996 NCP noise contours or that of the Future (2028) NEM/NCP noise exposure contours from this Part 150 Study. As such, this measure is recommended for withdrawal.

#### **LAND USE MITIGATION MEASURE NM-7**

- **Description:** At the Airport's option, purchase avigation easements, sound insulate, or acquire houses within the combined 65 DNL of the 1996 NEM contours and 1996 NCP contours, whichever is greater, where sound insulation is infeasible or not cost-effective because the property does not comply with the building code.
- **Status:** This measure is ongoing. This measure is implemented through the Airport's noise office sound insulation program and continues to offer sound insulation based on eligibility. Under this measure, the Airport would provide the flexibility by offering equitable solutions to the owners of those structures which are not up to the standards of the building code. The purchase of avigation easements, sound insulation, or acquisition of the property are recommended only in areas where sound insulation measures are being offered and then only in instances where a residential structure is not in compliance with the current standards of the state building code or when the condition of the structure makes it economically infeasible to implement the sound

insulation measures. Terms of an easement may require that any money be used for building code, sound insulation, or other compatibility improvements. Acquisition is only accomplished when the property is valued at less than the cost of insulation.

- **Recommendation:** Continue approved Measure NM-7 with modification to refer to the sound insulation program boundary as recommended in NM-A (see Section 4.3.2). The modified Measure NM-7 would state: “At the Airport’s option, purchase aviation easements, sound insulate, or acquire houses within the 2024 NCP sound insulation program boundary, where sound insulation is infeasible or not cost-effective because the property does not comply with the building code.”

#### **LAND USE MITIGATION MEASURE NM-8**

- **Description:** Sound insulate eligible houses located within the 65 DNL noise contour of the 2001 NCP, if any remain to be treated.
- **Status:** This measure is ongoing. This measure is implemented through the Airport’s noise office sound insulation program and continues to offer sound insulation based on eligibility.
- **Recommendation:** This measure is recommended for withdrawal because all residential sound insulation is recommended in NM-3. The 1996 NCP included sound insulation two phases: phase 1 (pre-west runway) and phase 2 (post-west runway). The 2024 NCP would include all sound insulation for the future 2028 conditions in one measure (Measure NM-3).

#### **LAND USE MITIGATION MEASURE NM-9**

- **Description:** Acquire mobile homes located within the 65 DNL noise contour of the 2001 NCP/NEM.
- **Status:** This measure is ongoing. According to the FAR Part 150 noise compatibility guidelines, mobile homes are not compatible land uses within the DNL 65 dB noise contour. Additionally, mobile home construction materials are not conducive to sound insulation treatment. As such, the approved Measure NM-9 of the 1996 NCP recommended the voluntary acquisition of these structures within the DNL 65 dB noise contour of the 2001 NCP/NEM. Three mobile home parks were identified for acquisition. To date, one mobile home park was acquired, and another was closed before an offer could be made.
- **Recommendation:** Continue approved Measure NM-9 with modification to refer to the sound insulation program boundary as recommended in NM-A (see Section 4.3.2). One mobile home park, the Interstate Mobile Home Park, is located within the 2024 NCP sound insulation program boundary. As such, the modified Measure NM-9 would state: “Acquire mobile homes located within the 2024 NCP sound insulation program boundary.”

#### 4.3.2 New Land Use Mitigation Measures Recommended for Inclusion in the 2024 NCP

Land use mitigation measures are intended to mitigate or convert existing, noncompatible uses to compatible uses. These potential measures are discussed in **Appendix D, *Land Use Methodology*** and summarized below:

##### **Mitigation (Corrective)**

- Sound Insulation
- Land Acquisition
- Purchase Guarantee
- Avigation Easements

A total of one (1) land use mitigation measure, NM-A, was considered and evaluated for inclusion in the 2024 NCP in accordance with 14 CFR Part 150 §150.23(e) and §B150.7. The measure was recommended for inclusion in this 2024 NCP.

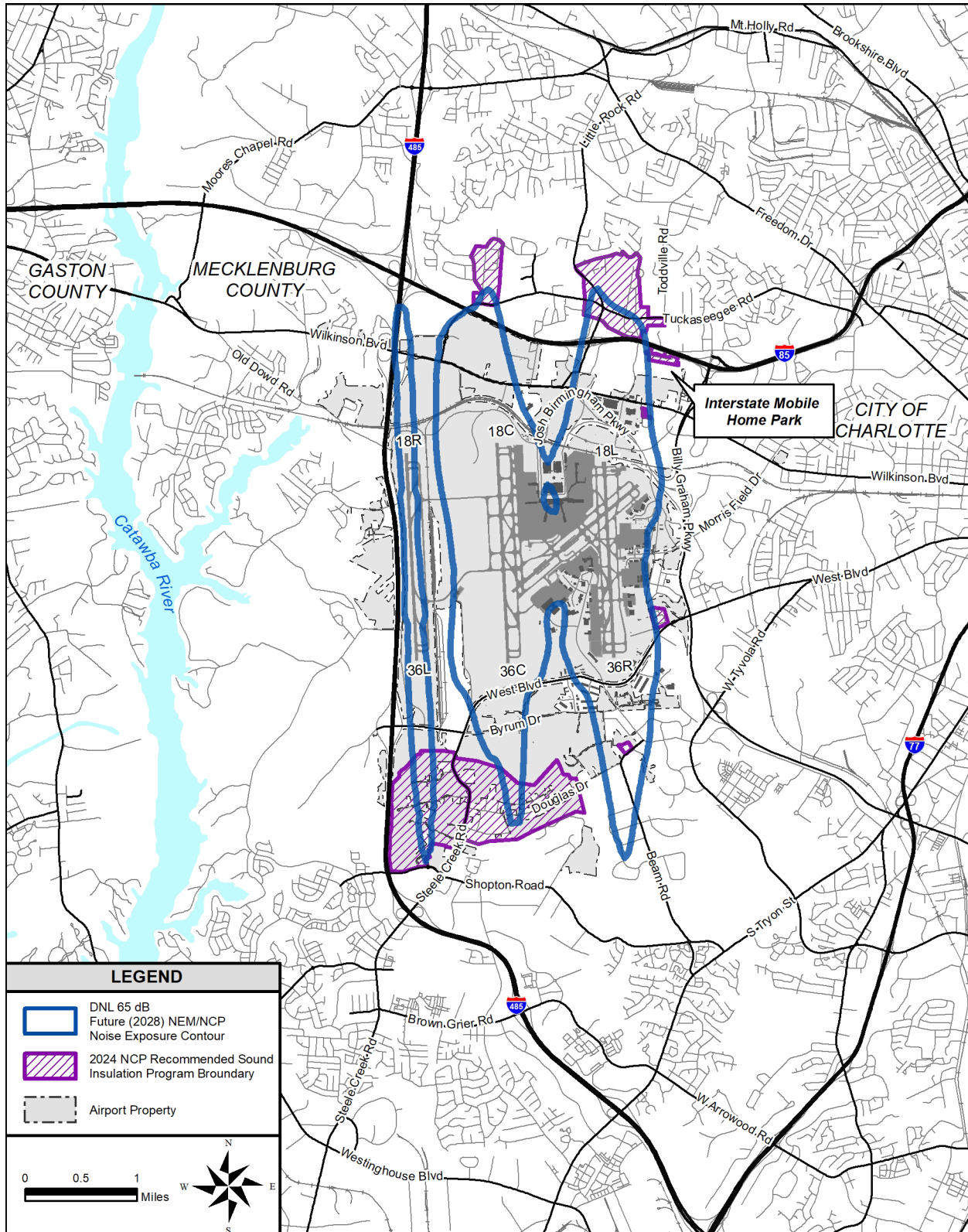
The following information is provided for each alternative:

- Title – includes a brief descriptive title of the measure.
- Background and Intent – includes the intent of the measure and the background and setting to which the measure relates where applicable.
- Benefits – includes a statement of how the measure would provide benefits.
- Drawbacks – identifies any potential negative consequences of implementing the measure.
- Findings and Recommendations – indicates if the alternative was recommended for inclusion in the 2024 NCP.

**Alternative Land Use Mitigation Measure NM-A: Update to Measures NM-3, NM-7, and NM-9**

<b>TITLE:</b>	Modify the residential sound insulation program boundary referred to in Measures NM-3, NM-7, and NM-9 to the 2024 NCP sound insulation program boundary which reflects the Future (2028) NEM/NCP Noise Exposure Contour.
<b>BACKGROUND AND INTENT:</b>	Approximately 60 single-family residential units and 94 multi-family residential units located on parcels that intersect the DNL 65+ dB noise exposure contour of the Future (2028) NEM/NCP would be potentially eligible for sound insulation. The City of Charlotte has developed a methodology for providing sound insulation for specific areas outside but adjacent to the DNL 65+ dB noise exposure contour of the Future (2028) NEM/NCP contour. The policy of providing sound insulation to the areas adjacent to the DNL 65+ dB noise exposure contour is intended to preserve the integrity of contiguous, stable, and viable residential neighborhoods of similar housing design, construction type and materials. The resulting sound insulation boundary would be expanded to follow physical and geographic boundaries (also referred to as block rounding). The methodology for implementing this policy is to provide sound insulation for homes where a majority of the neighborhood would be eligible for sound insulation because of their location within the DNL 65+ dB noise exposure contour of the Future (2028) NEM/NCP noise exposure contour. The sound insulation program boundary would include the residential units located on parcels that intersect the DNL 65+ dB noise exposure contour of the Future (2028) NEM/NCP and be expanded to follow physical and geographic boundaries to include entire neighborhoods. Applying this methodology would result in a total of 374 single-family residential units and 104 multi-family residential units to be potentially eligible for sound insulation. See <b>Exhibit 4-8, Recommended Sound Insulation Program Boundary</b> for reference.
<b>BENEFITS:</b>	The implementation of this measure would reduce interior noise levels for the homes impacted by aircraft noise at or near the DNL 65+ dB noise exposure contour.
<b>DRAWBACKS:</b>	Sound insulation does not alter the noise impacts outside the home.
<b>FINDINGS AND RECOMMENDATION:</b>	This alternative is RECOMMENDED for inclusion in the NCP, which would modify approved measures NM-3, NM-7, and NM-9.

### Exhibit 4-8 Recommended Sound Insulation Program Boundary



Source: Landrum & Brown, 2024.



### 4.3.3 Summary

This 2024 NCP includes five (5) land use mitigation measures, as summarized below.

- NM-1: Establish a public information program which distributes noise and noise abatement information to the public. (Continuation)
- NM-2: Sound insulate noise-sensitive public building intended for public use, instruction (e.g., schools) or assembly (e.g., churches) located within the Future (2028) NEM/NCP Noise Exposure Contour. (Modified)
- NM-3: Sound insulate eligible houses located within the 2024 NCP sound insulation program boundary which may be benefited under FAA design criteria. (Modified)
- NM-7: At the Airport's option, purchase avigation easements, sound insulate, or acquire houses within the 2024 NCP sound insulation program boundary, where sound insulation is infeasible or not cost-effective because the property does not comply with the building code. (Modified)
- NM-9: Acquire mobile homes located within the 2024 NCP sound insulation program boundary. (Modified)

## 4.4 2024 Noise Compatibility Program

### 4.4.1 2024 Noise Compatibility Program Description

The 2024 NCP measures are presented as a series of “plates” that summarize pertinent information required about each of the measures by 14 CFR Part 150 guidance. This information includes:

- A description and the background and intent of the measure
- The anticipated effect on land use compatibility
- The party (or parties) responsible for implementation
- The steps necessary for implementation, the anticipated cost, and the projected timing of implementation
- The relationship to other planning programs and other measures

Where helpful for clarification, an exhibit associated with the measure is provided. **Table 4-1, 2024 Noise Compatibility Program Recommendations**, summarizes the measures included in the 2024 NCP for CLT.

**Table 4-1 2024 Noise Compatibility Program Recommendations**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Noise Abatement Recommendations</b>					
<p><b>NA-4:</b>  <i>Revise measure to read as such:</i>                      Monitor late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions. Conduct follow-up with FAA Air Traffic Control Tower (ATCT) and carriers as needed to enhance voluntary adherence to existing program.</p> <p><b>Continuation with modification to remove reference to monthly reporting</b></p>	<p>City of Charlotte                      Aviation                      Department</p>	<p>Annual                      \$75,000 and                      minimal                      administrative                      costs</p>	<p>None</p>	<p>None</p>	<p>Currently being partially implemented.  <b>Modification requires FAA approval.</b></p>
<p><b>NA-5:</b>  <i>Revise measure to read as such:</i>                      Designate Runway 18C or 18L as preferred for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. when wind, weather, and operational conditions allow.</p> <p><b>Continuation with modification to remove reference to Runway 05/23 and large four-engine prop aircraft, and to update the names of the existing runways</b></p>	<p>City of Charlotte                      Aviation                      Department,                      ATCT, Airlines</p>	<p>None</p>	<p>None</p>	<p>None</p>	<p>Currently being implemented as conditions allow and recommended to continue with modification.  <b>Modification does not require FAA approval.</b></p>

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Noise Abatement Recommendations (continued)</b>					
<p><b>NA-6:</b> <i>Revise measure to read as such:</i> Reaffirm Airport user policy which designates locations and procedures for aircraft engine run-ups. Establish a run-up location on the deice pad and northeast airfield that are currently under construction. Maximize the use of midfield run-up locations over those located on the east side of the Airport. (NA-A-1) <b>Continue with modification to add two new run-up locations and encourage maximizing the use of midfield run-up locations</b></p>	City of Charlotte Aviation Department, ATCT, Airlines	None	None	None	Currently being implemented as conditions allow and recommended to continue as previously approved. <b>Modification on approval of measure by FAA.</b>
<p><b>NA-7 (Short-Term):</b> <i>Revise measure to read as such:</i> Departing Runways 36R and 36C, all turbojet aircraft initiate turns at 2.5 DME (36C) and 2.6 DME (36R) north of the CLT VOR/DME, respectively. <b>Continue with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft</b></p>	City of Charlotte Aviation Department, ATCT, Airlines	None	None	None	Currently being implemented as conditions allow and recommended to continue with modification. <b>Modification does not require FAA approval. This measure would be replaced with Measure NA-13 when it becomes active.</b>

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Noise Abatement Recommendations (continued)</b>					
<p><b>NA-8:</b>                      Revise measure to read as such:                      Departing Runway 18R, turbojet aircraft initiate turns as soon as practicable to a heading of 195 degrees.  <b>Continuation with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft</b></p>	City of Charlotte Aviation Department, ATCT, Airlines	None	None	None	Currently being implemented as conditions allow and recommended to continue with modification. <b>Modification does not require FAA approval.</b>
<p><b>NA-9:</b>                      Revise measure to read as such:                      Departing Runway 36L, turbojet aircraft initiate turns as soon as practicable to a heading of 315 degrees.  <b>Continuation with modification to update the name of the existing runways and remove reference to large four-engine prop aircraft</b></p>	City of Charlotte Aviation Department, ATCT, Airlines	None	None	None	Currently being implemented as conditions allow and recommended to continue with modification. <b>Modification does not require FAA approval.</b>
<p><b>NA-10 (Long-Term):</b>                      Conduct an assessment of ground run-up procedures after construction of the new fourth parallel runway to identify run-up locations in the midfield of the Airport.                      (NA-A-2)</p>	City of Charlotte Aviation Department, Airlines	\$25,000 to \$100,000	None	None	This is a new measure that would be implemented after FAA approval and the construction of the new Runway 01/19 (estimated 2028).

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Noise Abatement Recommendations (continued)</b>					
<p><b>NA-11 (Long-Term):</b> Designate Runway 36L and 36R as preferred for north flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m. (NA-E-1)</p>	<p>City of Charlotte Aviation Department, ATCT, Airlines</p>	<p>NEPA</p>	<p>None</p>	<p>None</p>	<p>This is a new measure that would be implemented after FAA approval of the measure and the required environmental processing per the NEPA, the CLT Tower Order has been updated, and the construction of the new Runway 01/19 is completed (estimated 2028).</p>
<p><b>NA-12 (Long-Term):</b> Designate Runways 18L, 18C, and 18R for south flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m. (NA-E-2)</p>	<p>City of Charlotte Aviation Department, ATCT, Airlines</p>	<p>NEPA</p>	<p>None</p>	<p>None</p>	<p>This is a new measure that would be implemented after FAA approval of the measure and the required environmental processing per the NEPA, the CLT Tower Order has been updated, and the construction of the new Runway 01/19 is completed (estimated 2028).</p>

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Noise Abatement Recommendations (continued)</b>					
<p><b>NA-13 (Long-Term):</b> Maximize the number of divergent headings for north flow departures while maintaining a 15° separation between headings on Runway 36C, Runway 36R, and Runway 01. (NA-F-2)</p>	<p>City of Charlotte Aviation Department, ATCT, Airlines</p>	<p>NEPA</p>	<p>None</p>	<p>None</p>	<p>This is a new measure that would be implemented after FAA approval of the measure and the required environmental processing per the NEPA, and the development of the air traffic procedures and implementation to the CLT Tower Order is completed. <b>This measure would replace Measure NA-7 when it becomes active.</b></p>
<p><b>NA-14 (Long-Term):</b> Maximize the number of divergent headings for south flow departures while maintaining a 15° separation between headings on Runway 18C, Runway 18L, and Runway 19. This would require the elimination of the 2-mile restriction. (NA-G-4)</p>	<p>City of Charlotte Aviation Department, ATCT, Airlines</p>	<p>NEPA</p>	<p>None</p>	<p>None</p>	<p>This is a new measure that would be implemented after FAA approval of the measure and the required environmental processing per the NEPA, and the development of the air traffic procedures and implementation to the CLT Tower Order is completed.</p>

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Land Use Compatibility Recommendations</b>					
<p><b>LU-1:</b> <i>Revise measure to read as such:</i> Promote compatible land use planning within the Airport Noise Disclosure Overlay District (DNL 65 dB of the combined 1996 NEM and 1996 NCP contours). <b>Continuation with modification to clarify the area of reference.</b></p>	City of Charlotte Aviation Department, City of Charlotte, Mecklenburg County	Minimal	Minimal	None	Currently being implemented. <b>Modification does not require FAA approval.</b>
<p><b>LU-2:</b> Pursue zoning for compatible development. <b>Continuation</b></p>	City of Charlotte Aviation Department, City of Charlotte, Mecklenburg County	Minimal	Minimal	None	Currently being partially implemented. <b>Continuation does not require FAA approval of measure.</b>
<p><b>LU-7:</b> Pursue the establishment of an Airport Overlay District that corresponds to the Airport Environs in which there will be special requirements relating to developing, rezoning, and transferring residential property. <b>Continuation</b></p>	City of Charlotte Aviation Department, City of Charlotte, Mecklenburg County	Minimal	Minimal	None	Currently being partially implemented. <b>Continuation does not require FAA approval of measure.</b>
<p><b>LU-9:</b> <i>Revise measure to read as such:</i> Continue efforts to maintain the use of the Airport Noise Disclosure Overlay District Notice. <b>Continuation with modification to remove the requirement to pursue method of enforcement.</b></p>	City of Charlotte Aviation Department, City of Charlotte, Mecklenburg County	Minimal	Minimal	None	Partially implemented. <b>Modification requires FAA approval of measure.</b>



**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Land Use Mitigation Recommendations</b>					
<p><b>NM-1:</b> Establish a public information program which distributes noise and noise abatement information to the public.  <b>Continuation</b></p>	<p>City of Charlotte                      Aviation Department</p>	<p>Minimal</p>	<p>None</p>	<p>None</p>	<p>Partially implemented.  <b>Continuation does not require FAA approval of measure.</b></p>
<p><b>NM-2:</b>  <i>Revise measure to read as such:</i>                      Sound insulate noise-sensitive public building intended for public use, instruction (e.g., schools) or assembly (e.g., churches) located within the Future (2028) NEM/NCP Noise Exposure Contour.  <b>Continuation with modification to update the sound insulation area to refer to the area within the Future (2028) NEM/NCP Noise Exposure Contour</b></p>	<p>City of Charlotte                      Aviation Department</p>	<p>Approximately                      \$2,250,000</p>	<p>None</p>	<p>None</p>	<p>Currently being implemented.  <b>Modification requires FAA approval of measure and implementation may be based on the availability of funding.</b></p>
<p><b>NM-3:</b>  <i>Revise measure to read as such:</i>                      Sound insulate eligible houses located within the 2024 NCP sound insulation program boundary which may be benefited under FAA design criteria.  <b>Continuation with modification to update the sound insulation area to refer to the area within the Future (2028) NEM/NCP Noise Exposure Contour</b></p>	<p>City of Charlotte                      Aviation Department</p>	<p>Approximately                      \$23,775,000</p>	<p>None</p>	<p>None</p>	<p>Currently being implemented.  <b>Modification requires FAA approval of measure and implementation may be based on the availability of funding.</b></p>

**Table 4-1 2024 Noise Compatibility Program Recommendations, (continued)**

Measure	Responsible Party	Cost to Airport	Cost to Local Governments	Cost to Users	Implementation Status
<b>Land Use Mitigation Recommendations (continued)</b>					
<p><b>NM-7:</b> <i>Revise measure to read as such:</i> At the Airport’s option, purchase avigation easements, sound insulate, or acquire houses within the 2024 NCP sound insulation program boundary, where sound insulation is infeasible or not cost-effective because the property does not comply with the building code. <b>Continuation with modification to update the sound insulation area to refer to the area within the Future (2028) NEM/NCP Noise Exposure Contour</b></p>	<p>City of Charlotte Aviation Department</p>	<p>Approximately \$1,500,000</p>	<p>None</p>	<p>None</p>	<p>Currently being implemented. <b>Modification requires FAA approval of measure and implementation may be based on the availability of funding.</b></p>
<p><b>NM-9:</b> <i>Revise measure to read as such:</i> Acquire mobile homes located within the 2024 NCP sound insulation program boundary. <b>Continuation with modification to update the sound insulation area to refer to the area within the Future (2028) NEM/NCP Noise Exposure Contour</b></p>	<p>City of Charlotte Aviation Department</p>	<p>Approximately \$4,000,000 to \$6,000,000</p>	<p>None</p>	<p>None</p>	<p>Currently being implemented. <b>Modification requires FAA approval of measure and implementation may be based on the availability of funding.</b></p>

### **Noise Compatibility Program Measure: NA-4**

**Description:** Monitor late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from NCP assumptions. Conduct follow-up with FAA Air Traffic Control Tower (ATCT) and carriers as needed to enhance adherence to existing program.

**Background and Intent:** This is a continuation with modification of Measure NA-4 in the approved 1996 NCP, which is currently partially implemented. Measure NA-4 recommends monitoring late night (11:00 p.m. to 7:00 a.m.) runway utilization and variances from the NCP assumptions and conducting follow-up with ATCT management and frequent nighttime operators if a concern is brought forward or if a question arises regarding nighttime operations at the Airport. The intent of this measure is to monitor late night runway utilization and variances from NCP assumptions. The measure would assure that ATCT and the users are aware of the effectiveness of the program and to provide a basis for discussion to maintain the maximum utility of the 2024 NCP.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-4 in the 1996 NCP.

**Land Use Compatibility Improvement:** Measure will provide a reduction in noise exposure by ensuring that the 2024 NCP is followed as it would result in noise improvements north and south of the Airport.

**Responsible Implementing Parties:** The City of Charlotte Aviation Department, through its Noise Abatement Specialist, will be responsible for implementation of this measure.

#### **Implementation Steps, Costs, and Phasing:**

**Steps:** The Airport Noise Abatement Specialist will continue to review runway use statistics each month and prepare a letter report relating the use of each runway during total hours, as well as those hours between 11:00 p.m. and 6:59 a.m. The Airport will receive these statistics from a vendor that tracks the Airport's aircraft operations. The report will be delivered to ATCT management at CLT, as well as to each frequent operator of night flights by turbojets.

**Costs:** Preparation of statistics from Airport vendor costs approximately \$75,000 annually, and any coordination with the FAA and/or users is anticipated to result in minimal administrative costs.

**Schedule:** Since this is a continuation of an approved measure, implementation is immediate.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

**Noise Compatibility Program Measure: NA-5**

**Description:** Designate Runway 18C or 18L as preferred for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. when wind, weather, and operational conditions allow.

**Background and Intent:** This is a continuation with modification of Measure NA-5 in the approved 1996 NCP, which is currently implemented. Measure NA-5 of the 1996 NCP previously approved measure designated Runway 18R (existing Runway 18C) and Runway 18L as preferred for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. when, under the current preferential runway use program, Runway 23 or Runway 5 could not be used for reasons of wind, weather, operational necessity, or required runway lengths. Since the approval of Measure NA-5, the existing Runway 18R/36L was constructed (previously referred to as Runway 17/35) and the previous Runway 18R became Runway 18C. Furthermore, Runway 5/23 was decommissioned in 2022 and is no longer used for aircraft arrivals or departures. To date, the Airport continues to utilize Runways 18C and 18L for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. As such, the measure was modified to remove reference to the decommissioned Runway 5/23 and update the names of the existing runways. The intent of this measure is to continue the utilization of Runways 18C and 18L for takeoffs by turbojet aircraft between 11:00 p.m. and 7:00 a.m. as conditions allow.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-5 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The FAA ATCT management at CLT is responsible for modifying the CLT Tower Order as needed and continuing to implement the air traffic management procedures.

**Implementation Steps, Costs, and Phasing:** N/A

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### Noise Compatibility Program Measure: NA-6

**Description:** Reaffirm Airport user policy which designates locations and procedures for aircraft engine run-ups. Establish a run-up location on the deice pad and northeast airfield that are currently under construction. Maximize the use of midfield run-up locations over those located on the east side of the Airport.

**Background and Intent:** This is a continuation with modification of Measure NA-6 in the approved 1996 NCP, which is currently implemented. In the past, residents of neighborhoods in the Airport Environs have complained about the noise levels produced by aircraft run-ups, which may have been attributed to aircraft run-ups or power up at the initiation of takeoff roll or reverse thrust during landing. To minimize noise levels produced by aircraft run-ups, Measure NA-6 in the approved 1996 NCP reaffirmed the Airport's user policy which designates locations and procedures for aircraft engine run-ups and identified a new run-up position for American Airlines (the former US Airways) in the midfield of the Airport.

To date, the Airport's established user policy and procedure addresses the location of engine run-ups by the NCANG or the Guard) and the airlines using the Airport. The Guard is directed by that policy to use the NCANG ramp. American Airlines (the former US Air) is directed to use the American Airlines maintenance ramp using a heading of either 230 or 050 degrees to assure that the aircraft on the American Airlines (the former US Air) ramp is facing at least partially into the wind. Other airlines are directed to use taxiways parallel to runways. All run-ups are to be conducted only after advising ATCT of the requirement for run-up. Run-up activity conducted on the taxiways are to be positioned under the guidance of ATCT ground control. Furthermore, two airfield projects are currently under construction that would provide additional run-up locations. This includes the deice pad located on the south airfield east of Runway 36C and in the northeast airfield east of Taxiway D. Construction is anticipated to conclude in 2025 and would be able to be used for run-ups when completed.

As such, the intent of this measure is to reaffirm the Airport's existing policy, establish two new run-up locations, and to maximize the use of midfield run-up locations over those located on the east side of the Airport. The higher usage of midfield run-up locations over those on the east side of the Airport would help reduce noise levels produced by aircraft run-ups to communities in the Airport Environs.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-6 in the 1996 NCP.

**Land Use Compatibility Improvement:** No effect on contours, but the measure will abate single-event levels generated by run-ups.

**Responsible Implementing Parties:** The ATCT is responsible for enforcing this measure as they would position any run-ups conducted on taxiways. The NCANG and American Airlines are responsible for implementation of the run-up orientation and the other airlines will be responsible for coordination of the other run-up locations.

#### **Implementation Steps, Costs, and Phasing:**

Steps: The City of Charlotte Aviation Department should schedule a meeting with ATCT and the airlines who use taxiways parallel to runways for run-ups to discuss the two new run-up locations and the maximizing of the use of midfield run-up locations over those located on the east side of the Airport.

Costs: No costs are anticipated.

**Schedule:** The portion of the measure related to the two new run-up locations and the maximizing of the midfield run-up locations over those located on the east side of the Airport may be implemented by the Airport and ATCT on adoption and acceptance of the 2024 NCP. The action should be accomplished within three months of initiation. The two new run-up locations will be implemented when the projects have completed construction which is anticipated to conclude in 2025.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### **Noise Compatibility Program Measure: NA-7 (Short-Term)**

**Description:** Departing Runways 36R and 36C, all turbojet aircraft initiate turns at 2.5 DME (36C) and 2.6 DME (36R) north of the CLT VOR/DME, respectively.

**Background and Intent:** This is a continuation with modification of the previously approved Measure NA-7 of the 1996 NCP, which is currently implemented. The 1996 NCP Measure NA-7 require large aircraft departing from Runway 36R to turn to a heading of 025 degrees at the 2.6 DME north of the CLT VOR/DME, and large aircraft departing Runway 36C (formerly 36L) to turn to a heading of 330 degrees at the 2.5 DME north of the CLT VOR/DME, respectively. The intent is to enhance noise abatement by concentrating overflights into specific corridors of compatibly used land northeast and northwest of the Airport.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-7 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The ATCT at CLT is responsible for continuing to implement the air traffic management procedures.

**Implementation Steps, Costs, and Phasing:**

Steps: Local ATCT should continue implementing measure as approved.

Costs: No costs are anticipated.

Schedule: The program has been initiated and will continue without interruption.

**Effects on Other Programs/Measures:** This measure would be replaced with Measure NA-13. when it becomes active

### **Noise Compatibility Program Measure: NA-8**

**Description:** Departing Runway 18R, turbojet aircraft initiate turns as soon as practicable to a heading of 195 degrees.

**Background and Intent:** This is a continuation with modification of Measure NA-8 in the approved 1996 NCP, which is currently implemented. The approved Measure NA-8 is intended to assure adequate separation between departures on Runway 18R and missed approaches on Runway 18C as ATCT is required to maintain visual separation between the operations. Departures from Runway 18R may occasionally be diverged to a heading of 210 degrees or more. The heading of 195 degrees is intended to direct traffic along a course roughly parallel to and west of Steele Creek Road and over more compatibly used lands than would a departure along runway heading. While the measure is intended for application to turbojet aircraft, it may also be used by smaller prop aircraft at the discretion of the controller.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-8 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The ATCT at CLT is responsible for continuing to implement the air traffic management procedures.

**Implementation Steps, Costs, and Phasing:**

Steps: Local ATCT should continue implementing measure as approved.

Costs: No costs are anticipated.

Schedule: The program has been initiated and will continue without interruption.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.



### **Noise Compatibility Program Measure: NA-9**

**Description:** Departing Runway 36L, turbojet aircraft initiate turns as soon as practicable to a heading of 315 degrees.

**Background and Intent:** This is a continuation with modification of Measure NA-9 in the approved 1996 NCP, which is currently implemented. The previously approved Measure NA-9 is intended to turn departures from Runway 36C (formerly Runway 36L) and Runway 36L to diverging headings. This is to prevent the Runway 36C route (as described in Measure NA-7) from crossing the extended centerline of Runway 18R/36L between one and two miles north of the north end of the new runway. The heading of 315 degrees from Runway 36L is intended to direct any turbojet departures from that runway along an initial course roughly aligned with the intersections of Wilkinson Blvd and Sam Wilson Road and of I-85 and Moores Chapel Road. While the measure is intended for application to turbojet aircraft, it may also be used by smaller prop aircraft at the discretion of the controller. To assure adequate separation between departures on Runway 36L and missed approaches on Runway 36C (a combination which is not the normal expected operating configuration), ATCT will be required to maintain visual separation between the operations. Departures from Runway 36L may occasionally be delayed until the missed approach has cleared or, optionally, the missed approach course from Runway 36C may be revised to provide for climbs along the runway heading prior to transitioning to the missed approach fix.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NA-9 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The ATCT at CLT is responsible for continuing to implement the air traffic management procedures.

**Implementation Steps, Costs, and Phasing:**

Steps: Local ATCT should continue implementing measure as approved.

Costs: No costs are anticipated.

Schedule: The program has been initiated and will continue without interruption.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### Noise Compatibility Program Measure: NA-10 (Long-Term)

**Description:** Conduct an assessment of ground run-up procedures after construction of the new fourth parallel runway to identify run-up locations in the midfield of the Airport.

**Background and Intent:** The Airport user policy currently identifies six run-up locations and procedures for aircraft engine run-ups, of which five are anticipated to be in operation after construction of the new fourth parallel runway due to future terminal development. After construction of the new fourth parallel runway, an assessment of ground run-up procedures and locations would be conducted to identify additional locations in the midfield in the future airport layout. The intent of this measure is to reduce sideline noise from run-ups after construction of the new fourth parallel runway.

**Relationship to 1996 NCP:** None

**Land Use Compatibility Improvement:** No effect on contours, but the measure will abate single-event levels generated by run-ups.

**Responsible Implementing Parties:** The City of Charlotte Aviation Department is responsible for conducting the assessment. If additional midfield ground run-up locations are identified, the ATCT is responsible for enforcing this measure as they would position any run-ups conducted on taxiways. The airlines will be responsible for coordination of the on-ramp run-up location if along a taxiway.

#### Implementation Steps, Costs, and Phasing:

**Steps:** The City of Charlotte Aviation Department should conduct an assessment of ground run-up locations after the measure is approved and construction of the new fourth parallel runway has been completed. Based on the findings of the assessment, the ATCT will be responsible for implementing additional ground run-up locations in the midfields.

**Costs:** Cost related to conducting an assessment of ground run-up procedures after construction of the new fourth parallel runway, at an estimated cost of \$25,000 to \$100,000. Minimal costs related to development and publication of new airport procedures to document new run-up locations based on the assessment.

**Schedule:** The ground run-up procedure assessment may be implemented after the measure is approved and construction of the new fourth parallel runway has been completed.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### Noise Compatibility Program Measure: NA-11 (Long-Term)

**Description:** Designate Runway 36L and 36R as preferred for north flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m.

**Background and Intent:** After construction of the new fourth parallel runway, this measure would designate Runway 36R and Runway 36L primarily for nighttime north flow arrivals. The intent of the measure is to reduce noise impacts by shifting the nighttime overflights from residential land uses off Douglas Drive and Shopton Road to noise-compatible land uses over Airport property west of Steele Creek Road and to the east off Beam Road.

**Relationship to 1996 NCP:** None

**Land Use Compatibility Improvement:** The measure will shift the nighttime overflights over residential land uses off Douglas Drive and Shopton Road to noise-compatible land uses over Airport property west of Steele Creek Road and to the east off Beam Road.

**Responsible Implementing Parties:** The City of Charlotte Aviation Department and FAA will be responsible for the completion of the environmental processing per the NEPA for the measure. The FAA ATCT management at CLT will be responsible for modifying the Tower Order and implementing procedures to effect the change identified in this measure.

#### Implementation Steps, Costs, and Phasing:

**Steps:** Environmental processing for the measure per the NEPA will be completed and approval will be required. Before construction of the new fourth parallel runway is complete, the City of Charlotte Aviation Department will request that FAA ATCT management modify the CLT Tower Order based on the description of this measure.

**Costs:** The cost for the completion of the required environmental processing per the NEPA will be primarily borne by the Airport subject to the availability of Federal AIP grant funding. The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.

**Schedule:** The measure may be implemented after the measure is approved, the required environmental processing per the NEPA is approved, and construction of the new fourth parallel runway has been completed. Planning for the implementation of this measure and the associated environmental processing per the NEPA may be initiated on approval of the measure by the FAA.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### Noise Compatibility Program Measure: NA-12 (Long-Term)

**Description:** Designate Runways 18L, 18C, and 18R for south flow arrivals by turbojet aircraft between 10:00 p.m. and 7:00 a.m.

**Background and Intent:** After construction of the new fourth parallel runway, this measure would designate Runway 18R, Runway 18C, and Runway 18L for south flow arrivals in the nighttime. The intent of this measure is to reduce noise impacts by spreading nighttime south flow arrivals among the three arrival runways. This would reduce the nighttime traffic over residential land uses off Tuckaseegee Road, Westwood Drive, and Little Rock Road. In turn, this would increase nighttime arrival overflights over Interstate 485 and Airport property.

**Relationship to 1996 NCP:** None

**Land Use Compatibility Improvement:** The measure will shift the nighttime traffic from residential land uses off Tuckaseegee Road, Westwood Drive, and Little Rock Road to major transportation corridors (Interstate 485) and noise-compatible land uses (Airport property).

**Responsible Implementing Parties:** The City of Charlotte Aviation Department and FAA will be responsible for the completion of the environmental processing per the NEPA for the measure. The FAA ATCT management at CLT will be responsible for modifying the Tower Order and implementing procedures to effect the change identified in this measure.

#### Implementation Steps, Costs, and Phasing:

Steps: Environmental processing per the NEPA for the recommended Part 150 air traffic procedures will be completed and approval is required for the measure's implementation. Before construction of the new fourth parallel runway is complete, the City of Charlotte Aviation Department will request that FAA ATCT management modify the CLT Tower Order based on the description of this measure.

Costs: The cost for the completion of the required environmental processing per the NEPA addressing the recommended Part 150 air traffic procedures would be primarily borne by the Airport subject to the availability of Federal AIP grant funding. The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.

Schedule: The measure may be implemented after the measure is approved, the required environmental processing per the NEPA addressing the recommended Part 150 air traffic procedures is completed, and construction of the new fourth parallel runway has been completed. Planning for the implementation of this measure and the associated environmental processing per the NEPA may be initiated on approval of the measure by the FAA.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### Noise Compatibility Program Measure: NA-13 (Long-Term)

**Description:** Maximize the number of divergent headings for north flow departures while maintaining a 15° separation between headings on Runway 36C, Runway 36R, and Runway 01.

**Background and Intent:** The intent of this measure is to reduce net residential noise impacts north of the Airport by providing additional flight corridors over as wide of an area as possible. The measure would implement the maximum number of divergent headings while maintaining a 15° separation between headings to spread noise over as wide an area surrounding the Airport as possible.

This measure would implement the following divergent headings to the following departure runways:

- Runway 36R: Runway Heading (RWH), 20°, 35°, 50°, 65°, 80°
- Runway 36C and Runway 01: RWH, 345°, 330°, 315°, 300°, 285°

The existing runway use program designates Runway 36R and Runway 36C for daytime and nighttime departure operations. After the new Runway 01/19 is constructed, the runway use program designates Runway 01 and Runway 36R for daytime departure operations and Runway 36C and Runway 36R for nighttime departure operations. Additionally, Runway 36C would be used for departures in the daytime if Runway 01 could not be used for reasons of operational necessity. As such, headings proposed for Runway 36C are also proposed for Runway 01.

*While a straight-out heading is identified for Runways 36R and 01 (or 36C), these headings cannot be used simultaneously because a 15-degree separation is required per 7110.65Z.*

**Relationship to 1996 NCP:** None

**Land Use Compatibility Improvement:** The measure will distribute noise impacts over as wide of an area as possible and would result in a net decrease in noise-sensitive facilities within the DNL 65 dB.

**Responsible Implementing Parties:** The City of Charlotte Aviation Department and FAA will be responsible for the completion of the environmental processing per the NEPA for the measure. The FAA is responsible for developing air traffic management procedures with respect to this measure, and FAA ATCT management at CLT will be responsible for modifying the Tower Order to implement the new procedures to effect the change.

#### Implementation Steps, Costs, and Phasing:

**Steps:** Environmental processing per the NEPA for the recommended measure will be completed and approval will be required. The FAA will develop air traffic management procedures for this measure and the City of Charlotte Aviation Department will request that FAA ATCT management modify the CLT Tower Order based on the procedures. During implementation of the new measure, CLT will monitor aircraft in flight and will coordinate with ATCT on its implementation.

**Costs:** The cost for the completion of the required environmental processing per the NEPA will be primarily borne by the Airport subject to the availability of Federal AIP grant funding. The cost for development, training, and publication of new procedures would be the responsibility of the FAA.

**Schedule:** The measure may be implemented after the measure is approved, the required environmental processing per the NEPA is approved, and the development of the air traffic procedures and implementation to the CLT Tower Order is completed. Planning for the implementation of this measure and the environmental processing per the NEPA may be initiated on approval of the measure by the FAA.

**Effects on Other Programs/Measures:** This measure would replace Measure NA-7.

### Noise Compatibility Program Measure: NA-14 (Long-Term)

**Description:** Maximize the number of divergent headings for south flow departures while maintaining a 15° separation between headings on Runway 18C, Runway 18L, and Runway 19. This would require the elimination of the 2-mile restriction.

**Background and Intent:** The intent of this measure is to reduce net residential noise impacts to the south of the Airport by dispersing flights over as wide of an area as possible. The measure would implement the maximum number of divergent headings while maintaining a 15° separation between headings to spread noise over as wide an area surrounding the Airport as possible. This would require the elimination of the existing 2-mile restriction.

This measure would implement the following divergent headings to the following departure runways:

- Runway 18L: RWH, 165°, 150°, 135°, 120°, 105°
- Runway 18C and Runway 19: RWH, 200°, 215°, 230°, 245°, 260°

The existing runway use program designates Runway 18L and Runway 18C for daytime and nighttime departure operations. After the new Runway 01/19 is constructed, the runway use program designates Runway 19 and Runway 18L for daytime departure operations and Runway 18C and Runway 18L for nighttime departure operations. Additionally, Runway 18C would be used for departures in the daytime if Runway 19 could not be used for reasons of operational necessity. As such, headings proposed for Runway 18C are also proposed for Runway 19.

*While a straight-out heading is identified for Runways 18L and 19 (or 18C), these headings cannot be used simultaneously because a 15-degree separation is required per 7110.65Z.*

**Relationship to 1996 NCP:** None

**Land Use Compatibility Improvement:** The measure will distribute noise impacts over as wide of an area as possible and would result in a net decrease in noise-sensitive facilities within the DNL 65 dB.

**Responsible Implementing Parties:** The City of Charlotte Aviation Department and FAA will be responsible for the completion of the environmental processing per the NEPA for the measure. The FAA is responsible for developing air traffic management procedures with respect to this measure, and FAA ATCT management at CLT will be responsible for modifying the Tower Order to implement the new procedures to effect the change.

**Implementation Steps, Costs, and Phasing:**

Steps: Environmental processing per the NEPA for the recommended measure will be completed and approval will be required. The FAA will develop air traffic management procedures for this measure and the City of Charlotte Aviation Department will request that FAA ATCT management modify the CLT Tower Order based on the procedures. During implementation of the new measure, CLT will monitor aircraft in flight and will coordinate with ATCT on its implementation.

Costs: The cost for the completion of the required environmental processing per the NEPA will be primarily borne by the Airport subject to the availability of Federal AIP grant funding. The cost for development, training, and publication of new procedures would be the responsibility of the FAA.

Schedule: The measure may be implemented after the measure is approved, the required environmental processing per the NEPA is approved, and the development of the air traffic procedures and implementation to the CLT Tower Order is complete. Planning for the implementation of this measure and the environmental processing per the NEPA may be initiated on approval of the measure by the FAA.

**Effects on Other Programs/Measures:** The measure is not expected to impact other measures or existing programs.

### **Noise Compatibility Program Measure: LU-1**

**Description:** Promote compatible land use planning within the Airport Noise Disclosure Overlay District (DNL 65 dB of the combined 1996 NEM and 1996 NCP contours).

**Background and Intent:** This is a continuation with modification of Measure LU-1 in the approved 1996 NCP, which is implemented. The measure recommended amending local land use planning policies (zoning, density, and capital improvement recommendations) to reduce the development of new noncompatible land uses within the Airport Environs. The intent of this measure is for the Planning Commission to be proactive in developing land use policies to be consistent with FAR Part 150 compatible land use guidelines. (See Table A-13 in Appendix A of this document, FAA Land Use Compatibility Appendix A, Table 1.)

The compatible land use policies would apply to the Airport Noise Disclosure Overlay District, also referred to as the areas within the DNL 65 dB of the combined 1996 NEM contours and 1996 NCP contours. The implementation of compatible land use planning should be continued in all future actions of the Charlotte-Mecklenburg Planning Commission.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure LU-1 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The City of Charlotte, the Charlotte-Mecklenburg Planning Commission, and the Airport Planner.

#### **Implementation Steps, Costs, and Phasing:**

**Steps:** The Airport and Planning Commission should continue to work cooperatively in implementing Measure LU-1 through recommending to the governing bodies to be proactive in developing land use policies for the Airport Environs to be consistent with FAR Part 150 compatible land use guidelines.

**Costs:** The costs of implementing the measure will be confined to administrative costs for the City of Charlotte Aviation Department and Planning Commission staff.

**Schedule:** As an approved measure, implementation may continue.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation program measures and it will enhance the compatibility of land uses surrounding the Airport.



## Noise Compatibility Program Measure: LU-2

**Description:** Pursue zoning for compatible development.

**Background and Intent:** This is a continuation of Measure LU-2 in the approved 1996 NCP, which is implemented. Measure LU-2 recommends the rezoning of property to permit only compatible uses within specific noise contours, to retain compatible zoning, and to limit the density of residential development permitted within noise contours. This measure is intended to establish the policy of making Airport-compatible land uses the priority within the Airport Noise Disclosure Overlay District, also referred to as the area within the DNL 65 dB noise exposure of the combined 1996 NEM and 1996 NCP noise contours, so that the Planning Commission will be proactive in initiating the rezoning of large undeveloped tracts of non-compatibly zoned property. As this measure is currently practiced by CLT, a zoning change request is initiated by the Airport as noncompatible property is acquired. The implementation of zoning for compatible development should continue to be the first priority within the Airport Environs in all future actions of the Charlotte-Mecklenburg Planning Commission.

**Relationship to 1996 NCP:** Continuation of the approved Measure LU-2 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The City of Charlotte, the Charlotte-Mecklenburg Planning Commission, and the Airport Planner.

### **Implementation Steps, Costs, and Phasing:**

**Steps:** The Charlotte-Mecklenburg Planning Commission should continue to rezone areas zoned as noncompatible within the Airport Environs to compatible zoning. The Airport Environs include the area south of Tuckaseegee Road, west of Billy Graham Parkway and W. Tyvola Road, east of the I 485 Outer Belt, and north of the intersection of York Road and Arrowood Road. These boundaries generally follow the Airport's DNL 65 dB noise exposure patterns of the combined 1996 NCP and 1996 NEM contours. As the Airport acquires noncompatible zoned property, the Airport Community Programs Office and Airport Planner should also continue to initiate rezonings.

**Costs:** The costs of implementing the measure will be limited to administrative costs attributable to the City of Charlotte Aviation Department and Planning Commission staff.

**Schedule:** As an approved measure, implementation may continue.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation program measures and it will enhance the compatibility of land uses surrounding the Airport.

### **Noise Compatibility Program Measure: LU-7**

**Description:** Pursue the establishment of an Airport Overlay District (“District”) that corresponds to the Airport Environs in which there will be special requirements relating to developing, rezoning, and transferring residential property.

**Background and Intent:** This is a continuation of Measure LU-7 in the approved 1996 NCP which was previously implemented. Measure LU-7 in the 1996 NCP recommended establishing the Airport Overlay District

to coordinate the City’s and the FAA’s definition of the area affected by the Airport. Establishing this area also allows measures to be implemented to mitigate the negative effects of noise in a way that would be compatible with the overall zoning in the City and Mecklenburg County.

The Charlotte-Mecklenburg Planning Department adopted an Airport Noise Disclosure Overlay District to provide mechanisms for the disclosure to residential property owners and prospective residential property owners in the Airport Environs that the use and enjoyment of property located within the district is subject to overflights and aircraft noise that may be objectionable. The Airport Noise Disclosure Overlay District boundary includes all parcels intersecting the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours. The following Airport Noise Disclosure Overlay District Notice is included with every building permit and certificate of occupancy issued for residential construction and use located in the Airport Noise Disclosure Overlay District: *“Noise Warning—This property, either partially or wholly, is zoned Airport Noise Disclosure Overlay District and lies within or near the Noise Exposure Map Areas of Charlotte/Douglas International Airport and may be subject to noise that may be objectionable.”*

**Relationship to 1996 NCP:** Continuation of the approved Measure LU-7 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** Charlotte-Mecklenburg Planning Commission, City of Charlotte Aviation Department.

**Implementation Steps, Costs, and Phasing:**

Steps: The City of Charlotte Aviation Department would continue to encourage the Charlotte-Mecklenburg Planning Commission to enforce the Airport Noise Disclosure Overlay District.

Costs: The cost of continuing to implement the measure will be confined to continuing costs to administer and enforce the Airport Noise Disclosure Overlay District Ordinance.

Schedule: As an approved measure, implementation may continue.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation program measures and it will enhance the compatibility of land uses surrounding the Airport.

### Noise Compatibility Program Measure: LU-9

**Description:** Continue efforts to maintain the use of the Airport Noise Disclosure Overlay District Notice.

**Background and Intent:** This is a continuation with modification of Measure LU-9 in the approved 1996 NCP, which was partially implemented. The intent of the previously approved Measure LU-9 in the 1996 NCP was to accommodate continued residential land use while providing a mechanism to enhance the awareness of new residents of the potential non-compatibility of the structure. However, no method of enforcement has been implemented.

This measure recommends continuing to support the Charlotte-Mecklenburg Planning Department's mechanisms for the disclosure to residential property owners and prospective residential property owners in the Airport Environs that the use and enjoyment of property located within the district is subject to overflights and aircraft noise that may be objectionable. The Airport Noise Disclosure Overlay District boundary includes all parcels intersecting the DNL 65 dB of the combined 1996 NEM and 1996 NCP contours. The following Airport Noise Disclosure Overlay District Notice is currently included with every building permit and certificate of occupancy issued for residential construction and use located in the Airport Noise Disclosure Overlay District: *"Noise Warning—This property, either partially or wholly, is zoned Airport Noise Disclosure Overlay District and lies within or near the Noise Exposure Map Areas of Charlotte/Douglas International Airport and may be subject to noise that may be objectionable."*

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure LU-9 of the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The City of Charlotte Aviation Department, the City/Airport attorney, the City of Charlotte City Council, Mecklenburg County, and the Charlotte-Mecklenburg Planning Commission.

**Implementation Steps, Costs, and Phasing:**

Steps: The Airport's planner will coordinate with Planning Commission staff and the City/Airport attorney to ensure the appropriate distribution of the Airport Noise Disclosure Overlay District Notice.

Costs: The costs of implementing the measure will be confined to administrative costs for the City of Charlotte Aviation Department and the Planning Commission. These costs will be incurred in the continued coordination and implementation of the Airport Noise Disclosure Overlay District Notice.

Schedule: As an approved measure, implementation may continue.

**Effects on Other Programs/Measures:** This measure is not expected to adversely affect any other mitigation program measures.

### **Noise Compatibility Program Measure: NM-1**

**Description:** Establish a public information program which distributes noise and noise abatement information to the public.

**Background and Intent:** This is a continuation of Measure NM-1 of the approved 1996 NCP, which was implemented. A public information program is in place that provides the general public, land developers, lending institutions, planning officials, and real estate professionals with the current status of Airport operations, proposed Airport development, noise impacts, and mitigation programs. Additionally, two newsletters which are currently in place, were implemented: *Connections* provides information of interest to business and development concerns, and *Neighborhood Update* focuses on the implementation of mitigation programs, neighborhood meetings, and noise issues of community importance. The newsletters are published on the Airport's website and are distributed to the interested public through email.

**Relationship to 1996 NCP:** Continuation of the approved Measure NM-1 in the 1996 NCP.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** The City of Charlotte Aviation Department Public Information Specialist.

#### **Implementation Steps, Costs, and Phasing:**

**Steps:** The Public Information Specialist, working with the Airport Planner, Community Programs Manager, Aviation Director, and, as warranted, the Airport's consultants, will review current projects, studies and analyses to identify information which should be provided to the general public via the *Neighborhood Update* or to the business community via the *Connections* newsletter.

**Costs:** The costs of implementation will be borne by the Airport. There is no Federal funding reimbursement for this measure. The Airport will underwrite the administrative costs associated with researching, writing, preparing the newsletters for publication, and for digital publication and email distribution.

**Schedule:** As an approved measure, implementation may continue.

**Effects on Other Programs/Measures:** This measure is not expected to adversely affect any other mitigation program measures.

## Noise Compatibility Program Measure: NM-2

**Description:** Sound insulate noise-sensitive public building intended for public use, instruction (e.g., schools) or assembly (e.g., churches) located within the Future (2028) NEM/NCP Noise Exposure Contour.

**Background and Intent:** This is a continuation with modification of Measure NM-2 approved in the 1996 NCP, which has been implemented. Measure NM-2 of the approved 1996 NCP recommended the sound insulation of public buildings (schools and churches) located within the DNL 65 dB of the combined 1996 NCP contours and 1996 NEM contours. The intent of this measure is to continue providing for the voluntary participation of noise-sensitive public buildings (e.g. schools and churches) in the recommended sound insulation program within the Future (2028) NEM/NCP Noise Exposure Contour. The following provides a list of the noise-sensitive public facilities identified within the Future (2028) NEM/NCP Noise Exposure Contour:

### Churches

Every Nation Church (sound insulated)  
Harvest Center Church  
Montagnard Alliance Church  
Mulberry Baptist Church (sound insulated)

### Schools (Includes Schools and Day Cares):

West Mecklenburg High School (sound insulated)  
East Voyager Academy of Charlotte  
Beginning Years Day Care  
Mulberry Head Start (sound insulated)

The untreated noise-sensitive public buildings located within the Future (2028) NEM/NCP Noise Exposure Contour are two churches (Harvest Church and Montagnard Alliance Church), one school (East Voyager Academy of Charlotte), and one daycare (Beginning Years Day Care).

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NM-2 in the 1996 NCP.

**Land Use Compatibility Improvement:** This noise mitigation measure will reduce the number of noncompatible noise-sensitive sites within the Future (2028) NEM/NCP Noise Exposure Contour by two churches and two schools.

**Responsible Implementing Parties:** The Community Programs Office of the City of Charlotte Aviation Department and the governing body of each of the four potentially eligible churches and schools. The Community Programs Office would be responsible for coordinating the development of the sound insulation specifications for these facilities.

**Implementation Steps, Costs, and Phasing:**

Steps: The Airport Community Programs Manager will take “before” interior and exterior noise measurements at the structure. These data will be given to the Airport’s noise consultant and a local architectural firm. From the analysis of this data, the consultants advise the City of Charlotte Aviation Department whether treatment is required. If treatment is warranted, the architect will develop the sound insulation specifications and put the contract for construction out to bid. The architect will select the contractor and oversee the construction. When the sound insulation is completed, the Airport Community Programs Manager will take “after” interior and exterior noise measurements to verify that the FAA and City-design objectives for interior NLR has been reached.

Costs: The costs of implementation will be borne by the Airport subject to the availability of Federal Airport Improvement Program (AIP) grant funding. There will be administrative costs in terms of coordinating and managing the program, and design and construction costs associated with the sound insulation of each structure. There will also be costs for noise measurements, architectural design specifications, cost of materials, labor, and final inspection of completed work. The estimated cost of sound insulating two churches is approximately \$1,000,000 and two schools is approximately \$1,250,000.<sup>12</sup> The actual cost for sound insulation of these facilities will vary and depend on construction estimates.

Schedule: The measure may be implemented on approval by the FAA and based on the availability of funding.

**Effects on Other Programs/Measures:** Supports Measures NM-3 which calls for sound insulation of private residences.

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<sup>12</sup> The cost is based on the previous costs for completing sound insulation at schools and churches in the surrounding area of the Airport.

### **Noise Compatibility Program Measure: NM-3**

**Description:** Sound insulate eligible houses located within the 2024 NCP sound insulation program boundary which may be benefited under FAA design criteria.

**Background and Intent:** This is a continuation with modification of Measure NM-3 in the approved 1996 NCP. The purpose of a sound insulation program is to reduce the adverse effect of airport-related noise on building occupants. This measure recommends that the City of Charlotte Aviation Department update the existing sound insulation program to include existing houses within the 2024 NCP sound insulation program boundary.

Exhibit 4-8 shows the Future (2028) NCP/NEM noise contours and the 2024 NCP sound insulation program boundary. This program measure will be voluntary, and provide mitigation to all private residences (other than mobile homes) that meet the FAA design objective for interior NLR. In order for homeowners to participate in the sound insulation program, noncompatible structures would first have to be deemed eligible.

The design objective for sound insulation, as stated in the FAA AIP Handbook, is to achieve a DNL of 45 dB in all habitable rooms. Eligibility criteria, as defined by FAA Order 5100.38A, requires that residential sound insulation projects be designed to provide at least 5 dB improvement in noise level reduction (NLR). Since it takes an improvement of at least 5 dB in noise level reduction (NLR) to be clearly perceptible to the average person, the residential sound insulation program will be designed to provide at least that level of noise reduction. Only those structures able to achieve the minimum improvement in NLR and a DNL of 45 dB will be eligible for participation in the Federally funded mitigation program. If the structure already has an interior DNL of 45 dB in all habitable rooms, it will not be eligible for the program.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NM-3 of 1996 NCP.

**Land Use Compatibility Improvement:** This noise mitigation measure will reduce the number of noncompatible structures that are eligible for sound insulation within the 2024 NCP sound insulation program boundary. All of these noncompatible dwelling units will be potentially eligible for participation in the sound insulation program.

**Responsible Implementing Parties:** City of Charlotte Aviation Department

**Implementation Steps, Costs, and Phasing:**

Steps: The implementation of sound insulation measures within the 2024 NCP sound insulation program boundary will require the evaluation of interior and exterior noise levels at the structure to determine program eligibility. These evaluations will be prepared by the Airport Community Programs Manager. Those residential structures which demonstrate a 45 decibel DNL interior noise level would not be eligible to participate in the sound insulation program. This eligibility criterion would most likely apply to houses constructed since the implementation of building code measures to achieve energy conservation (i.e., residential structures constructed since January 1, 1975).

Once eligibility is determined, the homeowner will complete a program application and submit it to the Airport Community Programs Office. Following the same implementation procedures of the 1996 NCP, the CLT staff will determine the design specifications for each individual structure and submit them to the homeowner in writing along with the request for an avigation easement. Once the homeowner accepts the design specifications and signs the avigation easement, CLT staff will develop the construction bid and award the contract. The Community Programs Manager oversees the construction.

To check the effectiveness of the sound insulation measures, the Community Programs Manager periodically will “spot check” the completed structures. This is accomplished by taking interior and exterior noise measurements to verify that the FAA design objective for interior noise level reduction has been reached.

While the program is guided by 2024 NCP sound insulation program boundary, the phasing for action of specific neighborhoods will be at the discretion of the Airport in accordance with local concerns and Federal funding availability. As with the existing sound insulation program of the approved 1996 NCP, the Community Programs Manager will identify and determine the eligibility of individual dwelling units within the noise contour. The extent of neighborhood participation in the program will be based on natural geographic features or developmental divisions found within or between neighborhood, as determined by the Airport.

Costs: The costs of implementation will be borne by the Airport, subject to the availability of Federal AIP grant funding. There will be administrative costs, in terms of coordinating and managing the program, and design and construction costs associated with the sound insulation of each residential structure. This will involve noise measurements, architectural design specifications, cost of materials, labor, and final inspection of completed work. The estimated cost of implementation will be approximately \$75,000 per structure. It is anticipated approximately 161 houses within the 2024 NCP sound insulation program boundary have been previously sound insulated and would not be eligible for further mitigation. As such, approximately 317 houses are anticipated to be potentially eligible for sound insulation at an estimated cost of \$23,775,000.

Schedule: The measure may be implemented on approval by the FAA and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to adversely affect any other mitigation program measures.



### **Noise Compatibility Program Measure: NM-7**

**Description:** At the Airport’s option, purchase avigation easements, sound insulate, or acquire houses within the 2024 NCP sound insulation program boundary, where sound insulation is infeasible or not cost-effective because the property does not comply with the building code.

**Background and Intent:** This is a continuation with modification of Measure NM-7 in the approved 1996 NCP. According to FAA Order 5100.38A, *AIP Handbook*, an airport project cannot provide funding to compensate for inadequate maintenance, to bring nonconforming structures up to building code standards, or to improve the comfort or attractiveness of a building. Under this measure, the Airport is provided the flexibility to provide equitable solutions to the owners of those structures which are not up to the standards of the building code. The purchase of avigation easements, sound insulation, or acquisition of the property is recommended only in areas where sound insulation measures are being offered, and then only in instances where a residential structure is not compliant with the current standards of the state building code or when the condition of the structure makes it economically infeasible to implement the sound insulation measures. Terms of an easement may require that any money be used for building code, sound insulation or other compatibility improvements. Acquisition should be accomplished when the property is valued at less than the cost of insulation.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NM-7 in the 1996 NCP.

**Land Use Compatibility Improvement:** This noise mitigation measure will reduce the number of noncompatible structures within the 2024 NCP sound insulation program boundary. The Airport Community Programs Manager will identify these structures during the inventory of property to determine program eligibility.

**Responsible Implementing Parties:** City of Charlotte Aviation Department

#### **Implementation Steps, Costs, and Phasing:**

**Steps:** In the assessment of properties for the sound insulation program, residential structures not meeting the current standards of the state building code should be identified. The Airport Community Programs Office should then initiate steps to secure purchase of an avigation easement, to provide partial insulation, or to acquire the property.

**Costs:** For planning purposes, the unit cost of implementing this action is estimated to be the same as the average unit cost for sound insulation of a single residence (\$75,000). It is not possible to determine the exact number of residential structures within the 2024 NCP sound insulation program boundary that do not meet the state building code standards without an inspection of each unit. The Airport will need to identify those structures as they proceed with the implementation of the sound insulation program. For the purposes of this document, it is estimated that 20 structures may be eligible for participation under this measure. At an approximate cost of \$75,000 per structure, the estimated total implementation costs of this measure would total \$1,500,000.

**Schedule:** The measure may be implemented on approval by the FAA and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure will reduce, on a one for one basis, participation in the sound insulation program recommended in Measure NM-3.

**Noise Compatibility Program Measure: NM-9**

**Description:** Acquire mobile homes located within the 2024 NCP sound insulation program boundary.

**Background and Intent:** This is a continuation with modification of Measure NM-9 of the approved 1996 NCP. According to the FAR Part 150 noise compatibility guidelines (see Table 2, FAA Land Use Compatibility Appendix A, Table 1), mobile homes are not compatible land uses within the DNL 65 dB noise contour. Additionally, mobile home construction materials are not conducive to sound insulation treatment. Measure NM-9 recommends continuing the voluntarily sound insulation of private residences within the 2024 NCP sound insulation program boundary. Because mobile homes cannot be effectively sound insulated, this measure recommends continuing the voluntary acquisition of these structures.

There is one mobile home park, the Interstate Mobile Home Park, located within the 2024 NCP sound insulation program boundary. The Interstate Mobile Home Park is located north of the Airport and south of I-85. As part of the 1996 NCP, the Interstate Mobile Home Park was previously offered acquisition and relocation pursuant to the Federal guidelines as published in FAA Order 5100.37A, *Land Acquisition and Relocation Assistance for Airport Projects, April 4, 1994*. However, the owner of the mobile home park declined the proposed acquisition. Because the mobile home park is located within the 2024 NCP sound insulation program boundary, this measure recommends continuing to offer voluntary acquisition for these structures.

The acquisition and relocation of the mobile home park and the mobile homes within these parks will be conducted pursuant to the Federal guidelines as published in FAA Order 5100.37A, *Land Acquisition and Relocation Assistance for Airport Projects, April 4, 1994*. This Order provides guidance on the necessity for and a means of preparing the appraisal and acquisition of real property; rendering relocation services; moving, relocation and replacement housing payments; and other expense payments under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1978 (PL 91-646). The mobile home park, and the homes located within, will be assessed on an individual basis regarding the type of relocation assistance for which they would be eligible. The specific program requirements, definitions, and plans for relocation will be prepared by the Department of Aviation.

<u>Estimated</u>		<u>Approximate</u>	
<u>Population</u>	<u>Mobile Home Park</u>	<u>Mobile Homes</u>	<u>Acreage</u>
156	Interstate Mobile Home Park	62 homes	12.8 acres

There may also be individually-sited mobile homes scattered throughout the 2024 NCP sound insulation program boundary. As these mobile homes are located within the 2024 NCP sound insulation program boundary, the owners will be offered the opportunity to voluntarily participate in the acquisition program. As mobile homes (trailers) are considered to be personal property in the State of North Carolina, the structures do not appear on real estate tax records. Therefore, individual mobile homes, not located within trailer parks, could not be specifically identified for the Part 150 Study’s land use data base. The Airport Community Programs Manager will attempt to locate these structures during the implementation and inventory for the mitigation programs.

The acquisition and relocation of the scattered mobile homes also will be conducted pursuant to the Federal guidelines as published in FAA Order 5100.37A, *Land Acquisition and Relocation Assistance for Airport Projects, April 4, 1994*. Each mobile home will be assessed on an individual basis regarding the type of relocation assistance for which they would be eligible.

**Relationship to 1996 NCP:** Continuation with modification of the approved Measure NM-9 in the 1996 NCP.

**Land Use Compatibility Improvement:** The acquisition of mobile homes will reduce the number of noncompatible land uses within the DNL 65 dB by approximately 12.8 acres and 62 mobile homes. One additional mobile home (trailer) was identified south of Wilkinson Boulevard on Eatonton St. Furthermore, because mobile homes (trailers) do not appear on the real estate tax records it was not possible to determine the exact number of potentially eligible mobile homes located outside of mobile home (trailer) parks. The Airport Community Programs Manager will be able to locate any individual mobile home units scattered within the DNL 65 dB noise contour during the implementation process of inventory and appraisal.

**Responsible Implementing Parties:** City of Charlotte Aviation Department.

**Implementation Steps, Costs, and Phasing:**

Steps: The Airport Community Programs Office will coordinate the assessment and inventory of the mobile home parks and the individual mobile home units located within the three eligible parks. The specific recommendations for each unit will be determined by the guidelines in FAA Order 5100.37A.

Costs: The cost is estimated to a total of \$4,000,000 to \$6,000,000, which includes the administrative costs of developing the voluntary acquisition program, the cost for the acquisition of park acreage and individual mobile home units, and relocation costs of units within the 2024 NCP sound insulation boundary.

Schedule: The measure may be implemented on approval by the FAA and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to adversely affect any other mitigation program measures.

#### 4.4.2 Future (2028) NEM/NCP Noise Exposure Contour

The Future (2028) NEM/NCP Noise Exposure Contour constitutes the official NEM for the year 2028 and is reflective of the forecast operating conditions for 2028 with the implementation of the 2024 NCP as presented in Section 4.4.1. The Future (2028) NEM/NCP Noise Exposure Contour superimposed on the existing land use is shown in **Exhibit 4-9, Future (2028) NEM/NCP Noise Exposure Contour**.

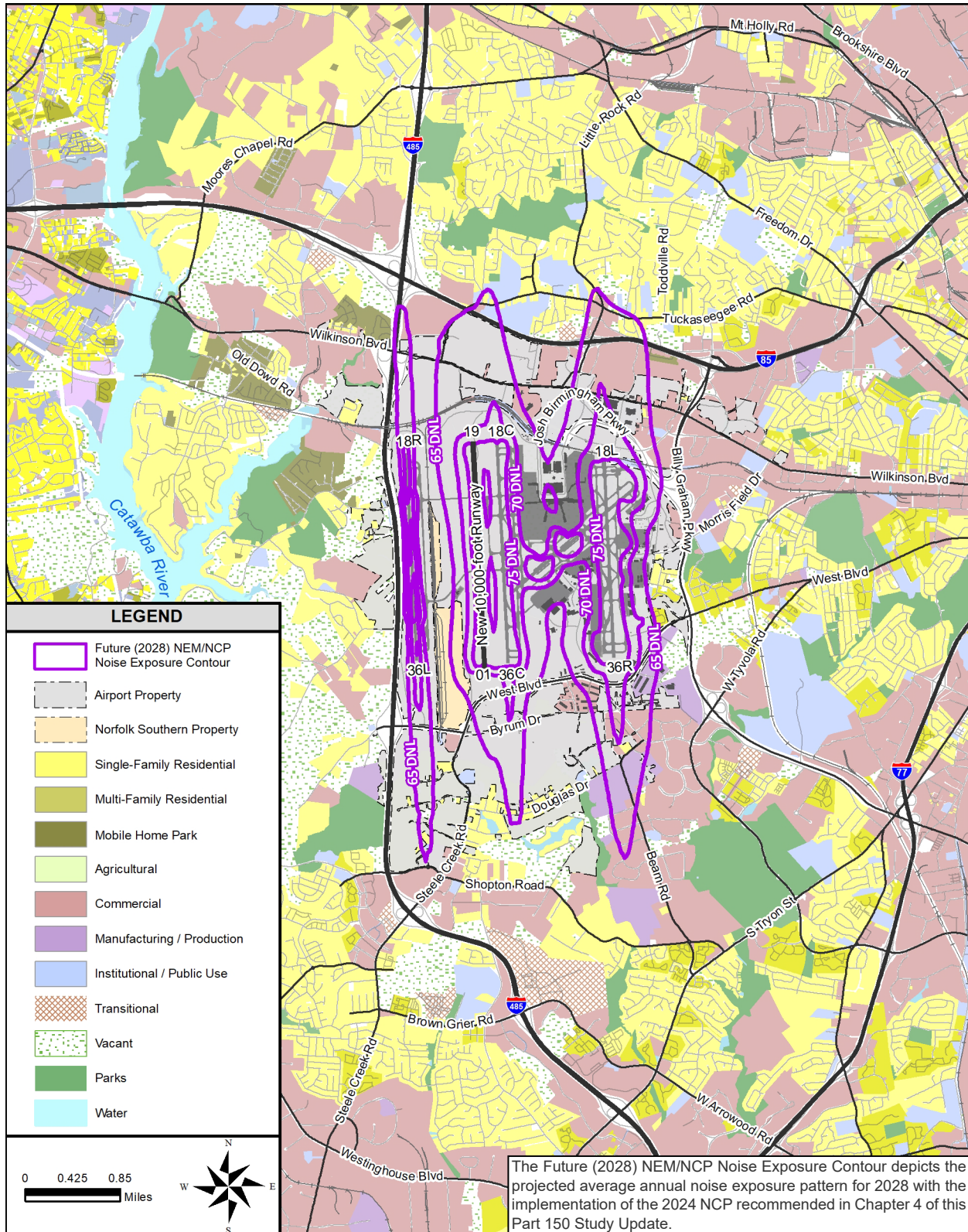
**Table 4-2, Future (2028) NEM/NCP Housing, Population, and Noise-Sensitive Sites** presents a summary of the number of housing units (households), population (residents), and other noise-sensitive sites within the DNL 65 dB noise exposure contour for the Future (2028) NEM/NCP. There are 217 housing units and eight noise-sensitive facilities within the DNL 65 dB for the Future (2028) NEM/NCP noise exposure contour.

**Table 4-2 Future (2028) NEM/NCP Residential Housing, Population, and Noise-Sensitive Sites**

Category	Future (2028) NEM/NCP
<b>Housing Units</b>	
DNL 65 – 70 dB	217
DNL 70 – 75 dB	0
DNL 75+ dB	0
DNL 65+ dB	217
<b>Population</b>	
DNL 65 – 70 dB	621
DNL 70 – 75 dB	0
DNL 75+ dB	0
DNL 65+ dB	621
<b>Noise-Sensitive Facilities</b>	
DNL 65 – 70 dB	8
DNL 70 – 75 dB	0
DNL 75+ dB	0
DNL 65+ dB	8

Source: Landrum & Brown, 2024.

**Exhibit 4-9 Future (2028) NEM/NCP Noise Exposure Contour**



Source: Landrum & Brown, 2024.

### 4.4.3 Noise Compatibility Program Costs

The City of Charlotte Aviation Department, supplemented by potential funding from the FAA, will incur the direct costs associated with the recommended NCP measures. Costs have been estimated in 2024 dollars and are presented in **Table 4-3, NCP Implementation Costs**. These costs are separated between the City of Charlotte Aviation Department, local governments, and users (e.g. airlines, corporate aviation, general aviation) if any, with CLT carrying the vast majority of responsibility for the costs of the program measures. The City of Charlotte Aviation Department-funded mitigation actions recommended for implementation are eligible for Federal matching funds amounting to approximately 80 percent of the total program cost. The costs of each individual measure are detailed earlier in this chapter.

Annual costs consist of the administrative expenses to coordinate public outreach efforts and land use compatibility planning meetings related to implementation of land use efforts. Annual costs also include payment to vendors to provide Airport aircraft operations data, and administrative costs for staff to review statistics and coordinate with ATCT management as needed. One-time costs include the expenditures to implement the sound insulation program. The total estimated cost for all NCP recommendations is between \$32,125,000 to \$35,200,000.

**Table 4-3 NCP Implementation Costs**

Type of Measure	Direct Cost to CLT	Direct Cost to Local Government	Direct Cost to Users
<b>Noise Abatement Measures</b>			
NA-4	Annual \$75,000 and minimal administrative costs	None	None
NA-10	\$25,000 to \$100,000	None	None
NA-11 through NA-14	Approximately \$500,000 to \$1,500,000 for NEPA	None	None
<i>Subtotal</i>	<i>\$600,000 to \$1,675,000</i>	<i>None</i>	<i>None</i>
<b>Land Use Compatibility Measures</b>			
LU-1 through LU-9	Minimal	Minimal	None
<i>Subtotal</i>	<i>Minimal</i>	<i>Minimal</i>	<i>None</i>
<b>Land Use Mitigation Measures</b>			
NM-1	Minimal	None	None
NM-2	\$2,250,000	None	None
NM-3	\$23,775,000	None	None
NM-7	\$1,500,000	None	None
NM-9	\$4,000,000 to \$6,000,000	None	None
<i>Subtotal</i>	<i>\$31,525,000 to \$33,525,000</i>	<i>Minimal</i>	<i>None</i>
<b>Total</b>	<b>\$32,125,000 to \$35,200,000</b>	<b>Minimal</b>	<b>None</b>

Notes: The City of Charlotte Aviation Department-funded mitigation actions recommended for implementation are eligible for Federal matching funds amounting to approximately 80 percent of the total program cost.

Source: Landrum & Brown, 2024.

#### 4.4.4 Implementation Schedule

As shown in Table 4-1, the existing noise abatement measures (NA-4 through NA-9) are from the previously approved 1996 NCP and can continue uninterrupted. Measure NA-6 can continue as approved in the 1996 NCP and the proposed modification will require FAA approval (anticipated 2024-2025). Measure NA-10 is a new measure that will require FAA approval (anticipated 2024-2025). The new Measures NA-11 and NA-12 would change runway use, which will require FAA approval, environmental processing per the NEPA and approval, the update of the CLT Tower Order, and the construction of the new fourth parallel runway is completed. The new Measures NA-13 and NA-14 would implement divergent headings, which will require FAA approval, environmental processing per the NEPA and approval, development of new air traffic procedures, and the update of the CLT Tower Order.

The existing land use compatibility measures (LU-1 through LU-9) are from the previously approved 1996 NCP and can continue uninterrupted. The existing land use mitigation measures (NM-1 through NM-9) are proposed for continuation with modification from the previously approved 1996 NCP, which may be implemented on approval by the FAA and based on the availability of funding.